APPENDIX D

QA Reporting

APPENDIX D-1

QA Weekly Reports

QA WEEKLY REPORT

DATE March 11, 2021 **Reference No.** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Shai Spilberg, Yves Boulianne

FROM Brandon Gray **EMAIL bgray@golder.com**

QA WEEKLY REPORT FROM FEBRUARY 20TH TO FEBRUARY 26TH – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from February 20th to February 26th, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The “+” and “-” symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Brandon Gray	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

General

- QC/QA sampled Zone 2 and Zone 3 filter material from existing stockpiles on site. Zone 3 filter material was found to be compliant with material specifications, however, Zone 2 fine filter was identified to be slightly coarser than design specification.
- QC/QA sampled Zone 4 material from east and west esker stockpiles on site. West esker stockpile material was found to be compliant with material specification however, East esker stockpile was identified to contain a high sand content and was noncompliant with design specification.

IVR Dyke

- Planned work execution for blasting operations is as follows: first blast, excavate overburden material, drill for second blast, second blast, third blast, excavate overburden material for key trench, clean/prepare foundation, proceed to QA approval of the foundation and begin placement of Zone 2B material.
- Stéphane Gionet noted, next hurdle will be removing overburden material and potentially treating exposed bedrock if encountered. KCG to have compressor ready and check condition of grout mix in seacan storage container. AEM noted, grout mix should be moved to fabrication shop to allow it to warm up prior to mixing.

Follow-up

- Laurier Collette coordinated with environmental department and verified possibility of sourcing Zone 4 material from Esker Pit 6 and Esker Pit 8 borrow sources. QA/QC to arrange visit to borrow sources to sample proposed Zone 4 material.
- Many samples of Zone 2A materials yielded grain-size distribution outside the specifications (refer to Section 6.0). AEM and Golder to follow-up on this aspect in the upcoming week.

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Drilling for key trench	■ KCG completed drilling holes for key trench between approx. Sta. 0+117 and 0+189, additional holes remain to be drilled between tie at second and third blast segments.
Key trench foundation preparation	■ KCG excavated overburden material from first blast for key trench at the IVR Dyke between Sta. 0+117 and Sta. 0+129, no visible ice lenses were observed in key trench and till was observed along excavation side walls.

5.0 FOUNDATION APPROVALS

No foundation approval was carried out during the reporting period.

Table 3: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

6.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 4 to Table 7 below present a summary of the laboratory testing results obtained by the QA and QC. No PNG field testing was done this week. The key findings are as follows:

- Fine filter (Zone 2A): all 4 samples have oversize particles (between 19 and 25 mm) but are otherwise well-graded. Average water content is 2.3%.
- Coarse filter (Zone 3): all 3 samples are considered compliant. Average water content is 8.2%.
- Esker (Zone 4): 1 out of 3 samples has too much sand while the other 2 are compliant. Average water content is 10.3%.
- Bentonite: all 2 samples are considered compliant. Average water content is 10.5%.

Table 4: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-1-AMQ-FF	22-Feb-21	22-Feb-21	Fine Filter Stockpile	Gradation	**Noncompliant (oversize)**
				Water Content	1.4 %
PSD-2-AMQ-FF	22-Feb-21	23-Feb-21	Fine Filter Stockpile	Gradation	**Noncompliant (oversize)**
				Water Content	2.2 %
PSD-3-AMQ-FF	22-Feb-21	23-Feb-21	Fine Filter Stockpile	Gradation	**Noncompliant (oversize)**
				Water Content	1.7 %
QA21-01	22-Feb-21	23-Feb-21	Fine Filter Stockpile	Gradation	**Noncompliant (oversize)**
				Water Content	3.9 %

Table 5: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-2-AMQ-CF	24-Feb-21	26-Feb-21	Stockpile, Coarse Filter Stockpile	Gradation	Marginally Compliant
				Water Content	8.3%
PSD-1-AMQ-CF	24-Feb-21	25-Feb-21	Coarse Filter Stockpile	Gradation	Compliant
				Water Content	8.1%
QA21-03	24-Feb-21	26-Feb-21	Coarse Filter Stockpile	Gradation	Compliant

Table 6: Sampling and Testing on Esker (Zone 4)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-1-AMQ-Esker	19-Feb-21	20-Feb-21	West Esker Stockpile	Gradation	**Noncompliant (high sand content)**
				Water content	10.7%
PSD-2-AMQ-Esker	19-Feb-21	22-Feb-21	West Esker Stockpile	Gradation	Compliant
				Water Content	10.2 %
QA21-02	22-Feb-21	24-Feb-21	South Esker Stockpile	Gradation	Compliant
				Water Content	9.9%

Table 7: Sampling and Testing on Bentonite

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-1-AMQ-BNT	24-Feb-21	25-Feb-21	Seacan Storage Container	Gradation	Compliant
				Water Content	8.1%
QA21-04	24-Feb-21	25-Feb-21	Seacan Storage Container	Gradation	Compliant
				Water Content	14.8 %

7.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	To be determined following further discussion with AEM.

8.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

9.0 PHOTOGRAPHS



Photograph 2001: Approx. Sta. 0+100 view looking NE. CAT dozer removing snow within footprint of upstream shell at the IVR Dyke.



Photograph 2006: Tetra Tech QC sampling Zone 2A fine filter material from southern face of existing stockpile.



Photograph 2008: Approx. Sta. 0+120 view looking W. KCG drilling holes through overburden in advance of first blast for key trench at the IVR Dyke



Photograph 2010: Coarse filter stockpile, view looking E. KCG loader creating sample pad for Zone 3 material.



Photograph 2011: Approx. Sta. 0+130, view looking W. Overburden exposed from first blast, no visible ice lenses observed.



Photograph 2012: Approx. Sta. 0+135, view looking S. KCG continuing to drill holes for second blast.



Photograph 2013: Approx. Sta. 0+115 view looking E, key trench excavation from first blast between Sta. 0+117 and Sta. 0+129.



Photograph 2015: Approx. Sta. 0+130 view looking SE, CAT excavator placing blasts mats over geotextile in preparation for second blast schedule for Saturday, February 27th.



Photograph 2016: Approx. Sta. 0+140 view looking E, KCG drilling holes for third key trench blast.

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https://golderassociates.sharepoint.com/sites/140958/project files/6 deliverables/21452873-1604-r-reva ivr d1 dyke as-built 2021/rev0/appendix d - qa reporting/d.1 weekly reports/201452873 qa weekly report 2021-02-20 to 2021-02-26-rev0.docx

QA WEEKLY REPORT

DATE March 11, 2021 **Reference No.** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Yves Boulianne, Shai Spilberg

FROM Brandon Gray **EMAIL bgray@golder.com**

QA WEEKLY REPORT FROM FEBRUARY 27TH TO MARCH 5TH – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from February 27th to March 5th, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The "+" and "-" symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Brandon Gray	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

General

- Liner team to arrive on site for Monday, March 8th.

IVR Dyke

- AEM, surface from second blasts appeared to have more back break but after verification once overburden material was excavated from key trench, back break was minor.
- QA representative noted, bedrock was observed in key trench between Sta. 0+200 and Sta. 0+205, additional foundation preparation required to verify full extents.
- KCG to calibrate loader bucket for FFAB trial mix, trial to confirm mix ratio and procedure used in mixing fine filter and bentonite material in advance of Zone 2B placement. In addition, test strip to be constructed with FFAB material, QC to use PNG for density testing trials.
- AEM noted, team to be more vigilant in monitoring excavation depth for base of key trench moving forward after QA/QC identified high spots in floor of excavation during approval process.
- QA representative noted, QC to be present during mixing of FFAB material at the mixing pad to record material quantities and verify mixing procedure. In addition, QA approval is needed for all foundation approvals and when material changes occur during construction.
- QC representative: opportunity to mix larger stockpiles of FFAB material during production, KCG will try to produce larger batches so QC can be present during mixing and will provide tracking quantities for mix ratio to AEM.

Follow-up

- AEM engineering noted, thermistor to be installed 150 mm below second lift of FFAB material placed in the key trench at the IVR Dyke between Sta. 0+140 and Sta. 0+215. Important to keep track of the work sequence to install instruments at the right time, especially below the liner before the area is backfilled and covered.

Conference Call

- Foundation preparation in the rockfill dike footprint: the specification require excavation down to ice-poor, competent material. Given the sensitivity to settlement and deformation of the upstream part of the dike where the LLDPE geomembrane will be installed, foundation in key trench and directly underneath upstream slope with must be excavated to ice-poor till. AEM proposed to remove ice and snow on the foundation downstream of the liner limit, without stripping frozen organics, even though this poses a risk of thaw-induced settlement in this area of the dike (composed of rockfill only). Golder's opinion is that this is acceptable, since it will avoid disturbing excessively the frozen ground for permafrost aggradation and provided that AEM is ready to repair the rockfill shell as needed in the future. This adjustment constituted field change FC21-02 (see Section 12.0).
- Fine filter material: the material sampled on site (0-25 mm) is coarser than the specifications (0-19 mm). However, a sampling bias exists due to the sampling at the surface of the stockpile. Golder recommended to re-sample the fine filter material after mixing of the stockpile with a loader to gather more representative samples and re-evaluate the gradation. Based on current results, Golder's opinion is that the material is still

adequate as a geosynthetics bedding and is compatible with the coarse filter in terms of grain-size distribution. The coarser material may however be unsuitable as is for the low-permeability zones (fine filter amended with bentonite, zone 2B). Golder suggested to increase the bentonite content if the material is not compliant in terms of gradation. AEM to make a final decision upon reception of additional lab results.

- A separate document supporting the discussion held between AEM and Golder with recommendations has been issued separately (21452873-1601-PPT_RevA, Golder, 2021).

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Drilling for key trench	■ KCG completed drilling holes for key trench sequence three, four and five between Sta. 0+149 and Sta. 0+275 and started drilling holes for key trench sequence six between Sta. 0+275 and Sta. 0+325. ■ Dyno conducted three blasts for key trench between approx. Sta. 0+129 and Sta. 0+229 and loaded holes for sequence five between Sta. 0+229 and Sta. 0+275.
Key trench foundation preparation	■ KCG excavated blasted overburden for key trench between Sta. 0+129 and Sta. 0+229. ■ KCG labourers prepared foundation surface for key trench between Sta. 0+130 and Sta. 0+180. ■ Key trench foundation was approved between Sta. 0+130 and Sta. 0+180 (details in Section 5.0).
Key trench backfill (Zone 2B)	■ KCG placed three lifts of FFAB between stations Sta. 0+130 and Sta. 0+180. The material is visually of good quality and well-graded. Lift not yet completed. Additional lifts were required to fill in areas of over excavation. ■ Compaction of the 250 mm lifts of FFAB with a 10-tonne smooth-drum compactor with vibration (6 passes) from Sta. 0+130 and Sta. 0+180 m.

5.0 FOUNDATION APPROVALS

The following foundation approvals were carried out during the reporting period.

Table 3: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210304-DS	IVR Dyke	Sta. 0+130 to Sta. 0+160 (key trench)	4-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix) with small ice horizons (1 to 2 mm thick), considered ice-poor and competent.
20210305-DS	IVR Dyke	Sta. 0+160 to Sta. 0+180 (key trench)	5-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix) with small ice horizons (1 to 2 mm thick), considered ice-poor and competent. A 100-150 mm ice rich lens was observed 1 m below existing ground along downstream and upstream side walls between Sta. 0+165 and Sta. 0+175 (areas of foundation outside key trench, not yet approved).

6.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 4 to Table 8 below present a summary of the laboratory testing results obtained by the QA and QC. No PNG field testing was done this week. The key findings are as follows:

- Fine filter (Zone 2A): still has oversize particles (between 19 and 25 mm) but is otherwise well-graded. Average water content is 4.3%. The material appears very consistent across the stockpile.
- FFAB (Zone 2B): the available results show that 8% bentonite satisfactorily increased the fines content despite the initial fine filter being too coarse. Average water content is 5.4%. 3 other grain-size distribution tests are pending.
- Coarse filter (Zone 3): no testing this week.
- Esker (Zone 4): results for this week are pending.
- Foundation soil (key trench): average water content is 10.8%, with values ranging from to 4.3% to 18.8%. Average ice content (measured by excess ice method in the laboratory) is 7.6%, with values ranging from 5.2% to 9.9%. These results combined with visual field observations suggest that the soil is generally ice-poor.

Table 4: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-3-AMQ-FF	3-Mar-2021	-	Fine Filter Stockpile	Gradation Water Content	Pending
QA21-05	3-Mar-2021	-	Mixing Pad	Gradation	Material is slightly too coarse but Golder recommends that is acceptable provided that handling, transport and placement are done carefully to limit segregation of the particles.
				Water Content	4.3 %

Table 5: Sampling and Testing on Fine Filter Amended with Bentonite (Zone 2B)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-1-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Gradation Water Content	Pending
PSD-2-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Gradation Water Content	Pending
PSD-3-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Gradation Water Content	Pending
MDR-1-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Proctor	Pending
SWELL-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Mixing Pad	Swell Test	Pending

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
SWELL-2-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Mixing Pad	Swell Test	Pending
SWELL-3-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Mixing Pad	Swell Test	Pending
QA21-06	3-Mar-2021	4-Mar-2021	Fine Filter Stockpile + bentonite	Gradation	Material is slightly too coarse but Golder recommends that it is acceptable given that % bentonite was increased to 8% provided that handling, transport and placement are done carefully to limit segregation of the particles.
				Water Content	5.4 %

Table 6: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result

Table 7: Sampling and Testing on Esker (Zone 4)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	-	West Esker Stockpile	Frozen single point modified proctor	Pending
				Thawed single point modified proctor	Pending

Table 8: Sampling and Testing on Foundation Soil

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
GWC-1-AMQ-KT	3-Mar-2021	4-Mar-2021	Key trench Sta. 0+145, O/S 0 m	Gravimetric Water Content	4.3
QA21-07	3-Mar-2021	4-Mar-2021	Sta. 0+145, O/S 0 m	Water Content	18.8 %
				Ice Content	9.9 % (<10% and combined with field observation: considered ice-poor)
QA21-08	5-Mar-2021	5-Mar-2021	Sta. 0+180, O/S 0 m,	Water Content	9.4 %
				Ice Content	5.2 %
QA21-09	5-Mar-2021	-	Key trench Sta. 0+190, OS -3 m	WC/IC	Pending
QA21-10	5-Mar-2021	-	Key trench Sta. 0+200, OS -1 m	WC/IC	Pending

7.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-02	Foundation preparation in rockfill shell footprint	03/03/2021	Requested by AEM. Favourable opinion from Golder.	Key trench and foundation area within the vertical limits of the LLDPE liner-bearing slope must be excavated to ice-poor soil or bedrock. Frozen organics can be left in place in the foundation in rockfill shell footprint downstream of the liner limit, provided snow, ice and loose materials are removed.
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.

8.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

9.0 PHOTOGRAPHS



Photograph 2017: Approx. Sta. 0+150 view looking NE, KCG drilling remaining tie in holes for third key trench blast.



Photograph 2019: Approx. Sta. 0+150 view looking W, blasted overburden material excavated between Sta. 0+129 and Sta. 0+149.



Photograph 2020: Approx. Sta. 0+150 view looking E, holes drilled in advance of third blast for key trench construction.



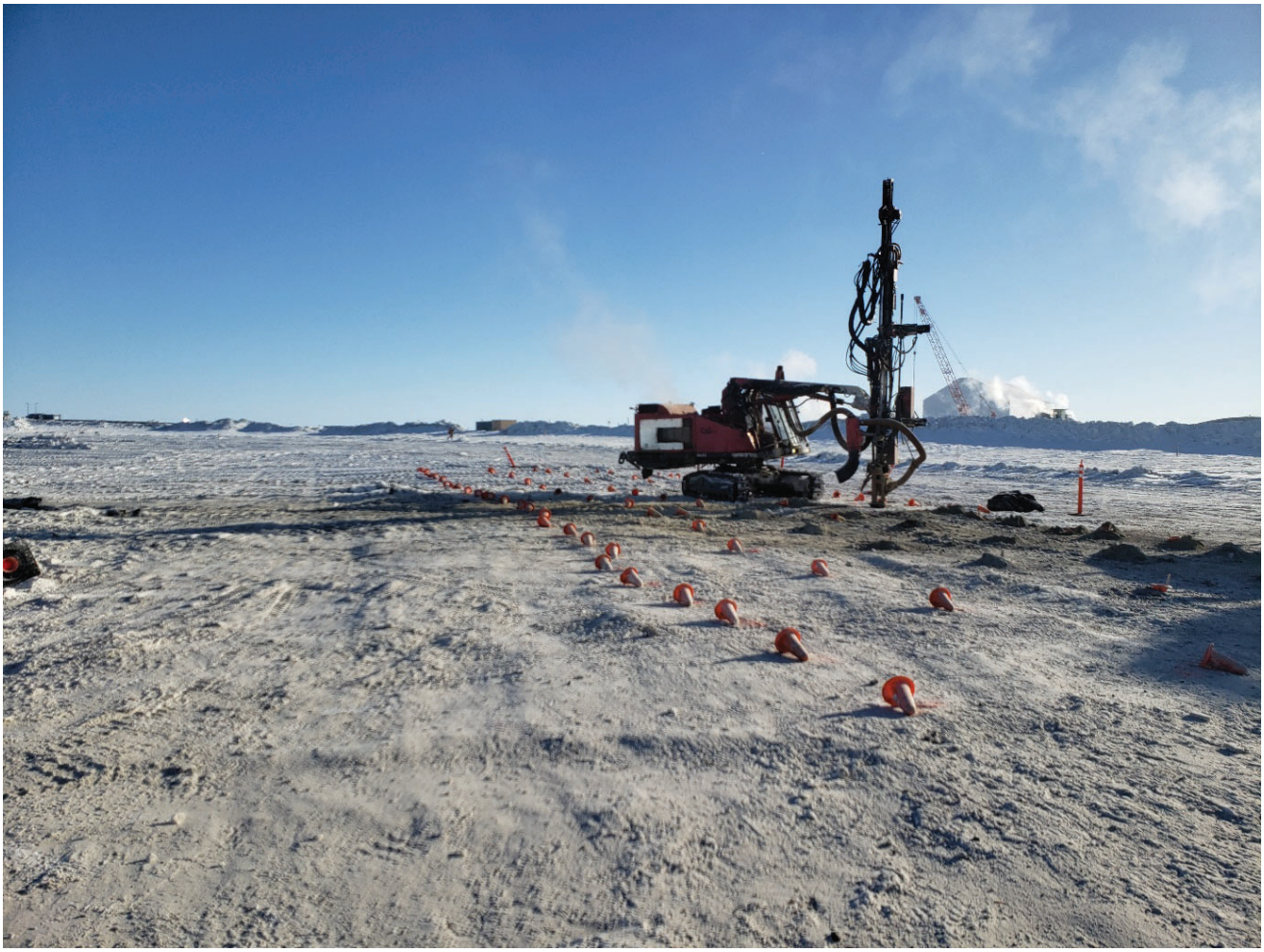
Photograph 2022: Approx. Sta. 0+170 view looking W, Dyno loading drill pattern for third key trench blast.



Photograph 2023: Approx. Sta. 0+130 view looking E, blast mats installed over drill pattern in preparation for third key trench blast.



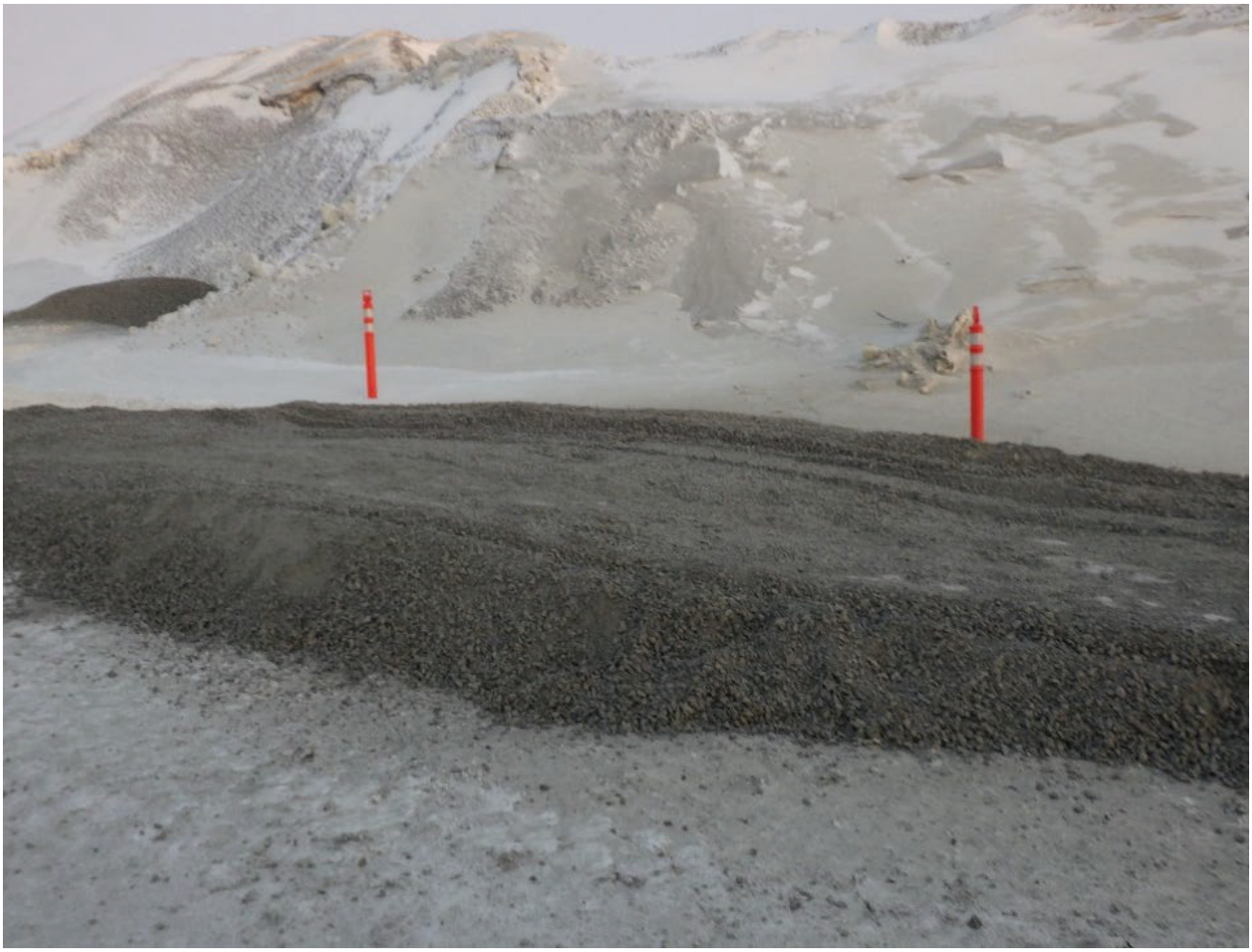
Photograph 2024: Approx. Sta. 0+130 view looking E, CAT excavator removing blast mats from third key trench blast.



Photograph 2025: Approx. Sta. 0+200 view looking E, KCG continuing to drill holes for fourth key trench blast.



Photograph 2026: Approx. Sta. 0+150 view looking W, KCG labourers cleaning foundation of key trench at the IVR dyke.



Photograph 2028: View looking E, test pad constructed from Zone 2A material at the fine filter stockpile.



Photograph 2029: Approx. Sta. 0+160 view looking W, key trench excavation prepared between Sta. 0+130 and Sta. 0+160.



Photograph 2030: Approx. Sta. 0+140 view looking E, KCG starting to place first 250 mm lift of FFAB material (Zone 2B) along floor of key trench.



Photograph 2031: View looking E, KCG producing FFAB (Zone 2B) material at the mixing pad.



Photograph 2036: Approx. Sta. 0+130 view looking E, CAT excavator placing FFAB material within footprint of key trench.



Photograph 2037: Approx. Sta. 0+190 view looking S, KCG labourers preparing foundation of key trench.



Photograph 2038: Approx. Sta. 0+170 view looking SW, orange stars highlight a 100-150 mm thick lens of fine-grained ice rich material along downstream sidewall of excavation.



Photograph 2039: Approx. Sta. 0+150 view looking SE, KCG compacting first placed lift of FFAB (Zone 2B) material.



Photograph 2040: Approx. Sta. 0+220 view looking E, CAT excavator placing blast mats for fifth key trench blast.



Photograph 2041: Approx. Sta. 0+190 view looking W, KCG compacting second placed lift of FFAB (Zone 2B) material.

Golder Associés Ltée

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QA WEEKLY REPORT

DATE March 13, 2021 **Reference No.** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Yves Boulianne, Brandon Gray

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA WEEKLY REPORT FROM MARCH 6TH TO MARCH 12TH – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from March 6th to March 12th, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The "+" and "-" symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Shai Spilberg	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

IVR Dyke - foundation

- AEM questioned Golder's method of measuring ice content (ice content = mass of supernatant water after thawing divided by dry mass) and its definition of "excess ice" (ice content > 10%). AEM thinks total water content is a better measure of ice in the foundation. Golder clarifies that both measurements are taken for each sample of foundation soil. Golder also reiterated that the ice content laboratory measurement is better suited for silty materials, as for coarse grained materials such as sands and gravel, excess ice is usually observed as ice layers. As a result, both the water content and excess ice results are taken into account for the evaluation of the ice-poor or ice-rich quality of the soil in combination with visual field observations.
- Ice content testing of trench bottom (subgrade foundation) will be done at 20 m intervals as opposed to 10 m intervals. This is considered sufficient resolution and will allow QA to focus on liner installation which is critical. Samples will be taken within this interval if a change is observed in the foundation.
- Golder has requested the AEM surveyor to provide cross sections of the as-built trench and liner footprint to assess whether organics and ice rich soils need to be stripped at the upstream or downstream surfaces adjacent to the trench. The drawing has not yet been received.
- Pockets of ice were observed at approx. Sta. 0+207 (2 m x 1 m large) and Sta. 0+210 (0.5 m x 0.5 m large). The pockets were excavated down approximately 0.5 m after which ice was still visible (Photograph 2052). Golder/AEM have adopted the following the procedure for when ice is encountered in the subgrade foundation of the key trench:
  - Excavate down approximately 30 cm;
  - If ice is still present, stop excavating;
  - Foundation may be approved regardless of ice presence because probability of thaw in this area is minimal.

  The above does not apply to very large patches of ice (e.g. ancient lakes) or weight bearing ice lenses, which must be removed. Note that this procedure may need to be revised for the dam abutment areas that are less than 3 m below final ground surface (approximately Sta. 0+000 to 0+100 and Sta. 0+450 to 0+550). The QA representative will make the decision regarding the suitability of ice-rich foundation soil and produce approvals accordingly.
- Horizontal ice seams were observed in the upstream trench at Sta. 0+226 (approx. 5 cm thick) (Photo 2061) and Sta. 0+233 (approx. 2 cm thick) at a depth of approximately 1.5 mbgs. The ice seams extend horizontally for several meters at each location.
- Ice lenses were observed from approx. Sta. 0+230 to 0+250 on the lower portion of downstream and upstream trench walls that was cleaned in preparation for fill placement (approx. 3 – 2.5 m bgs) (Photos 2062 and 2063). The ice lenses are generally 2 cm thick or less, and 20 cm wide (Photo 2064). However, some ice lenses measured 1.3 m long and 30 cm wide. Ice lenses are probably present further up the wall but could not be seen because the wall has not been fully cleaned yet. Ice lenses are probably also present in the trench floor.
- Foundation cleaning is progressing with compressed air. AEM intends to use 2 compressed air machines working in tandem to clean the foundation. Golder suggested that the cleaning process could be accelerated

so long as visibility of the foundation for inspection is maintained. The AEM representative wishes to continue cleaning in the same manner.

- The wall of the key trench should be cleaned of dust and snow prior to dumping FF and FFAB material in the trench so as not to contaminate it. KCG prepared designated dumping points. Approval should be obtained from QA/QC prior to adding lifts.
- Some areas of the subgrade foundation were 2-4 inches (50-100 mm) too high, which implies there will be 400-500 mm of FFAB under the liner (Photograph 2054), while the specifications require 500 mm. Golder agrees that this thickness is sufficient, so long as the thickness of FFAB is not less than 400 mm.
- At Sta. 0+254, a boulder approximately 0.5 x 0.5 m and 0.5 – 1 m high was observed sticking out of the trench floor (Photo 2065). The top of the boulder is at least 500 mm below the liner, so fill placement was approved. However, the fill around such boulders must be properly compacted and a manual plate compacter should be used if required.

IVR Dyke – fill materials

- AEM intends to make changes to the configuration of the upstream shoulder of the dam due to constraints on availability of esker material.
- There is not enough bentonite for 6% FFAB mix assuming 15% contingency. AEM proposes using different mixes for different areas and using higher mix content in critical areas. Golder provided revised mix quantities for the 6% FFAB.
- The Standard Proctor Density currently being used for compaction tests is considered low relative to the results in the field, perhaps due to a slight change in material composition. A new Standard Proctor test carried out by QC obtained a value of 2131 kg/m^3.

IVR Dyke – instrumentation

- A thermistor was successfully installed horizontally in the dyke foundation, from Sta. 0+145 to 0+220.

Conference Call

- AEM does not have access to sufficient esker material for the present dam configuration. AEM intends to change the configuration of the upstream shoulder of the dam by replacing some esker material with rock fill, which is readily available. The current approved plan is to replace esker material above elevation 163.2 m with rock fill. However, AEM and Golder both agree that is better to separate the esker/rock fill vertically instead of horizontally in the dam shoulder.

  Furthermore, AEM wishes to reduce the width of the upstream shoulder of the dam to 12 m including the upstream rockfill cover (instead of 12 m excluding the rockfill cover). Golder suggests this entails additional risk of foundation thaw. Based on thermal model results, AEM is comfortable with 12 m width with monitoring (thermistors).

- AEM does not have enough bentonite for 6% FFAB mix assuming 15% contingency. AEM will focus use of bentonite in critical areas.
- The footprint of the liner will be plotted on the footprint of the as-built trench (upstream and downstream) to inform the discussion on whether ice and organics should be stripped in the area adjacent to the trench walls to reduce the risk of settlement and subsequent liner strain; alternatively, whether the liner may be moved to fall within the footprint of the trench.

Follow-up

- The question of whether the liner falls completely within the footprint of the trench is important to answer prior to liner installation. Waiting for the plan view from AEM.
- The details concerning the new configuration of upstream shoulder of the dam will need to be finalized soon as construction is proceeding rapidly. Expecting input from AEM.
- The fine filter material sampled on site (Zone 2A) is coarser than spec. Formal acceptance of the available material is outstanding (FC21-01).
- The bentonite proportions will be modified in different areas of the dike due to limited bentonite availabilities. Formal acceptance of this change is outstanding (RFI-06).

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Drilling for key trench	■ KCG completed drilling blast holes until Sta. 0+455. ■ Dyno conducted two blasts for key trench between approx. Sta. 0+229 and Sta. 0+365 and loaded holes for the next sequences between Sta. 0+365 and Sta. 0+410.
Key trench foundation preparation	■ KCG excavated blasted overburden for key trench between Sta. 0+229 and Sta. 0+365. ■ KCG labourers prepared foundation surface for key trench between Sta. 0+180 and Sta. 0+320. ■ Key trench foundation was approved between Sta. 0+180 and Sta. 0+280 (details in Section 5.0).
Key trench backfill (Zone 2B and Zone 2A)	■ KCG placed FFAB and FF in the trench in lifts of 250-300 mm between stations Sta. 0+129 and Sta. 0+275. A maximum height of 0.6 mbgs was attained. The material is visually of good quality and well-graded. Additional lifts were required to fill in areas of over excavation. ■ Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes) from Sta. 0+129 and Sta. 0+275 m.

5.0 FOUNDATION/FILL APPROVALS

The following foundation and fill approvals were carried out during the reporting period.

Table 3: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210310 -DS-01	IVR Dyke (foundation)	Sta. 0+205 to Sta. 0+227	10-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix), considered ice-poor and competent. Trench walls were covered in snow and potential ice layers within the walls were not visible.
20210310 -DS-02	IVR Dyke (fill)	Sta. 0+180 to Sta. 0+205 (Zone 2B)	10-Mar-21	Compliant. Ready for placement of Zone 2A (FF) material on top of Zone 2B (FFAB).
20210311 -DS-01	IVR Dyke (foundation)	Sta. 0+227 to Sta. 0+248 (Key trench)	11-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix). Ice lenses are wedged in vertical cracks and are deemed non weight-bearing. The foundation is competent. Trench walls were covered in snow and potential ice layers within the walls were not visible.
20210312 -DS-01	IVR Dyke (fill placement)	Sta. 0+180 to Sta. 0+241 (Key trench)	12-Mar-21	Compliant. Material appeared well graded and evenly compacted, except near upstream trench wall, where there was some debris and uncompacted material. After cleaning & re-compaction (supervised by QA), fill placement was approved.
20210312 -DS-02	IVR Dyke (foundation)	Sta. 0+248 to Sta. 0+280 (Key trench)	12-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix). Ice lenses where observed in trench walls and are probably present in the foundation from approx. Sta. 0+250 to 0+270. The foundation is competent. Trench walls 1 m above ground were not cleaned yet (covered in dust) and therefore could not be inspected.

6.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 4 to Table 8 below present a summary of the laboratory testing results obtained by the QA and QC. The key findings are as follows:

- The Standard Proctor Density of the Zone 2B (FFAB) material was revised to 2131 kg/m^3 based on a new Standard Proctor test on that material.

- Ice content/water content samples were taken from the trench floor every 10 m. One sample (GWC-3-AMQTRENCH-20210309) indicated ice-rich soil based on water content.
- The FFAB material is slightly too coarse, as the initial fine filter is, but considered acceptable for the use as liner tie-in.

Table 4: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-3-AMQ-FF	3-Mar-2021	-	Fine Filter Stockpile	Gradation Water Content	Material is too coarse for fraction > 5 mm.

Table 5: Sampling and Testing on Fine Filter Amended with Bentonite (Zone 2B)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-1-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Gradation Water Content	Too coarse for fraction > 5mm. Slightly too coarse for fraction < 0.3 mm.
PSD-2-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Gradation Water Content	Too coarse for fraction > 15 mm.
PSD-3-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Gradation Water Content	Too coarse for fraction > 5mm. Slightly too coarse for fraction < 0.3 mm.
MDR-1-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Proctor	SPD = 2038 kg/m^3
SWELL-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Mixing Pad	Swell Test	Pass
SWELL-2-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Mixing Pad	Swell Test	Pass
SWELL-3-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Mixing Pad	Swell Test	Pass

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
MDR-3-AMQ-FF-20210310	10-Mar-2021	10-Mar-2021	0+190	Single Point Standard Proctor	SPD = 2131 kg/m^3

Table 6: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
None					

Table 7: Sampling and Testing on Esker (Zone 4)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	-	West Esker Stockpile	Frozen single point modified proctor	PSD = 1871 kg/m^3
				Thawed single point modified proctor	Pending

Table 8: Sampling and Testing on Foundation Soil

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
GWC-1-AMQTRENCH-20210308	March 8, 2021	March 8, 2021	0+185	Gravimetric Water Content	w/c = 21.1%
GWC-2-AMQTRENCH-20210308	March 8, 2021	March 8, 2021	0+195	Gravimetric Water Content	w/c = 14.4%
GWC-3-AMQTRENCH-20210309	March 9, 2021	March 9, 2021	0+207	Gravimetric Water Content	w/c = 37.2%

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
GWC-4-AMQTRENCH-20210309	March 9, 2021	March 9, 2021	0+220	Gravimetric Water Content	w/c = 13.8%
QA21-09	5-Mar-21	5-Mar-21	Sta. 0+180, OS 0.0 m	WC/IC	I/C = 5.2% W/C = 26.5%
QA21-10	5-Mar-21	7-Mar-21	Sta. 0+190, OS -3.0 m	WC/IC	I/C = 6.8% W/C = 17.3%
QA21-11	8-Mar-21	7-Mar-21	Sta. 0+200, OS -1.0 m	WC/IC	Pending
QA21-12	9-Mar-21	-	Sta. 0+210 OS 0.0 m	WC/IC	Pending
QA21-13	10-Mar-2021	-	Sta. 0+230, OS -4.5 m	WC/IC	Pending
QA21-14	10-Mar-2021	-	Sta. 0+240 OS 0 m	WC/IC	Pending
QA21-15	11-Mar-2021	-	Sta. 0+260, OS 0 m	WC/IC	Pending

7.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.
RFI-06	Zone 2B : Reduction of bentonite content in non-critical zones	-	-	Due to limited available quantities of bentonite, AEM proposed to limit the use of FFAB in critical zones of Zone 2B while using only fine filter in the non-critical areas. Final decision to be made by AEM following request for information from the designer.

8.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

9.0 PHOTOGRAPHS



Photograph 2052: Pocket of ice at approximately Sta. 0+207 after overexcavation, view looking E



Photograph 2053: Foundation surface approved, Sta. 0+205 to 0+227 view looking E.



Photograph 2054: High spot of subgrade foundation, indicated by orange paint at approx. Sta. 0+225 view looking E. Elevation of the spot is approximately 2 inches (50 mm) higher than design. This is considered acceptable.



Photograph 2055: Fill placement approved for placement of Zone 2A (FF) on top of Zone 2B (FFAB) from Sta. 0+180 to 0+205, view looking W.



Photograph 2056: Wind-blown snow on trench walls should be removed prior to adding lifts.



Photograph 2057: Typical small pocket of ice observed in trench floor. Small pockets of ice less than 0.5 m^2 were observed in multiple locations from Sta. 0+227 to 0+248.



Photograph 2058: Final foundation approved for placement of Zone 2A material (FFAB), Sta. 0+227 to 0+248.



Photograph 2059: Installation of thermistor installed from 0+145 to 0+220 at a depth of 2.75 mbgs, view looking W.



Photograph 2060: Excavator cleaning loose material, snow and dust from the back-break area of the trench wall, 0+100 to 0+200, view looking W.



Photograph 2061: Ice seam in upstream trench wall at Sta. 0+226, approximately 5 cm thick and 1.5 mbgs.



Photograph 2062: Ice lenses in downstream trench wall from Sta. 0+260 to 0+250, view looking W.



Photograph 2063: Ice lenses in downstream trench wall from Sta. 0+260 to 0+270, view looking E.



Photograph 2064: Close up view of ice lens in downstream trench wall, Sta. 0+250 to 0+270.



Photograph 2065: Boulder sticking out of trench floor at Sta. 0+254, view looking SW.



Photograph 2066: Approved fill placement (Zone 2B material, FFAB) from Sta. 0+180 to 0+241, view looking W.



Photograph 2067: Approved foundation from Sta. 0+248 to 0+280, view looking SE.

Golder Associés Ltée

Shai Spilberg
Mine Waste Group

Yves Boulianne, P.Eng.
Principal, Senior Geotechnical Engineer

SS/YB

https://golderassociates.sharepoint.com/sites/140958/project files/6 deliverables/21452873-1604-r-reva ivr d1 dyke as-built 2021/rev0/appendix d - qa reporting/d.1 weekly reports/201452873 qa weekly report 2021-03-06 to 2021-03-12-rev0.docx

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QA WEEKLY REPORT

DATE March 25, 2021 **Reference No.** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Yves Boulianne, Brandon Gray

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA WEEKLY REPORT FROM MARCH 13TH TO MARCH 23RD – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from March 13th to March 23rd, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The "+" and "-" symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Shai Spilberg	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

IVR Dyke - foundation

- Ice lenses are present in the key trench foundation and trench walls, below the active zone (depth ~1.5 to 2 m), from Sta. 0+230 to 0+315. The ice lenses are on average 2 cm and 20 cm long, however, some can be as thick as 10 cm and longer than several meters (ice seams). The water content and visible ice content of samples of overburden taken from the floor of the key trench at that location support this visual observation. The foundation was nevertheless approved at this location because the permafrost is not expected to thaw at this depth (approximately 6 m below dam crest). This reasoning may not apply if ice-rich soil is encountered at the shallower dam abutment regions unless a thermal berm is installed.
- Bedrock was encountered in the key trench foundation, starting around Sta. 0+315 and going until 0+445. The bedrock floor of the key trench is composed of high-quality bedrock, grey-brown diorite, with tight joints (minimal aperture) and irregular topography. The top 1 m of bedrock is generally weathered and fractured but was removed during blasting, mucking & cleaning of the key trench. The bedrock was mapped with a Maptek laser scanning system and by hand (Brunton compass).
- It was decided not to grout the bedrock floor of the key trench because the bedrock is high-quality with tight joints, and because the bedrock section falls outside the footprint of the Maximum Operating Level (MOL) of the pond. Refer to Field Change FC21-03.
- QA representative noticed the fractured bedrock zone in the upstream trench wall is rising higher as the trench progresses East from Sta. 0+315 to 0+445 and asked if FFAB should be preferentially placed against the fractured bedrock zone of the upstream trench wall as opposed to the entire length of the trench floor, which is high quality bedrock. Consensus is to continue with current design.

IVR Dyke – fill materials

- The Fine Filter (Zone 2A) material available on site was formally accepted despite being coarser than the Technical Specifications (Field Change FC21-01).
- Due to a shortage of bentonite on site, the Zone 2B material (FFAB) was reduced from an 8% bentonite mix to a 6% mix in the critical section of the dam within the footprint of the MOL (Sta. 0+080 to 0+320) and 4% outside the critical section. Furthermore, FFAB was eliminated from the upstream slope below the liner and replaced with Zone 2A (Fine Filter). FFAB was maintained for the upstream liner hinge and bottom of the key trench. This change will be documented in a RFI.
- A second mixing station was set up to accommodate preparation of 4% and 6% bentonite FFAB. The mixing stations are partially protected from the wind by seacans arranged in a “U” shape. Originally, the seacans were stacked two high but this was reduced to single height after one of the seacans fell over during a blizzard. Mixing of the Fine Filter with bentonite is not permitted during high winds, at the discretion of QA/QC, to prevent loss of fines in the material. The quantities of bentonite and Fine Filter are measured by weight using a scale on the loader, which has been calibrated.
- The Standard Proctor Density currently being used for compaction tests was considered low relative to the results in the field, perhaps due to a slight change in material composition. A new Standard Proctor test carried out by QC obtained a value of 2131 kg/m^3.

IVR Dyke – instrumentation

- A thermistor was successfully installed horizontally in the dyke foundation, from Sta. 0+145 to 0+220.

Conference Call

- AEM does not have access to sufficient esker material for the present dam configuration. AEM intends to change the configuration of the upstream shoulder of the dam by replacing some esker material with rock fill, which is readily available. The current approved plan is to replace esker material above elevation 163.2 m with rock fill. However, AEM and Golder both agree that is better to separate the esker/rock fill vertically instead of horizontally in the dam shoulder.

  Furthermore, AEM wishes to reduce the width of the upstream shoulder of the dam to 12 m including the upstream rockfill cover (instead of 12 m excluding the rockfill cover). Golder suggests this entails additional risk of foundation thaw. Based on thermal model results, AEM is comfortable with 12 m width with monitoring (thermistors).

- AEM does not have enough bentonite for 6% FFAB mix assuming 15% contingency. AEM will focus use of bentonite in critical areas.

- The footprint of the liner will be plotted on the footprint of the as-built trench (upstream and downstream) to inform the discussion on whether ice and organics should be stripped in the area adjacent to the trench walls to reduce the risk of settlement and subsequent liner strain; alternatively, whether the liner may be moved to fall within the footprint of the trench.

Follow-up

- The question of whether the liner falls completely within the footprint of the trench is important to answer prior to liner installation. Waiting for the plan view from AEM.

- The details concerning the new configuration of upstream shoulder of the dam will need to be finalized soon as construction is proceeding rapidly. Expecting input from AEM.

- The fine filter material sampled on site (Zone 2A) is coarser than spec. Formal acceptance of the available material is outstanding (FC21-01).

- The bentonite proportions will be modified in different areas of the dike due to limited bentonite availabilities. Formal acceptance of this change is outstanding (RFI-05).

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Drilling for key trench	■ KCG completed drilling blast holes until Sta. 0+455. ■ Dyno conducted two blasts for key trench between approx. Sta. 0+229 and Sta. 0+365 and loaded holes for the next sequences between Sta. 0+365 and Sta. 0+410.
Key trench foundation preparation	■ KCG excavated blasted overburden for key trench between Sta. 0+229 and Sta. 0+365. ■ KCG labourers prepared foundation surface for key trench between Sta. 0+180 and Sta. 0+320. ■ Key trench foundation was approved between Sta. 0+180 and Sta. 0+280 (details in Section 6.0).
Key trench backfill (Zone 2B and Zone 2A)	■ KCG placed FFAB and FF in the trench in lifts of 250-300 mm between stations Sta. 0+129 and Sta. 0+275. A maximum height of 0.6 mbgs was attained. The material is visually of good quality and well-graded. Additional lifts were required to fill in areas of over excavation. ■ Compaction was accomplished on each lift with a 10-tonne smooth-drum compactor with vibration (6 passes) from Sta. 0+129 and Sta. 0+275 m.

5.0 FOUNDATION/FILL APPROVALS

The following foundation and fill approvals were carried out during the reporting period.

Table 3: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210310-DS-01	IVR Dyke (foundation)	Sta. 0+205 to Sta. 0+227	10-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix), considered ice-poor and competent. Trench walls were covered in snow and potential ice layers within the walls were not visible.
20210310-DS-02	IVR Dyke (fill)	Sta. 0+180 to Sta. 0+205 (Zone 2B)	10-Mar-21	Compliant. Ready for placement of Zone 2A (FF) material on top of Zone 2B (FFAB).
20210311-DS-01	IVR Dyke (foundation)	Sta. 0+227 to Sta. 0+248 (Key trench)	11-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix). Ice lenses are wedged in vertical cracks and are deemed non weight-bearing. The foundation is competent. Trench walls were covered in snow and potential ice layers within the walls were not visible.

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210312 -DS-01	IVR Dyke (fill placement)	Sta. 0+180 to Sta. 0+241 (Key trench)	12-Mar-21	Compliant. Material appeared well graded and evenly compacted, except near upstream trench wall, where there was some debris and uncompacted material. After cleaning & re-compaction (supervised by QA), fill placement was approved.
20210312 -DS-02	IVR Dyke (foundation)	Sta. 0+248 to Sta. 0+280 (Key trench)	12-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix). Ice lenses where observed in trench walls and are probably present in the foundation from approx. Sta. 0+250 to 0+270. The foundation is competent. Trench walls 1 m above ground were not cleaned yet (covered in dust) and therefore could not be inspected.

6.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 4 to Table 8 below present a summary of the laboratory testing results obtained by the QA and QC. The key findings are as follows:

- The Standard Proctor Density of the Zone 2B (FFAB) material was revised to 2131 kg/m^3 based on a new Standard Proctor test on that material.
- Ice content/water content samples were taken from the trench floor every 10 m. One sample (GWC-3-AMQTRENCH-20210309) indicated ice-rich soil based on water content.
- The FFAB material is slightly too coarse, as the initial fine filter is, but considered acceptable for the use as liner tie-in.

Table 4: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-3-AMQ-FF	3-Mar-2021	-	Fine Filter Stockpile	Gradation Water Content	Material is too coarse for fraction > 5 mm.

Table 5: Sampling and Testing on Fine Filter Amended with Bentonite (Zone 2B)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-1-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Gradation Water Content	Too coarse for fraction > 5mm. Slightly too coarse for fraction < 0.3 mm.
PSD-2-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Gradation Water Content	Too coarse for fraction > 15 mm.
PSD-3-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Gradation Water Content	Too coarse for fraction > 5mm. Slightly too coarse for fraction < 0.3 mm.
MDR-1-AMQ-FFAB	3-Mar-2021	-	Mixing Pad	Proctor	SPD = 2038 kg/m^3
SWELL-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Mixing Pad	Swell Test	Pass
SWELL-2-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Mixing Pad	Swell Test	Pass
SWELL-3-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Mixing Pad	Swell Test	Pass
MDR-3-AMQ-FF-20210310	10-Mar-2021	10-Mar-2021	0+190	Single Point Standard Proctor	SPD = 2131 kg/m^3

Table 6: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
None					

Table 7: Sampling and Testing on Esker (Zone 4)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	-	West Esker Stockpile	Frozen single point modified proctor	PSD = 1871 kg/m^3
				Thawed single point modified proctor	Pending

Table 8: Sampling and Testing on Foundation Soil

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
GWC-1-AMQTRENCH-20210308	March 8, 2021	March 8, 2021	0+185	Gravimetric Water Content	w/c = 21.1%
GWC-2-AMQTRENCH-20210308	March 8, 2021	March 8, 2021	0+195	Gravimetric Water Content	w/c = 14.4%
GWC-3-AMQTRENCH-20210309	March 9, 2021	March 9, 2021	0+207	Gravimetric Water Content	w/c = 37.2%
GWC-4-AMQTRENCH-20210309	March 9, 2021	March 9, 2021	0+220	Gravimetric Water Content	w/c = 13.8%
QA21-09	5-Mar-21	5-Mar-21	Sta. 0+180, OS 0.0 m	WC/IC	I/C = 5.2% W/C = 26.5%
QA21-10	5-Mar-21	7-Mar-21	Sta. 0+190, OS -3.0 m	WC/IC	I/C = 6.8% W/C = 17.3%
QA21-11	8-Mar-21	7-Mar-21	Sta. 0+200, OS -1.0 m	WC/IC	Pending
QA21-12	9-Mar-21	-	Sta. 0+210 OS 0.0 m	WC/IC	Pending

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
QA21-13	10-Mar-2021	-	Sta. 0+230, OS -4.5 m	WC/IC	Pending
QA21-14	10-Mar-2021	-	Sta. 0+240 OS 0 m	WC/IC	Pending
QA21-15	11-Mar-2021	-	Sta. 0+260, OS 0 m	WC/IC	Pending

7.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.
RFI-05	Zone 2B : Reduction of bentonite content in non-critical zones	-	-	Due to limited available quantities of bentonite, AEM proposed to limit the use of FFAB in critical zones of Zone 2B while using only fine filter in the non-critical areas. Final decision to be made by AEM following request for information from the designer.

8.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

9.0 PHOTOGRAPHS



Photograph 2052: Pocket of ice at approximately Sta. 0+207 after overexcavation, view looking E



Photograph 2053: Foundation surface approved, Sta. 0+205 to 0+227 view looking E.



Photograph 2054: High spot of subgrade foundation, indicated by orange paint at approx. Sta. 0+225 view looking E. Elevation of the spot is approximately 2 inches (50 mm) higher than design. This is considered acceptable.



Photograph 2055: Fill placement approved for placement of Zone 2A (FF) on top of Zone 2B (FFAB) from Sta. 0+180 to 0+205, view looking W.



Photograph 2056: Wind-blown snow on trench walls should be removed prior to adding lifts.



Photograph 2057: Typical small pocket of ice observed in trench floor. Small pockets of ice less than 0.5 m^2 were observed in multiple locations from Sta. 0+227 to 0+248.



Photograph 2058: Final foundation approved for placement of Zone 2A material (FFAB), Sta. 0+227 to 0+248.



Photograph 2059: Installation of thermistor installed from 0+145 to 0+220 at a depth of 2.75 mbgs, view looking W.



Photograph 2060: Excavator cleaning loose material, snow and dust from the back-break area of the trench wall, 0+100 to 0+200, view looking W.



Photograph 2061: Ice seam in upstream trench wall at Sta. 0+226, approximately 5 cm thick and 1.5 mbgs.



Photograph 2062: Ice lenses in downstream trench wall from Sta. 0+260 to 0+250, view looking W.



Photograph 2063: Ice lenses in downstream trench wall from Sta. 0+260 to 0+270, view looking E.



Photograph 2064: Close up view of ice lens in downstream trench wall, Sta. 0+250 to 0+270.



Photograph 2065: Boulder sticking out of trench floor at Sta. 0+254, view looking SW.



Photograph 2066: Approved fill placement (Zone 2B material, FFAB) from Sta. 0+180 to 0+241, view looking W.



Photograph 2067: Approved foundation from Sta. 0+248 to 0+280, view looking SE.

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Shai Spilberg
Mine Waste Group

Yves Boulianne, P.Eng.
Principal, Senior Geotechnical Engineer

SS/YB

https://golderassociates.sharepoint.com/sites/140958/project files/6 deliverables/21452873-1604-r-reva ivr d1 dyke as-built 2021/rev0/appendix d - qa reporting/d.1 weekly reports/201452873 qa weekly report 2021-03-13 to 2021-03-23-rev0.docx

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QA WEEKLY REPORT

DATE March 30, 2021 **Reference No.** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Yves Boulianne, Shai Spilberg

FROM Brandon Gray **EMAIL bgray@golder.com**

QA WEEKLY REPORT FROM MARCH 23RD TO MARCH 30TH – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from March 23rd to March 30th, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The "+" and "-" symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Brandon Gray	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

IVR Dyke - Foundation

- QA representative noted, AEM engineering scanned bedrock surface between Sta. 0+130 and Sta. 0+100. Moving forward AEM engineering will be unavailable to complete bedrock scans due to end of month commitments with mine operations, QA to manually map bedrock until further notice.
- AEM surveyor and QA representative regarding high spots in bedrock along west abutment of IVR dyke. AEM surveyor noted between Sta. 0+090 and Sta. 0+070 bedrock is up to 250 mm above minimum 3.0 m excavation depth in localized areas. Beyond Sta. 0+070 bedrock increases to 500 mm above minimum excavation depth. Rock breaker was utilized to break localized areas of bedrock down to approximately 2.8 meters below ground surface (mbgs).
- AEM and QA representative discussed ice pockets observed along base of key trench excavation at 4.0 to 4.5 mbgs. AEM agreed ice to remain in place as extent of ice over liner footprint and probability of thaw in this area is minimal at +4.0 mbgs. The ice pockets were also deemed to be non-weight bearing, as they are wedged in vertical cracks between boulders. QA to survey extent of ice lenses for report documentation.

IVR Dyke – Fill Materials

- Discussions regarding expectations for snow removal from the under liner slope prior to LLDPE placement. Checks are required to ensure no snow layers have been buried within the surface of the fine filter material. This can occur when an excavator is used to scrape snow from placed material surfaces and the material is spread over top of the consolidated snow layer.
- Based on available esker material quantities (2500 m^3) on site AEM will be able to place Zone 4 up to elev.163.5 m.

IVR Dyke – Liner Installation

- AEM noted full time QA supervision of liner installation is not required at the IVR Dyke. QA representative should oversee calibration testing in the morning and conduct periodic inspections throughout the day to satisfy the testing frequency set out in the design specifications (1 every 5 QC tests).
- To facilitate the construction process QC representative on nightshift have been given permission by AEM to approve fill placement of Zone 2B (FFAB) for placement of Zone 2A (FF) for under liner slope. QC to spot check placed Zone 2B material thickness with KCG surveyor prior to placement of Zone 2A.

IVR Dyke – Instrumentation

- A thermistor was successfully installed vertically between the LLDPE liner and Zone 2B fine filter material at Sta. 0+150.
- Additional thermistor to be installed at Sta. 0+150 through Zone 3 coarse filter, drilling will be required through coarse filter into bedrock. AEM to extend casings around existing thermistor along downstream shell and new thermistor within key trench.

Conference Call

- AEM noted, extra bentonite was found on site bringing total quantity to 340 tonnes, an additional 4 seacans possibly remain but will need to be verified. Using estimate provided by Laurier 363 tonnes of bentonite is required, using survey data (1.8 times original quantities) 349 tonnes of bentonite will be required. Required

volume does not account for change in reduced FFAB width along bottom of key trench. AEM will maintain full width of FFAB along west abutment and will make adjustments near the east abutment if required.

Follow-up

- The question of whether the liner falls completely within the footprint of the trench is important to answer prior to liner installation. Waiting for the plan view from AEM.
  - Based on survey data provided by AEM between Sta. 0+130 and Sta. 0+340 the LLDPE liner is fully within the key trench excavation when taking into account backbreak from trench blasting. No additional foundation preparation outside the key trench to remove ice-rich material is thus required.

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Foundation Preparation	■ KCG continued key trench foundation preparation from approx. Sta. 0+065 to Sta. 0+050 and from approx. Sta. 0+425 to Sta. 0+460. Bottom of key trench consists predominantly of bedrock between stations. At approx. Sta. 0+460 foundation of key trench appeared to transition to a glacial till moving towards the east abutment. ■ Foundation approved for backfill of Zone 2B (FFAB) from Sta. 0+130 to Sta. 0+045 and from Sta. 0+423 to Sta. 0+442 (see Section 5.0). The bedrock surface was not grouted as per FC21-03 since the final foundation bedrock is of good quality. The first few lifts of FFAB must be hand compacted. ■ Mapping of the bedrock was done by AEM survey scanner and manually by QA representative.
Key Trench Backfill	■ Zone 2B (FFAB) material was placed for base of key trench from approx. Sta. 0+165 to Sta. 0+065 and from approx. Sta. 0+315 to Sta. 0+405. FFAB at 6% was placed up to Sta. 0+080 and was transitioned to FFAB at 4% from Sta. 0+080 towards the west abutment. Placement occurred in multiple 250 mm lifts and material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) placement occurred in multiple lifts of 300 mm thickness for under liner slope from approx. Sta. 0+164 and Sta. 0+065 and from approx. Sta. 0+315 to Sta. 0+405. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) and 2B (FFAB) material was placed to design lines over liner from approx. Sta. 0+165 to Sta. 0+125 and from Sta. 0+315 to 0+395. Placement occurred in multiple 250 mm (Zone 2B) and 300 mm (Zone 2A) lifts. Material was bucket compacted and verified by QC representative and material appeared visually of good quality and well-graded.

Activity or Area	Comments
	■ Zone 3 (CF) material was placed to design lines within key trench excavation from approx. Sta. 0+165 to Sta. 0+130 and from approx. Sta. 0+315 to Sta. 0+395. Placement occurred in multiple 500 mm lifts. Material was bucket compacted until trench backfill exceeded 2 meters above liner at which point material was compacted with a minimum 6 passes with a 10-ton roller. Compaction was verified by QC representative and material appeared visually of good quality and well-graded.
Dyke Backfill	■ Zone 1 rockfill material was placed within the footprint of the downstream shell in one 1000 mm lift between approx. Sta. 0+180 and Sta. 0+390 and one 750 mm lift from approx. Sta. 0+190 to Sta. 0+280 and from approx. Sta. 0+320 to Sta. 0+380. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
Liner Installation	■ Installation of geotextile from Sta. 0+170 to Sta. 0+120 and from Sta. 0+315 to Sta. 0+400. The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner was installed on the key trench slope (2.5H:1V). Liner surface was approved by QA representative and liner QC representative between the following stations: ▪ Sta. 0+315 to Sta. 0+355 (P23 to P28); ▪ Sta. 0+170 to Sta. 0+150 (P29 to P31); ▪ Sta. 0+315 to Sta. 0+355 (P32 to P47); and ▪ Sta. 0+150 to Sta. 0+120 (P38 to P41) ■ Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications ■ One repair was carried out between panel seams P1 and P29 at approx. Sta. 0+150. FC Liner removed smooth part of liner at tie-in due to damage caused during snow removal. No vacuum box testing required. ■ Two destructive tests were carried out at approx. Sta. 0+321 on seam between panels P23 and P24 and at approx. Sta. 0+136 on seam between panels P39 and P40. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. ■ No vacuum box test was conducted during reporting period.

5.0 FOUNDATION/FILL APPROVALS

The following foundation and fill approvals were carried out during the reporting period.

Table 3: Details of the Foundation and Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Zone 2A (FF) Under liner - top	20210323-DS-01	Sta. 0+135 to Sta. 0+165	Mar-23	Approved Zone 2A for placement of Zone 2B on top
Zone 2B (FFAB) Under liner	20210324-DS-01	Sta. 0+315 to Sta. 0+355	Mar-24	Approved Zone 2B for placement of liner.
Zone 2B (FFAB) Under liner	20210324-DS-02	Sta. 0+150 to Sta. 0+170	Mar-24	Approved Zone 2B for placement of liner.
Key trench Zone 2B (FFAB)	20210324-DS-05	Sta. 0+385 to Sta. 0+418	Mar-24	Approved Zone 2B for placement of Zone 2A
Key trench Zone 2B (FFAB) downstream of liner	20210324-DS-06	Sta. 0+315 to Sta. 0+355	Mar-24	Approved downstream trench excavation sidewall and base of Zone 2B for placement of Zone 2B over liner
Zone 2B (FFAB) over liner	20210325-DS-01	Sta. 0+315 to Sta. 0+355	Mar-25	Approved Zone 2B for placement of Zone 2A.
Key trench Zone 2B (FFAB) downstream of liner	20210325-DS-02	Sta. 0+150 to Sta. 0+170	Mar-25	Approved downstream trench excavation sidewall and base of Zone 2B for placement of Zone 2B over liner
Zone 2A (FF) under liner	20210324-DS-03	Sta. 0+385 to Sta. 0+406	Mar-25	Approved Zone 2A for placement Zone 2B.
Zone 2A (FF) over liner	20210324-DS-04	Sta. 0+315 to Sta. 0+355	Mar-25	Approved Zone 2A for placement of Zone 3.
Zone 2B (FFAB) under liner	20210324-DS-05	Sta. 0+385 to Sta. 0+406	Mar-25	Approved Zone 2B for placement of liner.
Key trench Foundation	20210324-DS-06	Sta. 0+130 to Sta. 0+105	Mar-25	Approved for placement of Zone 2B.
Zone 2A (FF) Over liner	20210326-DS-01	Sta. 0+140 to Sta. 0+165	Mar-26	Approved Zone 2A for placement of Zone 3.
Zone 3 (CF) Over liner	20210326-DS-02	Sta. 0+170 to Sta. 0+385	Mar-26	Approved Zone 3/Foundation for placement of Zone 1
Zone 2A/2B Over liner	20210327-DS-01	Sta. 0+385 to Sta. 0+405	Mar-27	Approved Zone 2A/2B for placement of Zone 3.

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B (FFAB) Under liner	20210327-DS-02	Sta. 0+105 to Sta. 0+130	Mar-27	Approved Zone 2B for placement of Zone 2A
Key trench Foundation	20210327-DS-03	Sta. 0+105 to Sta.0+090	Mar-27	Approved key trench foundation for placement of Zone 2B.
Zone 2A/2B Under liner	20210328-DS-01	Sta. 0+385 to Sta. 0+405	Mar-28	Approved Zone 2A/2B for placement of LLDPE liner
Zone 3 / Downstream foundation	20210328-DS-02	Sta. 0+105 to Sta. 0+130	Mar-28	Approved Zone 3/ downstream foundation for placement of Zone 1
Zone 2A/2B Over liner	20210328-DS-01	Sta. 0+150 to Sta. 0+120	Mar-28	Approved Zone 2A/2B for placement of Zone 3
Key trench Foundation	20210328-DS-02	Sta. 0+090 to Sta. 0+065	Mar-28	Approved key trench foundation for placement of Zone 2B. Bedrock like previous sections. Good quality, tight joints with no in filling.
Key trench Foundation	20210329-DS-01	Sta. 0+423 to Sta. 0+442	Mar-29	Floor of key trench is composed of good-quality bedrock, varying from grey-brown to brown-red in color, with heavily jointed areas, joints were observed to be tight (minimal aperture 0.1-0.25 mm) and irregular topography. Pockets of ice were observed at the following locations: • Sta. 0+435, near U/S wall, 4.4 mbgs, • Sta. 0+436, near D/S wall, 4.0 mbgs, • Sta. 0+438, 3 m D/S of key trench centerline, 4.2 mbgs Ice was removed down to 6-12” from surface and was observed to be continuous, ice lenses were not excavated further as the extent of ice over liner footprint and probability of thaw in this area is minimal at 4.0 to 4.5 mbgs.

6.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics approvals.

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (key trench)	20210324-DS-03	Sta. 0+315 to Sta. 0+355	Mar-24	Approved liner for placement of Zone 2B.
Liner (key trench)	20210324-DS-04	Sta. 0+150 to Sta. 0+170	Mar-24	Approved liner for placement of Zone 2B.
Liner (key trench)	202103248-DS-03	Sta. 0+150 to Sta. 0+120	Mar-27	Approved liner for placement of Zone 2B.

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 to Table 9 below present a summary of the laboratory testing results obtained by the QA and QC. The key findings are as follows:

- The FFAB material is slightly too coarse, as the initial fine filter is, but considered acceptable for the use as liner tie-in.
- All destructive tests on LLDPE liner were compliant.

Table 5: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
DT2	IVR Dike (key trench section)	Sta. 0+321	Seam P23/24	Destructive test, compliant
R6	IVR Dike (key trench section)	Sta. 0+150	Seam P1/P29	Removed smooth part of liner at tie-in due to damage caused during snow removal
DT3	IVR Dike (key trench section)	Sta. 0+136	Seam P39/P40	Destructive test, compliant

Table 6: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-7-AMQ-FF	Mar-24	Mar-25	Sta. 0+415, key trench under liner	GSA	Compliant, well graded with some coarse particles
				MC	2.42%
QA21-19	Mar-24	Mar-26	Sta. 0+305, key trench, elev. 162.0 m	GSA	Compliant, well graded with some coarse particles and insufficient fines (4.3%)
				MC	2.3%
PSD-8-AMQ-FF	Mar-28	Mar-28	Sta. 0+125, key trench, under liner	GSA	Compliant, well graded with some coarse particles
				MC	2.9%

Table 7: Sampling and Testing on Fine Filter Amended with Bentonite (Zone 2B)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-8-AMQ-FFAB	Mar-24	Mar-24	Sta. 0+400, key trench under liner	GSA	Compliant, well graded with some coarse particles
				MC	1.9 %

Table 8: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-3-AMQ-CF-20210321	March 21, 2021	March 21, 2021	Overliner backfill, Sta. 0+250, 0.0-0.3 m below OG	GSA	Compliant, well graded with some coarse particles (4% oversize observed on 150 mm sieve)
PSD-4-AMQ-CF	Mar-27	-	Sta. 0+370, key trench	GSA	Compliant

Table 9: Sampling and Testing on Foundation Soil

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
QA21-11	8-Mar-21	7-Mar-21	Sta. 0+200, OS -1.0 m	WC	8.4%
				IC	0.0%
QA21-12	9-Mar-21	Discarded	Sta. 0+210 OS 0.0 m	-	Discarded
QA21-13	10-Mar-2021	11-Mar-21	Sta. 0+230, OS -4.5 m	WC	36.0%
				IC	13.7%
QA21-14	10-Mar-2021	11Mar-21	Sta. 0+240 OS 0 m	WC	24.7%
				IC	5.8%
QA21-15	11-Mar-2021	12-Mar-21	Sta. 0+260, OS 0 m	WC	26.6%
				IC	19.9%

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 10: List of field changes.

ID	Item	Date	Acceptance	Description
-	-.	-	-	-

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 11: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

10.0 PHOTOGRAPHS



Photograph 2108: Additional snow to be removed under Zone 2B (FFAB) material placed along crest at Sta. 0+375, view looking E.



Photograph 2109: Additional Zone 2B (FFAB) material placed along crest following snow removal between Sta. 0+315 and Sta. 0+250, view looking E.



Photograph 2113: Excavator shaping Zone 2A (FF) to design lines at approx. Sta. 0+175, view looking NW.



Photograph 2114: FC liner welding LLDPE liner Sta. 0+321 between panel seams P23/P24, view looking S.



Photograph 2116: Slope of Zone 2A (FF) material under liner at approx. Sta. 0+165, view looking W.



Photograph 2117: FC liner removing ‘smooth’ portion of panel P1 at approx. Sta. 0+150 due to damage along seem caused by excavator during snow removal.



Photograph 2118: FC liner installing LLDPE between approx. Sta. 0+150 and Sta. 0+120, view looking SW.



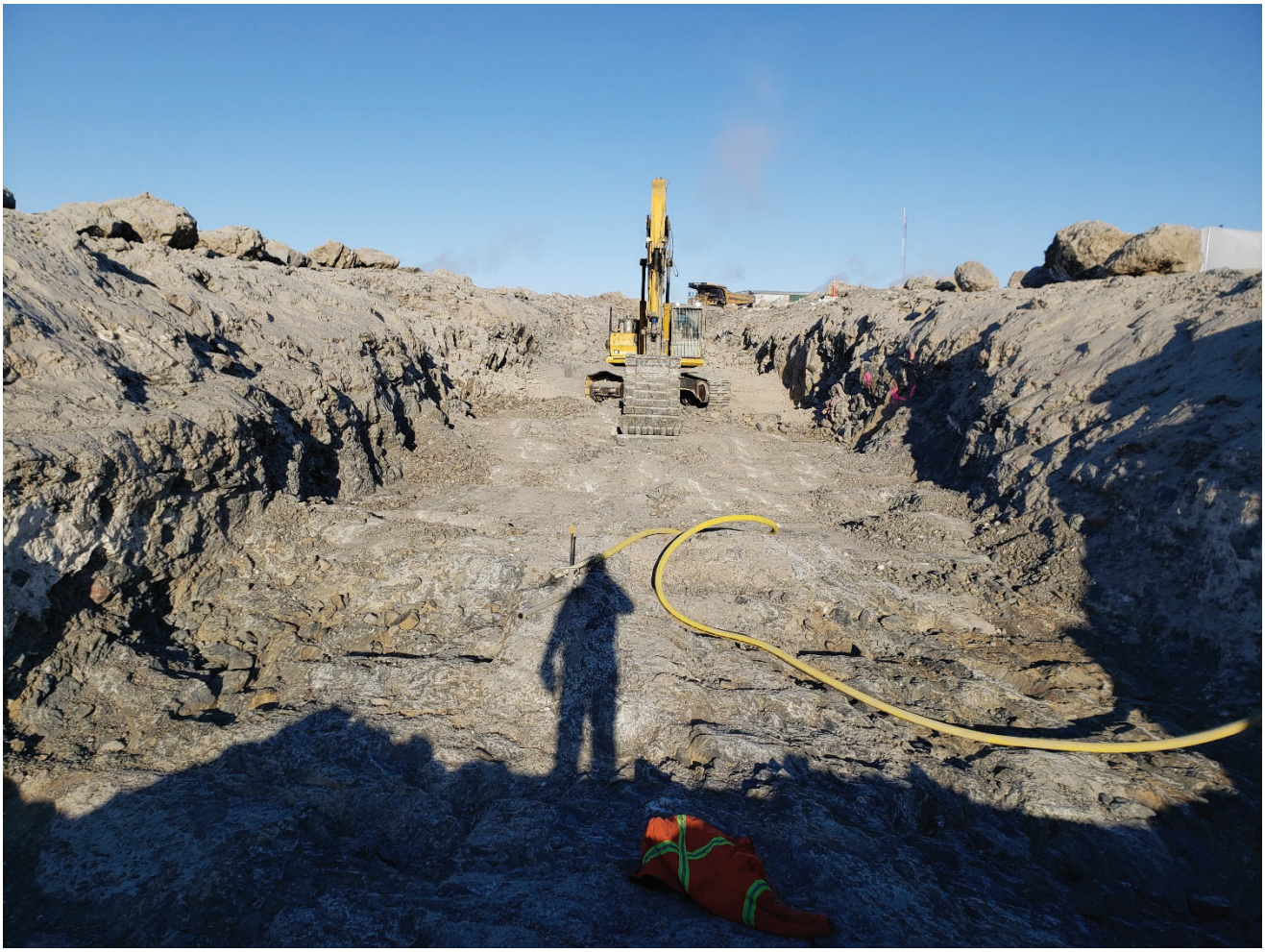
Photograph 2120: QC conducting compaction testing on placed Zone 2B (FFAB) material at approx. Sta. 0+405, view looking W.



Photograph 2122: Approved placement of Zone 2B (FFAB) material over LLDPE liner at approx. Sta. 0+330, view looking SE.



Photograph 2123: Excavator shaping Zone 2A (FF) to design lines at approx. Sta. 0+395, view looking W.



Photograph 2124: Excavator continuing to prepare key trench foundation at approx. Sta. 0+110, view looking W.



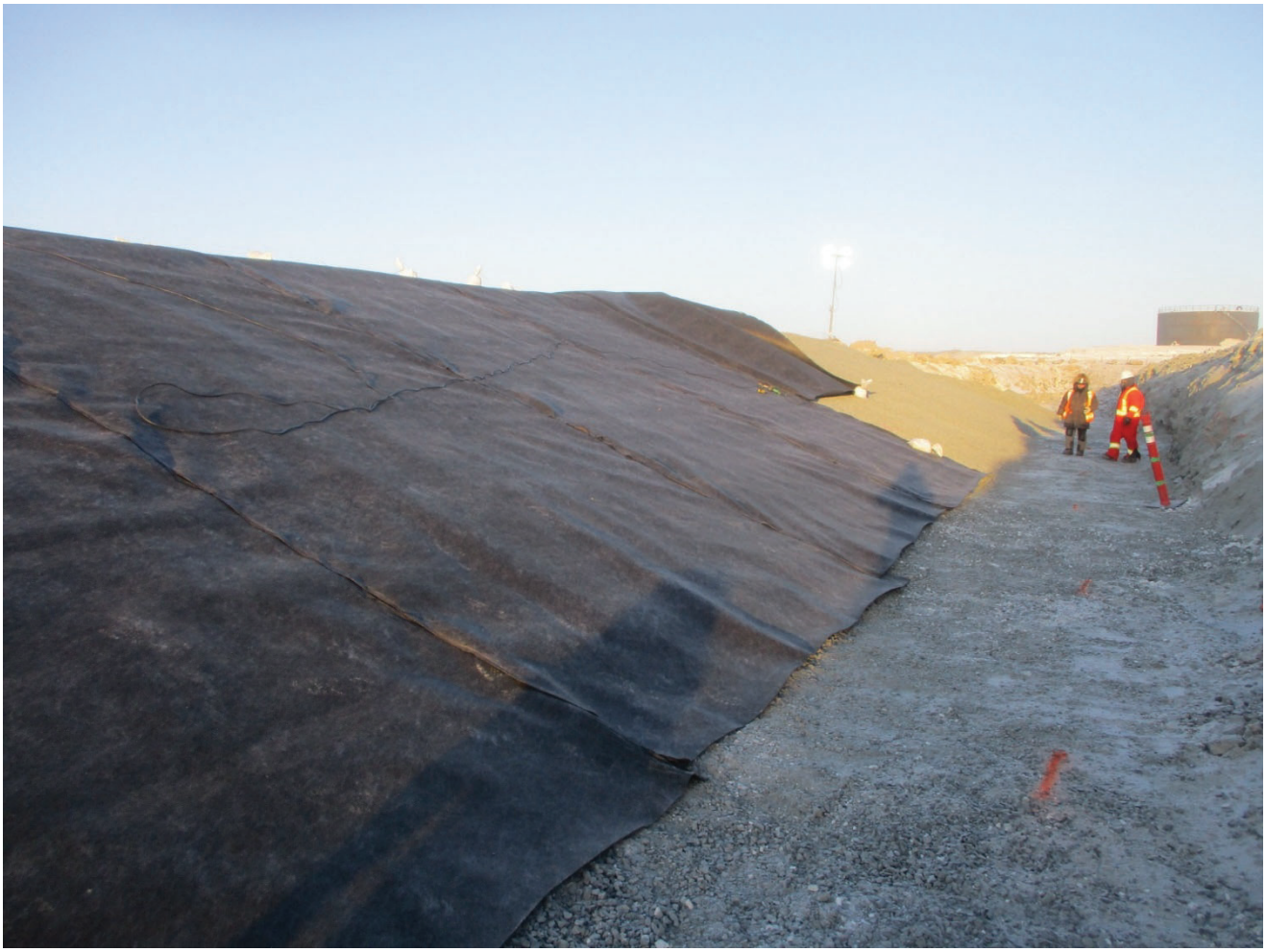
Photograph 2125: AEM installing thermistor along installed LLDPE at approx. Sta. 0+150, view looking SW.



Photograph 2127: Prepared section of key trench at Sta. 0+115, view looking E.



Photograph 2128: Excavator placing Zone 3 over Zone 2A/2B at approx. Sta. 0+320, view looking W.



Photograph 2129: Geotextile installed between Sta. 0+385 and Sta. 0+400 in advance on LLDPE liner installation, view looking E.



Photograph 2133: Excavator continuing to prepare key trench foundation at approx. Sta. 0+060, view looking W.



Photograph 2137: QC representative conducting PNG testing on placed Zone 2A (FF) material at approx. Sta. 0+110, view looking SW.



Photograph 2138: Approved key trench foundation at approx. Sta. 0+085, view looking E.



Photograph 2139: Excavator placing lift of Zone 2A (FF) material at approx. Sta. 0+130, view looking E.



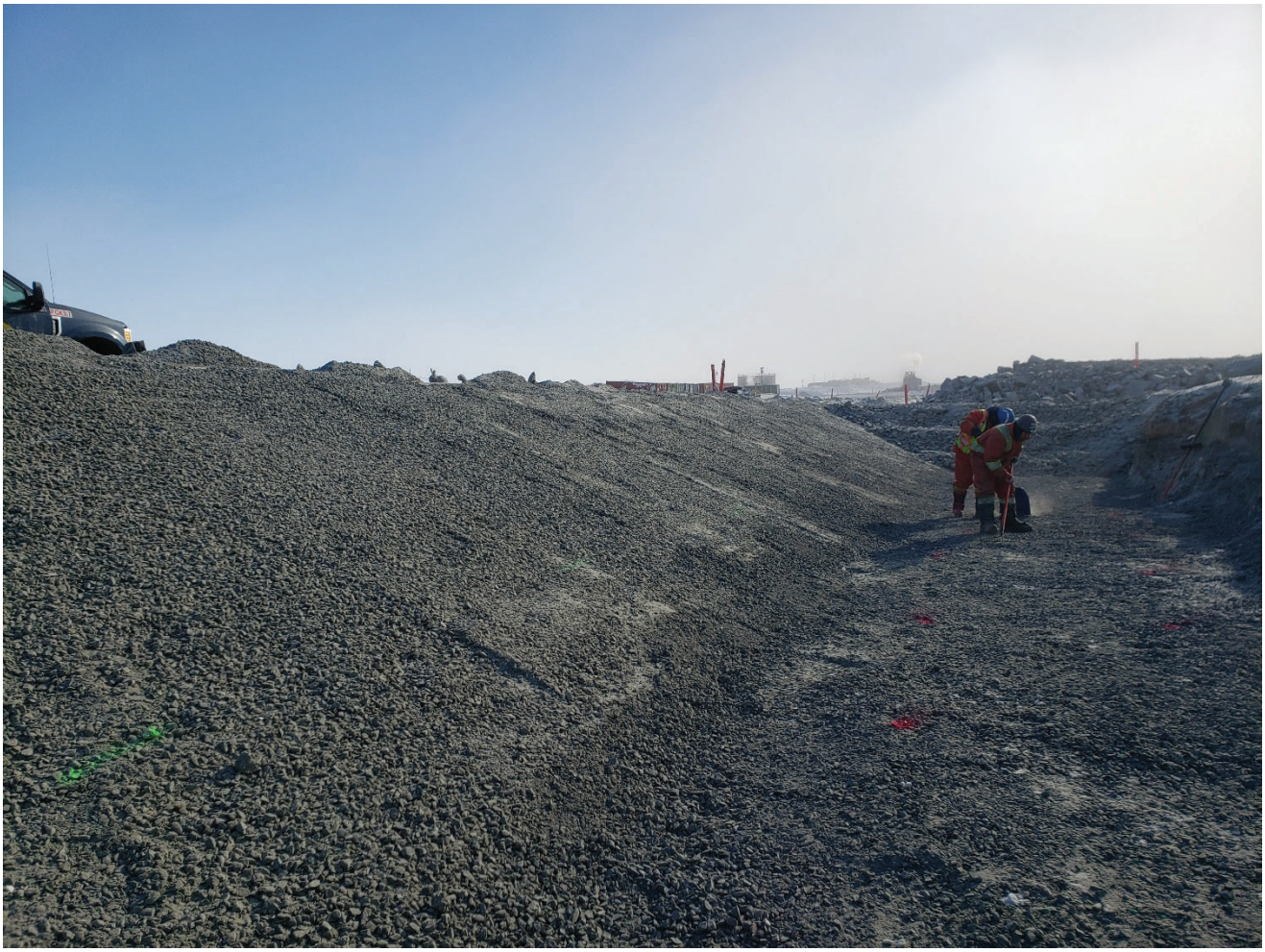
Photograph 2140: KCG placing Zone 1 for construction of downstream shell at approx. Sta. 0+260, view looking SW.



Photograph 2141: KCG labourers removing snow along toe of Zone 2A (FF) in advance of LLDPE installation at approx. Sta. 0+135, view looking E



Photograph 2143: FC liner installing LLDPE at approx. Sta. 0+135, view looking W.



Photograph 2144: Approved placement of Zone 2A/2B over LLDPE liner at approx. Sta. 0+120, view looking E.



Photograph 2145: Excavator removing snow along crest and downstream side walls of trench excavation at approx. Sta. 0+140, view looking SE.



Photograph 2146: KCG labourer using plate tamper to compact first lift of Zone 2B over bedrock at approx. Sta. 0+085, view looking S.



Photograph 2148: Approved section of key trench foundation at approx. Sta. 0+070, view looking W.



Photograph 2150: Excavator removing blasted material to prepare key trench foundation at approx. Sta. 0+060, view looking NW.



Photograph 2150: Excavator placing Zone 2A (FF) at approx. Sta. 0+090, view looking SE



Photograph 2154: Ice pocket observed in bedrock along base of key trench at approx. Sta. 0+438, view looking S.



Photograph 2154: Approved section of key trench at approx. Sta. 0+420, view looking E.

Golder Associés Ltée

Brandon Gray
Mine Waste Group

Yves Boulianne, P.Eng.
Principal, Senior Geotechnical Engineer

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https://golderassociates.sharepoint.com/sites/140958/project files/6 deliverables/21452873-1604-r-reva ivr d1 dyke as-built 2021/rev0/appendix d - qa reporting/d.1 weekly reports/201452873 qa weekly report 2021-03-23 to 2021-03-30-rev0.docx

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QA WEEKLY REPORT

DATE April 6, 2021 **Reference No.** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Yves Boulianne, Shai Spilberg

FROM Brandon Gray **EMAIL bgray@golder.com**

QA WEEKLY REPORT FROM MARCH 31ST TO APRIL 5TH – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from March 31st to April 5th, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The "+" and "-" symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Brandon Gray	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

IVR Dyke - Foundation

- AEM and QA representative discussed existing rockfill laydown along west abutment at the IVR dyke, existing laydown to remain in place.

IVR Dyke – Fill Materials

- AEM and QA/QC representatives discussed placement of Zone 3 and Zone 2A along slope of Zone 1 rockfill under liner. To facilitate the construction process AEM is looking to place Zone 3 and Zone 2A simultaneously in 500 mm lifts and utilize 10-ton smooth drum roller for compaction of material under liner. QA noted, design specification indicates Zone 2A be placed in 300 mm lifts and bucket packed however, utilizing 10-ton smooth drum roller to compact Zone 2A material will exceed the compaction effort achieved in bucket packing material in 300 mm lifts.
    - Placement methodology was revised and AEM noted, lifts of Zone 2A under liner to be limited to 300 mm thickness and compacted with a 10-ton smooth drum roller moving forward.

IVR Dyke – Liner Installation

- AEM and QA representative discussed quantity of LLDPE on site. AEM noted, a 20% contingency was added for liner installation and lengths of damaged LLDPE from loader forks should be cut off and stored for use outside the MOWL at the IVR Dyke.

IVR Dyke – Instrumentation

- AEM engineering installed casing to extend existing thermistor within the downstream rockfill shell at approx. Sta. 0+185.
- AEM engineering looking to drill upstream thermistor at Sta. 0+165 this week, AEM to follow up with KCG Monday April 5th to coordinate execution.

Follow-up

- AEM still considering options for remaining Zone 2B (FFAB) material placement at the IVR Dyke due to bentonite shortage. KCG to pause trench foundation preparation while awaiting path forward.

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Foundation Preparation	■ Foundation approved for backfill of Zone 2B (FFAB) from Sta. 0+065 to Sta. 0+045 and from Sta. 0+442 to Sta. 0+465 (see Section 5.0). The bedrock surface will not be grouted as per FC21-03 since the final foundation bedrock is of good quality and the foundation is outside the MOL footprint. The first few lifts of FFAB must be hand compacted. ■ Mapping of the bedrock was done manually by QA representative.
Key Trench Backfill	■ Zone 2B (FFAB) material was placed for base of key trench from approx. Sta. 0+065 to Sta. 0+045 and from approx. Sta. 0+420 to Sta. 0+465. Material was placed to the full width of the key trench excavation in multiple 250 mm lifts. Material was compacted with a 1-ton plate tamper in areas of deep rock pockets and with a minimum 6 passes with a 10-ton roller. Compaction was verified by QC representative and material appeared visually of good quality and well-graded. ■ Zone 2A (FF) material was placed for under liner slope from approx. Sta. 0+070 to Sta. 0+045 and from approx. Sta. 0+420 to Sta. 0+440. Material was with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2B (FFAB) material was placed for under liner hinge from approx. Sta. 0+110 to Sta. 0+045. Material was placed in two lifts of 250 mm thickness and compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2B (FFAB) material was placed over liner along base of key trench from approx. Sta. 0+120 to Sta. 0+045. Material was bucket compacted in two lifts of 250 mm thickness; compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) material was placed over liner from approx. Sta. 0+120 to Sta. 0+045. Material was placed in one lift of 300 mm thickness and bucket compacted. Compaction was verified by QC representative, material appeared visually of good quality and well-graded. ■ Zone 3 (CF) placement occurred in three lifts of 500 mm thickness for trench backfill between approx. Sta. 0+130 and Sta. 0+045. Material was bucket compacted until trench backfill exceeded 2 meters above liner at which point material was compacted with a minimum 6 passes with a 10-ton roller. Compaction was verified by QC representative and material appeared visually of good quality and well-graded.
Dyke Backfill	■ Zone 1 was placed over previously placed rockfill in multiple lifts of approximately 1000 mm - 750 mm thickness from approx. Sta. 0+365 to Sta. 0+080. Material appeared visually of good quality and well-graded. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 1 was sloped to design lines between approx. Sta. 0+365 and Sta. 0+310 in preparation for Zone 3 and Zone 2A placement under liner.

Activity or Area	Comments
	■ Zone 2A placement occurred in one lift of 300 mm thickness over liner between approx. Sta. 0+365 and Sta. 0+310. Material was bucket compacted; compaction was verified by QC representative. Material appeared visually of good quality and well-graded.
Liner Installation	■ Installation of geotextile from Sta. 0+122 to Sta. 0+045. The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner was installed on the key trench slope (2.5H:1V) from Sta. 0+122 to Sta. 0+045 (panels P42 to P55). Liner surface was approved by QA representative and liner QC representative. ■ Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications ■ Five repairs were carried out on panel P43 at approx. Sta. 0+114. Damage to liner was inferred to be caused from loader forks during transportation. Five vacuum box tests were carried out on repair patches, results met the Technical Specifications. ■ One destructive test was carried out at approx. Sta. 0+075 on seam between panels P48 and P49. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications.

5.0 FOUNDATION/FILL APPROVALS

The following foundation and fill approvals were carried out during the reporting period.

Table 3: Details of the Foundation and Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Foundation	20210331-DS-01	Sta. 0+065 to Sta. 0+045	Mar-31	Approved key trench foundation for placement of Zone 2B. Bedrock like previous sections. Good quality, tight joints with no in filling.
Zone 2A/2B Under liner	20210321-DS-02	Sta. 0+110 to Sta. 0+080	Mar-31	Approved Zone 2A/2B for placement of liner.
Key trench Zone 2B (FFAB)	20210331-DS-03	Sta. 0+065 to Sta. 0+045	Mar-31	Approved Zone 2B for placement of Zone 2A
Key trench Zone 2A/2B Under liner	20210401-DS-01	Sta. 0+089 to Sta. 0+045	Apr-1	Approved Zone 2A/2B for placement of LLDPE liner

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Zone 2A/2B Over liner	20210401-DS-02	Sta. 0+120 to Sta. 0+089	Apr-1	Approved liner and downstream sidewall for placement of Zone 2A/2B over liner.
Key trench Foundation	20210401-DS-04	Sta. 0+442 to Sta. 0+465	Apr-1	Floor of key trench is composed of a thin layer of glacial till overlaying bedrock and of good-quality bedrock, varying from grey-brown to brown-red in color, with heavily jointed areas, joints were observed to be tight (minimal aperture 0.1-0.25 mm) and irregular topography. Pockets of ice were observed at the following locations: • Sta. 0+455, near U/S wall, 4.2 mbgs, Ice was removed down to 6-12” from surface and was observed to be continuous, ice lenses were not excavated further as the extent of ice over liner footprint and probability of thaw in this area is minimal at 4.2 mbgs.
Key trench Zone 2A/2B Over liner	20210402-DS-01	Sta. 0+089 to Sta. 0+045	Apr-2	Approved Zone 2A/2B for placement of Zone 3.
Zone 1	20210404-DS-01	Sta. 0+365 to Sta. 0+310	Apr-4	Approved upstream slope of Zone 1 for placement of Zone 3 and Zone 2A material for under liner slope.

6.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics approvals.

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (key trench)	20210331-DS-04	Sta. 0+122 to Sta. 0+089	Mar-31	Approved liner for placement of Zone 2B/2A.
Liner (key trench)	20210401-DS-03	Sta. 0+089 to Sta. 0+045	Apr-01	Approved liner for placement of Zone 2B/2A.

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 to Table 8 below present a summary of the laboratory testing results obtained by the QA and QC. The key findings are as follows:

- The FFAB material is slightly too coarse, as the initial fine filter is, but considered acceptable for the use as liner tie-in.

Table 5: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
R7-R11	IVR Dike (key trench section)	Sta. 0+114	P43	Patched punctures in LLDPE liner from loader forks caused during transportation. Five vacuum box tests were carried out at Sta. 0+114 on panel P43, results met the Technical Specifications.
DT4	IVR Dike (key trench section)	Sta. 0+075	Seam P48/P49	Destructive test, compliant
R12	IVR Dike (key trench section)	Sta.0+047	Seam P53/P54/P55	Vacuum box tested and compliant.
R13	IVR Dike (key trench section)	Sta.0+049	Seam P52/P53/P55	Vacuum box tested and compliant.

Table 6: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-

Table 7: Sampling and Testing on Fine Filter Amended with Bentonite (Zone 2B)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-9-AMQ-FFAB	April 1, 2021	April 3, 2021	Stockpile	GSA	Compliant, well graded with some oversize particles
				MC	2.6%
QA21-20	April 1, 2021	April 2, 2021	Sta. 0+050,offset 5.0 m US, elev. 162.5 m	GSA	Complaint, well graded with some oversize particles
				MC	2.3%

Table 8: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-5-AMQ-CF	April 2, 2021	April 4, 2021	Sta. 0+120, Offset Centre line of Key Trench	GSA	Compliant
				MC	3.9%
QA21-21	April 2, 2021	April 4, 2021	Sta. 0+070, Offset Centerline of Key Trench	GSA	Compliant, well graded with one rock >150 mm
				MC	1.4%

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
-	-.	-	-	-

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.	Non-conformance	March 17, 2021	Golder, AEM	Closed. Results of grain size distribution testing showed similar gradation curves when comparing 6% FFAB and 4-6% mix FFAB.

10.0 PHOTOGRAPHS



Photograph 2155: KCG continuing to clean key trench between Sta. 0+055 and Sta. 0+045 view looking SW.



Photograph 2156: KCG utilizing plate tamper to compact low spots in key trench at approx. Sta. 0+430, view looking SE.



Photograph 2157: Approved section of key trench foundation at approx. Sta. 0+050, view looking W.



Photograph 2158: Approved section of Zone 2A/2B under liner at approx. Sta. 0+100, view looking W.



Photograph 2161: LLDPE liner installed between approx. Sta. 0+120 and Sta. 0+089, view looking E.



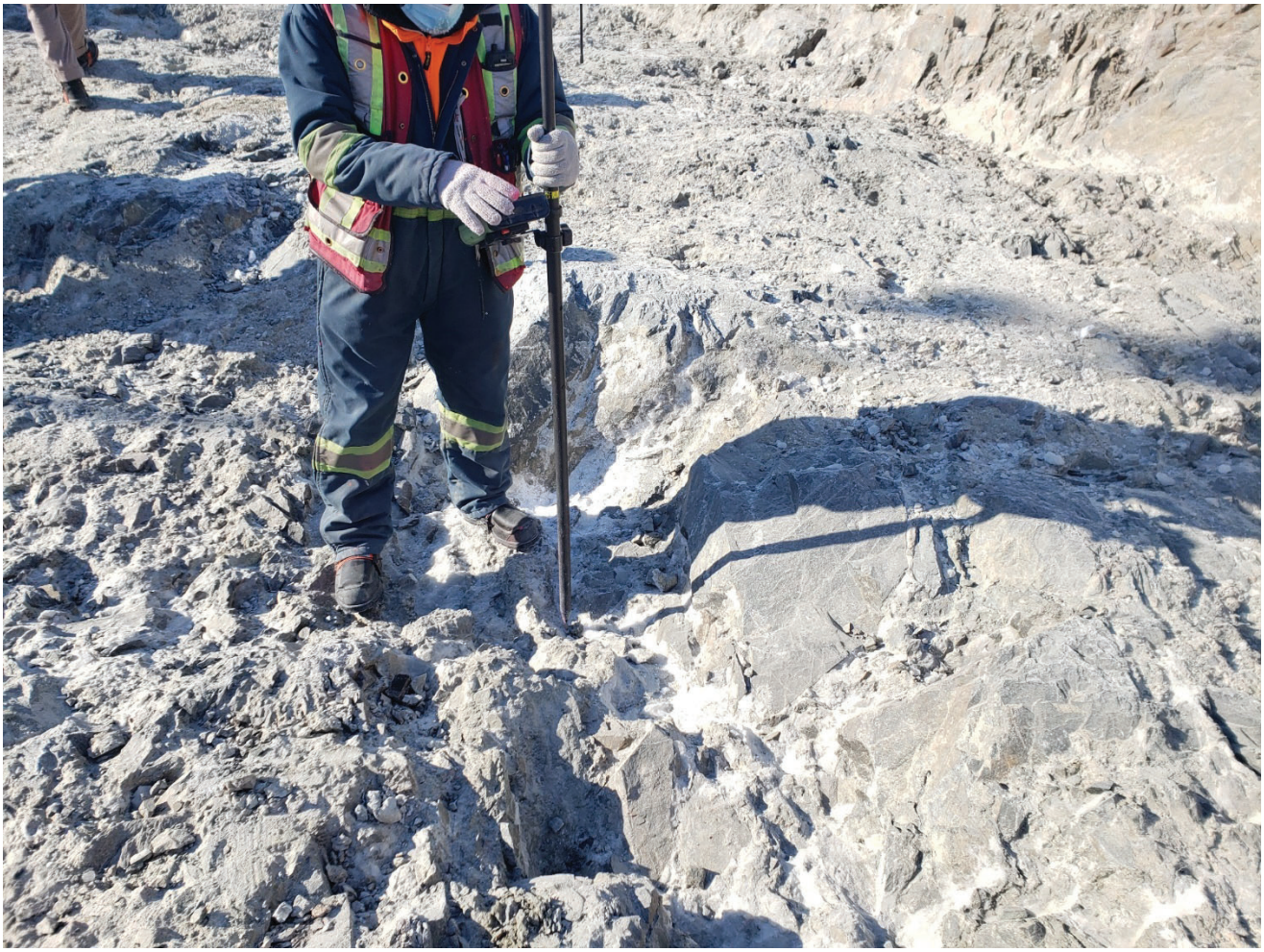
Photograph 2163: Excavator sloping Zone 2B under liner slope to design lines at approx. Sta. 0+050, view looking E. key trench excavation wall at approx. Sta. 0+080, view looking E.



Photograph 2165: Approved placement of Zone 2A/2B under liner at approx. Sta. 0+070, view looking W.



Photograph 2166: Approved section of key trench at approx. Sta. 0+450, view looking E.



Photograph 2167: Ice pocket at Sta. 0+455 and 4.2 mbgs, view looking W.



Photograph 2168: FC Liner installing LLDPE panels at approx. Sta. 0+070, view looking NW.



Photograph 2170: Approved placement of Zone 2A/2B at approx. Sta. 0+065, view looking SW. (at approx. Sta. 0+460, view looking E).



Photograph 2172: KCG placing Zone 3 for key trench backfill at approx. Sta. 0+090, view looking SE.



Photograph 2175: Komatsu excavator removing snow upstream of hinge point at approx. Sta. 0+320, view looking W.



Photograph 2176: Zone 1 rockfill sloped to design lines at approx. Sta. 0+360, view looking W.



Photograph 2177: Dozer placing lift of Zone 1 rockfill at approx. Sta. 0+200, view looking E.



Photograph 2181: KCG removing snow over previously placed Zone 2A (FF) at approx. Sta. 0+200, view looking SW.



Photograph 2182: CAT excavator sloping Zone 1 rockfill to design lines along upstream slope at approx. Sta. 0+165, view looking SE.

Golder Associés Ltée

Brandon Gray
Mine Waste Group

Yves Boulianne, P.Eng.
Principal, Senior Geotechnical Engineer

BG/YB

https://golderassociates.sharepoint.com/sites/140958/project files/6 deliverables/21452873-1604-r-reva ivr d1 dyke as-built 2021/rev0/appendix d - qa reporting/d.1 weekly reports/201452873 qa weekly report 2021-03-31 to 2021-04-05-rev0.docx

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QA WEEKLY REPORT

DATE April 13, 2021 **Reference No.** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Yves Boulianne, Brandon Gray

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA WEEKLY REPORT FROM APRIL 6TH TO APRIL 12TH – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from April 6th to April 12th, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The "+" and "-" symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Shai Spilberg	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

IVR Dyke - Foundation

- The remaining section of key trench foundation (Sta. 0+482 to 0+526) has been cleaned and approved for backfill of Zone 2A (FF) and Zone 2B (FFAB 4%) as per RFI-5. Placement of FFAB should not proceed in windy conditions.

IVR Dyke – Fill Materials

- AEM and QA/QC representatives discussed placement of Zone 3 and Zone 2A along slope of Zone 1 rockfill under liner. AEM noted, lifts of Zone 2A under liner to be limited to 300 mm thickness and compacted with a 10-ton smooth drum roller moving forward.
- There was significant snow accumulation on site due to inclement weather. The snow should be removed with a blower instead of an excavator, which tends to pack the snow into the material. This directive was followed.
- Zone 3 material tends to segregate when stockpiled, with coarser material accumulating on the outside of the pile. QA/QC recommended thoroughly mixing the material prior to placing it in lifts. This directive was followed.
- Dust from dumping often conceals snow. Continual probing for hidden snow pockets is necessary.
- There are frozen chunks of Zone 2A (FF) material in the Zone 2A stockpile. These frozen chunks should not be placed in the dyke because they interfere with proper compaction. Frozen chunks are sorted out as much as possible at the stockpile and at the dyke, prior to fill placement. Any other visible frozen chunks are then removed by hand. This procedure has been monitored by QC. Remaining frozen chunks in the placed material are rare and are not considered to be an issue.
- Configuration of Zone 2B (FFAB) has been established for the East abutment LLDPE liner tie-in, to address the bentonite shortage. FFAB will continue to be placed as per RFI-05 and stop at 7 m from the abutment.

IVR Dyke – Liner Installation

- Liner installation did not take place during the reporting period.

IVR Dyke – Instrumentation

- No instruments were installed during the reporting period.

IVR Dyke – Spillway

- Spillway alignment was confirmed and snow from the spillway area was thoroughly cleaned as per QA/QC instructions. The elevation of the LLDPE liner at the entry to the spillway channel was confirmed to be 164.75 m. Spillway design elevation is 164.8 m.

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Foundation Preparation	■ Key trench mucking, cleaning, and snow removal progressed from Sta. 0+442 to 0+526 (termination of dyke alignment, East abutment) during the reporting period. ■ Foundation approved for backfill of Zone 2B (FFAB) and Zone 2A (FF) as per RFI-5 from Sta. 0+442 to Sta. 0+526 (see Section 5.0). ■ The key trench foundation from Sta. 0+465 to 0+482 consists mostly of overburden, with bedrock exposed to the North and East of the section. The bedrock was observed to dip abruptly South, with approximately 2 m of bedrock observed in the upstream trench wall and no bedrock observed in the downstream wall. The bedrock is grey but becomes reddish brown near the surface due to oxidation. Several closely spaced joint sets are visible in the bedrock at this location. The bedrock surface will not be grouted as per FC21-03 since the final foundation bedrock is of good quality. The overburden does not appear to be ice rich and a sample obtained from the trench floor at Sta. 0+465 indicates low ice content and water content (1.2% and 18.3%, respectively). One spot of bedrock around Sta. 0+480 was about 50 mm higher than grade. This was considered acceptable. ■ The key trench foundation from Sta. 0+482 to 0+526 consists of an irregular bedrock surface, ice-rich, with ice-filled joints and localized pockets of ice. During cleaning, the ice pockets were chipped down at least 10 cm before stopping. Aside for a few wide, ice-filled joints, the bedrock quality is very good. There are some closely spaced joint sets/fracture zones on the downstream side of the key trench that dip towards the downstream side of the dam. The upstream and downstream trench walls are consistent with observations made elsewhere in the trench. The top 1-2 m of bedrock is generally weathered/fractured and becomes good quality with depth. The bedrock foundation was approved for fill of Zone 2A/2B material as per RFI-5, with no treatment necessary. The basis for this decision is consideration of the following facts: ▪ The bottom of the trench is at least 3 m below original ground surface and the ice should remain frozen at all times. ▪ A thermal berm will be added in this area. ▪ Joint orientation/aperture is generally not favourable to preferential flow under the dam. ▪ The foundation in this area is outside the footprint of the Maximum Operating Level of the basin (low gradient). ■ Mapping of the bedrock was done manually by QA representative.
Key Trench Backfill	■ Zone 2A (FF) and Zone 2B (FFAB) were placed as per RFI-5 in the key trench from Sta. 0+445 to 0+482 in 300 mm lifts of each material placed side by side and compacted with a CAT76XT roller doing 6 passes. The material appeared visually well graded and free of contaminants. ■ Zone 2A (FF) material was placed as per RFI-5 in the key trench from Sta. 0+482 to 0+515. Bedrock depressions were filled and hand-compacted to the satisfaction of QA/QC representatives. One lift to 3.0 mbgs was placed and vibration compacted by 6 passes of the CAT76XT roller. The material appeared visually well graded and free of contaminants.

Activity or Area	Comments
	■ Presence of frozen chunks was observed in the Zone 2A (FF) material. Chunks are generally 10-50 cm in diameter. The chunks are not permitted to be placed in the dyke as they interfere with compaction.
Dyke Backfill	■ The upstream rockfill slope, Zone 3 (CF) and Zone 2A (FF) at toe of slope were approved for simultaneous placement of Zone 2A (FF) and Zone 3 (CF) on upstream slope of rockfill, from Sta. 0+100 to 0+195. ■ Zone 2A (FF) and Zone 3 (CF) material were placed simultaneously in 300 mm lifts over the LLDPE liner from Sta. 0+080 to 0+365. The 1st lift of material was packed without vibration in six passes and the subsequent lifts were packed with vibration in six passes. Each lift was survey controlled. The material appeared visually well graded and free of contaminants. Snow was removed by blowpipe prior to material placement. Sloping of the Zone 2A (FF) surface was performed from Sta. 0+080 to 0+403 in preparation for LLDPE liner installation next week. ■ Slight segregation of the Zone 3 (CF) material was observed at the outside of the CF stockpile. QA/QC recommended thoroughly mixing the material prior to placing it in lifts. ■ Zone 1 was placed over previously placed rockfill in multiple lifts of approximately 1000 mm - 750 mm thickness from approx. Sta. 0+080 to Sta. 0+365. Material appeared visually of good quality and well-graded. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. ■ Zone 1 (RF) was placed at the east abutment area for construction of a berm and from Sta. 0+070 to 0+208. ■ Zone 2A (FF) underliner placement within the upstream side of the cut-off trench from Sta. 0+415 to Sta. 0+480. Material was placed with excavator and compacted using the vibratory smooth drum packer for a minimum of six passes. Survey grade control was used for each lift. Lifts were placed in steps to avoid a cold joint between backfilled sections. The material appeared well graded and free of contaminants. Sloping of Zone 2A (FF) was performed from Sta. 0+403 to 0+450 in preparation for LLDPE liner installation next week.
Liner Installation	■ No installation of LLDPE liner occurred during reporting period.

5.0 FOUNDATION/FILL APPROVALS

The following foundation and fill approvals were carried out during the reporting period.

Table 3: Details of the Foundation and Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 1 (Rockfill)	Pending	Sta. 0+100 to 0+310	April 6, 2021	Authorized for placement of Zone 2A (FF) and Zone 3 (CF) on upstream slope of rockfill.
Zone 3 (CF) under liner at upstream toe of rockfill slope	Pending	Sta. 0+100 to 0+310	April 6, 2021	Authorized for placement of Zone 2A (FF) and Zone 3 (CF) on upstream slope of rockfill.
Zone 2A (FF) under liner at upstream toe of rockfill slope	Pending	Sta. 0+100 to 0+310	April 6, 2021	Authorized for placement of Zone 2A (FF) and Zone 3 (CF) on upstream slope of rockfill.
Key trench foundation	20210407-DS-01	Sta. 0+465 to 0+482	April 7, 2021	Authorized for placement of Zone 2A (FF) and Zone 2B (FFAB). The trench floor consisted mostly of overburden, with bedrock exposed on the North and East section of the approved area. The bedrock was observed to dip abruptly South, with approximately 2 m of bedrock observed in the upstream trench wall and no bedrock observed in the downstream wall. The bedrock is grey but becomes reddish brown near the surface due to oxidation. Several closely spaced joint sets are visible in the bedrock at this location. The overburden did not visually appear ice rich. A sample was taken at Sta. 0+465 for ice content testing.
Key trench foundation	20210410-DS-01	Sta. 0+482 to 0+526 (Eastern termination of dam alignment)	April 10, 2021	Trench floor is ice-rich bedrock with ice-filled joints and localized ice-filled depressions. The ice-filled joints are at most 20 cm wide. The ice-filled depressions are generally 1-2 m^2 in extent. Ice in the trench floor was chipped down at least 10 cm before stopping as per agreed-upon procedure.

Structure	Name	Sta. and Offset	Date of Approval	Comment
				Large joint set/fracture zone observed on downstream side of trench, dipping towards downstream side of dyke. Top 1-2 m of bedrock in trench walls is fractured & weathered, like other sections. Foundation accepted as-is, without treatment. Some remaining debris to be removed under night shift QC supervision. Bedrock mapped with Brunton compass.

6.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics approvals.

Structure	Name	Sta. and Offset	Date of Approval	Comment
None				

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 to Table 8 below present a summary of the laboratory testing results obtained by the QA and QC. The key findings are as follows:

- The FFAB material is slightly too coarse, as the initial fine filter is, but considered acceptable for the use as liner tie-in.
- The coarse filter material is compliant.

Table 5: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
None				

Table 6: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-10-AMQ-FF-20210408	April 8, 2021	April 9, 2021	Sta. 0+450	Sieve	Non-compliant. Fraction greater than 2 mm too coarse. $D15_{max}$ respected.
PSD-11-AMQ-FF-20210411	April 11, 2021	-		Sieve	Pending

Table 7: Sampling and Testing on Fine Filter Amended with Bentonite (Zone 2B)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
SWELL-12-AMQFFAB-20210408	April 8, 2021	-	Sta. 0+450	Swell	Compliant

Table 8: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-6-AMQ-CF-20210405	April 4, 2021	April 5, 2021	Sta. 0+313	GSA	Compliant
				MC	6.2%
PSD-7-AMQ-CF-20210409	April 9, 2021	April 10, 2021	Sta. 0+150	GSA	Compliant
				MC	8.9%

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes

ID	Item	Date	Acceptance	Description
-	-.	-	-	-

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status

10.0 PHOTOGRAPHS



Photograph 2183: Cleaning snow from Zone 2B (FFAB) on top of liner, Sta. 0+150 to 0+195, view looking W.



Photograph 2184: Cleaning snow from Zone 2B (FFAB) on top of liner, Sta. 0+100 to 0+150, view looking E.



Photograph 2185: Key trench foundation approved from Sta. 0+465 to 0+482, view looking E.



Photograph 2186: Placement of Zone 3 (CF) material on upstream side of liner. Sta. 0+200, view looking W.



Photograph 2187: Placement of Zone 2A (FF) underliner lifts, Sta. 0+300, view looking W.



Photograph 2188: Spillway area cleaned of snow, Sta. 0+000, view looking E.



Photograph 2189: Snow removal from upstream underliner, Sta. 0+200, view looking E.



Photograph 2190: Sloping of Zone 2A (FF) upstream underliner, Sta. 0+200, view looking W.



Photograph 2191: Approved key trench bedrock foundation surface, Sta. 0+482 to 0+515, view looking E.



Photograph 2192: Ice-filled joint at Sta. 0+500 (joint #4 on bedrock map), view looking N.



Photograph 2193: Approved key trench bedrock foundation, Sta. 0+482 to 0+515, view looking W.



Photograph 2194: Approved key trench bedrock foundation from Sta. 0+515 to 0+526, view looking W. Ice pockets visible on left and right sides of photograph.



Photograph 2195: Termination of dam alignment (Eastern abutment) in key trench, Sta. 0+515, view looking E.



Photograph 2196: Closely spaced joint set/fracture zone on downstream side of key trench foundation, Sta. 0+520, view looking E.



Photograph 2191: Placement of Zone 2A (FF) in key trench, Sta. 0+482 to 0+526, view looking W.



Photograph 2192: Spillway at Sta. 0+75, view looking S.

Golder Associés Ltée

Shai Spilberg
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Principal, Senior Geotechnical Engineer

SS/YB

https://golderassociates.sharepoint.com/sites/140958/project files/6 deliverables/21452873-1604-r-reva ivr d1 dyke as-built 2021/rev0/appendix d - qa reporting/d.1 weekly reports/201452873 qa weekly report 2021-04-06 to 2021-04-12-rev0.docx

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QA WEEKLY REPORT

DATE April 20, 2021 **N° de référence** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Yves Boulianne, Brandon Gray

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA WEEKLY REPORT FROM APRIL 13TH TO APRIL 19TH – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from April 13th to April 19th, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The “+” and “-” symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Shai Spilberg	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

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IVR Dyke - Foundation

- The remaining section of key trench (Sta. 0+482 to 0+526) has been backfilled and approved for placement of dyke materials and LLDPE liner.

IVR Dyke – Fill Materials

- A new borrow pit ("Northwest") was identified as a possible source of Zone 4 (Esker) material. The borrow pit was determined to be excavatable. A sample of the material was found to be slightly coarser than Specifications and it was decided to mix it with the other esker material in a 2:1 ratio to produce a finer gradation.
- To comply with RFI-5, a 2.1 m wide section of Zone 2A (FF) material was excavated at the East dyke abutment (Sta. 0+526) and the opening was filled with Zones 2B (FFAB) and 2A (FF) compacted in 250 mm lifts with a manual plate tamper.
- Frozen chunks were observed in the Zone 2A/2B (FF/FFAB) material at the stockpile and dyke. These chunks interfere with compaction and placing them in the dyke should be avoided. KCG has been passing the material at the stockpile through a 6 inch grizzly and a dozer is dedicated to breaking up the frozen chunks. The chunks are further sorted at the dyke by excavator. This method is considered acceptable given that this is the only material available for Zone 2A/2B.
- One stockpile of Zone 2B (FFAB) originating from the bottom of the mixing station stockpile was observed to contain many frozen chunks and poor-quality material (lack of bentonite). It was swell tested and did not show swelling. AEM/KCG were instructed not to use this material as Zone 2B.
- The rockfill stockpiles on downstream side of dyke were inspected for lack of fines due to wind action. The material appeared acceptable.

IVR Dyke – Liner Installation

- LLDPE liner installation progressed from Sta. 0+403 to 0+526 in the key trench and from Sta. 0+140 to 0+369 on the dyke.
- QA representative instructed LLDPE liner installation foreman to use the damaged rolls in the non-critical section of the dyke (Sta. Sta. 0+045 to 0+080 and Sta. 0+320 to 0+520) and reserve the less damaged rolls for the critical section. All damages will be patched regardless.
- The QA representative instructed the LLDPE liner QC representative to keep the temperature of the LLDPE liner samples +20 to +25 degrees centigrade during tensiometer testing. This proved challenging during the warmer season when temperature in the field shack varied from +5C to +35C depending on the outside temperature and the status of the frostfighter. A labourer was assigned the job of temperature management in the field shack and temperatures of 20-25C were achieved.
- On April 14th, a truckload of Zone 2B (FFAB) was dumped in the trench on top of the liner at Sta. 0+477 causing the liner to fold upwards and some creases and small puncture holes (<1 cm diameter) in the horizontal liner toe anchor. The liner was hand-excavated and placed back in position, and the damage was

inspected by the QA representative. Given that the damage was limited to the liner toe anchor, it was considered acceptable to continue backfilling.

- On warm days, snow should be removed from the exposed LLDPE liner slope to prevent thawing and freezing on the geotextile.
- On April 17th, prior to placement of Zone 2B (FFAB) material over the LLDPE liner hinge point, the liner at the bottom of the slope was trimmed to accommodate Field Change FC21-05 (Section 9.0). A section of the hinge point extrusion weld was inadvertently cut from Sta. 0+197 to 0+217 and the section was backfilled with Zone 2B (FFAB) material over night shift. The following day, the mistake was realized and the LLDPE liner trimmings were located to determine the extent of damage. It was determined from the liner trimmings that the extrusion weld connecting panels P86-P89 to panels P8-P4 was cut (Photo 2212). The hinge weld at this location was hand excavated under supervision of the surveyor and QA representative (Photo 2213). Four test pits at Stations 0+232, 0+244, 0+255, and 0+267 were also done to ensure the integrity of the hinge weld in the rest of the backfilled section (0+217 to 0+272). The trimmings from that section did not reveal any damage. The damaged hinge weld was repaired by cleaning the area and performing an extrusion weld in compliance with FC21-05. Care was taken to ensure there were no rocks between the liner panels. The repair was visually inspected by the liner QC representative and QA representative and no deficiencies were observed. The section was re-approved for Zone 2B (FFAB) backfill.

IVR Dyke – Instrumentation

- The vertical and horizontal thermistors at Sta. 0+140 were installed and backfilled under AEM supervision during the reporting period.

IVR Dyke – Spillway

- No work occurred on the spillway during the reporting period.

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Foundation Preparation	■ No key trench foundation preparation occurred during the reporting period.
Key Trench Backfill	■ Zone 2A (FF) and Zone 2B (FFAB 4%) were placed as per RFI-5 in the key trench from Sta. 0+403 to 0+526 in 300 mm lifts of each material placed side by side and compacted with a CAT76XT roller doing 6 passes. The material appeared visually well graded and free of contaminants. The Zone 2A (FF)

Activity or Area	Comments
	material was sloped 3H:1V as a bedding surface for the geotextile and LLDPE liner. ■ Zone 2B (FFAB 4%) was placed in 300 mm lifts, compacted, and sloped on top of Zone 2A (FF) for the underliner hinge point from Sta. 0+403 to 0+526. The material was vibration compacted with a CAT76XT roller performing 6 passes. Lifts were survey controlled and compaction tested. The material appeared visually well graded and free of contaminants. ■ Zone 2A (FF) was placed and bucket compacted overliner in the key trench from Sta. 0+403 to 0+526 in 1 lift of 250 mm. The material appeared well graded, free of contaminants, and adequate thickness was attained according to survey. ■ Zone 3 (CF) material was placed in the key trench from Sta. 0+403 to 0+526 in 300 mm lifts. The first lift was bucket compacted and subsequent lifts were roller compacted with vibration in 6 passes. A minimal distance of 2 m was constantly maintained from the liner slope during vibratory compaction. The material appeared well graded and free of contaminants.
Dyke Backfill	■ Zone 2B (FFAB 6%) was placed over liner hinge in one 500 mm lift from Sta. 0+188 to 0+345 as per Field Change FC21-05. The material was bucket compacted, appeared well graded, and was free of contaminants. The thickness and width of the material was survey controlled. ■ Zone 2A (FF) was placed over liner on the upstream liner slope in one 300 mm lift from Sta. 0+188 to 0+319. The material was bucket compacted, appeared well graded, and was free of contaminants aside for some frozen chunks that were removed by hand. Adequate thickness was attained. ■ Zone 4 (Esker) material was placed in 300 mm lifts from Sta. 0+198 to 0+316. The material was roller compacted and visually assessed to be adequately compacted. Nucleodensimeter tests did not provide reasonable results due to the frozen yet loose nature of the material. The material appeared visually well graded and free of contaminants. The foundation of the Zone 4 (Esker) material was prepared by removing loose aggregates and snow. Organics were not removed. ■ Zone 3 (CF) was placed over liner on the upstream liner slope in one 300 mm lift from Sta. 0+198 to 0+257. The material was bucket compacted, appeared

Activity or Area	Comments
	visually well graded and free of contaminants, and thickness was survey controlled.
Liner Installation	■ Geotextile and LLDPE liner installed in the key trench from Sta. 0+403 to 0+526. Seams were air channel tested and compliant. 4 patches were done on panel P59 and 5 patches on P60 (R14 to R22) due to forklift damage. Patches were vacuum box tested and compliant. 1 patch done on panel P73, vacuum box tested and compliant (R23). 1 destructive test performed on seam P63/64. Results of peel and sheer tests compliant (DT5). ■ Geotextile and LLDPE liner installed in the IVR dyke from Sta. 0+140 to 0+369. Seams were air channel tested and compliant. Four destructive tests (D6 to D9) were done on seams P74/75, P86/87, P98/99, and P109/110. Results of peel and shear tests compliant. 1 patch done on panel P101 (R28), vacuum box tested and compliant. ■ The liner hinge weld was damaged during trimming from Sta. 0+217 to 0+197 (panels P86 to P89 welded to P8 to P4). The hinge weld was repaired and visually inspected prior to backfill.

5.0 FOUNDATION/FILL APPROVALS

The following foundation and fill approvals were carried out during the reporting period.

Table 3: Details of the Foundation and Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B (FFAB) under liner in key trench	20210416-DS-01	Sta. 0+403 to 0+526	April 16, 2021	Material placed as per RFI-5
Zone 2A (FF) under liner in key trench	20210416-DS-02	Sta. 0+403 to 0+526	April 16, 2021	Some frozen blocks present in material. These are sorted out at the stockpile and prior to placement at the dyke. This method is acceptable.

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B (FFAB) under liner hinge point	20210416-DS-03	Sta. 0+403 to 0+526	April 16, 2021	
Zone 2B (FFAB) over liner toe	20210416-DS-04	Sta. 0+403 to 0+526	April 16, 2021	
Zone 2A (FF) + Zone 3 (CF) over liner in key trench	20210416-DS-06	Sta. 0+403 to 0+526	April 16, 2021	
Zone 2B (FFAB) over liner hinge	20210419-DS-02	Sta. 0+188 to 0+345	April 19, 2021	
Zone 2A (FF) on upstream liner slope	20210419-DS-03	Sta. 0+188 to 0+319	April 19, 2021	
Zone 4 (Esker)	20210419-DS-04	Sta. 0+198 to 0+316	April 19, 2021	
Zone 3 (CF) on upstream liner slope	20210419-DS-05	Sta. 0+198 to 0+257	April 19, 2021	

6.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics approvals.

Structure	Name	Sta. and Offset	Date of Approval	Comment
LLDPE liner installation in key trench	20210416-DS-04	Sta. 0+403 to 0+526	April 16, 2021	
LLDPE liner installation in dyke	20210419-DS-01	Sta. 0+140 to 0+369	April 19, 2021	

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 to Table 8 below present a summary of the laboratory testing results obtained by the QA and QC. The key findings are as follows:

- Zone 2A (FF), Zone 3 (CF), and Zone 4 (Esker) samples are slightly too coarse. These materials are accepted provided care is taken to avoid segregation.
- The mixing station floor stockpile of Zone 2B (FFAB) did not exhibit any swelling and should not be used as Zone 2B material in the dyke.

Table 5: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
R14	IVR Dike (key trench section)	Sta. 0+420	Panel 59	Patched holes made by forklift. Vacuum tested and compliant.
R15	IVR Dike (key trench section)	Sta. 0+420	Panel 59	Patched holes made by forklift. Vacuum tested and compliant.
R16	IVR Dike (key trench section)	Sta. 0+420	Panel 59	Patched holes made by forklift. Vacuum tested and compliant.
R17	IVR Dike (key trench section)	Sta. 0+420	Panel 59	Patched holes made by forklift. Vacuum tested and compliant.
R18	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift. Vacuum tested and compliant.
R19	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift. Vacuum tested and compliant.
R20	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift. Vacuum tested and compliant.
R21	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift. Vacuum tested and compliant.
R22	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift. Vacuum tested and compliant.
R23	IVR Dike (key trench section)	Sta. 0+450	Seam P63/64	Patched hole made by destructive testing at bottom of slope. Vacuum tested and compliant.

Name	Description	Station	Seam	Comment
DT5	IVR Dike (key trench section)	Sta. 0+451	Seam P63/64	Destructive test, compliant
DT6	IVR Dike (key trench section)	Sta. 0+274	Seam P74/P75	Destructive test, compliant
DT7	IVR dyke upper liner section	0+239	P86/P87	Test results compliant.
R24	IVR dyke hinge weld repair	Sta. 0+197 to 0+217	P86 to P89 welded to P8 to P4	Repair visually inspected to satisfaction of QC and QA representatives.
R25	IVR Dike (key trench section)	Sta. 0+522	Seam P82/P84/P85	Vacuum box tested and compliant.
R26	IVR Dike (key trench section)	Sta. 0+525	Seam P82/P83/P85	Vacuum box tested and compliant.
R27	IVR Dike (upper liner slope)	Sta. 0+290	Seam P93/P94/P95	Vacuum box tested and compliant.
R28	Hole from forklift damage	0+330	P101	Vacuum box tested and compliant.
DT8	Destructive test	0+314	Seam P99/98	Shear and peel test results compliant.
DT9	Destructive test	0+153.5	Seam P108/109	Shear and peel test results compliant.

Table 6: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
PSD -11-AMQ-FF-20210411	April 11, 2021	April 12, 2021	Zone 2A (FF)	0+490	Sieve Analysis	Non-Compliant. Sample too coarse.

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
						Accepted as per FC21-01.
PSD-12-AMQ- FF-20210416	April 16, 2021	April 17, 2021	Zone 2A (FF)	Sta. 0+460	Sieve analysis	Minor non-compliance. Accepted as per FC21-01.

Table 7: Sampling and Testing on Fine Filter Amended with Bentonite (Zone 2B)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-10-AMQ-FFAB-20210411	April 11, 2021	April 12, 2021	0+515	Sieve Analysis	Non-Compliant. Sample too coarse. Accepted as per FC21-01.
SWELL-12-AMQ-FFAB-20210411	April 11, 2021	April 12, 2021	0+482	Swell	Compliant
SWELL-13-AMQ-FFAB-20210411	April 12, 2021	April 13, 2021	0+420	Swell	Compliant
PSD-11-AMQ-FFAB	April 16, 2021	April 17, 2021	Sta. 0+198	Sieve analysis; swell test	Noncompliant, slight oversize particles; Bentonite present. Accepted as per FC21-01.
FFAB grab sample	April 18, 2021	April 18, 2021	Mix pad floor material stockpile	Swell test	Non-compliant. Material did not swell.

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
FFAB grab sample	April 18, 2021	April 18, 2021	Mix pad floor material	Swell test	Compliant

Table 8: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-8-AMQ-CF-20210416	April 16, 2021	April 16, 2021	Sta. 0+440	Sieve analysis	Non-compliant, slightly too coarse between 31.5 mm to 9.5 mm. Accepted provided care is taken to avoid segregation.
PSD-9-AMQ-CF-20210416	April 16, 2021	April 17, 2021	Sta. 0+505	Sieve analysis	Minor noncompliance, one oversized particle in sample. Accepted for use on the dike.

Table 9: Sampling and Testing on Esker (Zone 4)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-3-AMQ-Esker-20210413	April 13, 2021	April 14, 2021	Stockpile	Sieve Analysis	Minor non-compliance. Sample slightly too coarse. Accepted provided care is taken to avoid segregation.

PSD-4-AMQ-Esker-20210413	April 13, 2021	April 14, 2021	Stockpile	Sieve Analysis	Minor non-compliance. Sample slightly too coarse. Accepted provided care is taken to avoid segregation.
PSD-5-AMQ-Esker-20210417	April 17, 2021	April 18, 2021	Sta. 0+194	Sieve analysis	Compliant
MDR-3-AMQ-Esker	April 17, 2021	April 18, 2021	Sta. 0+194	Frozen proctor	MDD: 1863 kg/m3; OMC: 7.3%

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 10: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-05	Configuration of Zone 2B (FFAB) on top of liner hinge	April 17, 2021	Favourable opinion from Golder	Inside the MOL (Sta. 0+100 to 0+280), the Zone 2B (FFAB) shall be 0.3 m thick over LLDPE liner hinge and the crest of the FFAB shall be 0.5 beyond the end of the liner. The liner hinge overlap shall be 1 m. The bentonite content shall be 6%. Outside the MOL (Sta. 0+045 to 0+100; Sta. 0+280 to 0+529), the Zone 2B (FFAB) shall be 0.25 m thick over LLDPE liner hinge and the crest of the FFAB shall be 0.5 beyond the end of the liner. The liner hinge overlap shall be 1 m. The bentonite content shall be 4%.

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 11: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
None				

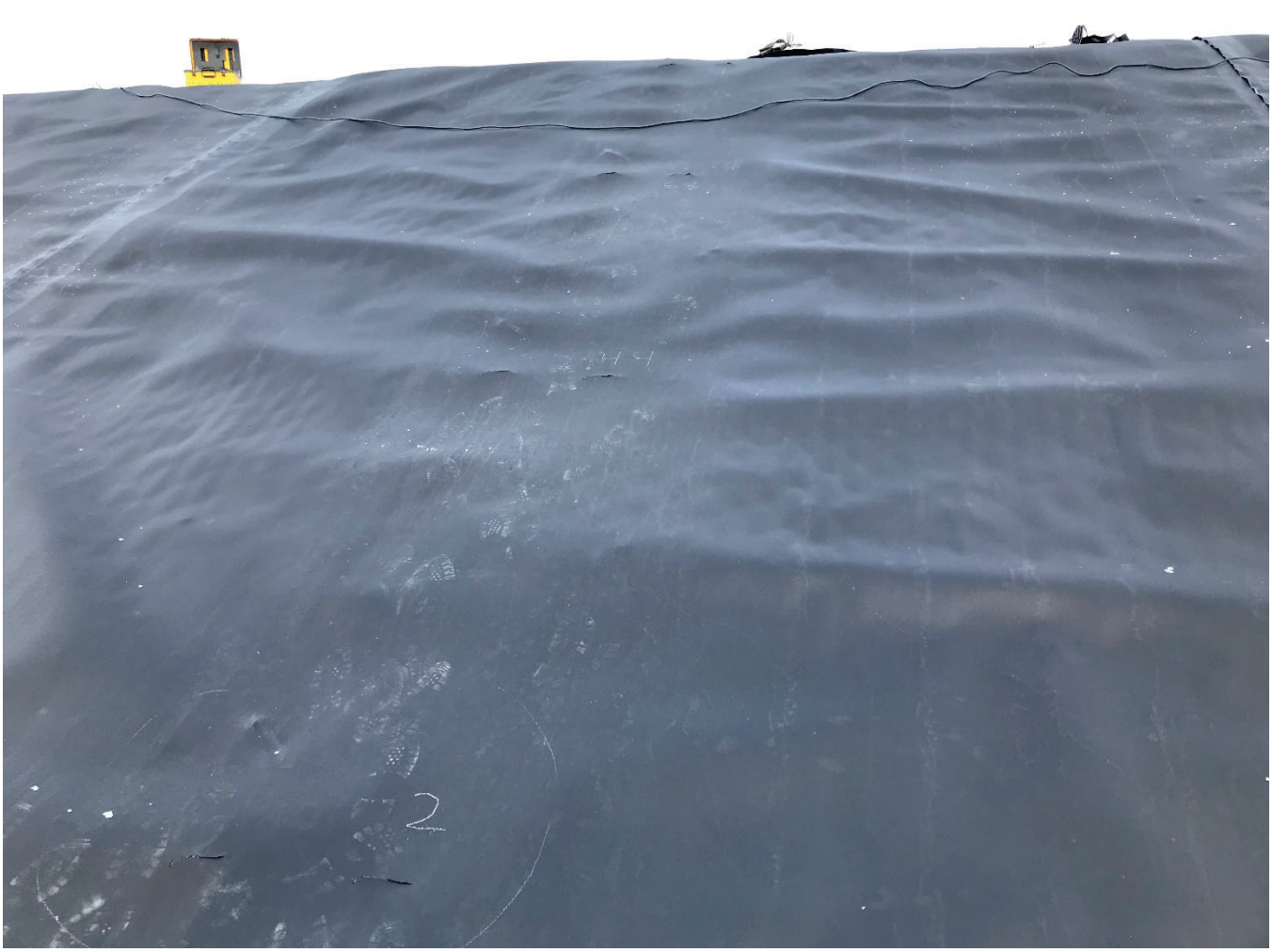
10.0 PHOTOGRAPHS



Photograph 2201: Prepared surface for LLDPE liner installation, Sta. 0+403 to 0+437, view looking E.



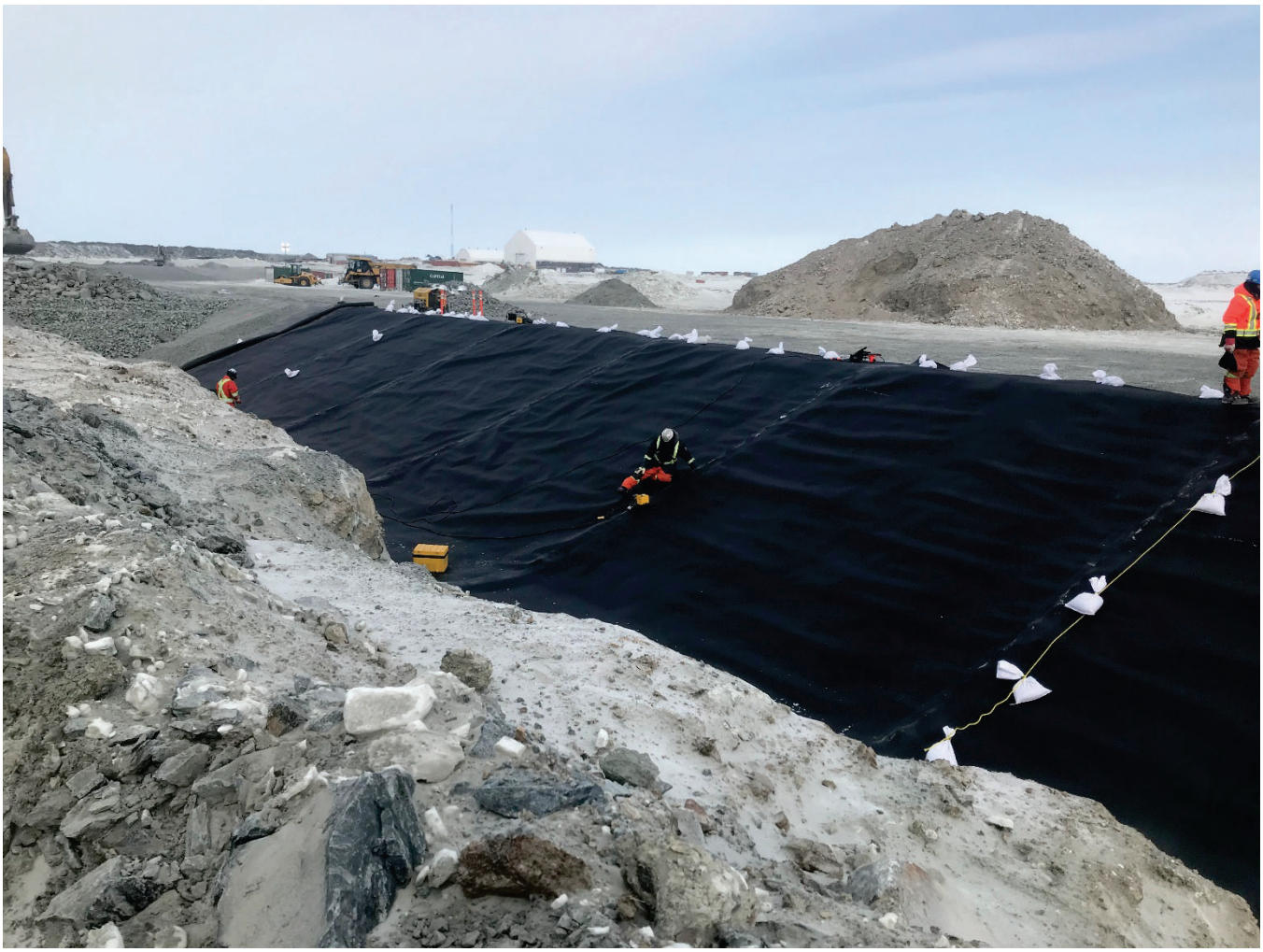
Photograph 2202: Installed LLDPE liner, Sta. 0+403 to 0+437, view looking E.



Photograph 2203: Forklift holes on panel P59, Sta. 0+420, view looking N.



Photograph 2204: Patches R14-R17 on panel P59, Sta. 0+420, view looking N.



Photograph 2205: Liner installation, Sta. 0+437 to 0+519, view looking NW.



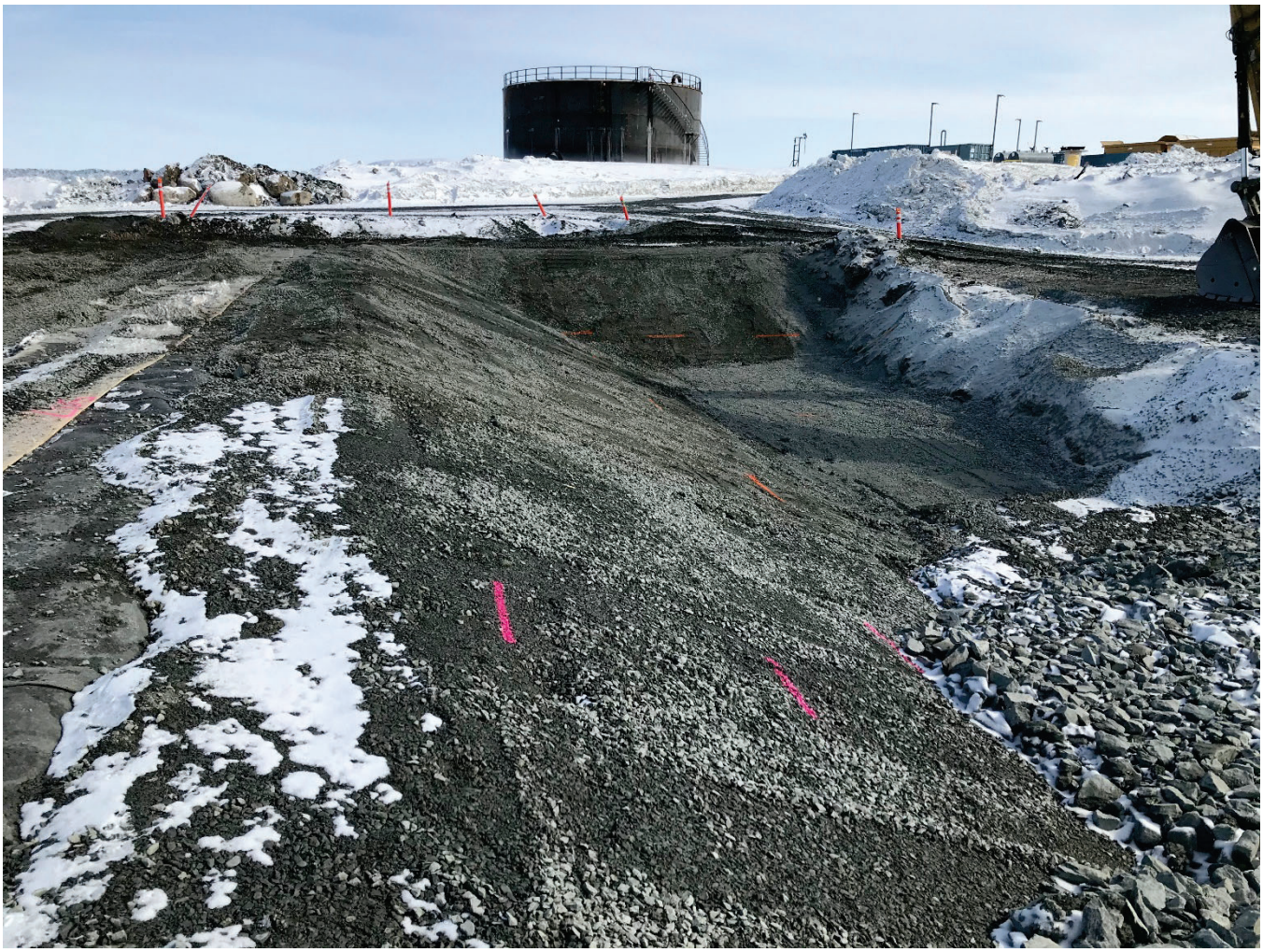
Photograph 2206: Placement of Zone 2B and Zone 2A on top of LLDPE liner, Sta. 0+437, view looking W.



Photograph 2207: Liner installation, Sta. 0+226 to 0+276, view looking W.



Photograph 2208: Excavation of Zone 2A (FF) at dyke East abutment for placement of Zone 2B (FFAB) and Zone 2A (FF) to comply with RFI-5, Sta. 0+526, view looking E.



Photograph 2209: East dyke abutment, 0+515, view looking E.



Photograph 2208: Trench for LLDPE liner tie-in, Sta. 0+230, view looking E.



Photograph 2211: Liner trimmings showing damaged hinge weld.



Photograph 2212: Exposed hinge weld damage, Sta. 0+200, view looking E.



Photograph 2213: Extrusion weld repair of damaged hinge weld, Sta. 0+205, view looking W.



Photograph 2214: Hinge weld repair, Sta. 0+205, view looking E.



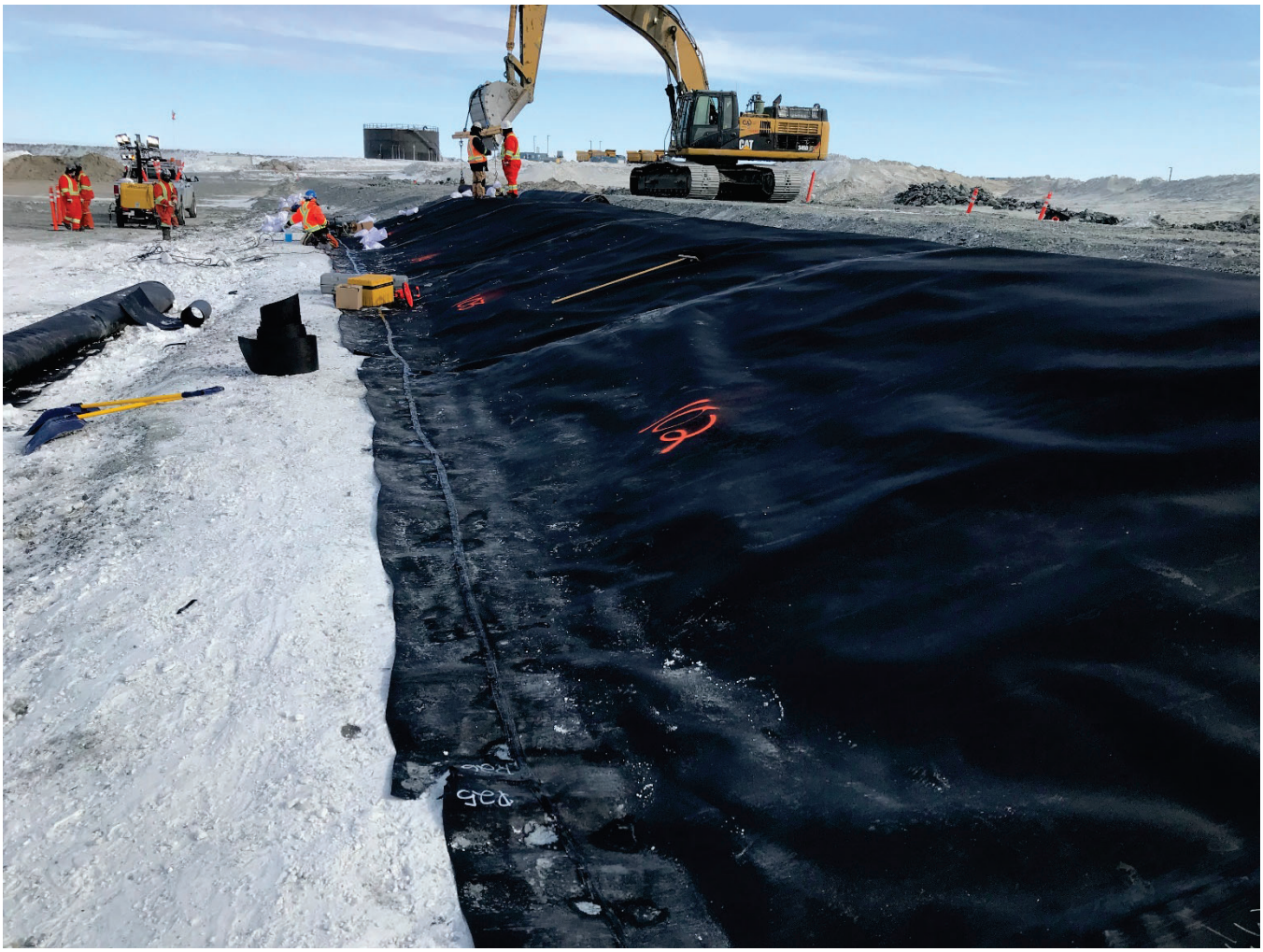
Photograph 2215: Snow removal and tie-in trench preparation for LLDPE liner installation, Sta. 0+220, view looking E.



Photograph 2216: Zone 2B (FFAB) on top of LLDPE liner hinge and Zone 2A (FF) placement on slope, Sta. 0+310, view looking W.



Photograph 2217: Esker material placed and sloped, Sta. 0+280, view looking W.



Photograph 2218: LLDPE liner installation, Sta. 0+340, view looking E.



Photograph 2219: Zone 4 (Esker) on upstream side of dyke, Sta. 0+320, view looking W.



Photograph 2220: Zone 3 (CF) placed on upstream slope, Sta. 0+250, view looking W.

Shai Spilberg
Mine Waste Group

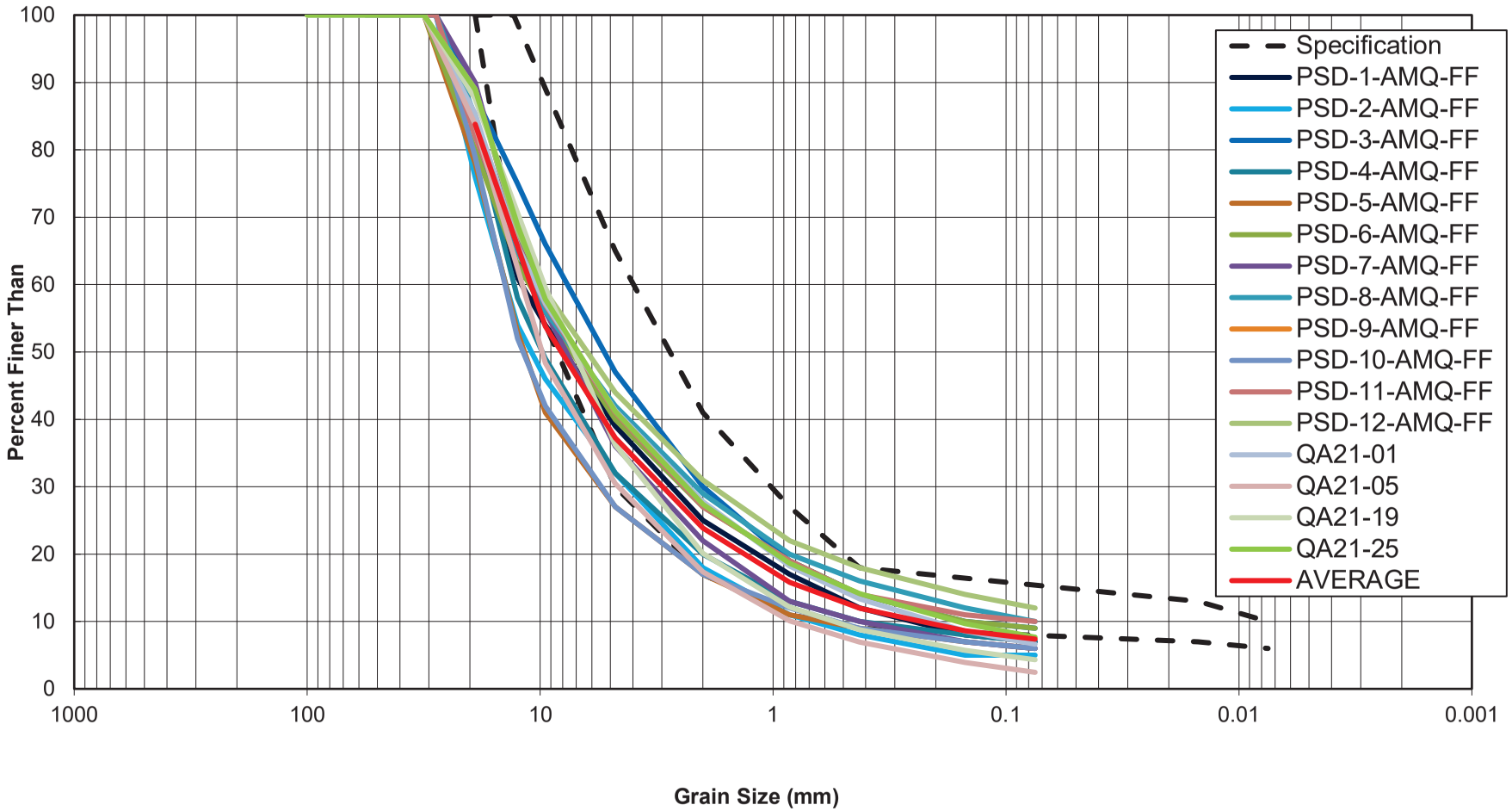
Yves Boulianne, P.Eng.
Principal, Senior Geotechnical Engineer

SS/YB

Attachments: none

https://golderassociates.sharepoint.com/sites/140958/project files/6 deliverables/21452873-1604-r-reva ivr d1 dyke as-built 2021/rev0/appendix d - qa reporting/d.1 weekly reports/201452873 qa weekly report 2021-04-13 to 2021-04-19-rev0.docx

APPENDIX A
Construction Material Test Results



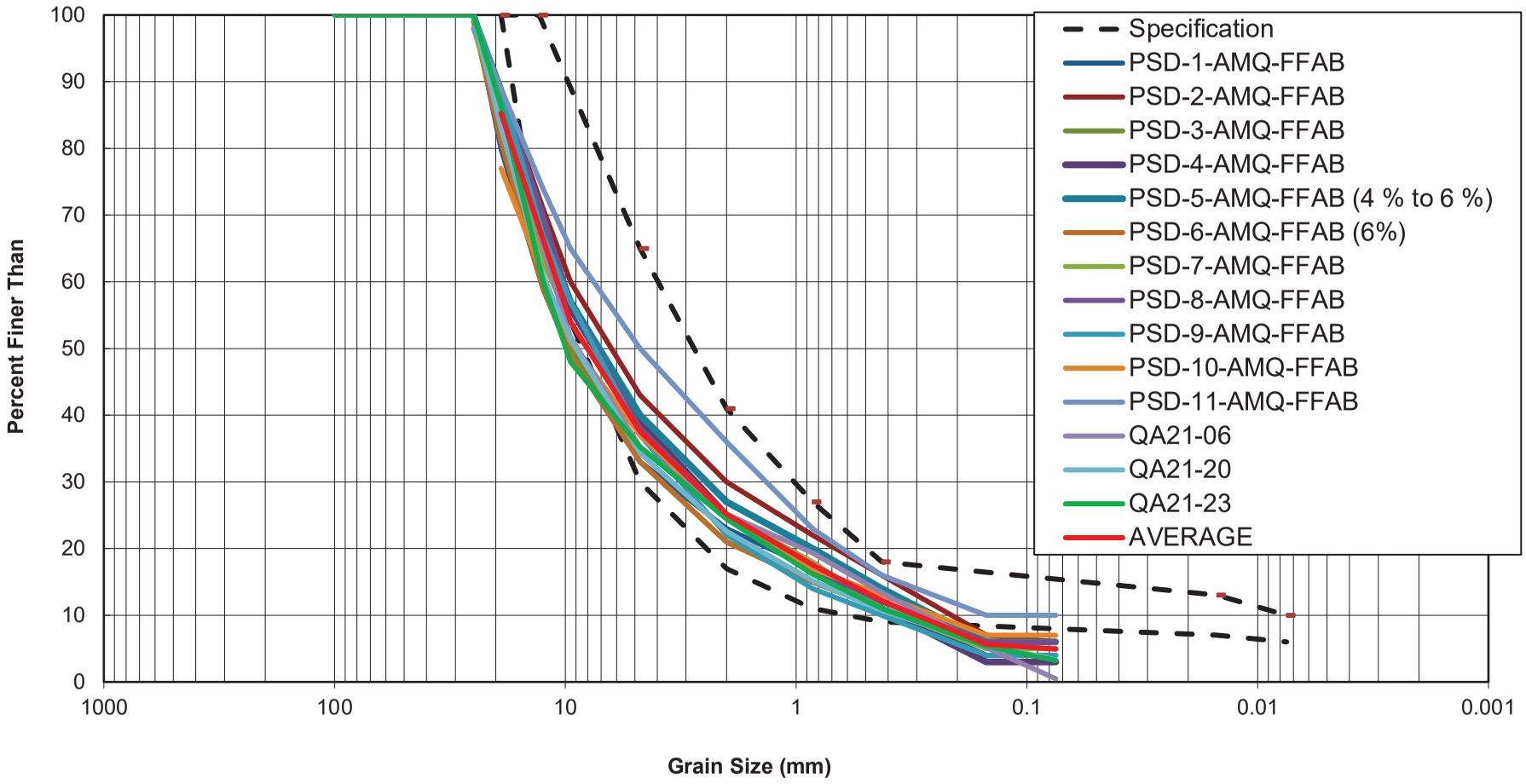
BOULDERS	COBBLES	GRAVEL		SAND			SILT / CLAY
		Coarse	Fine	Coarse	Medium	Fine	

GOLDER

QC GRAIN SIZE DISTRIBUTION: ZONE 2A - FINE FILTER

PROJECT NO:	21452873	DATE:	Apr-2021
BY:	BG	Review:	-

Figure 1



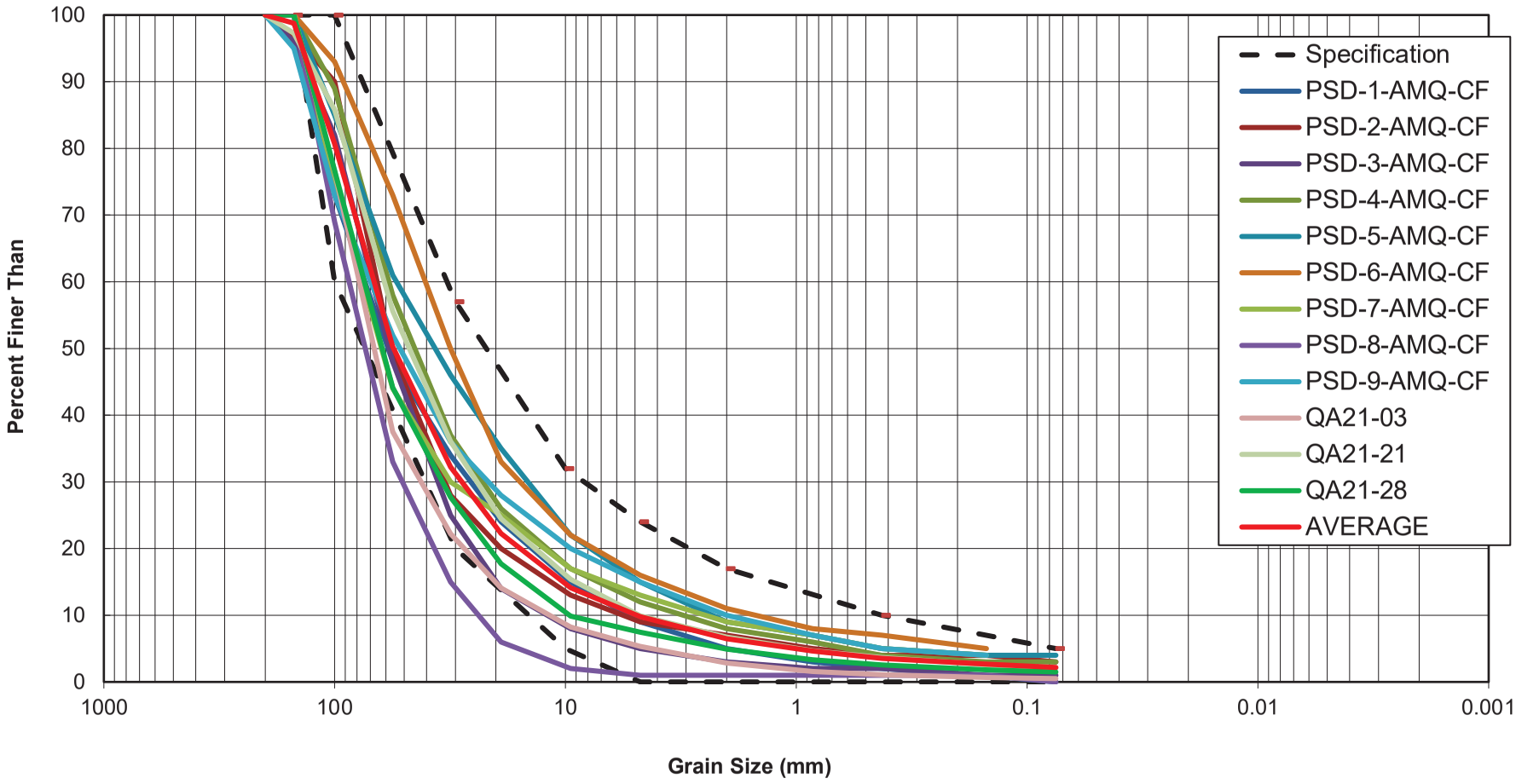
BOULDERS	COBBLES	GRAVEL		SAND			SILT / CLAY
		Coarse	Fine	Coarse	Medium	Fine	

GOLDER

QC GRAIN SIZE DISTRIBUTION: BENTONITE

PROJECT NO:	21452873	DATE:	Apr-2021
BY:	BG	Review:	-

Figure 2



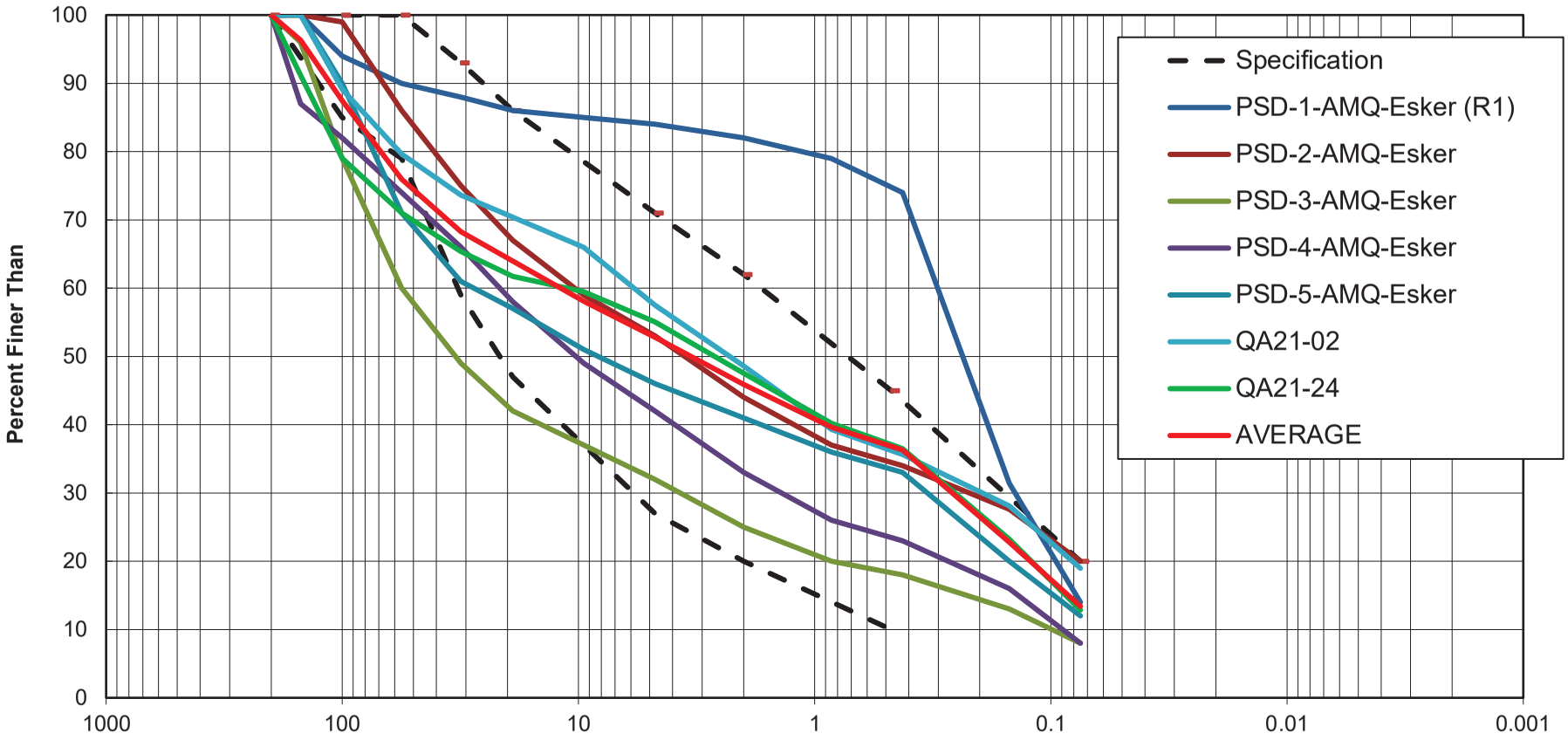
BOULDERS	COBBLES	GRAVEL		SAND			SILT / CLAY
		Coarse	Fine	Coarse	Medium	Fine	

GOLDER

QC GRAIN SIZE DISTRIBUTION: ZONE 3 - COARSE FILTER

PROJECT NO:	21452873	DATE:	Apr-2021
BY:	BG	Review:	-

Figure 3



BOULDERS	COBBLES	GRAVEL		SAND			SILT / CLAY
		Coarse	Fine	Coarse	Medium	Fine	

GOLDER

QC GRAIN SIZE DISTRIBUTION: ZONE 4 - ESKER

PROJECT NO:	21452873	DATE:	Apr-2021
BY:	BG	Review:	-

Figure 4

QA WEEKLY REPORT

DATE April 26, 2021 **N° de référence** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Yves Boulianne, Shai Spilberg

FROM Brandon Gray **EMAIL bgray@golder.com**

QA WEEKLY REPORT FROM APRIL 20TH TO APRIL 26TH – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from April 20th to April 26th, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The “+” and “-” symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Brandon Gray	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

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7250, rue du Mile End, 3e étage Montréal (Québec) H2R 3A4 Canada T: +1 514 383 0990 +1 514 383 5332

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IVR Dyke - Foundation

- Upstream foundational approvals for Zone 4 (esker) and Zone 1 (rockfill) on going and occurring in advance of material of placement.

IVR Dyke – Fill Materials

- AEM and QA representative discussed compaction of Zone 4 (esker) material over installed LLDPE liner. KCG to utilize smooth drum roller outside footprint of liner for first lift of Zone 4 placement, once second lift of Zone 4 is placed KCG to pack full width of Zone 4 material placed upstream of LLDPE.
- AEM to construct thermal berm covering along east and west abutments at the IVR dyke. An additional 2.5 m of rockfill to be placed along abutments, fine filter and coarse filter to be placed in advance in areas where there is exposed LLDPE liner.
- Placement of Zone 2A (FF) and Zone 2B (FFAB) material along installed LLDPE liner has been completed at the IVR dyke. Additional Zone 3 (CF) will be required along abutments to fully cover Zone 2A (FF) prior to placing rockfill for thermal berm.

IVR Dyke – Liner Installation

- Installation of LLDPE liner has been completed at the IVR Dyke, FC Liner scheduled to leave site Monday, April 26th.

IVR Dyke – Instrumentation

- No instruments were installed during the reporting period.

IVR Dyke – Spillway

- Spillway to be cut short by approximately 10 feet due to presence of existing electrical cable. QA noted, additional work maybe required during the summer to ensure spillway will allow water to flow towards existing culverts and away from the downstream toe of the dyke.
- AEM to place geotextile throughout the full footprint of the spillway channel in advance of GBM installation.
- Installation of geotextile and GBM has been completed through the spillway channel. Additional Zone 1 (rockfill) still required for the upstream inlet to the spillway channel.

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Foundation Preparation	■ KCG removed snow and ice within footprint of upstream shell in advance of Zone 1 (rockfill) and Zone 4 (esker) material between placement between approx. Sta. 0+420 and Sta. 0+080.
Dyke Backfill	■ Zone 2B (FFAB) material was placed in one lift of 250 mm thickness over installed LLDPE liner from approx. Sta. 0+140 to Sta. 0+080 and from approx. Sta. 0+385 to Sta. 0+520. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) placement occurred in one lift of 300 mm thickness along upstream slope of LLDPE liner from approx. Sta. 0+140 to Sta. 0+080 and from approx. Sta. 0+385 to Sta. 0+520. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 3 (CF) placement occurred in one lift of 300 mm thickness upstream of LLDPE liner over Zone 2A/2B material from Sta. 0+140 to Sta. 0+080 and from approx. Sta. 0+385 to Sta. 0+520. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 3 (CF) placement occurred in one lift of 500 mm thickness over installed LLDPE liner along dyke crest from approx. Sta. 0+080 to Sta. 0+520 to elev. 165.5 m. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded, ■ Zone 4 (esker) placement occurred in multiple lifts of 500 mm thickness upstream of installed LLDPE liner between approx. Sta. 0+080 and Sta. 0+410 to elev. 164.5 m. Material was compacted with a minimum of 8 passes with 10-ton smooth drum roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. Material was sloped to design lines in advance of Zone 1 (rockfill) placement. ■ Zone 2A (FF) placement occurred in two lifts of 250 mm thickness over LLDPE liner along east and west abutments from Sta. 0+ 527 to Sta. 0+520 and from approx. Sta. 0+045 to Sta. 0+060. Material was bucket compacted, compaction verified by QC/QA representatives. Material appeared visually of good quality and well-graded.

Activity or Area	Comments
	■ Zone 3 (CF) placement occurred in one lift of 300 mm thickness over Zone 2A material from Sta. 0+ 527 to Sta. 0+520 and from approx. Sta. 0+045 to Sta. 0+060. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 1 (Rockfill) placement occurred in multiple lifts of 1000 mm thickness upstream of LLDPE liner between Sta. 0+080 and Sta. 0+400. Material was compacted with a minimum 6 passes with a 10-ton smooth drum roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
Spillway Construction	■ KCG removed snow/ice and overburden material within footprint of the spillway channel between approx. Sta. 0+045 and Sta. 0-010 (spillway chainage). ■ Zone 3 (CF) placement occurred in one lift up to a maximum thickness of 300 mm within the footprint of the spillway channel between approx. Sta. 0+045 and Sta. 0+000 (spillway chainage). Material was compacted with a minimum of 6 passes with 10-ton smooth drum roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) placement occurred in one lift of 300 mm thickness along spillway channel between approx. Sta. 0+045 and Sta. 0-010 (spillway chainage). Material along spillway slopes was bucket compacted and material along floor of spillway was compacted with a minimum of 6 passes with 10-ton smooth drum roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Oversize rockfill was placed at the outlet of the spillway channel at approx. Sta. 0+045 for construction of rockfill pad.
BGM Installation	■ Installation of geotextile from approx. Sta. 0+045 to Sta. 0-010 (spillway chainage). The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. Two layers of geotextile were installed over existing LLDPE liner. The original design did not plan for installation of geotextile through spillway channel, QA is of the opinion additional geotextile will not negatively impact design intent. ■ BGM panels, P1 to P16, were installed within the footprint of the spillway between approx. Sta. 0+045 and Sta. 0-010 (spillway chainage). Panels were

Activity or Area	Comments
	overlapped 0.2 m and welded using blowtorch. BGM was extended beyond placement of geotextile at inlet of spillway at Sta. 0-010.
Liner Installation	■ Installation of geotextile from approx. Sta. 0+140 to 0+192.The bedding surface was approved prior to geotextile placement by the liner QC representative. QA representative was not on-site during installation of geotextile. ■ Installation of the LLDPE liner was installed on downstream slope (3.0H:1V) from Sta. 0+140 to Sta. 0+192 (panels P112 to P120). The bedding surface was approved prior to geotextile placement by the liner QC representative. QA representative was not on-site during LDDPE installation. ■ Installation of geotextile from Sta. 0+385 to Sta. 0+523 and from Sta. 0+080 to Sta. 0+045.The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner was installed on downstream slope (3.0H:1V) from Sta. 0+385 to Sta. 0+523 (panels P122 to P129) and from Sta. 0+080 and Sta. 0+045 (panels P130 to P131). The bedding surface was approved prior to geotextile placement by the liner QC representative. QA representative was not on-site during LDDPE installation. ■ The extrusion welding machine was calibrated prior to welding. Liner QC representative performed seam tests (air channel tests) on liner seams. All seam tests met the Technical Specifications. ■ Vacuum box tests were performed along the entire length of the horizontal extrusion weld connecting the upper LLDPE liner to the lower liner in the key trench. No leaks were observed. The extrusion weld was performed minimum 0.5 m from the bottom of the liner slope as per design. ■ Liner QC unable to perform air channel test between panels P124/P125 due to blockage welded seam, FC liner proceeded to apply extrusion weld between panels. Vacuum box tests were performed along the length of weld, no leaks were observed. ■ Geotextile was placed over the installed liner prior to backfill. The geotextile was installed with 6-inch overlaps that were heat welded with a blowtorch.

Activity or Area	Comments
	■ One destructive test sample (DT10) was performed on the seam between liner panels P119/P120. The results of the shear and peel tests met Technical Specifications.

5.0 FOUNDATION/FILL APPROVALS

The following foundation and fill approvals were carried out during the reporting period.

Table 3: Details of the Foundation and Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B Under Liner	202104020-DS-01	Sta. 0+140 to Sta. 0+080	Apr-20	Approved Zone 2B under liner for placement of Zone 2B over liner.
Spillway Foundation	20210422-DS-02	Spillway Footprint	Apr-22	Approved foundation of spillway for placement of Zone 3 (CF)
Spillway	20210424-DS-01	Spillway from Sta. 0+015 to Sta. 0-010	Apr-24	Approved placement of Zone 2A (FF) for installation of BGM liner.
Dyke Foundation	20210425-DS-01	Sta. 0+085 to Sta. 0+414	Apr-25	Approved footprint of Zone 4 upstream of liner for placement of Esker material.
Fill Placement Zone 4 (esker)	20210425-DS-02	Sta. 0+085 to Sta. 0+414	Apr-25	Approved placement of Zone 4 for Zone 1 rockfill material.

6.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics approvals.

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (upper slope)	20210420-DS-01	Sta. 0+360 to Sta. 0+385 & Sta. 0+140 to Sta. 0+192	April 20, 2021	Approved liner for placement of Zone 2B/2A.

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (upper slope)	20210421-DS-01	Sta. 0+385 to Sta. 0+483	April 21, 2021	Approved liner for placement of Zone 2B/2A.
Liner (upper slope)	20210422-DS-01	From Sta. 0+483 to Sta. 0+523 and from Sta. 0+080 to Sta. 0+045	April 22, 2021	Approved liner for placement of Zone 2B/2A.
BGM (spillway)	20210424-DS-02	Spillway from Sta. 0+015 to Sta. 0-010	Apr-24	Approved installation of BGM liner through footprint of spillway.

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 to Table 9 below present a summary of the laboratory testing results obtained by the QA and QC. The key findings are as follows:

- The mixed Zone 4 Esker material is compliant with the technical specifications.

Summary plots of grain size analysis conducted during reporting period can be found on Figures 1 through 5 in Appendix A.

Table 5: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
DT10	Destructive Test	Sta. 0+178	Seam P118/P119	Shear and peel test results compliant.

Table 6: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-13-AMQ-FF	April 23, 2021	April 23, 2021	Sta. 0+515, over liner hinge	GSA	Slightly too fine with 12% passing 75 µm sieve. Compliant
				MC	3.5%

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-14-AMQ-FF	April 25, 2021	April 25, 2021	Sta. 0+110, upstream of liner	GSA	Minor oversize on 19 mm sieve (8% retained). Compliant.
				MC	3.2%
QA21-25	April 24, 2021	April 24, 2021	Spillway, Sta. 0+020	GSA	Oversize on 19 mm sieve (89% passing). Complaint
				MC	3.6 %

Table 7: Sampling and Testing on Fine Filter Amended with Bentonite (Zone 2B)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-12-AMQ-FFAB	April 22, 2021	April 23, 2021	Sta. 0+515, over liner hinge	GSA	Slightly to fine with 12% passing 75 µm sieve. Complaint
				MC	3.5%
QA21-23	April 21, 2021	April 23, 2021	Sta. 0+400, over liner hinge	GSA	Oversize on 19 mm (85% passing). Complaint
				MC	8.5 %

Table 8: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-10-AMQ-CF	April 24, 2021	April 24, 2021	Sta. 0+060, over liner	GSA	Compliant
				MC	6.8% (fines)
QA21-28				GSA	Compliant

	April 25, 2021	April 25, 2021	Spillway, Sta. 0+030	MC	-

Table 9: Sampling and Testing on Coarse Filter (Zone 4)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
PSD-6-AMQ-Esker	April 21, 2021	April 22, 2021	Sta. 0+135, upstream shell	GSA	Minor oversize on 56 mm sieve (77% passing), compliant.
				MC	10.2%
PSD-7-AMQ-Esker	April 23, 2021	April 24, 2021	Sta. 0+110, upstream of liner	GSA	Compliant
				MC	10.6%
QA21-24	April 21, 2021	April 22, 2021	Sta. 0+120, upstream of liner	GSA	Complaint
				MC	10.6 %

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 10: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-06	Spillway: Installation of Geotextile under BGM	Apr-25	Approved by AEM. Favourable opinion from Golder.	Geotextile was installed prior to placement of BGM over the full footprint of the spillway channel between Sta. 0+048 and Sta. -0+012 (spillway chainage). The original design did not plan for installation of geotextile through this area. BGM was extended beyond placement of geotextile at spillway inlet at Sta. -0+012. QA is of the opinion additional geotextile will not significantly impact the design intent but should have been stopped short from -0+012 to the connection between the BGM and installed

ID	Item	Date	Acceptance	Description
				LLDPE, as an added precaution to minimize the seepage potential upstream and through the non welded connection by promoting contact between the liners. QA does not believe the extension of geotextile through the spillway area will significantly impact the performance of the structure in the event the spillway is activated.

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 11: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

10.0 PHOTOGRAPHS



Photograph 2221: Komatsu excavator placing Zone 2B (FFAB) over liner at approx. Sta. 0+130, view looking E. design lines at approx. Sta. 0+450, view looking W.



Photograph 2223: FC Liner installing LLDPE for upper slope at approx. Sta. 0+460, view looking SE.



Photograph 2225: Komatsu excavator placing Zone 2A (FF) along east abutment in advance of liner placement at approx. Sta 0+500, view looking E.



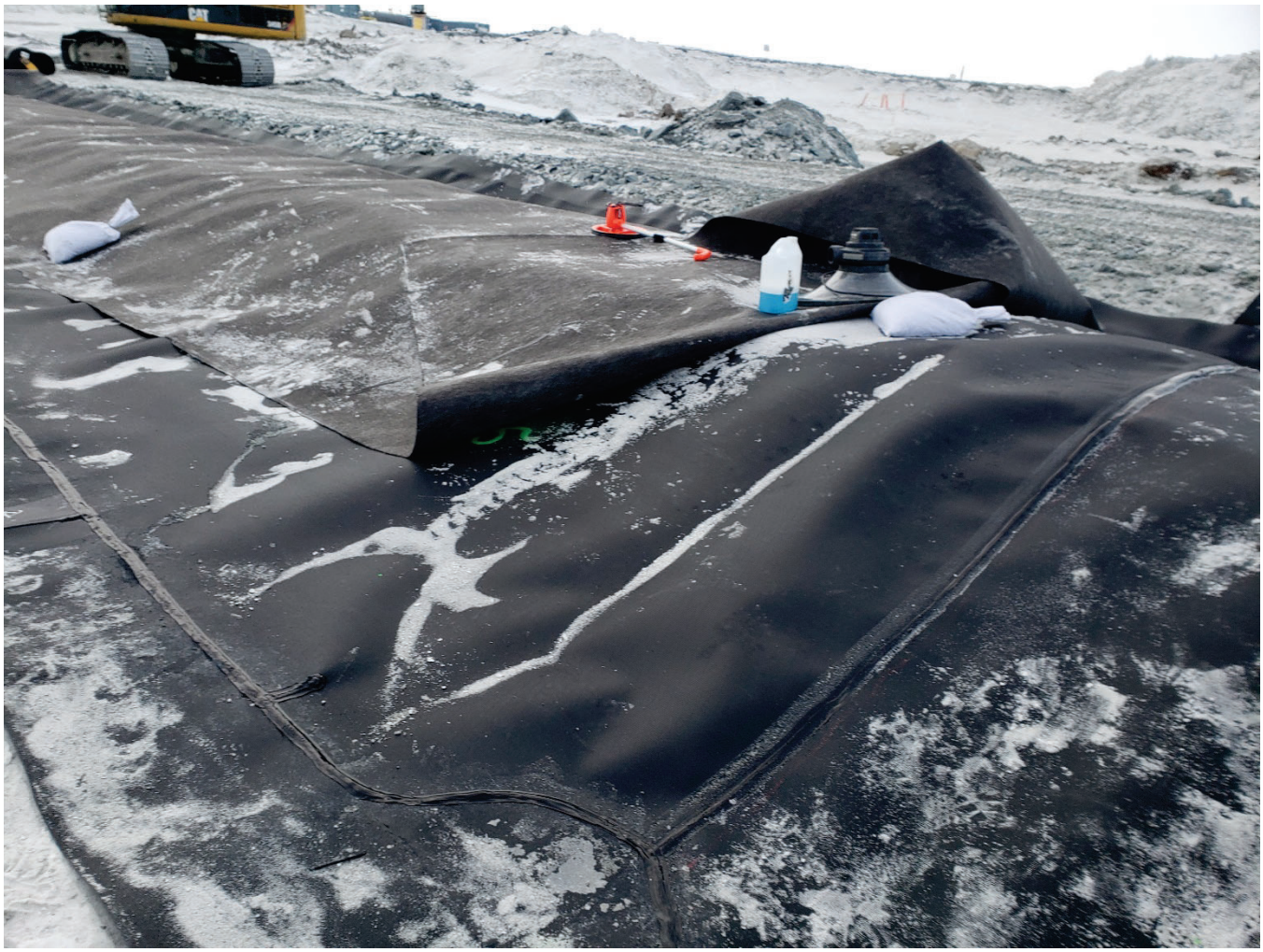
Photograph 2227 KCG utilizing smooth drum roller to compact placed Zone 4 material at approx. Sta. 0+100, view looking W.



Photograph 2228: Komatsu excavator placing Zone 3 (CF) along dyke crest over installed LLDPE at approx. Sta. 0+380, view looking SW.



Photograph 2229: FC liner installing geotextile over Zone 2A (FF) material at approx. Sta. 0+490, view looking W.



Photograph 2232: Extrusion weld between panels P124/P125 at approx. Sta. 0+483, view looking SE.



Photograph 2234: Geotextile installed over LLDPE liner placed along east abutment at approx. Sta. 0+520, view looking W.



Photograph 2235: Komatsu excavator removing snow and ice from foundation of key trench, view looking S.



Photograph 2236: Komatsu excavator placing Zone 2A (FF) over spillway slopes at approx. Sta. 0+030, view looking S.



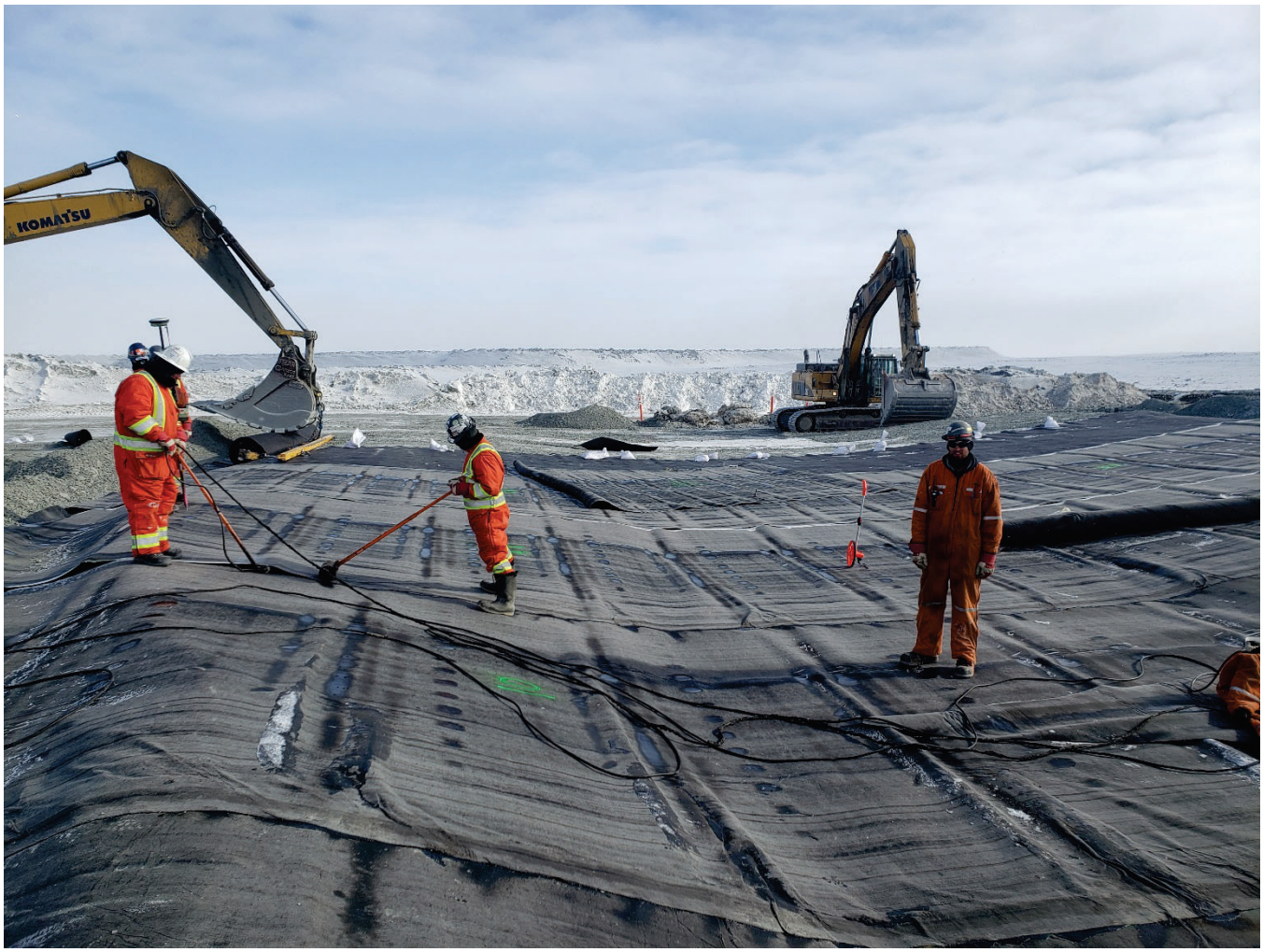
Photograph 2237: Approved placement of Zone 2A in spillway channel at approx. Sta. 0+030, view looking N.



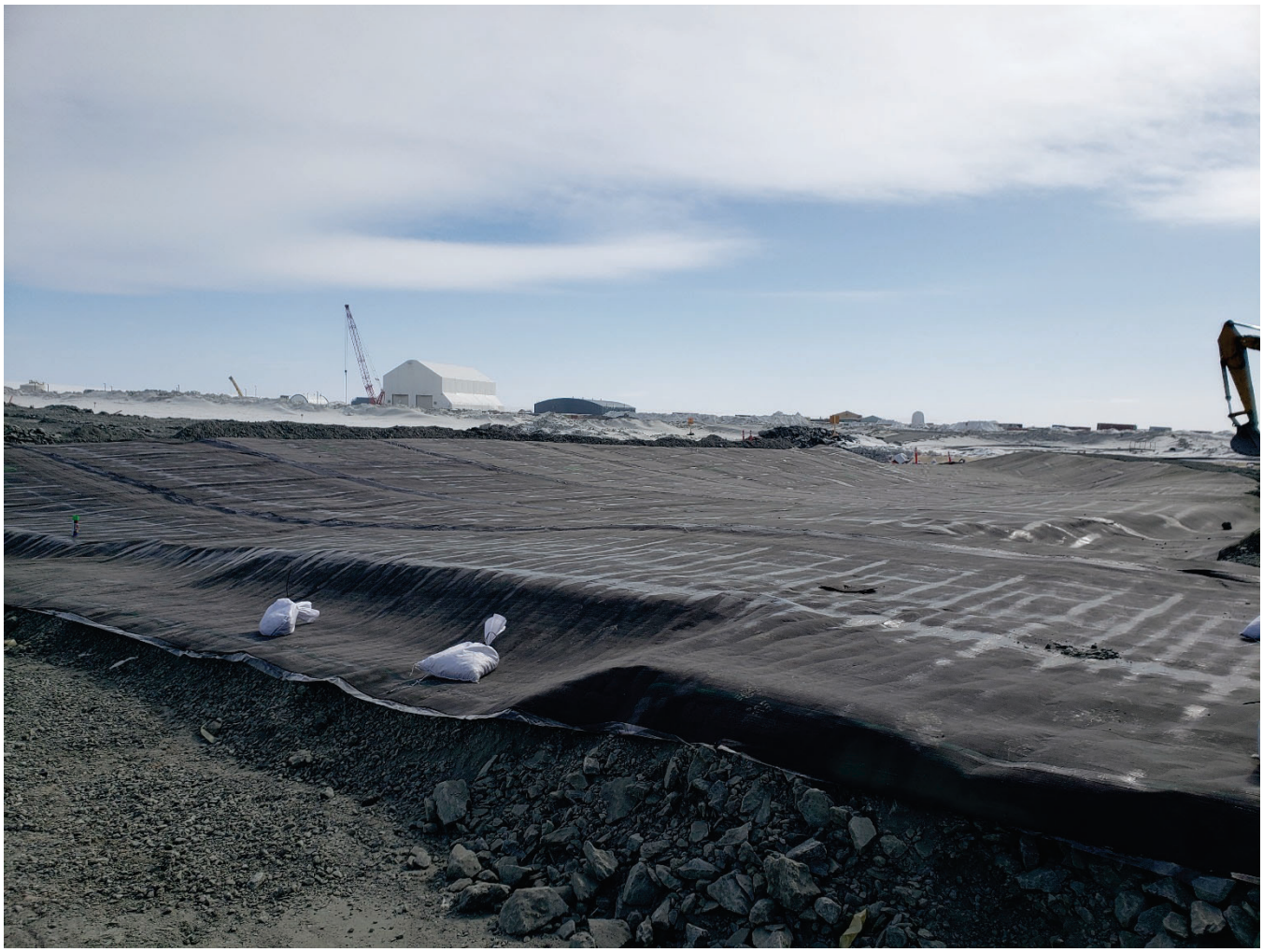
Photograph 2238: GBM installed along spillway channel at approx. Sta. 0+025, view looking SW.



Photograph 2240: FC liner installing geotextile through spillway channel at approx. Sta. 0+010, view looking W.



Photograph 2241: FC Liner heat welding GBM panels P10/P11 at approx. Sta. 0+000, view looking N.



Photograph 2242: Approved placement of GBM through spillway at approx. Sta. 0-010, view looking S.



Photograph 2243: Komatsu excavator removing snow over footprint of upstream shell in advance of Zone 4 (esker) placement at approx. Sta. 0+375 view looking W.



Photograph 2248: Komatsu excavator shaping Zone 1 (rockfill) to design lines at approx. Sta. 0+120, view looking W.



Photograph 2250: Dozer spreading Zone 1 (rockfill) at approx. Sta. 0+270, view looking W.

Brandon Gray
Mine Waste Group

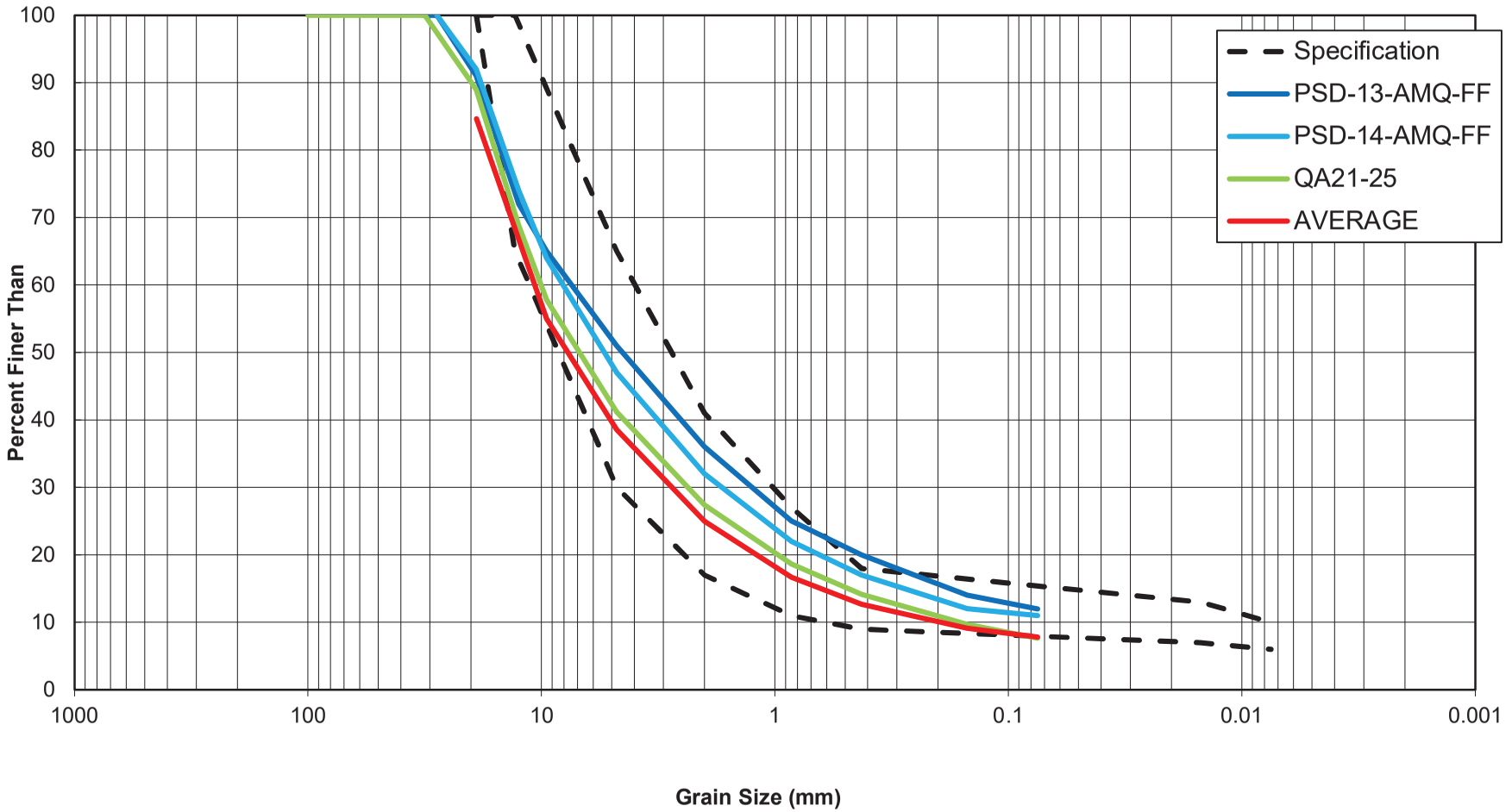
Yves Boulianne, P.Eng.
Principal, Senior Geotechnical Engineer

BG/YB

Attachments: None

https://golderassociates.sharepoint.com/sites/140958/project files/6 deliverables/21452873-1604-r-reva ivr d1 dyke as-built 2021/rev0/appendix d - qa reporting/d.1 weekly reports/201452873 qa weekreport 2021-04-20 to 2021-04-26-rev0.docx

APPENDIX A
Construction Material Test Results



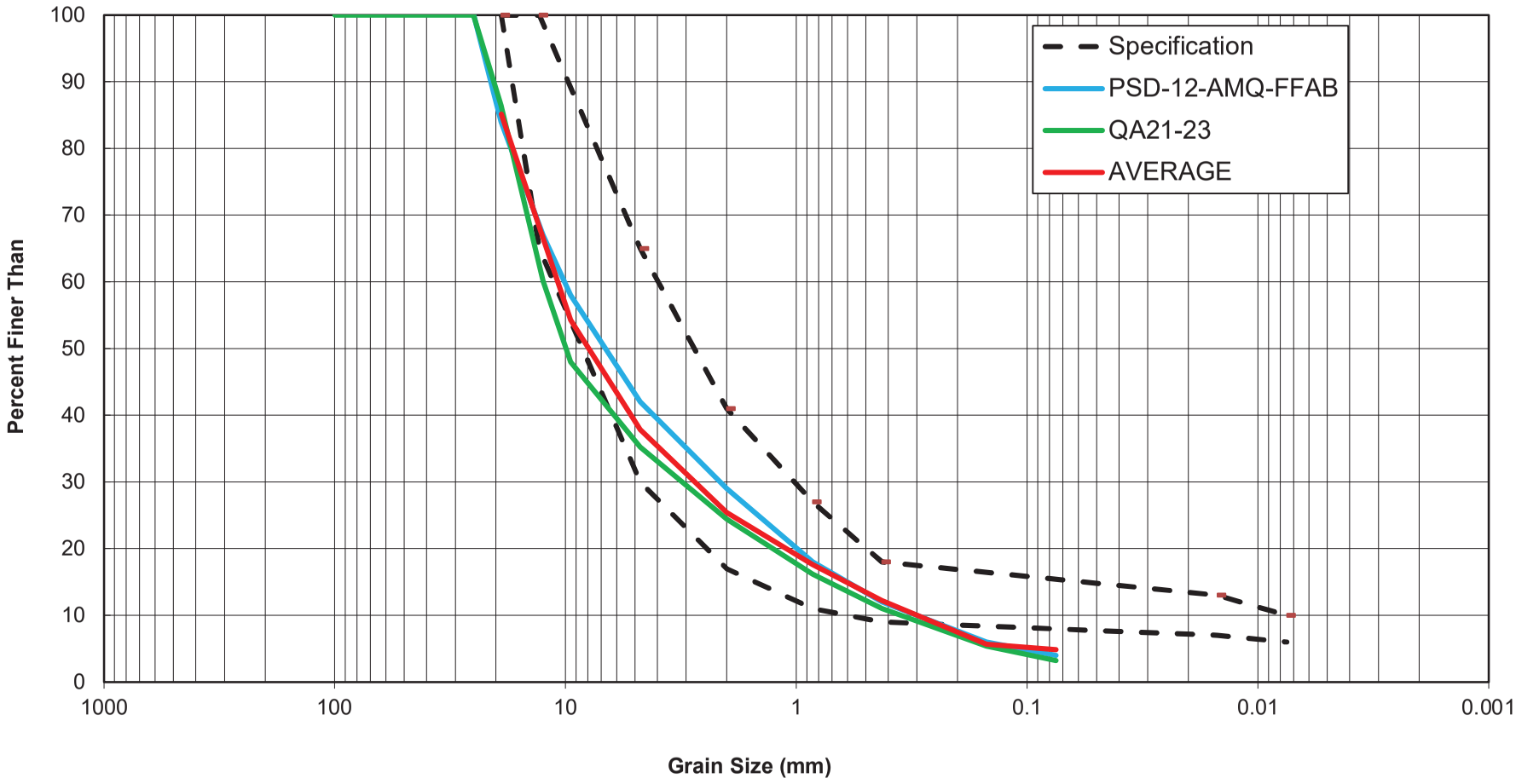
BOULDERS	COBBLES	GRAVEL		SAND			SILT / CLAY
		Coarse	Fine	Coarse	Medium	Fine	

GOLDER

QC GRAIN SIZE DISTRIBUTION: ZONE 2A - FINE FILTER

PROJECT NO:	21452873	DATE:	Apr-2021
BY:	BG	Review:	-

Figure 1



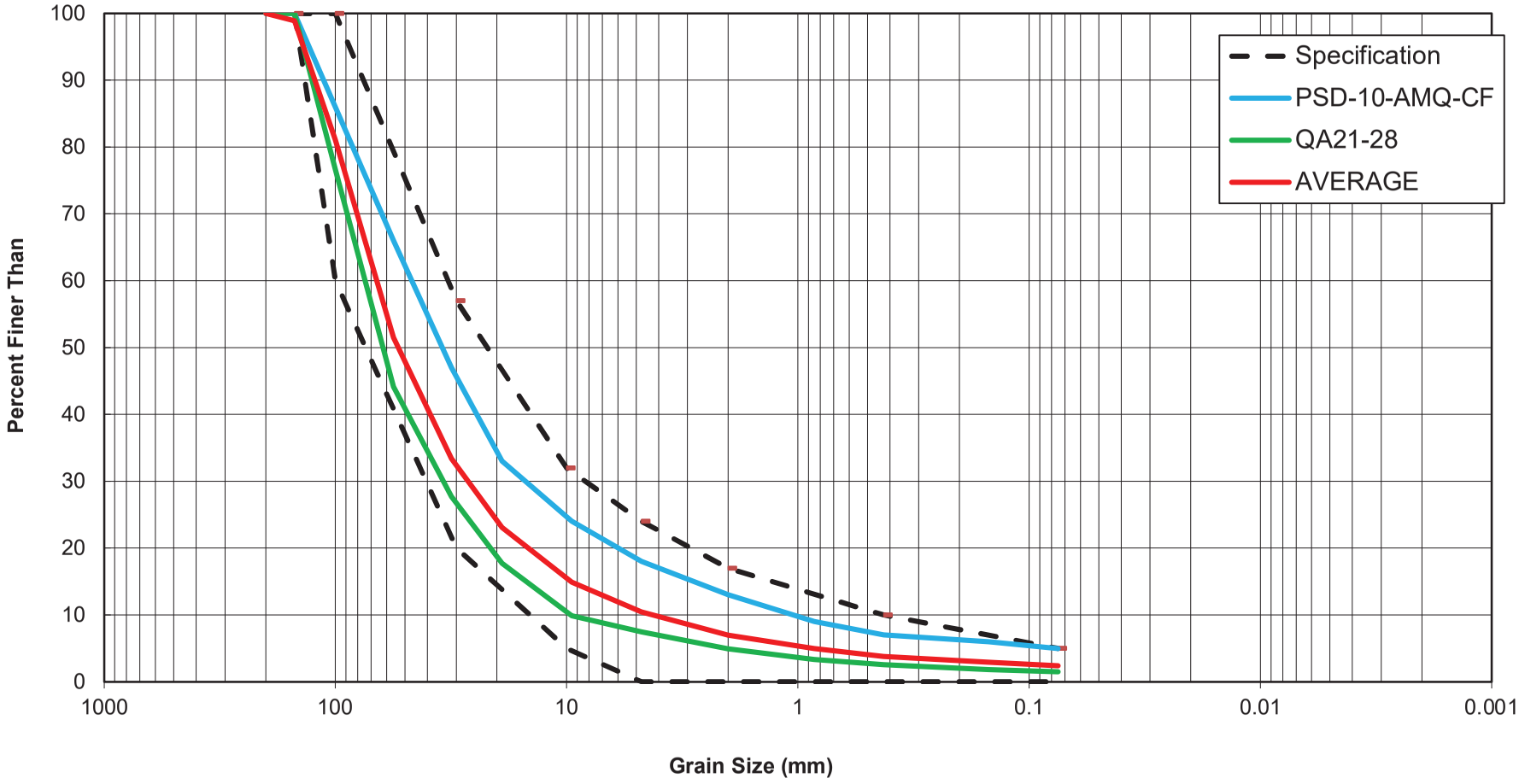
BOULDERS	COBBLES	GRAVEL		SAND			SILT / CLAY
		Coarse	Fine	Coarse	Medium	Fine	

GOLDER

QC GRAIN SIZE DISTRIBUTION: BENTONITE

PROJECT NO:	21452873	DATE:	Apr-2021
BY:	BG	Review:	-

Figure 2



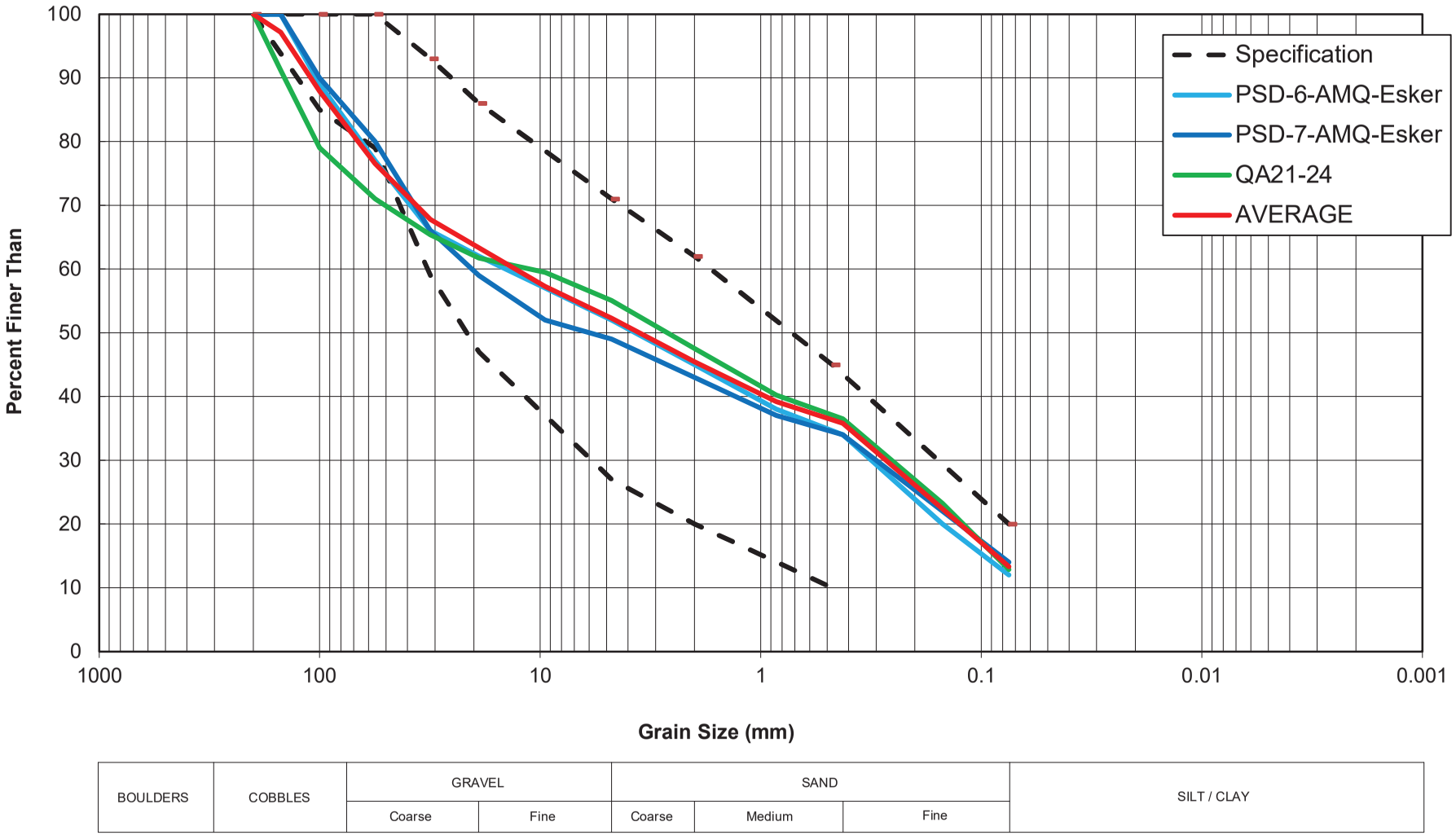
BOULDERS	COBBLES	GRAVEL		SAND			SILT / CLAY
		Coarse	Fine	Coarse	Medium	Fine	

GOLDER

QC GRAIN SIZE DISTRIBUTION: ZONE 3 - COARSE FILTER

PROJECT NO:	21452873	DATE:	Apr-2021
BY:	BG	Review:	-

Figure 3



BOULDERS	COBBLES	GRAVEL		SAND			SILT / CLAY
		Coarse	Fine	Coarse	Medium	Fine	

GOLDER

QC GRAIN SIZE DISTRIBUTION: ZONE 4 - ESKER

PROJECT NO:	21452873	DATE:	Apr-2021
BY:	BG	Review:	-

Figure 4

GOLDER
MEMBRE DE WSP

QA WEEKLY REPORT

DATE May 3, 2021 **Reference No.** 201452873-1600-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

CC Marion Habersetzer, Yves Boulianne, Shai Spilberg

FROM Brandon Gray **EMAIL bgray@golder.com**

QA WEEKLY REPORT FROM APRIL 27TH TO MAY 3RD – IVR D1 DYKE ATTENUATION POND MEADOWBANK (20145873)

This document summarizes QA activities performed by Golder from April 27th to May 3rd, 2021 inclusively, related to the construction activities of IVR D1 Dyke attenuation pond at the Meadowbank mine site – Amaruq division.

Unless otherwise specified, the construction activities use the centreline of the structures for a dike crest elevation of 165.5 m for reference (refer to the Drawings). The description of activities refers to the stations and offsets from the centreline (e.g., Sta. 0+500/-50 m). The "+" and "-" symbols indicate the location of the work downstream and upstream of the centreline, respectively.

1.0 GOLDER PERSONNEL ON SITE

Golder personnel on site during this reporting period is summarized in Table 1.

Table 1: Golder Personnel on Site

Name	Comments
Brandon Gray	QA representative

2.0 HEALTH AND SAFETY

H&S meetings were held with AEM and KCG during the daily construction meetings. Minutes from these meetings are provided in the QA daily reports.

3.0 SUMMARY OF MAIN DISCUSSIONS IN CONSTRUCTION MEETINGS

Construction meetings were held daily during the reporting period and were attended by the QA representative. The following key items were discussed:

IVR Dyke - Foundation

- Foundation approvals for upstream footprints of Zone 4 (esker) and Zone 1 (rockfill) are now complete.

IVR Dyke – Fill Materials

- AEM to continue full width of Zone 1 (rockfill) along east abutment at the IVR dyke.
- Access ramp along downstream shell at Sta. 0+325 to be removed and used for placement for thermal berm along west abutment.
- AEM to place up to 150 mm of Zone 2A over exposed LLDPE liner along dyke crest.

IVR Dyke – Instrumentation

- AEM to extend thermistor cables located along downstream shell horizontally through dyke crest at approx. Sta. 0+250.

IVR Dyke – Spillway

- Additional work will be required to comply with the design and allow water to flow from spillway to existing culvert downstream of the IVR dyke. Without these additional works, there is a risk that the spillway canal will not perform as intended.

IVR Dyke - Other

- During weekly technical meeting AEM and QA representative discussed as-built report, Golder to provide draft report within 60 days following the end of construction for AEM review.

4.0 SUMMARY OF CONSTRUCTION ACTIVITIES AND TEST RESULTS

Periodic QA inspections to monitor the construction activities and progress were performed by the QA representative; these are summarized in the tables below.

Table 2: QA Observations for IVR D1 Dyke

Activity or Area	Comments
Foundation Preparation	■ KCG removed snow and ice within footprint of upstream shell in advance of Zone 1 (rockfill) material between placement from approx. Sta. 0+420 to Sta. 0+523 and from approx. Sta. 0+040 to Sta. 0+025.
Dyke Backfill	■ Zone 1 (rockfill) placement occurred in two lifts of 1000 mm thickness over previously placed Zone 3 (CF) along east and west abutments from approx. Sta. 0+527 to Sta. 0+520 and from approx. Sta. 0+045 to Sta. 0+060. Material was compacted with a minimum of 6 passes with a 10-ton smooth drum roller, QA/QC verified compaction effort. Material appeared visually of good quality and well-graded.

Activity or Area	Comments
	■ Zone 2A (FF) placement occurred in one lift of 300 mm thickness over installed LLDPE liner from approx. Sta. 0+523 to Sta. 0+430 and from approx. Sta. 0+080 to Sta. 0+100. Material was bucket compacted, compaction verified by QA representative. Material appeared visually of good quality and well-graded. ■ Zone 3 (CF) placement occurred in one lift of 300 mm thickness over Zone 2A (FF) from approx. Sta. 0+523 to Sta. 0+430 and from approx. Sta. 0+080 to Sta. 0+100. Material was bucket compacted, compaction verified by QA representative. Material appeared visually of good quality and well-graded. ■ Zone 1 (rockfill) placement occurred in one lift of 1000 mm thickness upstream of LLDPE liner between approx. Sta. 0+200 and Sta. 0+300. Material appeared visually of good quality and well-graded. Material was compacted with a minimum of 6 passes with a 10-ton smooth drum roller, QA verified compaction effort. ■ Zone 1 (rockfill) placement occurred in one lift up to 1500 mm thickness for thermal berm along east abutment from approx. Sta. 0+545 to Sta. 0+430. Material appeared visually of good quality and well-graded. Material was compacted with a minimum of 6 passes with a 10-ton smooth drum roller, QA verified compaction effort. ■ Zone 1 (rockfill) was shaped to design lines along upstream and downstream slopes between approx. Sta. 0+025 and Sta. 0+523. ■ Zone 2A (FF) placement occurred in one lift up to 150 mm in thickness over installed LLDPE liner along dyke crest between approx. Sta. 0+105 and Sta. 0+430. Material appeared visually of good quality and well-graded.

5.0 FOUNDATION/FILL APPROVALS

The following foundation and fill approvals were carried out during the reporting period.

Table 3: Details of the Foundation and Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Fill Placement Zone 2A (FF) & Zone 3 (CF)	20210428-DS-01	Sta. 0+085 to Sta. 0+100 & Sta. 0+400 to Sta. 0+523	Apr-28	Approved placement of Zone 2A (FF) and Zone 3 (CF) over installed LLDPE liner in advance of Zone 1 (rockfill) placement for thermal berm along east and west abutments.
Foundation approval Zone 1	20210501-DS-01	Sta. 0+025 to Sta. 0+527	May-01	Approved foundation for placement of Zone 1 (rockfill) upstream of LLDPE liner.
Zone 1 (rockfill) placement	20210503-DS-01	Sta. 0+25 to Sta. 0+527	May-03	Final walk down inspection, approved placement of Zone 1 (rockfill) material.

6.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 4 to Table 8 below present a summary of the laboratory testing results obtained by the QA and QC. The key findings are as follows:

- Zone 1 rockfill appeared visually well graded and is compliant with the technical specifications.

Table 4: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

Table 5: Sampling and Testing on Fine Filter (Zone 2A)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-

Table 6: Sampling and Testing on Fine Filter Amended with Bentonite (Zone 2B)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-

Table 7: Sampling and Testing on Coarse Filter (Zone 3)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-

Table 8: Sampling and Testing on Coarse Filter (Zone 4)

Sample ID	Date Sampled	Date Tested	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-

7.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes

ID	Item	Date	Acceptance	Description
-	-	-	-	-

8.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

9.0 PHOTOGRAPHS



Photograph 2252: CAT excavator placing Zone 1 (rockfill) along west abutment at approx. Sta. 0+050, view looking W.



Photograph 2253: CAT excavator removing snow/ice within footprint of Zone 1 (rockfill) at approx. Sta. 0+430, view looking W.



Photograph 2255: CAT excavator placing Zone 2A (FF) over installed LLDPE liner at approx. Sta. 0+515, view looking W.



Photograph 2256: CAT excavator placing Zone 3 (CF) over previously placed Zone 2A (FF) at approx. Sta. 0+515, view looking W. at approx. Sta. 0+400, view looking NW.



Photograph 2258: Dozer spreading lift of Zone 1 (rockfill) at approx. Sta. 0+200, view looking W.



Photograph 2259: Zone 2A (FF) and Zone 3 (CF) placed over existing LLDPE liner at approx. Sta. 0+090, view looking E.



Photograph 2260: Komatsu dozer placing Zone 1 (rockfill) material for thermal berm at approx. Sta. 0+490, view looking E.



Photograph 2261: Komatsu excavator shaping upstream Zone 1 (rockfill) to design lines at approx. Sta. 0+300, view looking E.



Photograph 2263: Upstream Zone 1 slope shaped to design lines at approx. Sta. 0+410, view looking SE.



Photograph 2264: CAT excavator placing Zone 1 (rockfill) at approx. Sta. 0+085, view looking N.



Photograph 2266: KCG utilizing smooth drum roller to compact placed Zone 1 (rockfill) at approx. Sta. 0+090, view looking SE.



Photograph 2268: Komatsu excavator finalizing upstream slope at approx. Sta. 0+200, view looking W.



Photograph 2272: Upstream Zone 1 (rockfill) sloped to design lines at approx. Sta. 0+125, view looking E.



Photograph 2273: Downstream Zone 1 (rockfill) sloped to design lines at approx. Sta. 0+200, view looking E.



Photograph 2274: Crest of dyke at approx. Sta. 0+300, view looking E.

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Brandon Gray
Mine Waste Group

Yves Boulianne, P.Eng.
Principal, Senior Geotechnical Engineer

BG/YB

https://golderassociates.sharepoint.com/sites/140958/project files/6 deliverables/21452873-1604-r-reva ivr d1 dyke as-built 2021/rev0/appendix d - qa reporting/d.1 weekly reports/201452873 qa weekly report 2021-04-27 to 2021-05-03-rev0.docx

APPENDIX D-2

QA Daily Reports

QA DAILY REPORT

DATE February 20th, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA DAILY REPORT FOR FEBRUARY 20TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature around -29°C, cloudy with periods of light snow.

2.0 HEALTH AND SAFETY

- New employee on site: familiarize new workers with site-specific hazards and SOPs.
- Cold weather and ice: apply caution when driving or walking on icy surfaces, wear appropriate clothing.
- Coactivity at the IVR D1 Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DISCUSSION AND DAILY CONSTRUCTION MEETING

During the daily construction meeting and during the day the following discussions were held:

- Construction progressing well, contractor to continue removing unsuitable material along downstream shell in advance of scheduled Zone 1 Rockfill placement tomorrow.
- Discussion between Laurier Collette of AEM and QA representative regarding existing laydown constructed along west abutment of IVR Dyke. LC to verify, tie in with existing rockfill pad pending approval from designer.
- The contractor noted that due to presence of existing access road, alignment of IVR spillway channel will need to be adjusted to accommodate field conditions.

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4.0 DESCRIPTION OF CONSTRUCTION WORK PERFORMED AND QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. This report must be read in conjunction with the QC Report. The following tables summarize the progress and observations made for each structure.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Foundation preparation	■ Removal of snow and unsuitable foundation material within the footprint of the rockfill shell (Zone 1) IVR Dyke between approx. Sta. 0+080 and Sta. 0+160, down to the natural ground composed of frozen silty sand (till). Additional ice and organics to be removed prior to approval. ■ No ice lenses have been observed so far in the foundation soil but further cleaning is required to confirm that the foundation is composed of ice-poor soil.

5.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 2: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

6.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 3 and Table 4 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 3: Samples taken by the QC

Sample ID	Date sampled	Date tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 4: Samples taken by the QA

Sample ID	Date sampled	Date tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

7.0 PHOTOGRAPH



Photograph 2001: Approx. Sta. 0+100 view looking NE. CAT dozer removing snow within footprint of upstream shell at Dyke D1.



Photograph 2002: Approx. Sta. 0+160 view looking N. CAT dozer continuing to remove snow and organics within footprint of downstream shell at Dyke D1.
https://golderassociates.sharepoint.com/sites/140958/project files/5 technical work/qa database/6 qa deliverables/daily report/21452873 qa daily report 2021-02-20.docx

QA DAILY REPORT

DATE February 21, 2021 **Project No.** 21452873-Rev0

TO Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA DAILY REPORT FOR FEBRUARY 21ST, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature around -28°C, cloudy with periods of light snow.

2.0 HEALTH AND SAFETY

- QA representative conducted civility training.
- Cold weather and high wind speeds: reduced visibility, apply caution when driving and wear appropriate clothing.
- Coactivity at the IVR D1 Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DISCUSSION AND DAILY CONSTRUCTION MEETING

During the daily construction meeting and during the day the following discussions were held:

- At daily meeting it was discussed grading will continue to improve access along the IVR dyke in advance of drilling activities scheduled for Tuesday morning for drilling and blasting of the frozen foundation. First blast currently scheduled for Wednesday at 12:45.
- Discussion between Stephane Gionet of AEM and QA representative regarding work plan for the day, KCG to continue removing snow within downstream Zone 1 shell to create suitable access in preparation for drilling and blasting activities.
- Discussion between Laurier Collette of AEM and QA representative regarding additional removal of ice and organics. QA representative noted, additional organics will need to be removed and overburden till needs to be verified as suitable (ice-poor).

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- QC representative noted, there are currently 5 stockpiles of Zone 4 – esker material on site located within the WSRF. For QC sample identification, stockpiles have been split into the following; North esker piles, South esker piles and West esker pile.

4.0 DESCRIPTION OF CONSTRUCTION WORK PERFORMED AND QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. This report must be read in conjunction with the QC Report. The following tables summarize the progress and observations made for each structure.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Foundation preparation	■ Removal of snow and ice material within the footprint of the rockfill shell (Zone 1) IVR Dyke between approx. Sta. 0+160 and Sta. 0+400, down to the natural ground composed of frozen silty sand (till) and organic material. Additional ice and organics to be removed prior to approval. ■ No ice lenses have been observed so far in the foundation soil but further cleaning is required to confirm that the foundation is composed of ice-poor soil.

5.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 2: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

6.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 3 and Table 4 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 3: Samples taken by the QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
PSD-1-AMQ-Esker	February 19, 2021	February 20, 2021	Zone 4	West Esker Stockpile	Gradation	Non compliant (high sand content)
					Water content	10.7%

Table 4: Samples taken by the QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

7.0 PHOTOGRAPH



Photograph 2003: Approx. Sta. 0+000 view looking NE. CAT grader improving road access along west abutment of IVR Dyke.



Photograph 2004: Approx. Sta. 0+160 view looking E. Additional snow and ice removed within footprint of downstream shell for road access.



Photograph 2005: North Esker stockpile located within the WSRF, view looking S. Large amounts of snow and ice were observed over Zone 4 material.

QA/QC DAILY REPORT

DATE February 22, 2021 **Project No.** 21452873-Rev0

TO Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR FEBRUARY 22ND, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -25°C and -34°C, cloudy with moderately high winds.

2.0 HEALTH AND SAFETY

- Cold weather and high wind speeds: reduced visibility, apply caution when driving and wear appropriate clothing.
- Blast today in the open pit at 12:45: Be clear of blast area and check in with supervisor prior to blast.
- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Stéphane Gionet, Jean-François Landreville, Jennifer Pyliuk Laurier Collette, Marc-André Beaudet
- KCG: Richard St-Jean, Sabin Larouche, René Collard
- QA: Brandon Gray
- QC: Doug Yokoyama, Ryan Okkema

Health, Safety & Environment:

- Moderate wind speeds and blowing snow around the IVR Dyke, be mindful of increased risk to slips, trips and falls and dress according to weather conditions.

General Discussion:

- Drilling for key trench at the IVR Dyke is scheduled to commence tomorrow morning. KCG to transfer ownership to Dyno once holes are complete in preparation for blasting scheduled Wednesday at 12:45. Once Dyno has completed preparation work, KCG to secure the blast area.

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- KCG responsible for staging and installation of geotextile and blasting mats over blast holes. Stéphane noted, mine will provide KCG with 390 excavator to install blast mats, KCG to provide operator.
- Snow removal to create access road along downstream shell on-going, KCG to finish removing snow for access road and ensure any snowdrifts in the blast area are removed in advance of tomorrows drilling activities.
- JF noted, an additional 20+ survey pucks are required to complete drill hole layout, JF to track down remaining pucks however additional pucks will need to be ordered for future blasts.
- Stéphane noted, KCG to verify location of bentonite secant and review updated traffic management plan.
- Laurier to coordinate with environmental department to determine possibility of sourcing Zone 4 material from esker 6 stockpile.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station		Activity	Test/Inspect	Next Step(s)
0+000	0+520	None	-	Drilling for key trench

5.0 DISCUSSIONS

During the day the following discussions were held:

- Discussion between Stephane Gionet of AEM and QA representative regarding work plan for the day, no work planed for construction at the IVR dyke, KCG to continue prepping for drilling activities scheduled for tomorrow.
- Discussion between Jennifer Pyliuk of AEM and QA representative regarding daily report. Moving forward JP requested one daily report encompassing QA and QC observations, construction summary, equipment utilization and minutes from daily meeting.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	D8T Caterpillar dozer	-	-
Unit 005	Grader	-	-

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift QC representatives.

- To align naming convention of the Esker stockpiles, the stockpile named “South” is now referred to as “West”, and the “West” stockpile is now the “East” stockpile. The Esker sample PSD-1 has been revised to show the corrected sampling location name and is reattached to this report
- The Tetra Tech nuclear densometer has been cleared for use by the AEM onsite RSO.
- Three stockpile samples collected of the Fine Filter (19 mm minus) material

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Foundation preparation	■ No ice lenses have been observed so far in the foundation soil but further cleaning is required to confirm that the foundation is composed of ice-poor soil.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-1-AMQ-FF	22-Feb-21	22-Feb-21	Zone 2A	Fine Filter Stockpile	Gradation	Noncompliant (exceeds max grain size)
					Water Content	1.4 %
PSD-2-AMQ-Esker	19-Feb-21	22-Feb-21	Zone 4	West Esker Stockpile	Gradation	Pass
					Water Content	10.2 %

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-01	February 22, 2021	In Progress	Zone 2A	Fine Filter Stockpile	Gradation, MC	In Progress
QA21-02	February 22, 2021	In Progress	Zone 4	South Esker Stockpile	Gradation, MC	In Progress

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 PHOTOGRAPH



Photograph 2006: Tetra Tech QC sampling Zone 2A – filter material from southern face of existing stockpile.



Photograph 2007: Approx. Sta. 0+060 view looking E. Surveyor laying out drill pattern in preparation for drilling activities scheduled for tomorrow.

QA/QC DAILY REPORT

DATE February 23, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR FEBRUARY 23RD, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -25°C and -34°C, sunny.

2.0 HEALTH AND SAFETY

- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.
- Drilling scheduled today at the IVR Dyke: Follow positive communication procedures and remain clear of suspended overhead loads.
- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Stéphane Gionet, Jennifer Pyliuk, Laurier Collette, Marc-André Beaudet, Robert Howe
- KCG: Sabin Larouche, Richard Saint-Jean
- Dyno: Patricia Lim
- QA: Brandon Gray
- QC: Doug Yokoyama, Ryan Okkema

Health, Safety & Environment:

- Reminder that all employees are to use three-point contact when entering/exiting equipment and for employees working on the ground at the IVR Dyke ice cleats are required. KCG to go over JHA with employees mobilizing blast mats.

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General Discussion:

- Drilling for key trench at the IVR Dyke commenced late this afternoon, KCG has drilled 8 holes and plans to run nightshift to finish remaining holes. Blast holes to be filled first thing tomorrow morning. Mine supervisor to oversee employees working at the IVR Dyke during nightshift.
- Blast still scheduled for tomorrow at 12:45, blast supervisor to send out notification. Stéphane noted, all parties within the evacuation area have been advised, KCG to be responsible for their employees in reporting all clear, Stéphane to be responsible for employees under his supervision. Reporting to be done 30 minutes before blast.
- Blast supervisor to coordinate blast guards, supervisor will notify KCG if they need additional personal to cover the area. Following the blast all clear to be given by blast supervisor, KCG not to return to work until blast supervisor has walked the blast area and gives them permission.
- Stéphane to verify 390 excavator will be available for KCG to use for placing blast mats tomorrow.
- Next blast is scheduled for Friday at 12:45 and will be 20 meters in length. Planned work execution for coming days is as follows: first blast, muck out blasting material, drill for second blast, second blast, third blast, muck out excavation for key trench and clean/prepare foundation and begin placement of Zone 2B material.
- QC sampled Zone 3 coarse filter material from existing stockpile this afternoon and will begin splitting sample for gradation later today. QC noted, Gilson still requires repair, KCG to have mechanic inspect equipment prior to ordering parts.
- QC to set up seismograph ahead of tomorrows blast, Patricia to assist in installation.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station		Activity	Test/Inspect	Next Step(s)
0+000	0+120	No activity	-	-
0+120	0+130	Drilling for key trench	-	Drill remaining holes, blast scheduled for Wednesday
0+130	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between Stephane Gionet of AEM and QA representative on drilling activities at the IVR Dyke. SG noted KCG encountering challenges in operator drill rig in cold weather, drilling to commence later this afternoon.
- Discussion between Jennifer Pyliuk of AEM and QA representative regarding daily report. JP requested site overview map be included in daily report highlighting stockpile locations.

- QA representative to raise the issue of non-compliant fine filter with AEM for discussion with the designer, as most samples will likely be similar in terms of grain-size distribution.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	D8T Caterpillar dozer	-	-
Unit 005	Grader	-	-
TBD	Hammer Drill	Drilling blast holes for cut-off trench excavation	DS

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift QC representatives.

- Two fine filter (19 mm minus) sieves were completed, concluding the three stockpile samples as required per the technical specification. The gradation tests resulted noncompliant with oversize particles.
- Two stockpile samples collected of the Coarse Filter (150 mm minus) material. Sieve testing commenced on one of the samples
- The Gilson shaker is down for mechanical reasons. Lab testing will continue manually until repairs are completed.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Drilling	■ KCG commenced drilling activities for key trench between approx. Sta. 0+120 and 0+130.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-2-AMQ-FF	22-Feb-21	23-Feb-21	Zone 2A	Fine Filter Stockpile	Gradation	Noncompliant (oversize)
					Water Content	2.2 %
PSD-3-AMQ-FF	22-Feb-21	23-Feb-21	Zone 2A	Fine Filter Stockpile	Gradation	Noncompliant (oversize)
					Water Content	1.7 %
PSD-1-AMQ-CF	23-Feb-21	-	Zone 3	Coarse Filter Stockpile	Gradation/WC	Pending
PSD-2-AMQ-CF	23-Feb-21	-	Zone 3	Stockpile, Coarse Filter Stockpile	Gradation/WC	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-01	22-Feb-21	23-Feb-21	Zone 2A	Fine Filter Stockpile	Gradation	Noncompliant (oversize)
					Water Content	3.9 %
QA21-02	22-Feb-21	In Progress	Zone 4	South Esker Stockpile	Gradation, MC	In Progress

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 PHOTOGRAPH



Photograph 2008: Approx. Sta. 0+120 view looking west. KCG drilling holes through overburden in advance of blasting for key trench at the IVR Dyke



Photograph 2007: Coarse Filter stockpile, view looking W. Tetra Teck QC sampling Zone 3 material at existing stockpile.

13.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE February 24, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR FEBRUARY 24TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -30°C and -34°C, sunny.

2.0 HEALTH AND SAFETY

- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.
- Blast scheduled today for 12:45 at the IVR Dyke: Be clear of blast area and check in with supervisor prior to blast.
- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Stéphane Gionet, Jennifer Pyliuk, Laurier Collette, Marc-André Beaudet, Robert Howe, Jean-François Landreville, Jacques Proulx
- KCG: Sabin Larouche, Richard St-Jean
- QA: Brandon Gray
- QC: Doug Yokoyama

Health, Safety & Environment:

- Cold weather and high winds in the forecast, drive to changing road conditions and wear appropriate gear in the field. Stéphane noted, all employees should stay vigilant with mask wearing on site.
- KCG to finish cleanup of spill at the IVR Dyke and submit report to the environmental department by tomorrow.

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General Discussion:

- Blast for key trench at the IVR Dyke commenced on schedule this afternoon, KCG to continue with same procedure for tomorrow; continuing drilling holes for second blast scheduled for Friday at 12:45.
- Stéphane noted, area for improvement for KCG to have second drill rig on standby in the event the primary drill breaks down again. KCG confirmed parts for second drill rig to arrive tomorrow and will stage equipment at the IVR Dyke once repaired.
- KCG noted, significant delay in blast supervisor inspecting the blast area and giving KCG permission to return to work. AEM to follow up with blast supervisor to address concern.
- Review of plan from mine supervisor expected in the coming days.
- Evacuation for the blast went well, once again blast supervisor to coordinate blast guards for Friday's blast, supervisor will notify KCG if they need additional personal.
- Stéphane to install camera 10 minutes before next blast, will have direct communication with Keith to enter area and will notify supervisor when clear of the blast zone.
- QC/QA sampled Zone 3 coarse filter material from test pad at existing stockpile this afternoon and will begin splitting sample for gradation later today.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
0+000	0+120	No activity	-	-
0+120	0+130	Blast for key trench	-	Excavate blasted material
0+130	0+140	Drilling for key trench	-	Continue drilling for second blast
0+140	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between Stephane Gionet of AEM and QA representative on activities at the IVR Dyke. SG noted, blast to take place at 12:45 and QA representative to check in 1 hour prior to blast.
- Discussion between Jenifer Pyliuk of AEM and QA representative regarding QC daily report, JP noted, Tetra Tech will continue to send their own daily to select AEM employees.
- Discussion between Laurier Collette of AEM and QA representative regarding Zone 2A material specification and prepared foundation requirements at the IVR dyke. QA representative noted, through discussion between Marion Habersetzer (Golder) and Frédérick Bolduc (AEM) a revised material specification for the Zone 2A has been proposed (see section 12.0 for more details) and organics and ice-rich soils should be

removed during foundation preparation in accordance with technical specifications. Previously analyzed samples will be reviewed with the revised gradation limits.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	D8T Caterpillar dozer	-	-
Unit 005	Grader	-	-
TBD	Hammer Drill	Drilling blast holes for cut-off trench excavation	DS
TBD	450 Komatsu	Removing blast mats	DS

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- Took inventory of seacans containing bentonite near SANA laydown. 17 seacans were inventoried, it is estimated that these seacans contain a combined 295,000 kg of fine grained bentonite. 14 seacans were stacked on top of these seacans, all with labels marked “bentonite”
- Two stockpile samples collected of the Coarse Filter (150 mm minus) material. Loader brought to stockpile to sample deeper into stockpile. Sieve testing commenced on one of the samples
- Discarded stockpile samples of Coarse Filter (150 mm minus) collected from previous day as they were collected by hand
- Installed geophones near tank farm and tire shop in preparation for blast. Decommissioned geophones post-blast and delivered them to Dyno-Nobel personnel

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG conducted first blast for key trench at the IVR Dyke between Sta. 0+120 and 0+130, no visible ice lenses were observed in the exposed overburden material. ■ Drilling blast holes for key trench excavation between Sta. 0+130 and 0+140.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-1-AMQ-BNT	24-Feb-21	-	(Bentonite)	Seacan	Gradation/WC	Pending
PSD-1-AMQ-CF	24-Feb-21	-	Zone 3	Coarse Filter Stockpile	Gradation/WC	Pending
PSD-2-AMQ-CF	24-Feb-21	-	Zone 3	Coarse Filter Stockpile	Gradation/WC	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-02	22-Feb-21	24-Feb-21	Zone 4	South Esker Stockpile	Gradation	Compliant
					Water Content	9.9%
QA21-03	24-Feb-21	-	Zone 3	Coarse Filter Stockpile	Gradation/WC	Pending
QA21-04	24-Feb-21	-	(Bentonite)	Seacan	Gradation/WC	Pending

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

FC21-01: Zone 2 Material Specification

On AEM's request, Golder evaluated the finer filter material in terms of grain-size distribution. Despite the material available on site not fully meeting SNC's recommended gradation limits for Zone 2A material, past experience in dyke construction at the Meadowbank and Amaruq sites have shown good performance of this material. As such, provided that the fine filter material is well-graded, hard, sound and durable, and that placement and compaction are done to the satisfaction of the QA and QC supervisors, it is considered by Golder that this material is suitable for IVR Dike D-1 construction for Zones 2A and 2B. For gradation monitoring purposes, the QA and QC representatives will use the gradation limits that were successfully used for dike construction at Meadowbank (Golder project 11-1221-0035) as agreed with AEM. Moving forward, gradation test results for the fine filter material will be evaluated based on these limits and taking into account placement and compaction considerations.

Table 8: Zone 2A revised grain size specification.

Grain Size (mm)	Percent Passing by Mass (%)
20	100
12.7	50-100
4.76	23-68
0.425	0-20
0.075	0-15

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	24-Feb-21	Golder, AEM	Revised grain size specification for Zone 2A material.

13.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

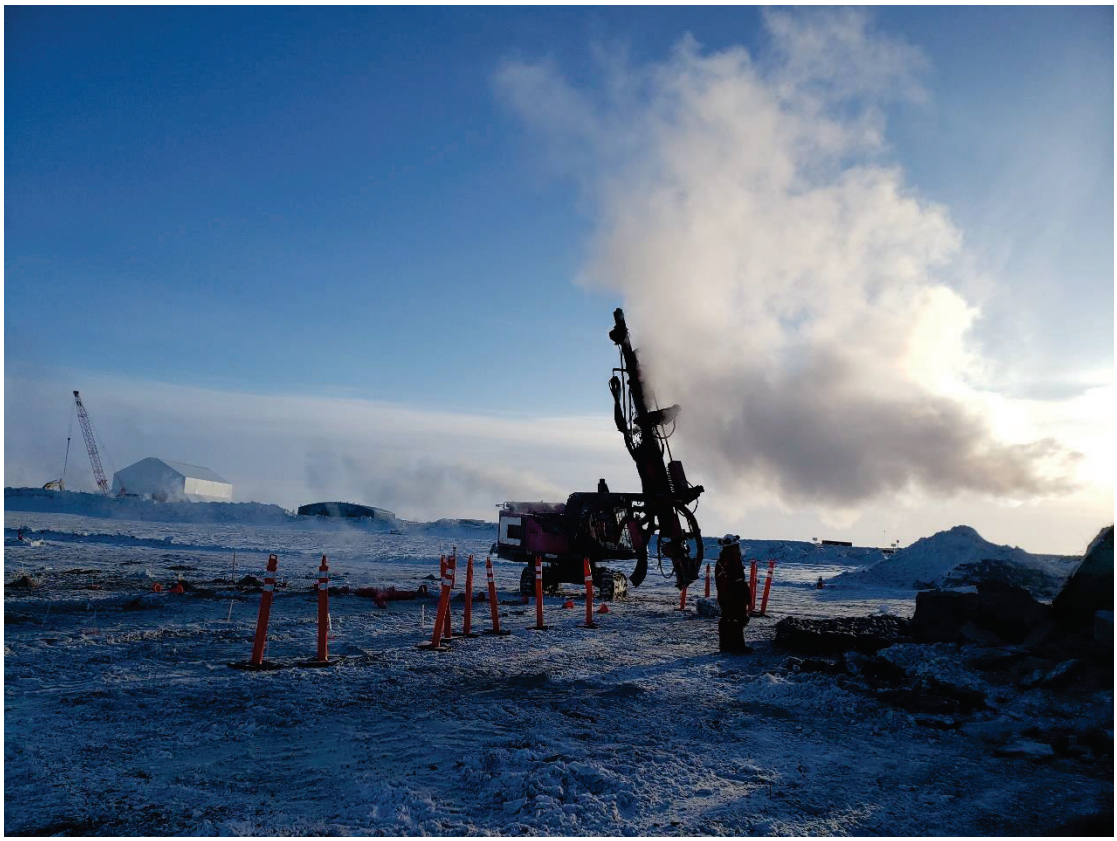
14.0 PHOTOGRAPH



Photograph 2010: Coarse filter stockpile, view looking E. KCG loader creating sample pad for Zone 3 material.



Photograph 2011: Approx. Sta. 0+130, view looking W. Overburden exposed from this afternoons blast, no visible ice lenses observed.



Photograph 2012: Approx. Sta. 0+135, view looking S. KCG continuing to drill holes for second blast.

15.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE February 25, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR FEBRUARY 25TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -36°C and -45°C, sunny.

2.0 HEALTH AND SAFETY

- Cold weather on site: Wear appropriate clothing and monitor for signs of frostbite.
- Blizzard conditions: Due to high winds and reduced visibility mine operations are travel on the Amaruq road are suspended till further notice. QA/QC were advised not to travel to lab located at KCG trailer.
- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Stéphane Gionet, Jennifer Pyliuk, Laurier Collette, Marc-André Beaudet, Jean-François Landreville,
- KCG: Sabin Larouche
- QA: Brandon Gray
- QC: Doug Yokoyama, Ryan Okkema

Health, Safety & Environment:

- Extreme cold weather in the forecast, wear appropriate gear in the field and take heat breaks as needed.
- KCG noted, spill from yesterday is removed and report has been sent to the environmental department.

General Discussion:

- Stéphane noted, tomorrow is his last day on site and cross-shift Anthony Stewart will be arriving in his place.

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- Second blast for key trench at the IVR Dyke now scheduled for Saturday afternoon at 12:45, to allow extra time for KCG to advance drilling and provide buffer for loading blast holes and placing blast mats. AEM to provide driller (for part of shift) to continue drilling activities at the IVR Dyke during night shift.
- KCG is currently heating second drill rig and confirmed parts will arrive tomorrow to begin making required repairs.
- KCG confirmed they are to have a compactor available for Saturday or Sunday and requested second packer from Meadowbank as back up. Stéphane to follow up and verify opportunity to acquire second packer.
- Stéphane noted, next hurdle will be removing overburden material and potentially treating exposed bedrock if encountered. KCG to have compressor ready and check condition of grout mix in seacan storage container. AEM noted, grout mix should be moved to fabrication shop to allow it to warm up prior to mixing.
- Path forward for tomorrow will include the following activities: complete drilling holes for second blast, load holes, instal geotextile and blast mats. KCG to arrange for nightshift employee to guard blast.
- QC representative requested additional water for soils laboratory.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+129	Excavation of blasted material	-	Finish foundation preparation
0+129	0+149	Drilling for key trench blasting	-	Load holes for blast
0+140	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between Stéphane Gionet of AEM and QA representative on activities at the IVR Dyke. SG noted, due to the blizzard conditions the only activity to occur at the IVR Dyke this morning will be to drilling for second blast.
- Discussion between Laurier Collette of AEM and QA representative regarding additional Zone 4 material located at borrow sources Esker Pit 6 and 8. QA/QC to arrange for visit to potential borrow sources to sample proposed Zone 4 material.

- Discussion between Jean-François Landreville of AEM and QA representative regarding as-built survey data, JF noted AEM can produce break lines of constructed surface to be used in as-built report.

Follow up from discussion on February 24, 2021:

- *Through discussion between Marion Habersetzer (Golder) and Frédérick Bolduc (AEM) a revised material specification for the Zone 2A has been proposed (see section 12.0 for more details) and organics and ice-rich soils should be removed during foundation preparation in accordance with technical specifications. Previously analyzed samples will be reviewed with the revised gradation limits.*
  - Further discussion regarding foundation preparation requirements to occur during meeting scheduled for Wednesday March, 4th.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	D8T Caterpillar dozer	-	-
Unit 005	Grader	-	-
TBD	Hammer Drill	Drilling blast holes for cut-off trench excavation	DS
17-0302	Excavator	Mucking blast area from 0+117 to 0+129	DS

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- Blizzard conditions resulted in closure of Amaruq Road and suspension of mine operations. Stéphane assessed condition of weather and road access to lab and recommended that lab testing be delayed until conditions improve
- Finished sieve on bentonite and one coarse filter sample, sieve results were compliant. Started sieve analysis on second coarse filter sample.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG excavated blasted material from first blast for key trench at the IVR Dyke between Sta. 0+117 and Sta. 0+129, no visible ice lenses were observed in excavation cut and bottom of key trench was observed to founded on till (inferred). ■ Drilling blast holes for key trench excavation between Sta. 0+129 and 0+149.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-1-AMQ-BNT	24-Feb-21	25-Feb-21	(Bentonite)	Seacan	Gradation	Compliant
					Water Content	14.7%
PSD-1-AMQ-CF	24-Feb-21	25-Feb-21	Zone 3	Coarse Filter Stockpile	Gradation	Compliant
					Water Content	8.1%
PSD-2-AMQ-CF	24-Feb-21	-	Zone 3	Coarse Filter Stockpile	Gradation/WC	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-03	24-Feb-21	-	Zone 3	Coarse Filter Stockpile	Gradation/WC	Pending
QA21-04	24-Feb-21	-	(Bentonite)	Seacan	Gradation	Compliant
					Water Content	14.8 %

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	24-Feb-21	Golder, AEM	Revised grain size specification for Zone 2A material.

13.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

14.0 PHOTOGRAPH



Photograph 2013: Approx. Sta. 0+115 view looking E, key trench excavation from first blast between Sta. 0+117 and Sta. 0+129.



Photograph 2014: Approx. Sta. 0+110 view looking NE, Komatsu 450 excavator moving blast mats.

15.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE February 26, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR FEBRUARY 26TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -40°C and -45°C, sunny.

2.0 HEALTH AND SAFETY

- Extreme cold weather warning on site: wear appropriate clothing and monitor for signs of frostbite, take warm up breaks as required.
- Coactivity at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

- No daily meeting occurred on Friday, February 26th.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+129	No activity	-	Finish foundation preparation
0+129	0+149	Installing geotextile and blast mats	-	Blast scheduled for Saturday at 12:45

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0+149	0+189	Drilling for key trench blasting	-	Fill holes and geotextile and blast mats.
0+189	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between Stéphane Gionet of AEM and QA representative regarding QA/QC site truck, SG noted, truck unable to start this morning, AEM to have personnel get truck back up and running this afternoon.
- Discussion between Anthony Steward, Laurier Collette and Jean-François Landreville of AEM and QA/QC representatives regarding project status and update:
  - JF noted, KCG is almost done drilling for third key trench blast at the IVR Dyke and will hold off on drilling fourth cut pending results of tomorrow blast. LC added, KCG to have personnel on tonight's nightshift to guard blast area.
  - QA/QC representatives discussed grain size testing requirements of Zone 2B and test strip required at the start of placement.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	D8T Caterpillar dozer	-	-
Unit 005	Grader	-	-
TBD	DX800 Drill	Drilling blast holes for cut-off trench excavation	DS/NS
17-0302	PC450 Komatsu Excavator	Placing blast mats between at IVR Dyke	DS
TBD	50 Ton Dump Truck x 3	-	-

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- Completed the second coarse filter sample, sieve result was marginally compliant.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG completed drilling holes for second key trench blast and installed geotextile and two layers of blasts mats at the IVR Dyke between Sta. 0+129 and Sta. 0+149. ■ KCG continued drilling blast holes for third key trench excavation between approx. Sta. 0+149 and Sta. 0+189.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-2-AMQ-CF	24-Feb-21	26-Feb-21	Zone 3	Coarse Filter Stockpile	Gradation	Compliant
					Water Content	8.3%

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-03	24-Feb-21	26-Feb-21	Zone 3	Coarse Filter Stockpile	Gradation	Compliant

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	To be determined following further discussion with AEM.

13.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

14.0 PHOTOGRAPH



Photograph 2015: Approx. Sta. 0+130 view looking SE, CAT excavator placing blasts mats over geotextile in preparation for second blast scheduled for tomorrow.



Photograph 2016: Approx. Sta. 0+140 view looking E, KCG drilling holes for third key trench blast.

15.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE February 27, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR FEBRUARY 27TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -35°C and -42°C, sunny.

2.0 HEALTH AND SAFETY

- Extreme cold weather warning on site: wear appropriate clothing and monitor for signs of frostbite, take warm up breaks as required.
- Blast scheduled today for 12:45 at the IVR Dyke: Be clear of blast area and check in with supervisor prior to blast.
- Coactivity at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Laurier Collette, Jean-François Landreville,
- KCG: Sabin Larouche
- QA: Brandon Gray
- QC: Doug Yokoyama, Ryan Okkema

General Discussion:

- Anthony of AEM, surface from second blasts appears to have more back break but will be verified once overburden material is excavated from key trench.
- KCG to complete drilling remaining holes for third key trench blast and start excavating blasted overburden material.
- Anthony of AEM noted a method for access into the trench will need to be created for required inspections, survey and bedrock foundation preparation activities.

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- 7 employees from KCG scheduled to start nightshift on Monday, March 1st, KCG noted there is opportunity to defer labour to pit operations to avoid stand by time.
- KCG is still waiting on getting smooth drum compactor working, Sabin to check in with Meadowbank site services to confirm availability of second compactor.
- Liner team to arrive on site Friday, March 5th, KCG noted they will not be ready for liner installation.
- Anthony of AEM, drill logs from first and third cuts indicate bedrock will likely be encountered in key trench, still waiting to review logs from second blast.
- AEM noted target is to have blasting completed in 3 weeks while Patricia Lim of Dyno is scheduled to be on site. AEM continuing to work with Dyno to reduce blast mats to a single layer.
- Outlook for the coming days; load holes for third key trench blast and excavate overburden material from second blast tomorrow, blast on Monday at 12:45, excavate blasted material Tuesday. AEM to make decision on drill pattern for fourth cut once blasted overburden material is excavated.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+129	No activity	-	Finish foundation preparation
0+129	0+149	Blasting for key trench and removing blast mats	-	Excavate blasted overburden material
0+149	0+189	Drilling remaining holes for key trench	-	Fill holes and install geotextile and blast mats.
0+189	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

■ Anthony Stewart of AEM and QA representatives discussed arrival of Shai Spilberg on Friday, March 5th.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	D8T Caterpillar dozer	-	-
Unit 005	Grader	-	-
TBD	DX800 Drill	Drilling blast holes for cut-off trench excavation	DS/NS
17-0302	PC450 Komatsu Excavator	Removing blast mats between 0+129 to 0+149	DS
TBD	50 Ton Dump Truck x 3	-	-

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- Attempted to drive to Esker #6 to take a sample. Access road had excess snowdrifts accumulated. As such, it was deemed unsafe to proceed until Site Services could clear the access
- Installed seismographs near tank farm and tire shop in preparation for blast. Decommissioned after blast and returned to engineering department

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ AEM conducted second blast for key trench between approx. Sta. 0+129 and Sta. 0+149. ■ KCG removed blasts mats between Sta. 0+129 and Sta. 0+149 and completed drilling holes for third key trench.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment

-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	To be determined following further discussion with AEM.

13.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

14.0 PHOTOGRAPH



Photograph 2017: Approx. Sta. 0+150 view looking NE, KCG drilling remaining for third key trench blast.



Photograph 2018: Approx. Sta. 0+140 view looking E, CAT excavator working to remove blast mats over second key trench blast between Sta. 0+129 and Sta. 0+149.

15.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE February 28, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR FEBRUARY 28TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -28°C and -31°C, sunny.

2.0 HEALTH AND SAFETY

- Weekly safety meeting: Four fatal hazards on construction sites; electrocution, falls, struck by and caught in.
- Blizzard conditions: Due to high winds and reduced visibility mine operations and travel on the Amaruq road suspended till further notice.
- Blast scheduled today for 12:45 in the pit: Be clear of blast area and check in with supervisor prior to blast.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Laurier Collette, Jean-François Landreville,
- KCG: Sabin Larouche
- QA: Brandon Gray
- QC: Doug Yokoyama, Ryan Okkema

General Discussion:

- KCG completed drilling third cut for key trench during night shift, unable to load holes during dayshift due to road shutdown for emulsion truck.
- KCG requested to reschedule tomorrows blast to Tuesday at 00:45. AEM to follow up and verify possibility of midnight blast.
- AEM, initial observation of cut from second blast look good, side walls near vertical. AEM received as built from KCG will review momentarily. AEM they will wait until third cut is excavated before verifying timing of fourth blast however, timing will not have impact on drill pattern.

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- On request of AEM fourth blast for key trench will be maintained at 40 metres, double blast mats still in effect. KCG noted longest blast length with double blast mats is 40 meters.
- KCG to have packer running by tomorrow, still following up on obtaining second packer from Meadowbank.
- Linear team still set in to arrive on Friday March 5th, AEM looking into rescheduling arrival to Monday March 8th.
- KCG confirmed nightshift to start Monday March 1st, noted QC will not be required for first few days as there will be no scheduled placement of material at the IVR Dyke
- KCG noted, loader with scale to be used in mixing fine filter and bentonite material at the mixing pad. AEM to run numbers and verify target percentage for mix ratio to account for bentonite loss during mixing and transport. QA representative also noted expiry time for mixed batch is 24 hours.
- KCG to provide water for QA/QC soils lab.
- AEM to follow up with QC's arrival of silica sand for sand cone testing on site.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+129	No activity	-	Finish foundation preparation
0+129	0+149	Excavate blasted overburden material	-	Continue excavating overburden material
0+149	0+189	No activity	-	Fill holes and install geotextile and blast mats.
0+189	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA/QC representatives discussed high winds and poor visibility on site causing temporary shutdown of work at the IVR Dyke.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	D8T Caterpillar dozer	-	-
TBD	DX800 Sandvik Drill	Drilling pattern #3 between 0+149 to 0+189	NS
13-0301	3450 Caterpillar Excavator	Removing blast mats and excavating between 0+129 to 0+149	DS
17-0302	PC450 Komatsu Excavator	-	-
1518	773F Haul Truck (50 ton)	Hauling excavated material from cut-off trench	DS
1536	773F Haul Truck (50 ton)	Hauling excavated material from cut-off trench	DS

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- No Q.C. activities completed today due to inclement weather conditions.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG partly excavated blasted overburden for key trench between Sta. 0+129 and Sta. 0+149. Due to high winds and poor visibility operations suspended in the afternoon.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	To be determined following further discussion with AEM.

13.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

14.0 PHOTOGRAPH



Photograph 2019: Approx. Sta. 0+150 view looking W, status of excavation from second cut for key trench excavation.



Photograph 2020: Approx. Sta. 0+150 view looking E, holes drilled in advance of third blast for key trench construction.

15.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 1, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 1ST, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -27°C and -33°C, sunny.

2.0 HEALTH AND SAFETY

- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.
- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Laurier Collette, Jean-François Landreville, Jennifer Pyliuk
- KCG: Bruno Cote, Danny Pageau
- QA: Brandon Gray
- QC: Doug Yokoyama, Ryan Okkema

General Discussion:

- AEM noted, outlook for weather in the coming days looks positive and manpower is gearing up for construction this week.
- KCG still waiting to have packer operational and have not verified opportunity to acquire second packer located in Meadowbank. In addition, compressor, and blower pipe ready however, still waiting to verify opportunity for back up compressor.
- Foundation preparation for key trench to start tomorrow following third blast. Blast time to be verified, AEM looking to blast sooner however will proceed at 12:45 if unable to coordinate early blast time.
- Linear team scheduled to arrive Monday, March 8th and will need real estate to start installing LLDPE.
- AEM noted, during nightshift QC representative will be under the supervision of KCG supervisor.

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4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+129	No activity	-	Finish foundation preparation
0+129	0+149	Excavated blasted overburden material	-	Finish foundation preparation
0+149	0+189	Filled holes and installed geotextile and blast mats.	-	Blast tomorrow
0+189	0+229	Started drilling holes for blast pattern	-	Continue drilling for fourth key trench blast
0+229	0+520			

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between AEM and QA representative regarding RFIs 001 and 004, AEM noted approval for RFIs expected in the coming days. In addition, AEM noted in respect to RFI 002 (change to geometry and location of liner joint in key trench) care will be taken to avoid puncture to linear at hinge point and will maintain 0.25 m FFAB thickness along downstream side.
- Discussion between AEM and QA representative regarding weekly report. AEM requested a revised template be used for the weekly report and should be submitted by end of week moving forward. Golder will discuss internally and provide an answer.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	D8T Caterpillar dozer	-	-
TBD	DX800 Sandvik Drill	-	-

13-0301	3450 Caterpillar Excavator	Excavating between 0+129 to 0+149	DS
17-0302	PC450 Komatsu Excavator	-	-
1518	773F Haul Truck (50 ton)	Hauling excavated material from cut-off trench	DS
1536	773F Haul Truck (50 ton)	-	DS

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- Completed inventory of accessible seacans of bentonite
- Took sample of esker material and conducted single point proctor while frozen

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG excavated blasted overburden for key trench between Sta. 0+129 and Sta. 0+149. ■ Dyno loaded blast pattern between Sta. 0+149 and Sta. 0+189. KCG proceeded to install geotextile and blast mats over area in preparation for tomorrows blast.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	-	Zone 4	West Esker Stockpile	Frozen single point modified proctor	Pending
					Thawed single point modified proctor	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	To be determined following further discussion with AEM.

13.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

14.0 PHOTOGRAPH



Photograph 2021: Approx. Sta. 0+120 view looking NE, KCG excavating blasted overburden material from second blast for key trench.



Photograph 2022: Approx. Sta. 0+170 view looking W, Dyno loading drill pattern for third key trench blast.



Photograph 2022: Approx. Sta. 0+125 view looking E, blast mats installed over drill pattern in preparation for tomorrows blast.

15.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 2, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 2ND, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -33°C and -38°C, sunny.

2.0 HEALTH AND SAFETY

- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.
- Blast scheduled today for 12:45 at the IVR Dyke: Be clear of blast area and check in with supervisor prior to blast.
- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Jean-François Landreville, Jennifer Pyliuk
- KCG: Bruno Cote, Danny Pageau
- QA: Brandon Gray
- QC: Chantal Pawlychka, John Carnegie

General Discussion:

- KCG to start excavating overburden material from todays blast and begin foundation preparation for key trench between Sta. 0+129 and Sta. 0+149 (second blast).
- KCG, second drill rig is being heated today and should be operational tomorrow. KCG also noted, zoom boom is broken and will be unable to access pallets of bentonite in seacans. AEM to follow up with mine on availability of forklift for tomorrow.
- KCG to continue drilling for key trench during nightshift, AEM emphasised the need to monitor drill rig efficiency and it being the critical path for blasting on time, KCG needs to be able to drill next blast pattern within 18 hours of previous blast to maintain schedule.

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- AEM noted, KCG to have the same capacity during dayshift and nightshift and must be able to depend on nightshift in preparing foundation for placement on dayshift.
- KCG to calibrate loader bucket for FFAB trial mix scheduled at 7:00 AM tomorrow, trial to confirm mix ratio and procedure used in mixing fine filter and bentonite material in advance of Zone 2B placement. In addition, test strip to be constructed with FFAB material, QC to use PNG for density testing trials.
- Moving forward if KCG has problems with equipment AEM to be notified as soon as possible.
- 10-tonne vibrating smooth drum roller from Meadowbank has arrived on site and is ready for use.
- KCG noted, equipment for grout mix currently in seacan needs to be verified by AEM.
- AEM, access needs to be created along first key trench cut to allow access for QA/QC personnel and 10-tonne vibrating smooth drum roller.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+129	No activity	-	Finish foundation preparation
0+129	0+149	No activity	-	Finish foundation preparation
0+149	0+189	Blasted for key trench, removing blast mats	-	Continue excavating overburden material
0+189	0+229	Drilling holes for blast pattern	-	Continue drilling for fourth key trench blast
0+229	0+520	-	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between AEM and QA/QC representatives regarding FFAB trial mix and test pad scheduled for tomorrow. QA/QC to determine mixing ratio for FFAB and QC to have PNG ready for density testing trials to take place at the mixing plant. In addition, QC to verify remaining quantities of bentonite on site.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	D8T Caterpillar dozer	-	-
TBD	DX800 Sandvik Drill	Drilling pattern #4 between 0+189 and 0+239	DS
13-0301	3450 Caterpillar Excavator	Excavating overburden material from second blast and removing blast mats from 0+149 to 0+189	-
17-0302	PC450 Komatsu Excavator	Removing blast mats from 0+149 to 0+189	DS
1518	773F Haul Truck (50 ton)	Hauling excavated material from cut-off trench	DS
1536	773F Haul Truck (50 ton)	-	-

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- Calibrated 6” proctor mold.
- Completed frozen esker single point modified proctor. Results to be finalized and sent out tomorrow.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Dyno completed blast for key trench between Sta. 0+149 and Sta. 0+189, KCG proceeded to remove blast mats between stations. ■ KCG continued drilling for key trench blast between Sta. 0+189 and Sta. 0+229.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	-	Zone 4	West Esker Stockpile	Frozen single point modified proctor	Pending
					Thawed single point modified proctor	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	To be determined following further discussion with AEM.

13.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

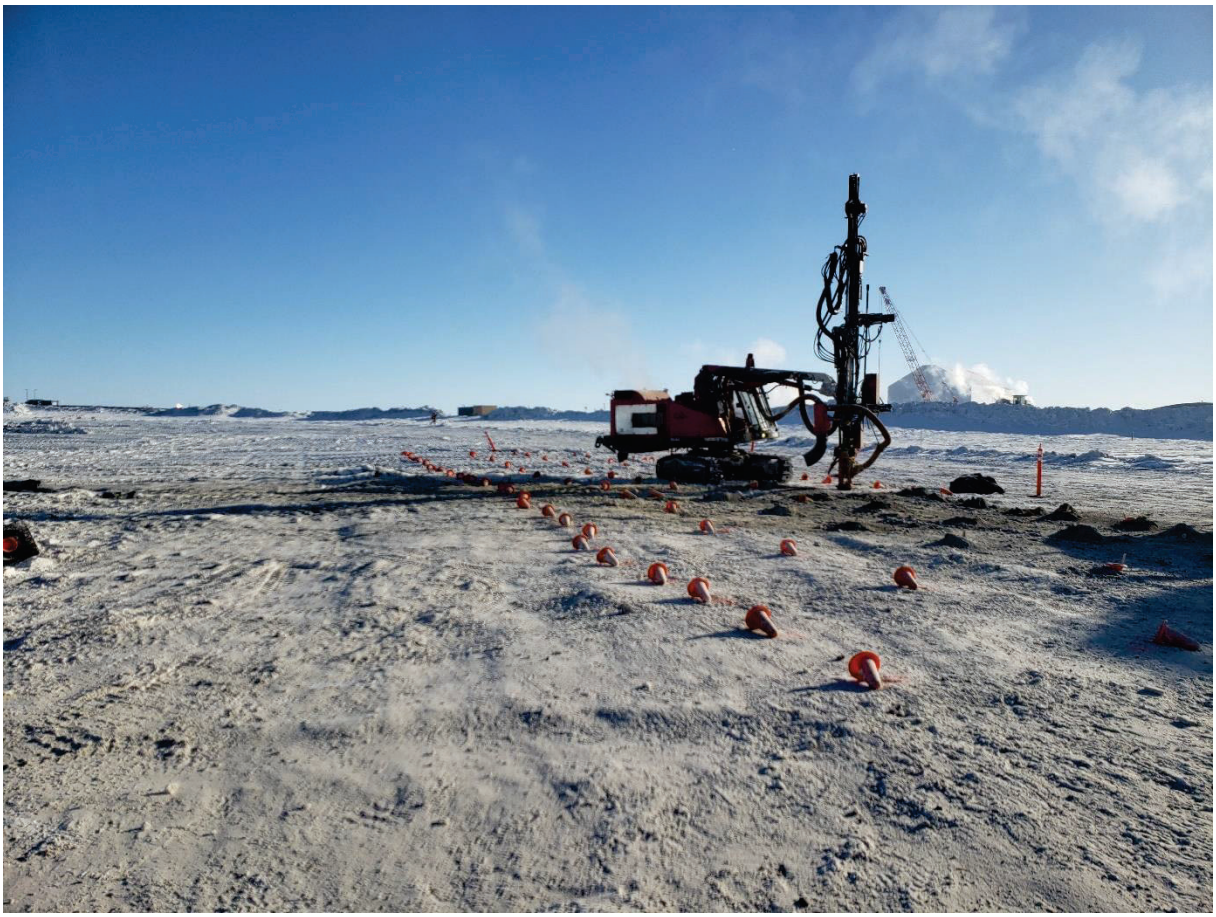
14.0 PHOTOGRAPH



Photograph 2023: Approx. Sta. 0+170 view looking E, KCG drilling pattern for fourth key trench blast at the IVR dyke.



Photograph 2024: Approx. Sta. 0+145 view looking E, CAT excavator removing blast mats at the IVR Dyke.



Photograph 2025: Approx. Sta. 0+200 view looking E, KCG continuing to drill holes for fourth key trench blast.

15.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 3, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 3RD, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -19°C and -30°C, sunny. Proceeded

2.0 HEALTH AND SAFETY

- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.
- Blast scheduled today for 12:45 in the Open Pit: Be clear of blast area and check in with supervisor prior to blast.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Jean-François Landreville, Jennifer Pyliuk, Sébastian Gionet
- KCG: Bruno Cote, Danny Pageau
- QA: Brandon Gray
- QC: Chantal Pawlychka,

Health, Safety & Environment:

- AEM noted with new employees arriving to site work cards and JHAs are a big focus.

General Discussion:

- AEM, fourth blast sequence is loaded, and geotextile and blast mats are to be installed tomorrow morning.
- KCG preparing foundation of key trench between Sta. 0+129 and Sta. 0+160 and will continue to drill holes between Sta. 0+229 and Sta. 0+275, in advance of fifth blast. Currently 47 out of 112 holes have been drilled for fifth blast.

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- KCG noted, back up compressor is available but can only run 1 blow pipe at a time while working in the trench.
- KCG to have forklift available for tomorrow to access bags of bentonite at the mixing pad.
- QC representative noted, FFAB trial has been mixed and will provide bentonite mix ratios tomorrow, FFAB and fine filter test strip currently on-going but will be completed by end of day.
- QA representative, sample of foundation soil currently in oven and awaiting results for ice and water content analysis.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+129	No activity	-	To be kept open as free face for blasting
0+129	0+160	Foundation preparation for key trench	-	Start placement of Zone 2B material
0+160	0+189	Excavating overburden material	-	Start foundation preparation for key trench
0+189	0+229	Drilling holes at tie in	-	Loading holes for blast and install geotextile and blast mats
0+229	0+275	Drilling holes for blast pattern	-	Finish drilling for 5th blast and begin loading/tie
0+275	0+520	-	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between AEM and QA/QC representative, QA representative to send out email confirming FFAB mix ratio and QC to verify quantity of bentonite on site.
- Conference call with AEM and Golder team regarding the following construction items:
  - Foundation preparation in the rockfill dike footprint: the specification require excavation down to ice-poor, competent material. Given the sensitivity to settlement and deformation of the upstream part of the dike where the LLDPE geomembrane will be installed, foundation in key trench and directly underneath upstream slope with must be excavated to ice-poor till. AEM proposed to remove ice and snow on the

foundation downstream of the liner limit, without stripping frozen organics, even though this poses a risk of thaw-induced settlement in this area of the dike (composed of rockfill only). Golder's opinion is that this is acceptable, since it will avoid disturbing excessively the frozen ground for permafrost aggradation and provided that AEM is ready to repair the rockfill shell as needed in the future. This adjustment constituted field change FC21-02 (see Section 12.0).

- Fine filter material: the material sampled on site (0-25 mm) is coarser than the specifications (0-19 mm). However, a sampling bias exists due to the sampling at the surface of the stockpile. Golder recommended to re-sample the fine filter material after mixing of the stockpile with a loader to gather more representative samples and re-evaluate the gradation. Based on current results, Golder's opinion is that the material is still adequate as a geosynthetics bedding and is compatible with the coarse filter in terms of grain-size distribution. The coarser material may however be unsuitable as is for the low-permeability zones (fine filter amended with bentonite, zone 2B). Golder suggested to increase the bentonite content if the material is not compliant in terms of gradation. AEM to make a final decision upon reception of additional lab results.
- A separate document supporting the discussion held between AEM and Golder with recommendations has been issued separately (21452873-1601-PPT_RevA, Golder, 2021).

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	CAT CS76 Roller	Compacted test pads FFAB and fine filter	DS
TBD	DX800 Sandvik Drill	Drilling pattern #5 between 0+229 to 1+275	DS
13-0301	3450 Caterpillar Excavator	Bentonite transport and mixing (1hr)	DS
17-0302	PC450 Komatsu Excavator	Removing dental cleaning cuttings from key trench	DS
TBD	WA500 Komatsu Loader	Loading FFAB/ fine filter material for test pads	DS
1536	773F Haul Truck (50 ton)	-	-

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- Observed bentonite and fine filter trial mix ratio (approx. 8% bentonite) in stockpile yard for the FFAB material to be used in key trench. Waited from 8:30 to 9:30 for all equipment to arrive for mixing.

- Observed the dental cleaning in the key trench in preparation for signoff, took samples back to lab for tests.
- Took four samples of FFAB to be tested in the lab: 1 proctor, 3 particle size distribution test, swell tests.
- Took one sample of the fine filter material for particle size distribution test
- Completed FFAB test pad at stockpile yard in front of bentonite seacans. Took density readings after every 2 passes with CAT CS76 compact roller, up to 8 passes.
- Completed fine filter test pad at stockpile yard. Took density readings after every 2 passes with the CAT CS76 compact roller, up to 8 passes.
- Oven drying 3 samples of FFAB material in order to determine a swell ratio for bentonite.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG continued drilling for key trench blast at fourth cut tie in and between Sta. 0+229 and Sta. 0+275. ■ KCG prepared foundation for key trench between Sta. 0+129 and Sta. 0+149.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	-	Zone 4	West Esker Stockpile	Frozen single point modified proctor	Complete
					Thawed single point modified proctor	Pending
PSD-1-AMQ-FFAB	3-Mar-2021	-	Zone 2B	Mixing Pad	Gradation/WC	Pending
PSD-2-AMQ-FFAB	3-Mar-2021	-	Zone 2B	Mixing Pad	Gradation/WC	Pending
PSD-3-AMQ-FFAB	3-Mar-2021	-	Zone 2B	Mixing Pad	Gradation/WC	Pending
MDR-1-AMQ-FFAB	3-Mar-2021	-	Zone 2B	Mixing Pad	Proctor	Pending
PSD-3-AMQ-FF	3-Mar-2021	-	Zone 2A	Fine Filter Stockpile	Gradation/WC	Pending
GWC-1-AMQ-KT	3-Mar-2021	-	Foundation	Sta. 0+145, O/S 0 m	Gradation/WC	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-05	3-Mar-2021	-	Zone 2A	Mixing Pad	Gradation/ Proctor/WC	Pending

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-06	3-Mar-2021	-	Zone 2B	Fine Filter Stockpile	Gradation/WC	Pending
QA21-07	3-Mar-2021	-	Foundation	Sta. 0+145, O/S 0 m	WC/IC	Pending

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-02	Foundation preparation in rockfill shell footprint	03/03/2021	Requested by AEM. Favourable opinion from Golder.	Key trench and foundation area within the vertical limits of the LLDPE liner-bearing slope must be excavated to ice-poor soil or bedrock. Frozen organics can be left in place in the foundation in rockfill shell footprint downstream of the liner limit, provided snow, ice and loose materials are removed.
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.

13.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

14.0 PHOTOGRAPH



Photograph 2023: Approx. Sta. 0+150 view looking W, KCG cleaning foundation of key trench at the IVR dyke.



Photograph 2024: Approx. Sta. 0+230 view looking N, KCG continuing to drill holes for fifth key trench cut.



Photograph 2025: Test pad for fine filter Zone 2A material.

15.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 5, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 5TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -19°C and -30°C, sunny.

2.0 HEALTH AND SAFETY

- High wind speeds in the forecast: reduced visibility, apply caution when driving and wear appropriate clothing.
- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Sébastian Gionet
- KCG: Bruno Cote, Nicolas Tremblay
- QA: Brandon Gray
- QC: Chantal Pawlychka

Health, Safety & Environment:

- AEM noted new employees arriving to site should complete e-learning in advance to be added to SOP and orientation training. In addition, all relevant JSAs to be reviewed and signed off on by new employees on site.

General Discussion:

- KCG blasted for fourth cut this afternoon and is currently removing geotextile and blast mats, tie-in for fifth key trench blast will be completed by tomorrow morning.
- AEM noted, team to be more vigilant in monitoring excavation depth for base of key trench moving forward after QA/QC identified high spots in floor of excavation during the approval process.

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- KCG, second smooth drum roller is now operational and will mobilize equipment to the AEM yard.
- KCG to coordinate with mine operations for traffic management plan from the mixing pad to the IVR dyke.
- AEM requested KCG provide a more detailed description for equipment on LMAs moving forward to capture daily activities and stand by time.
- QA representative noted, QC to be present during mixing of FFAB material at the mixing pad to record material quantities and verify mixing procedure. In addition, QA approval is needed for all foundation approvals and when material changes occur during construction.
- QC representative working nightshift to check in with KCG supervisor prior to start of shift.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+130	No activity	-	To be kept open as free face for blasting
0+130	0+160	Placement of FFAB	-	Continue placement of FFAB
0+149	0+180	Foundation preparation for key trench	-	Start placement of FFAB
0+180	0+229	Blast, removing blast mats and geotextile	-	Excavate overburden material
0+229	0+275	Drilling holes for blast pattern	-	Finish drilling for 5th blast and begin loading/tie
0+275	0+520	-	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between AEM and QA representative regarding depth of excavation along floor of key trench between approx. Sta. 0+145 and Sta. 0+150. QA noted, elevation between stations did not satisfy the minimum 3.0 m excavation depth and will need to be cut down by 150 to 200 mm.
- Discussion between AEM and QA representative regarding survey of approved key trench foundation, AEM to provide survey once data is compiled.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
TBD	CAT CS76 Roller	-	-
TBD	DX800 Sandvik Drill	-	-
13-0301	3450 Caterpillar Excavator	Bentonite mixing	DS
17-0302	PC450 Komatsu Excavator	Removing dental cleaning cuttings from key trench	DS
TBD	WA500 Komatsu Loader	Loading FFAB/ fine filter material for FFAB material	DS
1536	773F Haul Truck (50 ton)	Transport FFAB to dike	DS
TBD	3450 Caterpillar Excavator	Removing blast matts	DS

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- Completed bentonite mix sample quantities for FFAB material, with a target of 8% bentonite. Sent to Golder QA to review and distribute.
- Completed walk-through of trench from station 0+129 to 0+159 in the morning. Area from 0+145 to 0+149 was too high (by approx. 8 inches) and was not at grade (3.0 m below ground surface).
- Set up the 2 seismographs for the blast at 12:45: unit 07 at dyke east end and unit 03 at dyke west end.
- Discussed working equipment used for FFAB mixing with Tony (AEM). Mixing process to be refined with less equipment (no excavator) for nightshift.
- Observed bentonite and fine filter trial mixing (approx. 8% bentonite) in stockpile yard for the FFAB material to be used in key trench (37 T) in the afternoon.
- Confirmed with survey that the high area (station 0+145 to 0+149) was at grade, after further excavation completed in the afternoon. Approved by Golder QA for foundation.
- Split 3 FFAB sieve samples. Put in oven to dry for nightshift to complete sieve.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Dyno completed blast for key trench between Sta. 0+189 and Sta. 0+229, KCG proceeded to remove blast mats between these stations. ■ KCG continued drilling for key trench between Sta. 0+229 and Sta. 0+275. ■ KCG removed approx. 200 mm of overburden between Sta. 0+145 and Sta. 0+150 to achieve design grade. ■ Key trench foundation was approved between Sta. 0+130 and Sta. 0+160.
Key trench backfill (Zone 2B)	■ KCG proceeded to start placing first 250 mm thick lift of FFAB between stations Sta. 0+130 and Sta. 0+160. The material is visually of good quality and well-graded. Lift not yet completed.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210304-DS	IVR Dyke	Sta. 0+130 to Sta. 0+160 (key trench)	4-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix) with small ice horizons (1 to 2 mm thick), considered ice-poor and competent.

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	-	Zone 4	West Esker Stockpile	Thawed single point modified proctor	Pending
PSD-1-AMQ-FFAB	3-Mar-2021	-	Zone 2B	Mixing Pad	Gradation/WC	Pending
PSD-2-AMQ-FFAB	3-Mar-2021	-	Zone 2B	Mixing Pad	Gradation/WC	Pending
PSD-3-AMQ-FFAB	3-Mar-2021	-	Zone 2B	Mixing Pad	Gradation/WC	Pending
MDR-1-AMQ-FFAB	3-Mar-2021	-	Zone 2A	Mixing Pad	Proctor	Pending
PSD-3-AMQ-FF	3-Mar-2021	-	Zone 2A	Fine Filter Stockpile	Gradation/WC	Pending
GWC-1-AMQ-KT	3-Mar-2021	-	Foundation	Sta. 0+140, OS 0 m	Gravimetric Water Content	4.3 %

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-05	3-Mar-2021	4-Mar-2021	Zone 2A	Mixing Pad	Gradation	Material is slightly too coarse but Golder recommends that it is acceptable provided that handling, transport and placement are done

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
						carefully to limit segregation of the particles
					Water Content	4.3 %
QA21-06	3-Mar-2021	4-Mar-2021	Zone 2B	Fine Filter Stockpile	Gradation	Material is slightly too coarse but Golder recommends that it is acceptable given that % of bentonite was increased to 8%, provided that handling, transport and placement are done carefully to limit segregation of the particles
					Water Content	5.4 %
QA21-07	3-Mar-2021	4-Mar-2021	Foundation	Sta. 0+145, O/S 0 m,	Water Content	18.8 %
					Ice Content	9.9 % (<10% and combined with field observation: considered ice-poor)

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

13.0 TABLE 8: LIST OF FIELD CHANGES.

ID	Item	Date	Acceptance	Description
FC21-02	Foundation preparation in rockfill shell footprint	03/03/2021	Requested by AEM. Favourable opinion from Golder.	Key trench and foundation area within the vertical limits of the LLDPE liner-bearing slope must be excavated to ice-poor soil or bedrock. Frozen organics can be left in place in the foundation in rockfill shell footprint downstream of the liner limit, provided snow, ice and loose materials are removed.
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.

14.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

15.0 PHOTOGRAPH



Photograph 2026: Approx. Sta. 0+160 view looking W, key trench excavation prepared between Sta. 0+130 and Sta. 0+160.



Photograph 2027: Approx. Sta. 0+140 view looking E, KCG starting to place first 250 mm lift of FFAB material (Zone 2B) along floor of key trench.



Photograph 2028: KCG producing FFAB material at the mixing pad.



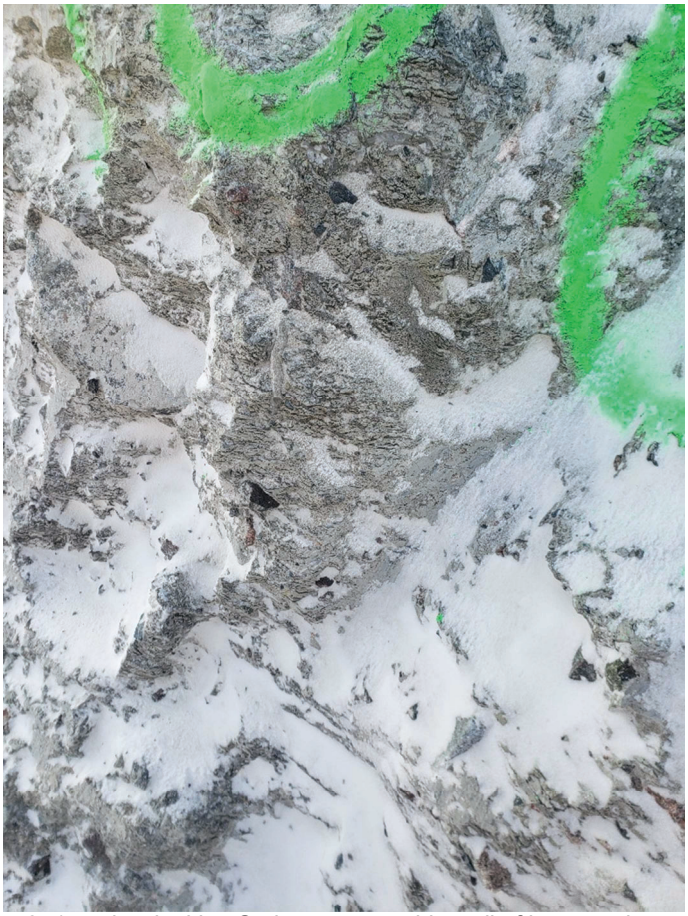
Photograph 2027: Approx. Sta. 0+185 view looking SE, CAT excavator removing blast mats at the IVR Dyke.



Photograph 2027: Approx. Sta. 0+140 view looking N, upstream side wall of key trench excavation small ice lenses (1-4 mm) observed.



Photograph 2027: Approx. Sta. 0+145 view looking S, downstream side wall of key trench excavation small ice lenses (1-2 mm) observed.



Photograph 2027: Approx. Sta. 0+155 view looking S, downstream side wall of key trench excavation small ice lenses (1-2 mm) observed throughout till overburden.

16.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 5, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 5TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -30°C and -34°C, sunny.

2.0 HEALTH AND SAFETY

- High wind speeds in the forecast: reduced visibility, apply caution when driving and wear appropriate clothing.
- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Sébastian Gionet, Yanick Hamel, Jerome Collard
- KCG: Bruno Cote, Nicolas Tremblay
- QA: Brandon Gray
- QC: Chantal Pawlychka

Health, Safety & Environment:

- AEM noted all employees who will be working at the IVR Dyke must review and sign off on JHAs.
- Liner crew scheduled for SOP training on Tuesday March 9th. Shai Spilberg scheduled for SOP training on Saturday March 13th.

General Discussion:

- KCG workplan; start placing third lift of FFAB material in key trench and continue foundation preparation between Sta. 0+200 and Sta. 0+220. AEM noted, with inclement weather KCG to protect work front using spare blast mats at the IVR Dyke.

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- Drilling at the IVR Dyke going well, KCG has 58 holes remaining to drill for sequence 6. AEM to verify drill pattern for sequence 7 as soon as possible
- KCG noted, smooth drum roller at the IVR Dyke is down and needs battery replaced, AEM noted second smooth drum roller in yard should be operational for use on nightshift.
- AEM engineering noted, thermistor to be installed 150 mm below second lift of FFAB material placed in the key trench at the IVR Dyke between Sta. 0+140 and Sta. 0+215.
- AEM, survey to verify lost quantity of fine filter material at the stockpile.
- QA representative noted, samples of foundation soil have been taken between Sta. 0+180 and Sta. 0+200. In addition, bedrock was observed in the key trench between Sta. 0+200 and Sta. 0+205, additional foundation preparation required to verify full extents.
- QC representative, opportunity to mix larger stockpile of FFAB material during production, KCG will try to produce larger batches so QC can be present during mixing and will provide tracking quantities for mix ratio to AEM.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+130	No activity	-	To be kept open as free face for blasting
0+130	0+180	Placement of FFAB	-	Continue placement of FFAB
0+180	0+200	Foundation preparation for key trench	-	Start placement of FFAB
0+200	0+229	No activity	-	To be kept open as buffer zone for blasting
0+229	0+275	Loading holes and installing geotextile and blast mats	-	Blast scheduled for Saturday at 12:45 PM
0+275	0+325	Drilling holes for blast pattern	-	Finish drilling for 6th blast and begin loading/tie in
0+325	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between AEM and QA representative regarding installation of thermistors at the IVR Dyke, Jerome Collard and Bruno Lessard will be doing the installation. QA representative noted, installation for horizontal thermistor will be required by early next week.
- Discussion between Golder and QA representative regarding horizontal part of linear past hinge point potentially being under ice rich till. Golder noted, the critical part is to ensure the hinge point itself is on ice-poor soil and having ice-rich soil underneath part of the liner extension is not likely to cause any damage to the liner system. QA representative noted, he will coordinate with AEM survey to verify extent of horizontal part of linear past hinge point on ice-rich soil.
- Discussion between QA and QC representatives regarding compaction effort following FFAB test pad. During testing of Zone 2B material an optimum density of 2000 kg/m^3 was achieved using 6 passes with a 10-ton smooth drum roller.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
CPT01	CAT CS76 Roller	Compacting of lifts in trench	DS
TBD	DX800 Sandvik Drill	Drilling of buffer zone (between zone 4 and 5)	DS
13-0301	3450 Caterpillar Excavator	Bentonite mixing	DS
17-0302	PC450 Komatsu Excavator	Removing dental cleaning cuttings from key trench	DS
17-0201	WA500 Komatsu Loader	Loading FFAB/ fine filter material for FFAB material	DS
1536	773F Haul Truck (50 ton)	Transport FFAB to dike	DS
TDB	773F Haul Truck (50 ton)	Transport FFAB to dike	DS
TBD	3450 Caterpillar Excavator	Removing blast matts	DS

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- Completed walk-through of trench from station 0+160 to 0+180 in the morning. Took QA/QC sample of foundation at station 0+170 and 0+180. Confirmed GWC < 30%.
- Approved foundation with Golder QA from stations 0+160 to 0+180 for FFAB placement.
- Monitored material placement in the trench. Base lift from station 0+130 to 0+180 was placed and packed. Another lift was placed (to 3.0 m depth from surface) but was not packed before end of day shift. Packer stopped working.
- Brought both seismographs from yesterdays zone 4 blast to AEM representatives.
- Observed bentonite and fine filter trial mixing (approx. 8% bentonite) in stockpile yard for the FFAB material to be used in key trench. Process refined to a loader and a zoom boom. Crew recorded the mass of materials used for each mix.
- Observed QA sampling at bottom of trench at stations 0+170, 0+180, 0+190, 0+200. Had excavator scrap bottom of trench to clean area, and then scrap the bottom of trench for sample. Visually observed material to be < 10% ice content. QA to perform gravimetric water content test.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG labourers continued cleaning foundation for key trench between Sta. 0+160 and Sta. 0+200. Bedrock was observed between approx. Sta. 0+200 and Sta. 0+205. Outside these stations, foundation is composed of frozen till. ■ KCG installed geotextile and blast mats between Sta. 0+229 and Sta. 0+275 for fifth key trench blast. ■ Key trench foundation was approved between Sta. 0+160 and Sta. 0+180.
Key trench backfill (Zone 2B)	■ KCG placed two lifts of FFAB between stations Sta. 0+130 and Sta. 0+180. The material is visually of good quality and well-graded. ■ Compaction of 250 mm lifts (#2) of FFAB with a 10-tonne smooth-drum compactor with vibration (6 passes) from Sta. 0+130 and Sta. 0+180 m.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210305-DS	IVR Dyke	Sta. 0+160 to Sta. 0+180 (key trench)	5-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix) with small ice horizons (1 to 2 mm thick), considered ice-poor and competent. A 100-150 mm ice rich lens was observed 2 m below existing ground along d/s and u/s side walls between Sta. 0+165 and Sta. 0+175. AEM survey to verify extent of linear over ice rich soil between stations prior to backfill of Zone 2A and Zone 3 material.

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	-	Zone 4	West Esker Stockpile	Thawed single point modified proctor	Pending
PSD-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Gradation/WC	Pending
PSD-2-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Gradation/WC	Pending
PSD-3-AMQ-FFAB	3-Mar-2021	-	Zone 2B	Mixing Pad	Gradation/WC	Pending

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2A	Mixing Pad	Proctor	Pending
PSD-3-AMQ-FF	3-Mar-2021	4-Mar-2021	Zone 2A	Fine Filter Stockpile	Gradation/WC	Pending
SWELL-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Pending
SWELL-2-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Pending
SWELL-3-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-08A	5-Mar-2021	5-Mar-2021	Foundation	Sta. 0+180, O/S 0 m,	Water Content	9.4 %
					Ice Content	5.2 % (ice-poor soil)
QA21-08B	5-Mar-2021	5-Mar-2021	Foundation	Sta. 0+180, O/S 0 m,	Water Content	41.2 % (not valid see Note 1)
					Ice Content	14 % (not valid see Note 1)
QA21-09	5-Mar-2021	-	Foundation	Sta. 0+190, OS -3 m	WC/IC	Pending

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-10	5-Mar-2021	-	Foundation	Sta. 0+200, OS -1 m	WC/IC	Pending

Note 1: Significant snow present in sample during testing, not representative of foundation conditions.

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

13.0 TABLE 8: LIST OF FIELD CHANGES.

ID	Item	Date	Acceptance	Description
FC21-02	Foundation preparation in rockfill shell footprint	03/03/2021	Requested by AEM. Favourable opinion from Golder.	Key trench and foundation area within the vertical limits of the LLDPE liner-bearing slope must be excavated to ice-poor soil or bedrock. Frozen organics can be left in place in the foundation in rockfill shell footprint downstream of the liner limit, provided snow, ice and loose materials are removed.
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.

14.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

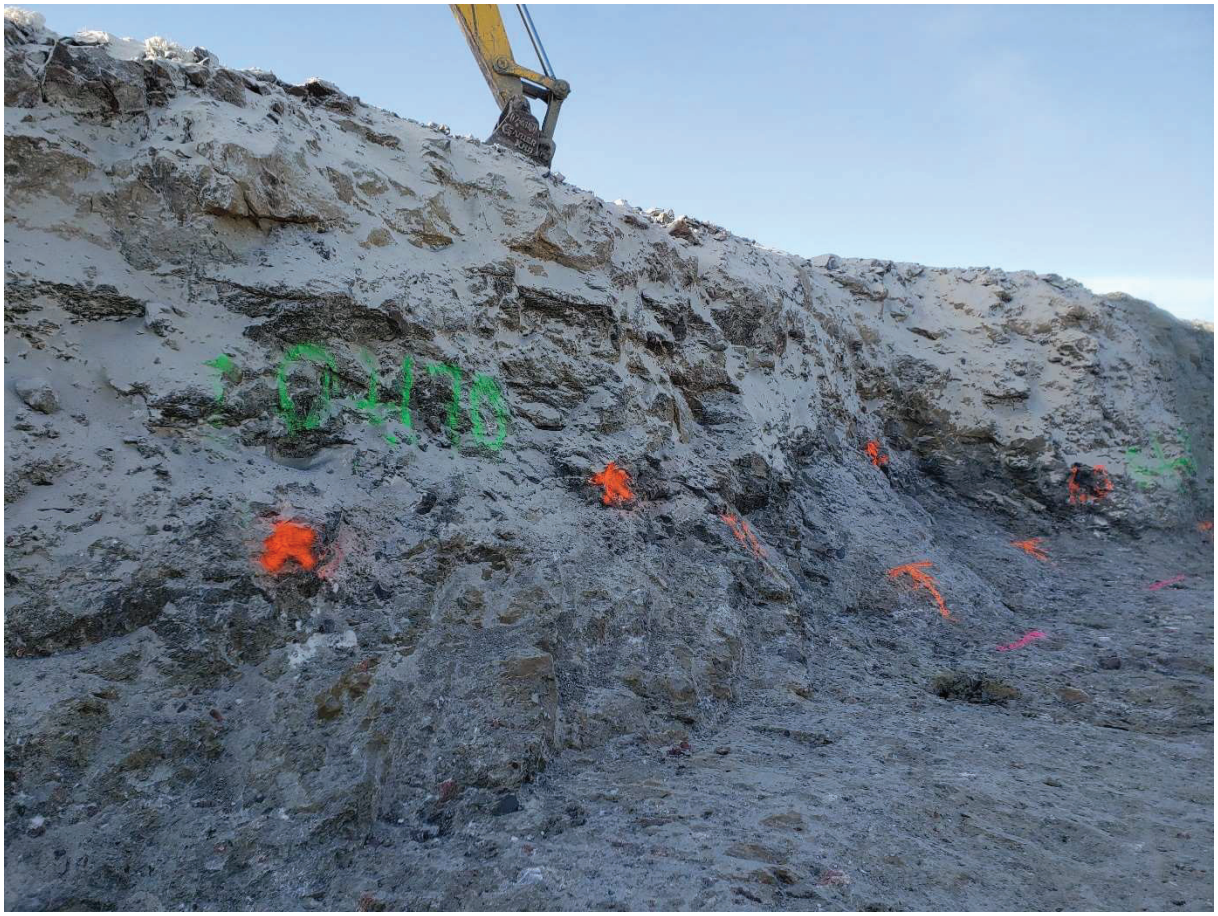
15.0 PHOTOGRAPH



Photograph 2032: Approx. Sta. 0+130 view looking E, CAT excavator placing FFAB material within footprint of key trench.



Photograph 2033: Approx. Sta. 0+190 view looking S, KCG labourers preparing foundation of key trench.



Photograph 2034: Approx. Sta. 0+170 view looking SW, orange stars highlight a 100-150 mm thick lens of fine-grained ice rich material along downstream sidewall of excavation.



Photograph 2035: Approx. Sta. 0+150 view looking SE, KCG compacting first placed lift of FFAB material.



Photograph 2036: Approx. Sta. 0+220 view looking E, CAT excavator placing blast mats for fifth key trench blast.



Photograph 2037: Approx. Sta. 0+190 view looking W, KCG compacting second placed lift of FFAB material.

16.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 6, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 6TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -18°C and -34°C, blizzard.

2.0 HEALTH AND SAFETY

- High wind speeds and blizzard conditions: Due to high winds and reduced visibility mine operations and travel on site roads are suspended till further notice.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Yanick Hamel
- KCG: Danny Pageau, Nicolas Tremblay
- QA: Brandon Gray
- QC: Chantal Pawlychka, John Carnegie

General Discussion:

- Weather has had a significant impact on construction at the IVR Dyke, weather outlook for the coming days looks poor and condition of key trench is unknown. AEM looking to reschedule liner team to arrive on Friday March 12th.
- Discussed opportunities to improve batching FFAB material at the mixing pad. AEM suggested anticipating required FFAB material for the day and producing larger stockpile in the morning, potential opportunity to add more seacans at mixing pad to facilitate process.
- Discussed over excavation along floor of key trench, KCG currently averaging a 3.3 m excavation depth from first two approved sections. QC to verify bentonite quantities and AEM survey to provide estimate for additional FFAB material based on over excavation depth to date. AEM to assess if there is sufficient bentonite on site to account for increased volume or look at opportunity to optimize targeted blast depth.
- KCG verified second compressor is available as back up.

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- QC representatives to verify quantity of sandbags in seacan on site.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+130	No activity	-	To be kept open as free face for blasting
0+130	0+180	No activity	-	Continue placement of FFAB
0+180	0+200	No activity	-	Start placement of FFAB
0+200	0+229	No activity	-	To be kept open as buffer zone for blasting
0+229	0+275	No activity	-	Blast rescheduled to Sunday at 12:45 PM
0+275	0+325	No activity	-	Begin loading/tie in
0+325	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between AEM and QA representative regarding code white on site, no travel on site until further notice.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization.

Unit ID	Equipment	Task Worked	Shift (DS/NS)
CPT01	CAT CS76 Roller	-	DS
TBD	DX800 Sandvik Drill	-	DS
13-0301	3450 Caterpillar Excavator	-	DS

17-0302	PC450 Komatsu Excavator	-	DS
17-0201	WA500 Komatsu Loader	-	DS
1536	773F Haul Truck (50 ton)	-	DS
TDB	773F Haul Truck (50 ton)	-	DS
TBD	3450 Caterpillar Excavator	-	DS

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

- None.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ No activity.
Key trench backfill (Zone 2B)	■ No activity.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 4: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 5 and Table 6 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	-	Zone 4	West Esker Stockpile	Single point modified proctor	Pending
PSD-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Gradation	Compliant, well graded with some coarse particles
					Water Content	Not Recorded
PSD-2-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Gradation	Compliant, well graded with some coarse particles
					Water Content	Not Recorded
PSD-3-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Gradation	Compliant, well graded with some coarse particles
					Water Content	Not Recorded
MDR-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2A	Mixing Pad	Single Point Proctor	1942 kg/m^3 @ 5.8 %MC (Uncorrected for oversize)
PSD-3-AMQ-FF	3-Mar-2021	4-Mar-2021	Zone 2A	Fine Filter Stockpile	Gradation	Complete (17 % oversize)
					Water Content	2.6 %
SWELL-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Pending
SWELL-2-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Pending

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
SWELL-3-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Pending
TS-1-AMQ-FFAB	-	4-Mar-2021	Zone 2B	Mixing Pad	Test Strip	2000 kg/m^3 @ 6 passes
TS-1-AMQ-FF	-	4-Mar-2021	Zone 2A	Mixing Pad	Test Strip	2000 kg/m^3 @ 6 passes

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-09	5-Mar-2021	-	Foundation	Sta. 0+190, OS -3 m	WC/IC	Pending
QA21-10	5-Mar-2021	-	Foundation	Sta. 0+200, OS -1 m	WC/IC	Pending

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 7: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of Field Changes

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.

13.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

14.0 PHOTOGRAPH

No activity due to blizzard conditions on site.

15.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 7, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 7TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -6°C and -18°C, blizzard.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Blast scheduled today for 12:45 at the IVR Dyke and Open Pit: Be clear of blast area and check in with supervisor prior to blast.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Yanick Hamel
- KCG: Bruno Cote, Danny Pageau, Nicolas Tremblay
- QA: Brandon Gray
- QC: Chantal Pawlychka

Health, Safety & Environment:

- Discussed incident that occurred during yesterday's blizzard, seacan stacked at the mixing pad fell off, no equipment or personal were harmed in the incident. Moving forward seacans will be single stacked at the mixing pad if double stacking is required secants to be welded or clamped together.

General Discussion:

- KCG workplan for nightshift; finish placement of FFAB (Zone 2B) material between Sta. 0+130 and Sta. 0+180, proceed to excavate blasted overburden material between Sta. 0+229 and Sta. 0+275 and

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remove snow along sidewalls of trench excavation in preparation for placement of Zone 2A material tomorrow.

- KCG manpower for tomorrow's crew change consists of the following: 1 excavator operator, 1 loader operator and, 4 labourers. Noted new nightshift surveyor to arrive Tuesday and will be on dayshift for 2 days before crossing over, KCG to have no surveyor on nights for Wednesday and Thursday.
- KCG will be seeking approval for final lift of FFAB placement tomorrow morning between Sta. 0+130 and Sta. 0+180.
- AEM noted, KCG will start having to dump material from upstream side of key trench for placement of Zone 2A material, ensure truck drivers are aware of new process.
- AEM will be installing thermistors today between Sta. 0+140 and Sta. 0+180, remaining length of thermistor will need to be installed once FFAB material is placed.
- QA representative noted, footprint of LLDPE liner if fully within limits of key trench excavation between Sta. 0+160 and Sta. 0+180, additional removal of ice-rich soil not required.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+130	No activity	-	To be kept open as free face for blasting
0+130	0+180	Placement of FFAB (Zone 2B) material	-	Start placement of Zone 2A
0+180	0+229	No activity	-	Start foundation preparation for key trench
0+229	0+275	Blast for key trench and removing blast mats	-	Start excavating blasted overburden material
0+275	0+325	Drilling for key trench	-	Begin loading drill holes for sequence 6 blast
0+325	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- Discussion between AEM survey and QA representative regarding footprint of LLDPE liner between Sta. 0+160 and Sta. 0+180. AEM noted, liner is fully within footprint of key trench excavation and will provide survey data highlighting limits of liner and excavation at the IVR Dyke.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization during dayshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS76 Roller	Compacting of lifts in trench (11:30 to 11:45; 14:45 to 15:00)
TBD	DX800 Sandvik Drill	Drilling of buffer zone (between zone 5 and 6) after blast
13-0301	3450 Caterpillar Excavator	-
17-0302	PC450 Komatsu Excavator	Snow removal/FFAB placement
17-0201	WA500 Komatsu Loader	Loading FFAB/ fine filter material for FFAB material
1536	773F Haul Truck (50 ton)	Transport FFAB to dike
1518	773F Haul Truck (50 ton)	Transport FFAB to dike
17-0301	PC450 Komatsu Excavator	Snow removal (08:00 to 10:30); Blast mat removal (13:30 to 17:30)

Table 3: Summary of contractor equipment utilization during nightshift.

Unit ID	Equipment	Task Worked
13-0301	3450 Caterpillar Excavator	-
17-0302	PC450 Komatsu Excavator	Snow removal/FFAB placement
17-0201	WA500 Komatsu Loader	Loading FFAB/ fine filter material for FFAB material
1536	773F Haul Truck (50 ton)	Transport FFAB to dike/ Hauling out blast rock
1518	773F Haul Truck (50 ton)	Transport FFAB to dike/ Hauling out blast rock
17-0301	PC450 Komatsu Excavator	-

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

Dayshift

- Monitoring of snow removal in trench from stations 0+130 to 0+180. Two excavators completed snow removal from 08:30 until 10:30 between stations 0+150 to 0+180. After survey confirmed lift was still at depth (3.0 m from surface). The lift was compacted at 11:30.

- Completed compaction tested with the nuclear gauge from station 0+150 to station 0+180 at depth of 3.0 m from ground surface.
- Set up of 2 seismographs for the blast scheduled at 12:45. Unit 3 was placed at the North-West location relative to the dike; Unit 5 was placed at the South-East location relative to the dike. Dropped off the instruments at the AEM Geotech office following blast.
- Beaker measurements at the lab for the swell tests and jar tests.
- Monitoring of FFAB material batching for the trench.
- Monitoring of snow removal from stations 0+130 to 0+150 after the blast (13:15). One excavator worked on snow removal until 13:30. Blow pipe was used to remove dense snow after.

Nightshift

- Monitoring the compaction of the 3rd FFAB at depth 2.75 m from ground surface from station 0+135 to 0+180.
- Monitoring of FFAB placement and compaction at 2.50 m from ground surface from stations 0+130 to 0+180.
- Completed compaction tested with the nuclear gauge from station 0+135 to station 0+180. 350 mm of FFAB material had to be added from station 0+130 to 0+135. Material was placed in two lifts.
- Monitored the installation of the horizontal thermistor cable.
- Monitoring of FFAB material batching for the trench.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 4: QA observations for IVR D1 Dyke

Activity or Area	Comments
Drilling for Key Trench	■ Dyno completed blast for key trench between Sta. 0+229 and Sta. 0+275, KCG proceeded to remove blast mats between these stations. ■ KCG continued drilling for key trench between Sta. 0+275 and Sta. 0+325.
Key trench backfill (Zone 2B)	■ KCG placed one 250 mm thick lift of FFAB between stations Sta. 0+130 and Sta. 0+180. The material is visually of good quality and well-graded. By end of shift KCG began placing a second 250 mm thick lift of FFAB between stations 0+130 and Sta. 0+180. Lift not yet completed.

Activity or Area	Comments
	■ Compaction of completed 250 mm lift of FFAB with a 10-tonne smooth-drum compactor with vibration (6 passes) from Sta. 0+130 and Sta. 0+180 m.

9.0 FOUNDATION APPROVAL

No foundation approvals were done during the reporting period.

Table 5: Details of the Foundation Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 6: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	5-Mar-2021	Zone 4	West Esker Stockpile	Single point modified proctor	Pending
SWELL-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Pending
SWELL-2-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Pending
SWELL-3-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Pending

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
JAR-1-AMQ-TRENCH	4-Mar-2021	4-Mar-2021	N/A	Foundation Sta. 0+180	Jar test	Pending

Table 7: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-09	5-Mar-2021	7-Mar-2021	Foundation	Sta. 0+190, OS -3 m	Water Content	26.5 %
					Ice Content	5.2 % (ice-poor)
QA21-10	5-Mar-2021	7-Mar-2021	Foundation	Sta. 0+200, OS -1 m	Water Content	17.3 %
					Ice Content	6.8 % (ice-poor)

Table 8: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
4	5-Mar-2021	NS	Zone 2B	Sta. 0+130 to Sta. 0+180, key trench, ~159.0 m below ground surface	Dry density	Slightly below target of 98% of maximum Standard Proctor dry density (average of 97.4%) but still considered acceptable due to field variability and visual observations of compaction.
					Moisture Content	Average of 6.2%
4	7-Mar-2021	DS	Zone 2B		Dry Density	Compliant

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
				Sta. 0+150 to Sta. 0+180, key trench, ~159.1 m		(average of 98.7 % of maximum standard proctor dry density)
					Moisture Content	Average of 6.5%
8	7-Mar-2021	NS	Zone 2B	Sta. 0+130 to Sta. 0+180, key trench, ~159.4 m and ~160.0 m	Dry Density	Compliant (average of 100.4 % of maximum standard proctor dry density)
					Moisture Content	Average of 5.4%

11.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.

12.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

13.0 PHOTOGRAPH



Photograph 1: Approx. Sta. 0+130 view looking E, CAT excavator removing snow from yesterday's blizzard.



Photograph 2: Approx. Sta. 0+275 view looking E, CAT excavator removing snow along tie in between sequence 6 and 7 in advance of drilling.



Photograph 3: Approx. Sta. 0+140 view looking NW, smooth drum roller compacting placed lift of FFAB (Zone 2B) material.



Photograph 4: Approx. Sta. 0+130 view long NE, KCG labourer removing snow along trench excavation side walls in advance of FFAB (Zone 2B) placement.



Photograph 5: Approx. Sta. 0+145 view looking west, CAT excavator placing 250 mm lift of FFAB (Zone 2B) material.

14.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 8, 2021 **Project No.** 21452873-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 8TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- Temperature between -18°C and -27°C, overcast.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Yanick Hamel, Jennifer Pyliuk
- KCG: Nicolas Tremblay, André Desmeules
- QA: Brandon Gray
- QC: Chantal Pawlychka

Health, Safety & Environment:

- Investigation into seacan incident at mixing pad on-going. Corrective actions taken have included the following measurers: all seacans at the mixing pad to be single stacked, if seacans are required to be double stacked seacans will need to be welded or clamped together.

General Discussion:

- KCG currently preparing foundation of key trench between Sta.0+180 and Sta. 0+210, liner team scheduled to arrive on site Friday and start installing liner Saturday.
- AEM horizontal thermistor at Sta. 0+180 to be extended to Sta. 0+220.

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- AEM provided reminder for KCG to review new process of dumping on north side of excavation sidewall with truck drivers. In addition, AEM survey to verify no utilities/cables are present along the east abutment of the IVR Dyke.
- AEM noted seacan stacker currently down till further notice, AEM and KCG to devise plan in staging bags of bentonite at the mixing pad.
- QA/QC noted, Zone 2B (FFAB) material has been placed and approved between Sta. 0+130 and Sta. 0+180 and is ready for placement of Zone 2A (fine filter) material once snow along upstream sidewall of trench excavation is removed.
- QA representative noted, cross shift is scheduled for tomorrow and there will be no QA presence on site for part of the day.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+000	0+117	No activity	-	-
0+117	0+130	No activity	-	To be kept open as free face for blasting
0+130	0+180	No activity	Fill Placement Approval	Start placement of Zone 2A
0+180	0+205	Foundation preparation for key trench	Foundation Approval	Start placement of FFAB (Zone 2B) material
0+205	0+229	Foundation preparation for key trench	-	Continue foundation preparation for key trench
0+229	0+275	Excavating blasted overburden material	-	Start foundation preparation for key trench
0+275	0+325	Drilling tie in and loading holes for key trench	-	Install geotextile and blast mats, blast scheduled for Tuesday at 12:45
0+325	0+370	No activity	-	Begin drilling for sequence 7
0+375	0+520	No activity	-	-

5.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM survey and QA representative discussed excavation of key trench and footprint of LLDPE liner between Sta. 0+130 and Sta. 0+205. AEM to provide plan view of as-built crest and toe lines of trench excavation along with LLDPE hinge point and downstream crest.
- AEM and QA/QC representative discussed foundation preparation between Sta. 0+180 and Sta 0+205. AEM requested additional water content samples be taken along floor of key trench at Sta. 0+185 and Sta. 0+195.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization during dayshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS76 Roller	-
TBD	DX800 Sandvik Drill	Drilling of buffer zone (between zone 5 and 6)
13-0301	3450 Caterpillar Excavator	Excavation and dental cleaning after station 0+180
17-0302	PC450 Komatsu Excavator	-
17-0201	WA500 Komatsu Loader	-
1536	773F Haul Truck (50 ton)	-
1518	773F Haul Truck (50 ton)	-
17-0301	PC450 Komatsu Excavator	-

Table 3: Summary of contractor equipment utilization during nightshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS76 Roller	Compacted FFAB placement
TBD	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	Placing FFAB in trench
17-0302	PC450 Komatsu Excavator	Removing snow and dental cuttings
17-0201	WA500 Komatsu Loader	Mixing Fine Filter with Bentonite at mixing station
1536	773F Haul Truck (50 ton)	Removing snow/ Hauling FFAB
1518	773F Haul Truck (50 ton)	Removing snow/Hauling FFAB

1519	773F Haul Truck (50 ton)	Removing snow/Hauling FFAB

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

Dayshift

- Monitoring of excavation and dental cleaning in trench from stations 0+180 to 0+220. One excavator worked on excavating material. Two laborers cleaned foundation with blow pipe.
- Collected a foundation sample at station 0+210 with Golder QA for GWC% test.
- Collected a Zone 2A (fine filter) sample from west side of stockpile. Left in lab to thaw for thawed single-point proctor point.
- Worked with survey and Golder QA to evaluate Zone 2B (FFAB) volumes and bentonite quantities for dike construction. Will complete volumes and estimations tomorrow.
- Discussed ice content and GWC tests at trench foundation with Golder QA (Brandon) and Jennifer (AEM). GWC% tests on foundation will continue to be tested by Golder QA.
- Assessment of foundation from stations 0+180 to 0+220. Foundation approved from station 0+180 to 0+205. Foundation between station 0+205 and 0+210 appeared as ice-rich fractured bedrock. The area will require further ice removal. Discussed with Golder QA and Jennifer (AEM). Will confirm path forward tomorrow.

Nightshift

- Collected two foundation samples at stations 0+185 and 0+195 for a moisture content test.
- Monitored the placement and compaction of FFAB from station 0+180 to 0+205. Took nuclear gauge readings at a depth of 3.25 m from ground surface.
- Monitored the placement and compaction of FFAB from station 0+180 to 0+205. Took nuclear gauge readings at a depth of 3.0 m from ground surface.
- Conducted a Standard Proctor on thawed sample of Fine Filter. Moisture point drying in the oven.
- Monitored the placement off FFAB from Station 0+180 to 0+205 at a depth of 2.75 m from ground surface. Lift will be compacted and tested on dayshift.
- Monitored the cleaning of snow removal from the upstream trench wall with air compressor.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 4: QA observations for IVR D1 Dyke

Activity or Area	Comments
Drilling for Key Trench	■ KCG completed drilling tie in for 6th sequence for key trench between Sta. 0+275 and Sta. 0+325 and proceeded to start drilling for 7th sequence between Sta. 0+325 and Sta. 0+370. ■ Dyno loaded holes for 6th sequence for key trench blast between Sta. 0+275 and Sta. 0+325.
Key trench foundation preparation	■ KCG excavated blasted overburden between Sta. 0+210 and Sta. 0+265. ■ KCG labourers continued cleaning foundation for key trench between Sta. 0+180 and Sta. 0+205. Bedrock was observed between approx. Sta. 0+205 and Sta. 0+210. Outside these stations, foundation is composed of frozen till. ■ Key trench foundation was approved between Sta. 0+180 and Sta. 0+205 (see Section 9.0 for more details).
Key trench backfill	■ Zone 2B fill placement was approved between Sta. 0+130 and Sta. 0+280 (see Section 9.0 for more details).

9.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 5: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210308-DS-01	IVR Dyke (fill)	Sta. 0+130 to Sta. 0+180 (Zone 2B)	8-Mar-21	Compliant. Fill placement of Zone 2B (FFAB) material to 2.5 metres below ground surface (approx. El. 160 m). Waiting for AEM to provide as-built survey.
20210308-DS-02	IVR Dyke (foundation)	Sta. 0+180 to Sta. 0+205 (key trench)	8-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix) with small ice horizons (1 to 8 mm thick), considered ice-poor and competent.

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 6: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-1-AMQ-Esker	1-Mar-2021	5-Mar-2021	Zone 4	West Esker Stockpile	Dry Density (uncorrected)	2014 kg/m^3
					Water Content (in-situ)	11.4%
MDR-1-AMQ-FF	1-Mar-2021	7-Mar-2021	Zone 2A	Stockpile	Single point proctor frozen (uncorrected)	1926 kg/m^3
					Water Content (in-situ)	3.6%
SWELL-1-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Discarded
SWELL-2-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Discarded
SWELL-3-AMQ-FFAB	3-Mar-2021	4-Mar-2021	Zone 2B	Mixing Pad	Swell Test	Discarded
JAR-1-AMQ-TRENCH	4-Mar-2021	4-Mar-2021	N/A	Foundation Sta. 0+180	Jar test	Discarded

Table 7: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-11	8-Mar-2021	-	Foundation	Sta. 0+210, OS -3 m	WC/IC	Pending

Table 8: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	8-Mar-2021	NS	Zone 2B	Sta. 0+180 to Sta. 0+205, key trench, ~158.7 m	Dry Density	Compliant (average of 100 % of maximum single point proctor dry density
					Moisture Content	Average 5.5%
2	8-Mar-2021	NS	Zone 2B	Sta. 0+180 to Sta. 0+205, key trench, ~159.0 m	Dry Density	Compliant (average of 99 % of maximum single point proctor dry density
					Moisture Content	Average 5.1%

11.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.

12.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

13.0 PHOTOGRAPH



Photograph 1: Approx. Sta. 0+130 view looking E, Zone 2B (FFAB) material placed to approx. elev. 160.0 m (2.5 m below existing ground). Area approved for placement of fine filter.



Photograph 2: Approx. Sta. 0+170 view looking NE, additional snow to be removed along upstream excavation wall in advance of Zone 2A (fine filter) material placement.



Photograph 3: Approx. Sta. 0+185 view looking E, KCG continuing to prepare floor of key trench in advance of Zone 2B (FFAB) material placement.



Photograph 4: Approx. Sta. 0+180 view looking E, key trench foundation approved between Sta. 0+180 and Sta. 0+205.



Photograph 5: Approx. Sta. 0+206 view looking E, additional ice and loose bedrock to be removed during key trench foundation preparation.

14.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 9, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 9TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- High -38°C Low -43°C during day shift, overcast & windy
- High -31°C Low -41°C during night shift, clear & windy

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Yanick Hamel, Jennifer Pyliuk
- KCG: Nicolas Tremblay, André Desmeules
- QC: Chantal Pawlychka

Health, Safety & Environment:

- Reminder to wear mask and safety glasses in the trench.

General Discussion:

- Equipment issues. Three packers are not working. All in for repairs. Should have a packer for night shift.
- Liner crew to arrive on Friday. Need to find sandbags and need to relocate a seacan to be used as a storage area and shelter for the liner crew.
- Light plant set up will be improved and adjusted in the trench.
- CAT 3450 excavator will be used to dig out an ice patch at around station 0+207. Excavator can only excavate up to 300 mm max.

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4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+117	0+129	-	-	-
0+129	0+149	Zone 2A and Zone 2B placement under liner slope.	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface. Approved for Zone 2A (Fine Filter) under liner placement.	Liner installation
0+149	0+189	Zone 2B placement under liner slope.	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface. Approved for Zone 2A (Fine Filter) under liner placement.	Liner installation
0+189	0+229	Dental cleaning & FFAB placement	N/A	QA Approval
0+229	0+275	Excavation & dental cleaning	N/A	Dental cleaning
0+275	0+325	Loading & pattern layout	N/A	Blasting

5.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM questioned Golder's method of measuring ice content (ice content = mass of supernatant water after thawing divided by dry mass) and its definition of "excess ice" (ice content > 10%). AEM thinks total water content is a better measure of ice in the foundation. Golder clarifies that both measurements are taken for each sample of foundation soil. Golder also reiterated that the ice content laboratory measurement is better suited for silty materials, as for coarse grained materials such as sands and gravel, excess ice is usually observed as ice layers. As a result, both the water content and excess ice results are taken into account for the evaluation of the ice-poor or ice-rich quality of the soil in combination with visual field observations.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization during dayshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS76 Roller	Compact 1 lift; broken down

TBD	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	Zone 2A placement from station 0+130 to 0+165
17-0302	PC450 Komatsu Excavator	Cleaning foundation at bottom of trench
17-0201	WA500 Komatsu Loader	-
1536	773F Haul Truck (50 ton)	Transport material to dike
1518	773F Haul Truck (50 ton)	Transport material to dike
17-0301	PC450 Komatsu Excavator	-

Table 3: Summary of contractor equipment utilization during nightshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS76 Roller	Compaction of Zone 2A lifts
TBD	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	Removing blast rock
17-0302	PC450 Komatsu Excavator	Placing FF/FFAB above liner
17-0201	WA500 Komatsu Loader	Moving snow away from trench
1536	773F Haul Truck (50 ton)	Transport Zone 2A fill to the trench/removing blast rock
1518	773F Haul Truck (50 ton)	Transport Zone 2A fill to the trench
1519	773F Haul Truck (50 ton)	Transport Zone 2A fill to the trench

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

Dayshift

- Construction monitoring of Zone 2B placement from station 0+180 to 0+200. Removal of over-build on last lift completed by night shift (to depth of 2.75 m from ground surface). Monitoring compaction of lift and performed compaction testing with the nuclear densometer.
- At 07:30 the packer broke down. Final lift of Zone 2B material (to depth of 2.5 m from ground surface) from station 0+180 to 0+200 could not be packed. Packer was not properly fixed over dayshift. The two other packers available were also not functioning.

- Horizontal thermistor installation completed by Claude with AEM Geotech. The thermistor was not placed in PVC and was coiled in sections along its own length. The thermistor is now backfilled from station 0+130 to 0+180. Thermistors installation and backfilling was monitored and handled by AEM Geotech department.
- Set-up and take-down of 2 seismographs prior to and after blast. Unit 5 was placed on the south-east end of the dike and unit 3 was placed on the north-west end of the dike.
- Measured the dried single point proctor sample from the thawed Zone 2A proctor completed on nightshift.
- Developed an excel spreadsheet to calculate the total required mass of bentonite for Zone 2B (FFAB) material placement along the dike. Jennifer Pyliuk confirmed the priority zones. Totaled the mass of bentonite used per volume of dike and used as a comparison against estimate to develop contingency. Worked with AEM survey to determine some of the volumes of the Zone 2B material, as shown on the cross section.

Nightshift

- Monitored the excavation of a patch of ice from station 0+205 to 0+210. Excavated only to 250 mm. Took a sample at station 0+207 for moisture content.
- Took foundation cuttings sample at station 0+220 for a moisture content.
- Monitored the removing of excess FFAB material and regrading from 0+180 to 0+205.
- Monitored the dental cleaning from station 0+210 to 0+230. Foundation cuttings need to be removed from trench floor before FFAB can be placed.
- Fine Filter material was placed from station 0+130 to 0+170 from dayshift. Night shift removed excess material from lift and compacted fine filter material. (20:00 – 24:00)
- Completed compaction testing with the nuclear gauge for FFAB (Zone 2B) from station 0+180 to station 0+205 at depth of 2.50 m from ground surface (01:30 to 02:00)
- Completed compaction testing with nuclear gauge for Fine Filter (Zone 2A) from station 0+130 to 0+170 at a depth of 2.25 m from ground surface (02:00 to 02:30)
- Monitoring of FFAB (Zone 2A) placement and compaction at 2.25 m from ground surface from stations 0+130 to 0+170 (04:00 to 05:00).

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 4: QA observations for IVR D1 Dyke

Activity or Area	Comments
None	Cross-shift change. No presence of Golder QA on site.

9.0 FOUNDATION/FILL APPROVAL

No foundation or fill approvals were done during the reporting period.

Table 5: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
None				

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 6: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/El.)	Test	Testing Result
GWC-1-AMQTRENCH-20210308	March 8, 2021	March 8, 2021	Foundation	0+185	Gravimetric Water Content	Pending
GWC-2-AMQTRENCH-20210308	March 8, 2021	March 8, 2021	Foundation	0+195	Gravimetric Water Content	Pending
GWC-3-AMQTRENCH-20210309	March 9, 2021	March 9, 2021	Foundation	0+207	Gravimetric Water Content	Pending
GWC-4-AMQTRENCH-20210309	March 9, 2021	March 9, 2021	Foundation	0+220	Gravimetric Water Content	Pending

Table 7: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 8: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	9-Mar-2021	DS	Zone 2B	Sta. 0+180 to Sta. 0+205	Dry Density	Compliant Average 2034 kg/m^3 99.6% SPD (min)*
					Moisture Content	Average 6.1%
2	9-Mar-2021	NS	Zone 2B	Sta. 0+182, 1.1 m o/s south of centre line	Dry Density	Compliant Average 2046 kg/m^3 99.2% SPD (min)*
					Moisture Content	Average 5.8%
3	9-Mar-2021	NS	Zone 2B	Sta. 0+136 to Sta. 0+170	Dry Density	Compliant Average 2100 kg/m^3 98.2% SPD (min)*
					Moisture Content	Average 4.3%

* The Standard Proctor Density will be revised based on upcoming Standard Proctor tests.

11.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.

12.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

13.0 PHOTOGRAPH

None (no QA on site)

14.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 10, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 10TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers day shift for March 10th, 2021. Night shift for March 10th and day shift for March 11th will be covered in the March 11th report, etc. to reduce reporting delays.

1.0 WEATHER

- High -40°C Low -46°C during day shift, clear & windy

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Yanick Hamel, Jennifer Pyliuk
- KCG: Nicolas Tremblay, André Desmeules
- QA: Shai Spilberg
- QC: Chantal Pawlychka

Health, Safety & Environment:

- Focus will be audit of work cards over next few days. One near miss on site between loader and light vehicle. Reminder to slow down, take time and not to rush.

General Discussion:

- KCG will try set up for 2 blow pipes in trench tomorrow to reduce time cleaning in the trench.
- Equipment issues today: Excavator 17-301 is down; KCG packer may be worked on tonight to troubleshoot problems.

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- No survey on nightshift both Friday and Saturday.

4.0 CONSTRUCTION WORK SUMMARY

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+117	0+129	-	-	-
0+129	0+149	Zone 2A placement under liner slope.	Approved for Zone 2A (Fine Filter) under liner placement.	Liner installation
0+149	0+189	Zone 2A placement under liner slope.	Approved for Zone 2A (Fine Filter) under liner placement.	Liner installation
0+189	0+229	Dental cleaning	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface.	Zone 2B placement
0+229	0+275	None	N/A	Excavation
0+275	0+325	None	N/A	Excavation

5.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM intends to make changes to the configuration of the upstream shoulder of the dam due to constraints on availability of esker material.
- There is not enough bentonite for 6% FFAB mix assuming 15% contingency. AEM proposes using different mixes for different areas and using higher mix content in critical areas. Golder provided revised mix quantities for the 6% FFAB.
- Golder has requested the surveyor to provide cross sections of the as-built trench and liner footprint to assess whether organics and ice rich soils need to be stripped at the upstream or downstream surfaces adjacent to the trench.
- Pockets of ice were observed at approx. Sta. 0+207 (2 m x 1 m large) and Sta. 0+210 (0.5 m x 0.5 m large). The pockets were excavated down approximately 0.5 m after which ice was still visible (Photograph 1). Golder/AEM have adopted the following the procedure for when ice is encountered in the subgrade foundation of the key trench:
  - Excavate down approximately 30 cm;

- If ice is still present, stop excavating;
- Foundation may be approved regardless of ice presence because probability of thaw in this area is minimal.

The above does not apply to very large patches of ice (e.g. ancient lakes) or weight bearing ice lenses, which must be removed. Note that this procedure may need to be revised for the dam abutment areas that are less than 3 m below final ground surface (approximately Sta. 0+000 to 0+100 and Sta. 0+450 to 0+550). The QA representative will make the decision regarding the suitability of ice-rich foundation soil and produce approvals accordingly.

- Foundation cleaning is progressing with compressed air. AEM intends to use 2 compressed air machines working in tandem to clean the foundation. Golder suggested that the cleaning process could be accelerated so long as visibility of the foundation for inspection is maintained. The AEM representative wishes to continue cleaning in the same manner.
- The wall of the key trench should be cleaned of dust and snow prior to dumping FF and FFAB material in the trench so as not to contaminate it. AEM foreman said they intend to prepare designated dumping points.
- Some areas of the subgrade foundation are 2-4 inches (50-100 mm) too high, which implies there will be 400-500 mm of FFAB under the liner (Photograph 3), while the specifications require 500 mm. Golder agrees that this thickness is sufficient, so long as the thickness of FFAB is not less than 400 mm.
- Liner installation crew arriving on Friday. Installation should begin Saturday afternoon.

6.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization during dayshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS76 Roller	Compaction of Zone 2A lifts
TBD	DX800 Sandvik Drill	Drilling of zone 7 and buffer zone (between zone 6 and 7)
13-0301	3450 Caterpillar Excavator	-
17-0302	PC450 Komatsu Excavator	Zone 2A placement from station 0+130 to 0+197
17-0301	PC450 Komatsu Excavator	Trench cleaning from station 0+200 onward
17-0201	WA500 Komatsu Loader	-
1536	773F Haul Truck (50 ton)	-
1519	773F Haul Truck (50 ton)	Transport Zone 2A to the trench

1518	773F Haul Truck (50 ton)	Transport Zone 2A to the trench

7.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

Dayshift

- Construction monitoring and compaction tests via nuclear densometer from stations 0+130 to 0+180, of Zone 2A (fine filter) material placement. Nightshift completed 1 lift of Zone 2A material to depth of 2.2 m from ground surface. Construction completed 2 lifts (300 mm each) of Zone 2A material to depth of 1.6 m from ground surface on dayshift.
- Final assessment of Zone 2B (FFAB) material placed to grade (depth of 2.5 m from ground surface) from stations 0+180 to 0+205. Golder QA approved the as-built Zone 2B material for placement of Zone 2A material from stations 0+180 to 0+205. The as-built lift of Zone 2B (FFAB) material stopped short of station 0+205. Construction completed 1 lift (300 mm lift) of Zone 2A material to depth of 2.2 m from ground surface on dayshift. Compaction tests via nuclear densometer were completed for the lift.
- Assessment of ice rich foundation material located from station 0+205 to 0+210. The area was excavated another 300 mm deeper to see if ice rich foundation could be removed; the excavation confirmed consistent ice rich conditions at a deeper depth from surface. These conditions were relayed to Jennifer Pyliuk (AEM) and Shai (Golder QA).
- Excavator 17-302 stopped working at 13:15 in the trench. The excavator has a mechanical issue to be assessed by the site mechanic.

8.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 3: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG labourers continued cleaning foundation for key trench between Sta. 0+205 and Sta. 0+227. Foundation is composed of frozen till. Pockets of ice were observed from 0+205 to 0+210. These were excavated down 0.3 m and ice was still visible. The ice appears to be in vertical fissures between boulders and non weight-bearing. ■ Key trench foundation was approved between Sta. 0+205 and Sta. 0+227 (see Section 9.0 for more details).

Activity or Area	Comments
Key trench backfill	■ Zone 2B fill placement was approved between Sta. 0+180 and Sta. 0+205 (see Section 9.0 for more details). ■ KCG placed one 250 mm thick lift of fine filter (Zone 2A) on top of the FFAB (Zone 2B) between stations Sta. 0+180 and Sta. 0+205. The material is visually of good quality and well-graded. ■ Compaction of completed 250 mm lift of fine filter (Zone 2A) with a 10-tonne smooth-drum compactor with vibration (6 passes) from Sta. 0+180 and Sta. 0+205 m.

9.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 4: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210310-DS-01	IVR Dyke (foundation)	Sta. 0+205 to Sta. 0+227	10-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix), considered ice-poor and competent. Trench walls were covered in snow and potential ice layers within the walls were not visible.
20210310-DS-02	IVR Dyke (fill)	Sta. 0+180 to Sta. 0+205 (Zone 2B)	10-Mar-21	Compliant. Ready for placement of Zone 2A (FF) material on top of Zone 2B (FFAB).

10.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
None						

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-13	10-Mar-2021	-	Foundation	Sta. 0+230, OS -4.5 m	WC/IC	Pending
QA21-14	10-Mar-2021	-	Foundation	Sta. 0+240 OS 0 m	WC/IC	Pending

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
5	10-Mar-2021	DS	Zone 2A	Sta. 0+147 to Sta. 0+160, key trench 2.2 to 1.6 m from surface	Dry Density	Compliant Average 2160 kg/m^3 % SPD 105.2 (min)*
					Moisture Content	Average 5.5%

* Standard Proctor Density to be revised following results of new Standard Proctor test

11.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.
TBD	Zone 2B : Reduction of bentonite content in non-critical zones	-	-	Due to limited available quantities of bentonite, AEM proposed to limit the use of FFAB in critical zones of Zone 2B while using only fine filter in the non-critical areas. Final decision to be made by AEM following request for information from the designer.

12.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

13.0 PHOTOGRAPHS



Photograph 2052: Pocket of ice at approximately Sta. 0+207 after overexcavation, view looking E



Photograph 2053: Foundation surface approved, Sta. 0+205 to 0+227 view looking E.



Photograph 2054: High spot of subgrade foundation, indicated by orange paint at approx. Sta. 0+225 view looking E. Elevation of the spot is approximately 2 inches (50 mm) higher than design. This is considered acceptable.



Photograph 2055: Fill placement approved for placement of Zone 2A (FF) on top of Zone 2B (FFAB) from Sta. 0+180 to 0+205, view looking W.

14.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 11, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 11TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 10th, 2021 and day shift for March 11th, 2021.

1.0 WEATHER

- High -41°C Low -48°C during night shift, clear & windy
- High -37°C Low -51°C during day shift, clear & windy

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Yanick Hamel, Jennifer Pyliuk
- KCG: Nicolas Tremblay, André Desmeules
- QA: Shai Spilberg
- QC: Chantal Pawlychka

Health, Safety & Environment:

- Very dusty in the trench after the haul trucks dump the material. N95 face masks will be provided to everyone working in the trench and should be worn during truck-dumping.

General Discussion:

- KCG will try set up for 2 blow pipes in trench tomorrow to reduce time cleaning in the trench.

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- Equipment issues today: Excavator 17-301 had same issues today; attempt was made to use larger drill compressor to clean trench. This test was not successful (mechanical issues).
- No survey on nightshift both Friday and Saturday.
- A thermistor was successfully installed in the dam foundation.

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+117	0+129	-	-	-
0+129	0+149	Zone 2A placement under liner slope & cleaning of trench walls for material placement up to OG	Approved for Zone 2A (Fine Filter) under liner slope.	Liner placement
0+149	0+189	Zone 2A placement under liner slope & cleaning of trench walls for material placement up to OG	Approved for Zone 2A (Fine Filter) under liner slope.	Liner placement
0+189	0+229	Dental cleaning & Zone 2B placement	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface.	Zone 2B placement
0+229	0+275	Dental cleaning	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface up to station 0+248.	Zone 2B placement
0+275	0+325	Dental cleaning	N/A	Zone 2B placement

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Walls of the trench should be cleaned of snow prior to adding lifts (photo 2056). Approval should be obtained from QA/QC prior to adding lifts.
- Ice content testing of trench bottom (subgrade foundation) will be done at 20 m intervals as opposed to 10 m intervals. This is considered sufficient resolution and will allow QA to focus on liner installation which is critical. Samples will be taken within this interval if a change is observed in the foundation.
- The Standard Proctor Density currently being used for compaction tests is considered low relative to the results in the field, perhaps due to a slight change in material composition. A new Standard Proctor test carried out by QC obtained a value of 2131 kg/m^3.

5.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization during nightshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS76 Roller	Compaction of Zone 2A and Zone 2B lifts
TBD	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	Mucking/removing blast rock
17-0302	PC450 Komatsu Excavator	Zone 2A placement from station 0+165 to 0+197 / Zone 2B placement from station 0+205 to 0+220
17-0301	PC450 Komatsu Excavator	-
17-0201	WA500 Komatsu Loader	Mixing FFAB at bentonite mixing station
1536	773F Haul Truck (50 ton)	Transport Zone 2B to the trench
1519	773F Haul Truck (50 ton)	Transport Zone 2B to the trench
1518	773F Haul Truck (50 ton)	Transport Zone 2A to the trench

Table 3: Summary of contractor equipment utilization during dayshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS76 Roller	Compaction of Zone 2B lifts
TBD	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	Blast mat placement and removal
17-0302	PC450 Komatsu Excavator	Zone 2B placement from station 0+205 to 0+220
17-0301	PC450 Komatsu Excavator	-
17-0201	WA500 Komatsu Loader	Zone 2B mixing
1536	773F Haul Truck (50 ton)	-
1519	773F Haul Truck (50 ton)	Transport Zone 2B to the trench
1518	773F Haul Truck (50 ton)	Transport Zone 2B to the trench

6.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

Nightshift

- Construction monitoring and compaction tests via nuclear densometer from stations 0+165 to 0+197, of Zone 2A (fine filter) material placement. Construction completed 1 lift (250 mm each) of Zone 2A material to depth of 1.6 m from ground surface on a Nightshift.
- Construction monitoring and compaction test via nuclear densometer from stations 0+205 to 0+220of Zone 2B (FFAB) material placed to grade (depth of 3.0 m from ground surface) from stations 0+180 to 0+205. An extra lift of FFAB had to be added at 0+205 to 0+210 due to a hole where ice was dug out.
- Grabbed a sample of Fine Filter material to do a frozen single point standard proctor on. Material was grabbed from station 0+190.
- Grabbed a sample of FFAB (Zone 2B) to perform a swell test on. Material was grabbed from station 0+210.
- Monitored dental cleaning with the blow pipe from station 0+225 to 0+240. Cuttings were removed from foundation floor.

Dayshift

- Construction meeting at 06:45 on the dike with Manual and Shai (Golder QA) to discuss plan for the day and areas of focus. Completed a walk-through of the trench and observed the dental cleaning of the foundation.
- Assisted Shai (Golder QA) in collecting representative foundation samples of trench bottom from station 0+230 and 0+240 from
- Another Zone 2A single point frozen proctor was completed on nightshift due to higher densities that were being observed in the field. The QC team wanted to confirm if a new proctor value should be used for the density tests going forward on this material. Weighed the dried mass of sample and processed the results.
- The new Zone 2A (FF) value for max density was determined as 2131 kg/m3.
- Seismograph setup is to be completed by the AEM Geotech department prior to any blasts o the dike. Showed the Geotech department both designated locations for the seismograph setup from 10:30 to 11:30.
- Construction monitoring and compaction tests via nuclear densometer from stations 0+200 to 0+220, of Zone 2B (FFAB) material placement. Nightshift completed 1 lift of Zone 2B material to depth of 3.25 m from ground surface. Construction completed 3 lifts (250 mm each) of Zone 2B material to depth of 2.5 m from ground surface on dayshift. Two lifts (depth of 3.0 m and 2.75 m from O.G) were compacted and tested; the 3rd lift (depth of 2.5 m from O.G) has not yet been compacted or density tested.
- The remaining portion of the horizontal thermistor was installed and monitored by AEM Geotech department (Patrice) from 14:00 to 14:45. The horizontal thermistor was installed atop the Zone 2B (FFAB) material at

depth of 2.75 mm from ground surface. It extends from station 0+145 to 0+220. The thermistor beads were surveyed as directed by the AEM Geotech department.

- Assisted Shai (Golder QA) in collecting representative foundation samples of trench bottom from station 0+230 and 0+240.
- Assessment of ice rich foundation material located from station 0+227 to 0+248. Conditions were relayed to Shai (Golder QA) for consideration prior to foundation approval.

7.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 4: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG labourers continued cleaning the foundation from 0+227 to 0+248. Ice continues to be visible in that section (Photograph 2057). However, the ice pockets are smaller than from 0+205 to 0+227 (all less than 0.5 m^2 in area) and wedged between frozen boulders. It was decided not to try and excavate down. ■ Like from stations 0+205 to 0+227, the section from 0+227 to 0+248 appears to be particularly ice rich but ice appears to be non weight-bearing. ■ Key trench foundation was approved from 0+227 to 0+248 (see Section 8.0 for more details).
Key trench backfill	■ Zone 2B placement occurred in 2 lifts of 300 mm thickness from Sta. 0+250 to 0+220 during nightshift. ■ Zone 2A placement occurred in 1+ lifts of 300 mm thickness from Sta. 0+129 to 0+189. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared compact and evenly compacted. It is visually of good quality and well-graded. ■ Excavator was observed cleaning loose material, snow and dust from the back-break area of the trench wall between Sta. 0+100 and 0+200 (Photograph 2060).

8.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 5: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210311-DS-01	IVR Dyke (foundation)	Sta. 0+227 to Sta. 0+248 (Key trench)	11-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix). Ice lenses are wedged in vertical cracks and are deemed non weight-bearing. The foundation is competent. Trench walls were covered in snow and potential ice layers within the walls were not visible.

9.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 6: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-3-AMQ-FF-20210310	March 10, 2021	March 10, 2021	Zone 2B (FFAB)	0+190	Single Point, Standard Proctor	SPD = 2131 kg/m^3
GWC-1-AMQTRENCH-20210308	March 8, 2021	March 8, 2021	Foundation	0+185	Gravimetric Water Content	w/c = 21.1%
GWC-2-AMQTRENCH-20210308	March 8, 2021	March 8, 2021	Foundation	0+195	Gravimetric Water Content	w/c = 14.4%
GWC-3-AMQTRENCH-20210309	March 9, 2021	March 9, 2021	Foundation	0+207	Gravimetric Water Content	w/c = 37.2%
GWC-4-AMQTRENCH-20210309	March 9, 2021	March 9, 2021	Foundation	0+220	Gravimetric Water Content	w/c = 13.8%

Table 7: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-15	11-Mar-2021	-	Foundation	Sta. 0+260, OS 0 m	WC/IC	Pending

Table 8: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
4	10-Mar-2021	NS	Zone 2A	Sta. 0+165 to 0+200 Key trench Depth 1.9 to 1.6 mbgs	Dry Density	Compliant Average 2142 kg/m^3 % SPD 99.2 (min)*
					Moisture Content	Average 3.0%
4	10-Mar-2021	NS	Zone 2B	Sta. 0+200 to 0+220 Key trench Depth 3.3 mbgs	Dry Density	Compliant Average 2020 kg/m^3 % SPD 98.5 (min)
					Moisture Content	Average 4.3%
2	11-Mar-2021	DS	Zone 2A	Sta. 0+205 to 0+220 Key trench Depth 3.0 and 2.75 mbgs	Dry Density	Compliant Average 2089 kg/m^3 % SPD 98.0 (min)
					Moisture Content	Average 5.3%

* calculated using new Standard Proctor Density (2131 kg/m^3)

10.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.
TBD	Zone 2B : Reduction of bentonite content in non-critical zones	-	-	Due to limited available quantities of bentonite, AEM proposed to limit the use of FFAB in critical zones of Zone 2B while using only fine filter in the non-critical areas. Final decision to be made by AEM following request for information from the designer.

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 PHOTOGRAPH



Photograph 2056: Wind-blown snow on trench walls should be removed prior to adding lifts.



Photograph 2057: Typical small pocket of ice observed in trench floor. Small pockets of ice less than 0.5 m^2 were observed in multiple locations from Sta. 0+227 to 0+248.



Photograph 2058: Final foundation approved for placement of Zone 2A material (FFAB), Sta. 0+227 to 0+248.



Photograph 2059: Installation of thermistor installed from 0+145 to 0+220 at a depth of 2.75 mbgs, view looking W.



Photograph 2060: Excavator cleaning loose material, snow and dust from the back-break area of the trench wall, 0+100 to 0+200, view looking W.

13.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 12, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 12TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 11th, 2021 and day shift for March 12th, 2021.

1.0 WEATHER

- High -34°C Low -46°C during night shift, clear & windy
- High -32°C Low -42°C during day shift, clear & windy

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Anthony Stewart, Yanick Hamel, Jennifer Pyliuk
- KCG: Nicolas Tremblay, André Desmeules
- QA: Shai Spilberg
- QC: Chantal Pawlychka

Health, Safety & Environment:

- End section of trench wall has loose material. Stay at least 2 m away from trench wall in that area.
- Buried electrical and telecommunication wires are in the sector. Utilities must be located prior to excavation.

General Discussion:

- Blast tomorrow at 12h45

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- Liner installation crew has arrived on site.
- Liner installation will be done with a telehandler if possible, to free up an excavator.
- Liner rolls are being transferred to a heated seacan to warm them up.
- One compressor is down.
- QA representative mentions that he has Standard Operating Procedure training tomorrow morning from 7-9am, so there will be no QA available at that time. He plans to do a walk-through of site before 7am.

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+117	0+129	Construction in area on hold. This area is currently used for the access ramp into the trench for access.		
0+129	0+149	Zone 2A placement	Approved for Zone 2A (Fine Filter) under liner slope.	Liner placement
0+149	0+189	Zone 2B & Zone 2A placement	Approved for Zone 2A (Fine Filter) under liner slope.	Liner placement
0+189	0+229	Zone 2B & Zone 2A placement	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface.	Zone 2B placement
0+229	0+275	Dental cleaning, and Zone 2B & Zone 2A placement to Sta. 0+248. Dental cleaning to Sta. 0+280.	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface up to station 0+248.	Zone 2B placement
0+275	0+320	Dental cleaning to Sta. 0+280	-	Zone 2B placement
0+320	0+365	None	-	Excavating
0+365	0+410	Loading	-	Blasting
0+410	0+455	Drilling	-	Loading

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Boreholes in trench floor should be filled with bentonite.

- Horizontal ice seams were observed in the upstream trench at Sta. 0+226 (approx. 5 cm thick) (Photo 2061) and Sta. 0+233 (approx. 2 cm thick) at a depth of approximately 1.5 mbgs. The ice seams extend horizontally for several meters at each location.
- Ice lenses were observed from approx. Sta. 0+230 to 0+250 on the lower portion of downstream and upstream trench walls that was cleaned in preparation for fill placement (approx. 3 – 2.5 m bgs) (Photos 2062 and 2063). The ice lenses are generally 2 cm thick or less, and 20 cm wide (Photo 2064). However, some ice lenses measured 1.3 m long and 30 cm wide. Ice lenses are probably present further up the wall but could not be seen because the wall has not been fully cleaned yet. Ice lenses are probably also present in the trench floor.
- At Sta. 0+254, a boulder approximately 0.5 x 0.5 m and 0.5 – 1 m high was observed sticking out of the trench floor (Photo 2065). The top of the boulder is at least 500 mm below the liner, so the foundation was approved for fill placement. However, the fill around such boulders must be properly compacted and a manual plate compacter should be used if required.

5.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization during nightshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS76 Roller	Compaction of Zone 2A/2B lifts
TBD	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	Placing Zone 2A from station 0+130 to 0+180
17-0302	PC450 Komatsu Excavator	Zone 2B placement from station 0+220 to 0+248
17-0301	PC450 Komatsu Excavator	Dental cleaning from 0+165 onward
17-0201	WA500 Komatsu Loader	Mixing FFAB at bentonite mixing station
1536	773F Haul Truck (50 ton)	Transport Zone 2B fill to trench/Standby
1519	773F Haul Truck (50 ton)	Transport Zone 2B fill to trench/Standby
1518	773F Haul Truck (50 ton)	Transport Zone 2A/2B fill to trench

Table 3: Summary of contractor equipment utilization during dayshift.

Unit ID	Equipment	Task Worked

CPT01	CAT CS76 Roller	Compaction of Zone 2A lifts
TBD	DX800 Sandvik Drill	Drilling zone 9
13-0301	3450 Caterpillar Excavator	Material placement in trench
17-0302	PC450 Komatsu Excavator	Material placement in trench
17-0301	PC450 Komatsu Excavator	Dental cleaning
17-0201	WA500 Komatsu Loader	Mixing FFAB at bentonite mixing station
1536	773F Haul Truck (50 ton)	-
1519	773F Haul Truck (50 ton)	Transport Zone 2A to the trench
1518	773F Haul Truck (50 ton)	Transport Zone 2A to the trench

6.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

Nightshift

- Compaction tests via nuclear densometer from stations 0+205 to 0+220. The Zone 2B material to a depth of 2.5 m from ground surface was compacted on Nightshift.
- Construction monitoring and compaction tests via nuclear densometer from stations 0+130 to 0+180 of Zone 2A (Fine Filter) material placement. Nightshift completed 2 lifts (250mm each) of Zone 2A material to depth of 1.0 m from ground surface.
- Construction monitoring and compaction tests via nuclear densometer from stations 0+220 to 0+240 of Zone 2B (FFAB) material placement. Nightshift completed 4 lifts (2 -250mm and 2-200 mm thickness) of Zone 2B material to depth of 2.5 m from ground surface. Waiting for Golder QA approval to place Zone 2A (Fine Filter) on top.
- Monitored the cleaning of the upstream trench walls form station 0+165 to 0+220. Snow and debris was collected in excavator bucket and removed from trench.
- Took a sample of Zone 2B (FFAB) from station 0+248 for a swell test.

Dayshift

- Construction meeting at 07:00 on the dike with Manuel and Shai (Golder QA) to discuss plan for the day and areas of focus. Completed a walk-through of the trench and QA completed approvals for Zone 2A placement.

- Construction monitoring and compaction tests via nuclear densometer (see attachment). Each lift was monitored during compaction to confirm at least 6 passes. Each lift was density tested.
- Completed assessment of the dental cleaning from station 0+248 to 0+285. Large ice lenses were observed consistently over the bottom of the trench and along the trench walls from approximately 1.5 m below ground surface to trench bottom. Some of the ice bands along the wall measured 1.3 m long by 0.3 m wide. The ice could not be excavated out as it was dispersed consistently through the foundation material (glacial till). It is also highly likely the ground conditions below would have had the same permafrost conditions.

7.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 4: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG labourers continued cleaning the foundation from 0+248 to 0+280. Ice lenses were visible in the downstream trench walls from approximately 0+250 to 0+270 (Photos 2062 to 2064). The ice lenses are probably present as well in the trench foundation. ■ A sample for ice content testing was acquired at Sta. 0+260. ■ Key trench foundation was approved from 0+248 to 0+280 (see Section 8.0 for more details).
Key trench backfill	■ Zone 2B placement occurred in 2 lifts of 300 mm thickness from Sta. 0+130 to 0+180 during nightshift. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2A placement occurred in 5 lifts of 300 mm thickness from Sta. 0+168 to 0+236. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared evenly compacted. It is visually of good quality and well-graded. ■ Fill placement of Zone 2B (FFAB) material was approved from Sta. 0+180 to 0+241 (Photo 2066). Prior to approval, the base of the upstream trench wall was cleaned and re-compacted as per the QA representative's instructions.

8.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 5: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210312-DS-01	IVR Dyke (fill placement)	Sta. 0+180 to Sta. 0+241 (Key trench)	12-Mar-21	Compliant. Material appeared well graded and evenly compacted, except near upstream trench wall, where there was some debris and uncompacted material. After cleaning & re-compaction (supervised by QA), fill placement was approved.
20210312-DS-02	IVR Dyke (foundation)	Sta. 0+248 to Sta. 0+280 (Key trench)	12-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix). Ice lenses where observed in trench walls and are probably present in the foundation from approx. Sta. 0+250 to 0+270. The foundation is competent. Trench walls 1 m above ground were not cleaned yet (covered in dust) and therefore could not be inspected.

9.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 6: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
None						

Table 7: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 8: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
9	12-Mar-2021	DS	Zone 2A	Sta. 0+168 to 0+235 Key trench Depth 2.2 to 0.6 mbgs	Dry Density	Compliant Average 2156 kg/m^3 % SPD 99.0 (min)
					Moisture Content	Average 3.9%

10.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.
TBD	Zone 2B : Reduction of bentonite	-	-	Due to limited available quantities of bentonite, AEM proposed to limit the use of FFAB in critical zones of Zone 2B while using only fine filter in

	content in non-critical zones			the non-critical areas. Final decision to be made by AEM following request for information from the designer.

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 PHOTOGRAPH



Photograph 2061: Ice seam in upstream trench wall at Sta. 0+226, approximately 5 cm thick and 1.5 mbgs.



Photograph 2062: Ice lenses in downstream trench wall from Sta. 0+260 to 0+250, view looking W.



Photograph 2063: Ice lenses in downstream trench wall from Sta. 0+260 to 0+270, view looking E.



Photograph 2064: Close up view of ice lens in downstream trench wall, Sta. 0+250 to 0+270.



Photograph 2065: Boulder sticking out of trench floor at Sta. 0+254, view looking SW.



Photograph 2066: Approved fill placement (Zone 2B material, FFAB) from Sta. 0+180 to 0+241, view looking W.



Photograph 2067: Approved foundation from Sta. 0+248 to 0+280, view looking SE.

13.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 13, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 13TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 12th, 2021 and day shift for March 13th, 2021.

1.0 WEATHER

- High -42°C Low -47°C during night shift, windy with light snow
- High High -41°C Low -50°C during day shift, clear & windy

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Stephane Gionet, Yanick Hamel
- KCG: Nicolas Tremblay, André Desmeules
- Liner installation crew supervisor
- QA: Shai Spilberg
- QC: Chantal Pawlychka

Health, Safety & Environment:

- Close quarters in the trench & multiple equipment working. Communication is key.
- Traffic on site. Improvements to be made to circulation plan, signage etc.

General Discussion:

- Time change tomorrow – 1 hour ahead.

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- Liner installation crew is setting up and performing calibration tests on their equipment.
- Compressor issues – need to fix compressor because trench cleaning is the current bottleneck.

Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+117	0+129	Construction in area on hold. This area is currently used for the access ramp into the trench for access.		
0+129	0+149	Zone 2A placement	Approved for Zone 2A (Fine Filter) under liner slope.	Liner installation
0+149	0+189	Zone 2A placement	Approved for Zone 2A (Fine Filter) under liner slope.	Liner installation
0+189	0+229	Zone 2A placement	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface.	Liner installation
0+229	0+275	Zone 2B & Zone 2A placement	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface up to station 0+248.	Zone 2A placement
0+275	0+320	Dental cleaning & Zone 2B placement	-	Zone 2B placement
0+320	0+365	None	-	Excavating
0+365	0+410	Blasting	-	Excavating
0+410	0+455	Drilling	-	Loading

4.0 DISCUSSIONS

During the day, the following discussions were held:

- An overhang was observed at the trench wall around Sta. 0+280. Overhangs should be removed prior to fill placement to reduce material contamination. In this case, the overhang was completely solid and impossible to remove with an excavator. Given the low risk of this area falling into the fill material, it is not considered problematic to leave it in place.
- During profiling of the slope for liner placement, the excavator operator used the wrong surface and accidentally excavated FFAB material from the bottom of trench at Sta. 0+130 over a horizontal distance of approximately 1.2 m. The re-placement and re-compaction of this material will be supervised by night shift QC.

- The liner installation crew is on site setting up and performing calibration tests on their equipment. The QA representative will visit their work area tomorrow to review the calibration data and speak with their QC representative (Florent) about the QC program.
- QA representative's daily report emails to KCG are being blocked by KCG's spam system. KCG has been informed.

5.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization during nightshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS563 Roller	Compaction of Zone 2A/2B lifts
9936	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	Removing blasted overburden from Zone 6
17-0302	PC450 Komatsu Excavator	Zone 2B placement from station 0+248 to 0+280
17-0301	PC450 Komatsu Excavator	-
17-0201	WA500 Komatsu Loader	Mixing at bentonite mixing station/removing snow around trench
1536	773F Haul Truck (50 ton)	Transport Zone 2B fill to trench/blast material removal
1519	773F Haul Truck (50 ton)	Transport Zone 2A fill to trench/blast material removal
1518	773F Haul Truck (50 ton)	Transport Zone 2B fill to trench/blast material removal

Table 3: Summary of contractor equipment utilization during dayshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS563 Roller	Compaction of Zone 2A and Zone 2B lifts
9936	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	Blast mat placement and removal
17-0302	PC450 Komatsu Excavator	Material placement in trench
17-0301	PC450 Komatsu Excavator	Material placement in trench. Dental cleaning
17-0201	WA500 Komatsu Loader	-

1536	773F Haul Truck (50 ton)	-
1519	773F Haul Truck (50 ton)	Transport Zone 2A to the trench
1518	773F Haul Truck (50 ton)	Transport Zone 2A to the trench

6.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

Nightshift

- Compaction tests via nuclear densometer from stations 0+130 to 0+208. The Zone 2A material to a depth of 0.50 m and 0.75 m from ground surface was compacted on Nightshift.
- No surveyor on nightshift tonight. All lift grade marks were placed on the trench walls on dayshift and measured with a measuring tape by QC on nightshift.
- Construction monitoring and compaction tests via nuclear densometer from stations 0+208 to 0+233 of Zone 2A (Fine Filter) material placement. Nightshift completed 1 lift (250mm) to depth of 1.0 m from ground surface
- Construction monitoring and compaction tests via nuclear densometer from stations 0+248 to 0+280 of Zone 2B (FFAB) material placement. Nightshift completed 2 lifts (250mm each) and 1 lift was not compacted to depth of 2.75 m from ground surface.
- 1000 m3 of Zone 2B (FFAB) has been placed. Another sample of FFAB was taken at station 0+270 to do a sieve analysis test on.
- Monitored the removal of blast rock from station 0+340.

Dayshift

- Construction monitoring and compaction tests via nuclear densometer (see attachment). Each lift was monitored during compaction to confirm at least 6 passes. Each lift was density tested.
- Completed assessment of the dental cleaning from station 0+280 to 0+300. Highly fracture bedrock noted at station 0+300. Large ice lenses were observed along the trench walls from approximately 1.5 m below ground surface to trench bottom. Ice-rich coatings observed in fracture lines of the bedrock. The areas of glacial till on trench bottom from station 0+280 to 0+300 are ice-rich; however, they have a slightly lesser ice content than from stations 0+205 to 0+280. Ice formations on bottom of trench are irregular; Ice formations on trench walls range from irregular to stratified.
- Collected sample for swell test of FFAB at station 0+270. Setup swell test in lab.
- Worked on dry sieve for FFAB taken for 1000 m3 volume in trench. Will be completed on nightshift.

7.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 4: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG labourers continued cleaning the foundation from Sta. 0+280 to 0+300. Ice lenses continue to be visible in the trench walls similar to the previous section from Sta. 0+248 to 0+280. As in the previous section, ice lenses are much more abundant below 1.5 mbgs (Photo 2069) and are probably present in the trench floor. The ice lenses are on average ~2 cm thick and ~20 cm wide. Ice lenses are also visible on a smaller scale as shown in the floor sample taken from 0+300 (Photo 2070). ■ A sample for ice content testing was acquired at Sta. 0+300. ■ Key trench foundation was approved from 0+280 to 0+300 (see Section 8.0 for more details).
Key trench backfill	■ Zone 2B placement occurred in 2 lifts of 250 mm thickness from Sta. 0+248 to 0+280 during nightshift, and from Sta. 0+241 to 0+275 in 3 lifts of 250 mm thickness. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2A placement occurred in 1 lift of 250 mm thickness from Sta. 0+135 to 0+233 during nightshift, and from Sta. 0+180 to 0+227 in 2 lifts of 250 mm. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared evenly compacted. It is visually of good quality and well-graded. ■ Fill placement of Zone 2B (FFAB) material was approved from Sta. 0+241 to 0+300. Prior to approval, the base of the upstream trench wall was cleaned and re-compacted as per the QA representative's instructions.

8.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 5: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210313-DS-01	IVR Dyke (foundation)	Sta. 0+280 to Sta. 0+300 (Key trench)	13-Mar-21	Compliant. Foundation is composed of frozen till (gravel, cobbles and boulders in a fine-grained silty sand matrix). The trench walls were cleaned prior to inspection. Ice lenses were observed in the trench walls, becoming numerous at 1.5 mbgs, and are probably present in the foundation. The foundation is competent.
20210313-DS-02	IVR Dyke (Zone 2B fill placement)	Sta. 0+241 to Sta. 0+300 (Key trench)	13-Mar-21	Compliant. Material appeared well graded and evenly compacted. 30 – 50 mm of settlement occurred after compaction; however, the Zone 2B material (FFAB) is very thick in this area due to overblasting and the final grade was accepted.

9.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 6: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-4-AMQ-FFAB-20210312	March 12, 2021	March 13, 2021	Zone 2B (FFAB)	Station 0+270 3.3 m from surface	Sieve	Pending
SWELL-3-AMQFFAB-20210313	March 13, 2021	March 13, 2021	Zone 2B (FFAB)	0+270	Swell	Complete

Table 7: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-17	13-Mar-21	-	Foundation	Key trench 0+300 OS 0.0 m	Water Content and Ice Content	Pending

Table 8: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
3	12-Mar-2021	NS	Zone 2B	Sta. 0+260 to 0+273 Key trench Depth 3.3 to 3 mbgs	Dry Density	Compliant Average 2158 kg/m^3 % SPD 99.7 (min)
					Moisture Content	Average 5.3%
3	12-Mar-2021	NS	Zone 2A	Sta. 0+160 to 0+220 Key trench Depth 1 to 0.5 mbgs	Dry Density	Compliant Average 2112 kg/m^3 % SPD 98.2 (min)
					Moisture Content	Average 3.5%
4	13-Mar-2021	DS	Zone 2A	Sta. 0+168 to 0+235 Key trench Depth 2.2 to 0.6 mbgs	Dry Density	Compliant Average 2158 kg/m^3 % SPD 99.2 (min)
					Moisture Content	Average 3.4%
3	13-Mar-2021	DS	Zone 2A	Sta. 0+180 to 0+227 Key trench Depth 0.9 to 0.5 mbgs	Dry Density	Compliant Average 2073 kg/m^3 % SPD 100.9 (min)
					Moisture Content	Average 4.9%

10.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.
TBD	Zone 2B : Reduction of bentonite content in non-critical zones	-	-	Due to limited available quantities of bentonite, AEM proposed to limit the use of FFAB in critical zones of Zone 2B while using only fine filter in the non-critical areas. Final decision to be made by AEM following request for information from the designer.

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 PHOTOGRAPH



Photograph 2068: Key trench subgrade foundation approved from Sta. 0+280 to 0+300, view looking S.



Photograph 2069: Ice lenses in trench wall from Sta. 0+280 to 0+300, view looking W.



Photograph 2070: Close-up of key trench floor sample taken from Sta. 0+300.

13.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 14, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 14TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 13th, 2021 and day shift for March 14th, 2021.

1.0 WEATHER

- High -32°C Low -46°C during night shift, windy & clear
- High High -28°C Low -34°C during day shift, clear & sunny

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Stephane Gionet, Yanick Hamel
- KCG: Nicolas Tremblay, André Desmeules
- QA: Shai Spilberg
- QC: Chantal Pawlychka

Health, Safety & Environment:

- Close quarters in the trench & multiple equipment working. Communication is key.
- Traffic on site. Improvements to be made to circulation plan, signage etc.
- Do not eat food outside, it attracts wildlife. Coffee especially.

General Discussion:

- Smaller excavator will be brought to site for bedrock cleanup.

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Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+117	0+129	Construction in area on hold. This area is currently used for the access ramp into the trench for access.		
0+129	0+149	Zone 2A placement & sloping	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface. Approved for Zone 2A (Fine Filter) under liner placement.	Liner installation
0+149	0+189	Zone 2A placement & sloping	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface. Approved for Zone 2A (Fine Filter) under liner placement.	Liner installation
0+189	0+229	Zone 2A placement & sloping	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface. Approved for Zone 2A (Fine Filter) under liner placement.	Liner installation
0+229	0+275	Zone 2A placement	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface. Approved for Zone 2A (Fine Filter) under liner placement.	Zone 2A placement
0+275	0+320	Zone 2B placement	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface up to station 0+280.	Zone 2B placement
0+320	0+365	None	-	Excavating
0+365	0+410	None	-	Excavating
0+410	0+455	Drilling	-	Loading

4.0 DISCUSSIONS

During the day, the following discussions were held:

- The trench walls should be quickly cleaned with the compressor pipe prior to foundation approval to allow QA/QC representatives to inspect foundation conditions.
- Bedrock was encountered in the key trench foundation, starting around Sta. 0+315.
- Reminder to place FFAB material 30-50 mm above grade prior to compaction to achieve proper grade.

5.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization during nightshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS563 Roller	Compaction of Zone 2A/2B lifts
9936	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	-
17-0302	PC450 Komatsu Excavator	Zone 2A/2B placement
17-0301	PC450 Komatsu Excavator	Removing blast rock & dental cuttings
17-0201	WA500 Komatsu Loader	Loading FF/FFAB in haul trucks
1536	773F Haul Truck (50 ton)	Transport Zone 2B fill to trench/blast material removal
1519	773F Haul Truck (50 ton)	Transport Zone 2A fill to trench/blast material removal
1518	773F Haul Truck (50 ton)	Transport Zone 2B fill to trench/blast material removal

Table 3: Summary of contractor equipment utilization during dayshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS563 Roller	Compaction of Zone 2A and Zone 2B lifts
9936	DX800 Sandvik Drill	Drilling at Zone 9
13-0301	3450 Caterpillar Excavator	Material placement in trench
17-0302	PC450 Komatsu Excavator	Material placement in trench. Sloping of Zone 2A material.
17-0301	PC450 Komatsu Excavator	Material placement in trench.
17-0201	WA500 Komatsu Loader	-
1536	773F Haul Truck (50 ton)	-
1519	773F Haul Truck (50 ton)	Transport Zone 2A/2B to the trench
1518	773F Haul Truck (50 ton)	Transport Zone 2A/2B to the trench

6.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

Nightshift

- Commpaction tests via nuclear densometer from stations 0+240 to 0+275. The Zone 2B material to a depth of 2.50 m from ground surface. Material was placed on dayshift and compacted on nightshift.
- Surveyor worked until 20:00. All lift grade marks were placed on the trench walls measured with a measuring tape by QC on nightshift.
- Construction monitoring and compaction tests via nuclear densometer from stations 0+240 to 0+275 of Zone 2A (Fine Filter) material placement. Nightshift completed 2 lifts (250mm each) to depth of 2.0 m from ground surface.
- Construction monitoring and compaction tests via nuclear densometer from stations 0+280 to 0+300 of Zone 2B (FFAB) material placement. Nightshift completed 1 lift (300mm) and 1 lift was not compacted to depth of 3.0 m from ground surface.
- 1000 m3 of Zone 2A (FF) has been placed. Another sample of FF was taken at station 0+245 to do a sieve analysis test on.
- Monitored the dental cleaning from station 0+300 onward.
- Monitored the blast rock removal from zone 8.
- No Zone 2B (FFAB) was mixed tonight. All FFAB that was placed in trench was mixed during dayshift.

Dayshift

- Construction monitoring and compaction tests via nuclear densometer (see attachment). Each lift was monitored during compaction to confirm at least 6 passes. Each lift was density tested.
- Completed assessment of the dental cleaning from station 0+300 to 0+320. Fractured bedrock noted at station 0+312 near the upstream wall of the trench. Large ice lenses were observed along the trench walls from approximately 1.5 m below ground surface to trench bottom. Ice-rich coatings observed in fracture lines of the bedrock. Ice formations on bottom of trench are irregular; Ice formations on trench walls range from irregular to stratified.
- Fractured bedrock as foundation from station 0+315 to 0+320.
- Collected sample for swell test of FFAB at station 0+300. Started test in lab.

7.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 4: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG labourers continued cleaning the foundation from Sta. 0+300 to 0+320. Ice lenses continue to be visible in the trench walls similar to the previous sections. As in the previous section, ice lenses are much more abundant below 1.5 mbgs and are probably present in the trench floor. ■ Key trench foundation was approved from 0+300 to 0+312 (see Section 8.0 for more details).
Key trench backfill	■ Zone 2B placement occurred in 1 lift of 250 mm thickness from Sta. 0+275 to 0+295 during nightshift, and from Sta. 0+275 to 0+280 during dayshift. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2A placement occurred in several lifts of 250 mm thickness from Sta. 0+129 to 0+275 during nightshift and nightshift to original ground surface. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared evenly compacted. It is visually of good quality and well-graded.

8.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 5: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210314-DS-01	IVR Dyke (Zone 2A fill placement)	Sta. 0+165 to Sta. 0+215 (Key trench)	14-Mar-21	Material appeared well graded but was not yet compacted. Approval conditional upon compaction test results approved by QC nightshift.

9.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 6: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-4-AMQ-FF-20210312	March 12, 2021	March 13, 2021	Zone 2B (FFAB)	Station 0+270 3.3 m from surface	Sieve	Complete Material is compliant within filter bands except for fine faction (< ~0.3 mm) and coarse fraction (> 12.5 mm). $D15_{max}$ is satisfied.

Table 7: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 8: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
4	13-Mar-2021	NS	Zone 2A	Sta. 0+255 to 0+275 Key trench Depth 2.0 to 2.25 mbgs	Dry Density	Compliant Average 2119 kg/m^3 % SPD 98.1 (min)
					Moisture Content	Average 3.5%
3	13-Mar-2021	NS	Zone 2B	Sta. 0+250 to 0+285 Key trench Depth 2.5 to 3.3 mbgs	Dry Density	Compliant Average 2069 kg/m^3 % SPD 100.1 (min)
					Moisture Content	Average 4.1%

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
3	14-Mar-2021	DS	Zone 2A	Sta. 0+135 to 0+266 Key trench Depth 1.6 to 1.3 mbgs	Dry Density	One result non compliant. Section will be removed and recompacted with proper compaction (0+145 o/s 9.5 m E) Average 2014 kg/m^3 % SPD 84.3 (min)
					Moisture Content	Average 3.4%
2	14-Mar-2021	DS	Zone 2B	Sta. 0+280 to 0+312 Key trench Depth 3.0 to 2.75 mbgs	Dry Density	Compliant Average 2128 kg/m^3 % SPD 103.1 (min)
					Moisture Content	Average 5.3%

10.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 9: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.
TBD	Zone 2B : Reduction of bentonite content in non-critical zones	-	-	Due to limited available quantities of bentonite, AEM proposed to limit the use of FFAB in critical zones of Zone 2B while using only fine filter in the non-critical areas. Final decision to be made by AEM following request for information from the designer.

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 10: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 PHOTOGRAPHS



Photograph 2071: Zone 2A material (FFAB) placed to original ground surface, view look W.



Photograph 2072: Bedrock in key trench foundation Sta. 0+320, view looking W.

13.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 15, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 15TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 14th, 2021 and day shift for March 15th, 2021.

1.0 WEATHER

- High -30°C Low -37°C during night shift, clear, light wind
- High -25°C Low -30°C during day shift, clear & sunny

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Stephane Gionet, Yanick Hamel
- KCG: Nicolas Tremblay, André Desmeules
- QA: Shai Spilberg
- QC: Chantal Pawlychka

Health, Safety & Environment:

- Close quarters in the trench & multiple equipment working. Communication is key.
- Flurries in the forecast. Be aware of changing road conditions.

General Discussion:

- No QC presence on site for part of the day tomorrow during cross shift; QA representative will have to fill in.

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Table 1: The following table summarizes construction activates at the IVR Dyke.

Station (Approx.)		Activity	Test/Inspect	Next Step(s)
From	To			
0+117	0+129	Construction in area on hold. This area is currently used for the access ramp into the trench for access.		
0+129	0+149	Sloping of Zone 2A, final lift of Zone 2A, and liner installation from station 0+165 to 0+215.	Density compaction tests. Approved for Zone 2B (FFAB) placement to 0.5 m above OG.	Reconstruction of Zone 2A material from station 0+135 to 0+165.
0+149	0+189	Sloping of Zone 2A, final lift of Zone 2A, and liner installation from station 0+165 to 0+215.	Density compaction tests. Approved for Zone 2B (FFAB) placement to 0.5 m above OG.	Approval for backfill over liner.
0+189	0+229	Sloping of Zone 2A, final lift of Zone 2A, liner installation from station 0+165 to 0+215.	Density compaction tests. Approved for Zone 2B (FFAB) placement to 0.5 m above OG.	Approval for backfill over liner (to station 0+215). Approved for FFAB placement directly under liner (to station 0+242).
0+229	0+275	Zone 2A placement to station 0+307.	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface up to station 0+280. Approved for Zone 2A (Fine Filter) under liner placement.	Sloping of Zone 2A
0+275	0+320	Zone 2A placement to station 0+307. Dental cleaning to station 0+345.	Approved for Zone 2B (FFAB) to depth of 2.5 m from surface up to station 0+280.	Sloping of Zone 2A material (to station 0+307). Approval for Zone 2B placement (to station 0+345).
0+320	0+365	Dental cleaning of bedrock foundation.	-	Approval for Zone 2A placement
0+365	0+410	None	-	Excavating
0+410	0+455	Blast. Placement and removal of blast mats.	-	Excavating

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Liner installation has begun. The liner QC representative (FC Geosynthetique) is having trouble performing seal tests in cold temperatures (-30C). Instruments not working well. They are looking into a solution.
- Bedrock will be mapped using laser scanner instead of hand mapping to prevent delay of works. QA to collect the remaining information on the field (e.g. crack filling materials) for approval of the bedrock foundation.
- AEM intends not to grout the bedrock surface since the bedrock is sound and joints are closed. Golder's opinion on this will be provided shortly.
- Liner QC representative is having trouble performing seam tests in cold temperatures. They are looking into solutions.
- Most liner rolls were observed be damaged during transport. The rolls are punctured up to 2-3 layers deep. The damaged section of rolls will have to be discarded and should not be used for installation.

5.0 EQUIPMENT UTILIZATION

Equipment utilization is based on summary provided by Tetra Tech day shift and night shift QC representatives.

Table 2: Summary of contractor equipment utilization during nightshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS563 Roller	Compaction of Zone 2A/2B lifts
9936	DX800 Sandvik Drill	-
13-0301	3450 Caterpillar Excavator	Removing blast material
17-0302	PC450 Komatsu Excavator	Zone 2B placement
17-0301	PC450 Komatsu Excavator	Removing dental cuttings
17-0201	WA500 Komatsu Loader	Loading FF/FFAB in haul trucks
1536	773F Haul Truck (50 ton)	Remove blast material
1519	773F Haul Truck (50 ton)	Transport Zone 2B fill to trench/blast material removal
1518	773F Haul Truck (50 ton)	Transport Zone 2B fill to trench/blast material removal

Table 3: Summary of contractor equipment utilization during dayshift.

Unit ID	Equipment	Task Worked
CPT01	CAT CS563 Roller	Compaction of Zone 2A and Zone 2B lifts
9936	DX800 Sandvik Drill	Drilling
13-0301	3450 Caterpillar Excavator	Material placement in trench
17-0302	PC450 Komatsu Excavator	Material placement in trench. Sloping of Zone 2A material.
17-0301	PC450 Komatsu Excavator	Material placement in trench.
17-0201	WA500 Komatsu Loader	-
1536	773F Haul Truck (50 ton)	-
1519	773F Haul Truck (50 ton)	Transport Zone 2A/2B to the trench
1518	773F Haul Truck (50 ton)	Transport Zone 2A/2B to the trench

6.0 QC ACTIVITIES SUMMARY

The QC activities are based on summary provided by Tetra Tech day shift and night shift representatives.

Nightshift

- Compaction tests via nuclear densometer from stations 0+165 to 0+215. The Zone 2A (Fine Filter) material to a depth of 0.0 m from ground surface. Material was placed on dayshift and compacted on nightshift.
- Construction monitoring and compaction tests via nuclear densometer from stations 0+165 to 0+215 of Zone 2B (FFAB) material placement. Nightshift completed 2 lifts (250mm each) to depth of 0.5 m above ground surface.
- Construction monitoring of Zone 2B (FFAB) material placement. Nightshift placed 1 lift (300mm) to a depth of 2.50 m from ground surface. Dayshift needs to compact this lift.
- A sample of Zone 2B (FFAB) was collected for a swell test at station 0+180.
- Monitored the dental cleaning from station 0+312 onward.
- Monitored the blast rock removal from zone 8.

Dayshift

- Construction monitoring and compaction tests via nuclear densometer (see attachment). Each lift was monitored during compaction to confirm at least 6 passes. Each lift was density tested.

- Assessment of foundation conditions at the trench bottom from station 0+315 to 0+342. There is some fractured bedrock on the sides of the trench walls: the upstream trench wall has bedrock/fractured bedrock from approximately 2.0 m from original ground to trench bottom; the downstream trench wall has bedrock/fractured bedrock from approximately 1.5 m from original ground to trench bottom. Observed ice rich conditions consistent with previous sections: Large ice lenses were observed along the trench walls from approximately 1.5 m below ground surface to trench bottom. Ice-rich coatings observed in fracture lines of the bedrock. Ice formations on bottom of trench are irregular; Ice formations on trench walls range from irregular to stratified.
- Completed swell test of FFAB at station 0+175. Visual confirmation of bentonite presence in the Zone 2B (FFAB) material.

7.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 4: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG labourers continued cleaning the foundation from Sta. 0+320 to 0+342. Floor of the key trench is composed of high-quality bedrock, grey-brown diorite, with tight joints (minimal aperture).
Key trench backfill	■ Zone 2B placement occurred in 2 lifts of 250 mm thickness from Sta. 0+165 to 0+215 and 1 lift of 250 mm thickness from Sta. 0+280 to 0+307. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2A placement occurred in 1 lift from Sta. 0+216 to 0+241, 2 lifts from Sta. 0+222 to 0+261, and 2 lifts from from 0+280 to 0+307. Lift thickness was 250 to 300 mm. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared evenly compacted. It is visually of good quality and well-graded.
Geotextile and LLDPE liner installation	■ AM and PM calibration results met Technical Specifications. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications.

Activity or Area	Comments
	■ Installation of the geotextile on the key trench slope (2.5H:1V) from Sta. 0+169 m to 0+239 m. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner on the key trench slope (2.5H:1V) from Sta. 0+169 m to 0+210 m (panel numbers P1 to P6). The LLDPE was free of folds and holes. Seam tests (air channel tests) were carried out under the supervision of the QA Engineer and results met Technical Specifications. ■ The total fusion seam length is about 50 m. The total extrusion fillet seam length is 0 m. ■ Vacuum box tests have not been performed yet.

Table 5: Details of the Destructive Testing and Follow-up on Repairs

Name	Structure	Station	Seam	Comment
None				

8.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 6: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210315-DS-01	IVR Dyke (Zone 2B fill placement under liner)	Sta. 0+167 to Sta. 0+212 (Key trench)	15-Mar-21	No large rocks or snow observed on slope. Material appeared well graded and well compacted. Surface of slope must be raked prior to geotextile/liner placement to even out lines created by excavator.

9.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 7: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-5-AMQ-FF-20210313	March 13, 2021	March 14, 2021	Zone 2A (FF)	Station 0+245 2.25 m from surface	Sieve	Complete Material is out of spec (too coarse) for faction >2 mm. $D15_{max}$ is marginally satisfied.
SWELL-6-AMQFFAB-20210314	March 14, 2021	March 14, 2021	Zone 2B (FFAB)	0+175	Swell	Complete Swell test successful

Table 8: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 9: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	14-Mar-2021	NS	Zone 2A	Sta. 0+175 to 0+195 Key trench Depth 0 mbgs	Dry Density	Compliant Average 2100 kg/m^3 % SPD 98.3 (min)
					Moisture Content	Average 3.9%
4	14-Mar-2021	NS	Zone 2B	Sta. 0+175 to 0+212 Key trench Depth 2.5 to 3.3 mbgs	Dry Density	Compliant Average 2049 kg/m^3 % SPD 99.8 (min)
					Moisture Content	Average 5.7%

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
5	15-Mar-2021	DS	Zone 2A	Sta. 0+216 to 0+307	Dry Density	Compliant Average 2141 kg/m^3 % SPD 99.4 (min)
					Moisture Content	Average 3.0%
1	15-Mar-2021	DS	Zone 2B	Sta. 0+280 to 0+307	Dry Density	Compliant Average 2157 kg/m^3 % SPD 105.8 (min)
					Moisture Content	Average 4.4%

10.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 10: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	-	-	Final decision to be made by AEM following additional sampling and testing of the fine filter material.
TBD	Zone 2B : Reduction of bentonite content in non-critical zones	-	-	Due to limited available quantities of bentonite, AEM proposed to limit the use of FFAB in critical zones of Zone 2B while using only fine filter in the non-critical areas. Final decision to be made by AEM following request for information from the designer.

11.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 11: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

12.0 PHOTOGRAPHS



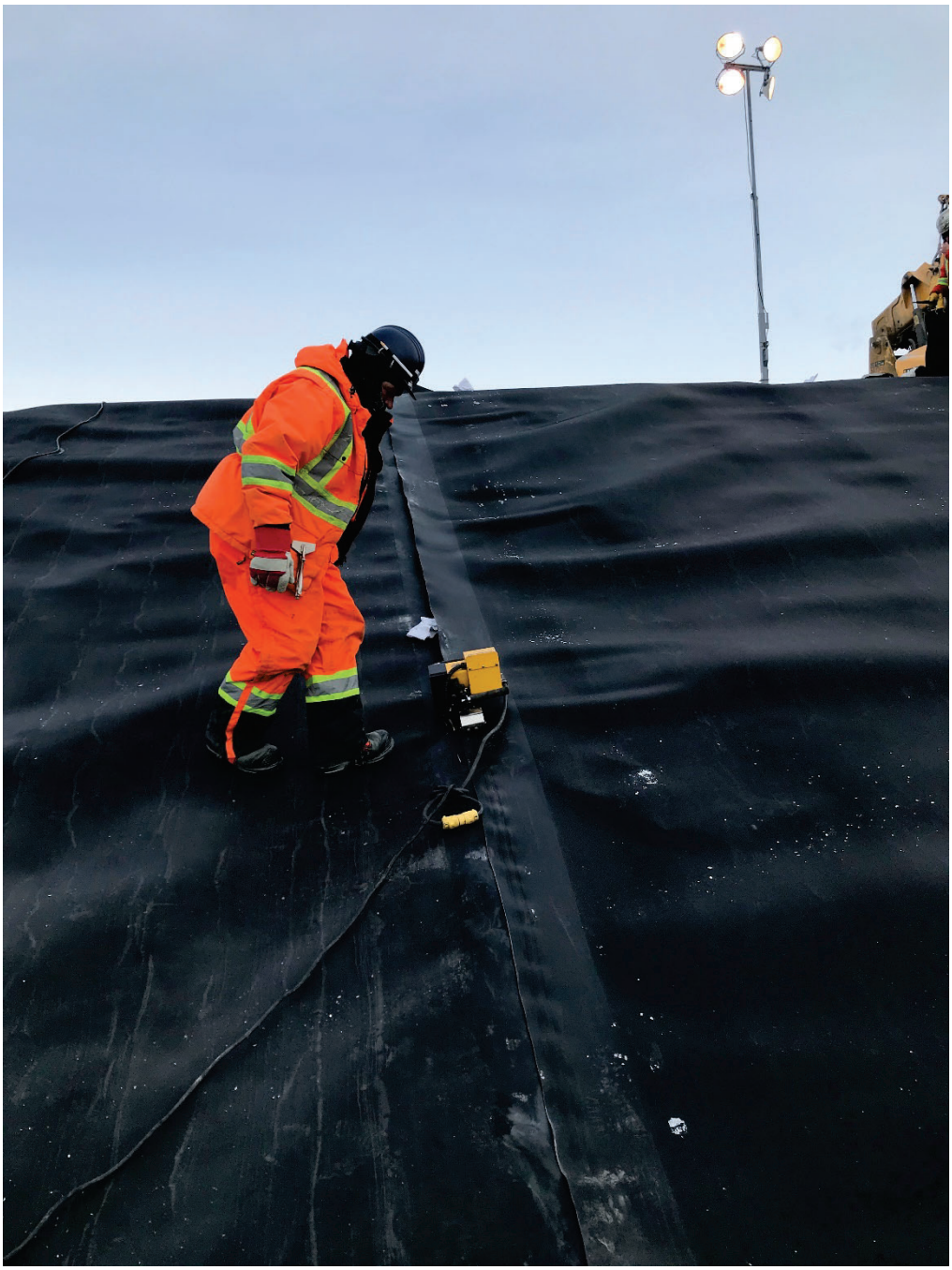
Photograph 2073: Bedrock in key trench, view look W.



Photograph 2074: Damage to liner roll during transport.



Photograph 2075: Approved surface for liner placement, Sta. 0+170 view looking E.



Photograph 2076: Liner welding, view looking N.



Photograph 2077: Liner installation Sta. 0+170, view looking E.

13.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 16, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 16TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 15th, 2021 and day shift for March 16th, 2021.

1.0 WEATHER

- High -30°C Low -33°C during night shift, snowing & windy
- High -20°C Low -32°C during day shift, clear & sunny

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Stephane Gionet, Yanick Hamel
- KCG: Manuel
- QA: Shai Spilberg
- QC: Ryan Okkema

Health, Safety & Environment:

- Close quarters in the trench & multiple equipment working. Communication is key.
- Reminder to watch speed limit entering and exiting the IVR-DIKE.

General Discussion:

- Backfill of liner requires spotter.
- No compaction allowed on top of liner until 2 m of material placed. Only bucket compaction.

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- Equipment – compressor still not working.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Backfill of trench section with bedrock foundation (Sta. 0+315 onwards) will proceed with placement of FFAB material with no grouting of bedrock surface. The top of the bedrock is weathered and highly fractured; however, after blasting and mucking this portion is removed and the underlying rock is of very good quality. Grouting of this section was not considered necessary because the maximum operating level of the pond is far from the dyke at this location (low gradient) and the bedrock quality is high with tight joints (minimal aperture). Formally accepted as field change FC-03 (see Section 5).
- Liner QC representative performed seam tests (air channel tests) on liner seams last night, and reperformed them in presence of QA representative today. The seam tests met the Technical Specifications; however, it is difficult to perform these tests in excessively cold temperatures (-30C). Multiple attempts are often necessary. The liner installer has ordered a new seam test kit that should arrive next week.
- According to calibration sheet in machine, the tensiometer machine was last calibrated on December 15, 2020.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Mapping of the foundation bedrock with a Maptek laser scanning system from Sta. 0+312 to 0+340. ■ Foundation approved for backfill of FFAB from Sta. 0+312 to 0+340. Refer to Section 6 – Foundation Approval.
Key trench backfill	■ Zone 2B placement occurred in 2 lifts of 250 mm thickness from Sta. 0+216 to 0+241. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2A placement occurred in 2 lifts from Sta. 0+241 to 0+256 and 2 lifts from Sta. 0+266 to 0+295. Lift thickness was 250 to 300 mm. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6

Activity or Area	Comments
	passes). Material appeared evenly compacted. It is visually of good quality and well-graded.
Liner installation	■ The slope from 0+210 to 0+239 was covered in approximately 2 cm of snow overnight. Efforts were made to remove as much a snow as possible by hand (shovel) without disturbing liner bedding surface. Use of a blower was deemed unacceptable so as not to disturb surface and remove fines (bentonite). ■ AM and PM calibration results met Technical Specifications. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. The tensiometer tests are being conducted in warm conditions (at least 20C). ■ Installation of the geotextile on the key trench slope (2.5H:1V) from Sta. 0+210 m to 0+239 m. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner progressed on the key trench slope (2.5H:1V) from 0+210 to 0+239 (panels P7 to P9). The LLDPE was free of folds and holes. Liner surface was approved by QA representative and liner QC representative. ■ Destructive testing will occur after 150 m of liner install, as per specs. ■ The total fusion seam length is about 95 m. The total extrusion fillet seam length is 0 m. ■ Vacuum box tests have not been performed yet.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 2: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210316-DS-02	IVR Dyke (Foundation approval)	Sta. 0+312 to Sta. 0+340 (Key trench)	16-Mar-21	Trench floor is grey-brown diorite bedrock with tight joints (minimal aperture) and no infilling. Top ~1 m of bedrock is weathered and fractured;

				however, the fractured material was removed during blasting and mucking. The floor of the key trench is high quality bedrock. The fractured zone in the upstream key trench wall will be covered by the first layer of FFAB. There are 3 joint sets in the bedrock. One spot is high by 150 mm at Sta. ~0+312 closer to the downstream wall of the trench. This is acceptable. The first few lifts of Zone 2B (FFAB) material will have to be compacted by hand with a manual plate compactor in bedrock crevices and depressions.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 3: Details of the geosynthetics Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210316-DS-01	IVR Dyke (Geosynthetics - Lower section of liner in key trench)	Sta. 0+169 to Sta. 0+239 (Key trench)	16-Mar-21	Liner extends too far at toe of slope – to be cut prior to backfill. This was done. Approximately 2 cm of snow fell overnight on subsurface bedding of geotextile/liner. Snow was removed by hand (shovels) prior to liner installation without disturbing liner bedding.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 4: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
None						

Table 5: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 6: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
4	15-Mar-2021	NS	Zone 2B	Sta. 0+217 to 0+231 Key trench Depth 0.5 to 0.25 mbgs	Dry Density	Compliant Average 2021 kg/m^3 % SPD 98.0 (min)
					Moisture Content	Average 5.7%
6	15-Mar-2021	NS	Zone 2A	Sta. 0+248 to 0+290 Key trench Depth 1.75 to 0 mbgs	Dry Density	Compliant Average 2107 kg/m^3 % SPD 98.1 (min)
					Moisture Content	Average 3.9%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 7: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-01	Zone 2A: Grain Size Spec.	March 16, 2021	Requested by AEM. Favourable opinion from Golder.	Fine filter is coarser than design but is deemed suitable for its intended use (liner bedding, filter compatibility with coarse filter, matrix for the bentonite in FFAB).
RFI-05	Zone 2B : Reduction of bentonite content in non-critical zones	March 16, 2021	Requested by AEM. Favourable opinion from Golder.	Bentonite content of Zone 2A material (FFAB) will be reduced to 4% mix ratio in areas outside critical section (Sta. 0+080 to 0+320). Formal RFI document in progress by AEM.
FC21-03	Grouting of bedrock in non-critical zones	March 16, 2021	Requested by AEM. Favourable opinion from Golder.	Foundation bedrock grouting can be omitted in areas where the bedrock is sound, of high quality, with closed joints AND where water does not pond directly against the dike at MOL. Areas within the MOL footprint and fractured bedrock areas will be grouted as per design.

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 8: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2078: Snow on geotextile/LLDEP liner bedding surface Sta. 0+210, view look S.



Photograph 2079: Bedding surface for geotextile/LLDPE liner after cleaning snow. Sta. 0+210, view looking N.



Photograph 2080: Calibration weld of LLDPE liner.



Photograph 2081: Tensiometer peel test on calibration sample.



Photograph 2082: Calibration peel test fracture result.



Photograph 2083: Geotextile installation on lower key trench slope, Sta. 0+250 looking W.



Photograph 2084: LLDPE liner installed on lower slope of key trench, Sta. 0+265 looking W.



Photograph 2085: Cleaning, placement & compaction of Zone 2B (FFAB) material over bedrock section of key trench, Sta. 0+315 looking S

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 17, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 17TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 16th, 2021 and day shift for March 17th, 2021.

1.0 WEATHER

- High -22°C Low -28°C during night shift, clear
- High -23°C Low -33°C during day shift, clear

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- AEM: Stephane Gionet, Yanick Hamel
- KCG: Manuel
- QA: Shai Spilberg
- QC: Ryan Okkema (DS), Doug Yokoyama (NS)

Health, Safety & Environment:

- Good site housekeeping. Keep up the good work.
- Covid testing – 2 people have missed their day 5 covid test in the last 3 days. It is very important not to forget these tests.
- Some fly rocks occurred during last blast because there was no open face. The fly rocks did not go very far (within clearance radius). Subsequent blasts will be done with open faces.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Due to lack of communication at the beginning of shift, some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A Non-Conformity will nonetheless be issued to document this item. A sample of the material was taken by QA representative for grain size testing.
- QA/QC focus in the next few days will be the bentonite mixing procedure. The QA and QC representatives will visit the bentonite mixing station tomorrow to document and review the mixing process. QA/QC has requested truck count and bentonite bag count sheets from contractor to review bentonite quantities and ensure adequate sampling & laboratory testing is being done.
- The liner installation crew foreman asked if horizontal joints are allowed in the LLDPE liner. AEM and Golder responded that horizontal joints should be avoided in the critical dam section from 0+080 to 0+320. In general, the Specifications state: “All field seams shall be made generally perpendicular to the longitudinal axis of slopes except locally in areas where conditions do not permit.”
- High relative density values are being obtained from compaction density tests on the 4% bentonite FFAB mix. A standard Proctor test will be done on this material to obtain a new maximum dry density.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Foundation approved for backfill of FFAB from Sta. 0+340 to 0+377 (see Section 6.0). Floor of the key trench is composed of high-quality bedrock, grey-brown diorite, with tight joints (minimal aperture) and irregular topography. The top 1 m of bedrock is generally weathered and fractured but was removed during blasting & mucking in the key trench footprint. As the bedrock rises towards the East, the upper weathered/fractured zone also rises in the upstream trench wall and will not be covered by FFAB at this location. The bedrock surface will not be grouted as per FC21-03, since the final foundation bedrock is high quality and outside the MOL footprint. ■ Mapping of the bedrock is being done with a Maptek laser scanning system.
Key trench backfill	■ Zone 2B (FFAB) material placement started from 0+175 to 0+200 on top of liner (approved) to a height of ~2 mbgs. The fine filter material looks well

Activity or Area	Comments
	graded. It was bucket compacted since compaction is not allowed for less than 2 m of fill on top of LLDPE liner. ■ Zone 2B placement occurred in 5 lifts of 250 mm thickness from Sta. 0+295 to 0+355. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2A placement occurred in 2 lifts of 300 mm from Sta. 0+295 to 0+355. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared evenly compacted. It is visually of good quality and well-graded.
Liner installation	■ Installation of geotextile from Sta. 0+239 to 0+269. The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner progressed on the key trench slope (2.5H:1V) from 0+239 to 0+269 (panels P10 to P14). The LLDPE was free of folds and holes. Liner surface was approved by QA representative and liner QC representative. ■ Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. There is continuing difficulty in performing the seam tests in cold temperatures. ■ AM and PM calibration results met Technical Specifications. The welding speed had to be decreased due to cold temperatures. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. The tensiometer tests are being conducted in warm conditions (at least 20C). ■ Destructive testing was performed on the seam between Panels P10/P11 (sample DT1). Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. The sample was kept by QA representative for potential independent lab testing. ■ Three extrusion fillet welds were performed on panel P14 that had holes from transport damage, labelled R1, R2, and R3. The extrusion machine was

Activity or Area	Comments
	calibrated prior to welding. Vacuum box tests were conducted on the patches and no leaks were detected. ■ The total fusion seam length is about 95 m. The total extrusion fillet seam length is approximately 150 m.

Table 2: Details of the Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
DT1	Destructive test	Sta. 0+238	Between panels 875 and 876	Compliant
R1	Repair (hole)	Sta. 0+265	Panel P14	Repaired with extrusion weld, vacuum tested
R2	Repair (hole)	Sta. 0+265	Panel P14	Repaired with extrusion weld, vacuum tested
R3	IVR Dike (key trench section)	Sta. 0+265	Panel P14	Repaired with extrusion weld, vacuum tested

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210317-DS-02	IVR Dyke (Foundation approval)	Sta. 0+340 to Sta. 0+377 (Key trench)	17-Mar-21	Trench floor is grey-brown diorite bedrock with tight joints (minimal aperture) and no infilling. The bedrock rises towards the East. Top ~1 m of bedrock is weathered and fractured; however, the fractured material was removed during blasting and mucking in the key trench footprint. The floor of the key trench is high quality bedrock.

				The first few lifts of Zone 2B (FFAB) material will have to be compacted by hand with a manual plate compactor in bedrock crevices and depressions.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the Geosynthetics Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210317-DS-01	IVR Dyke (Lower section of liner in key trench)	Sta. 0+239 to Sta. 0+269 (Key trench)	17-Mar-21	3 patches made on Panel 14 that was damaged during transport. Liner installation foreman was instructed not to use damaged panels in the critical section of the dam going forward.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-5-AMQ-FFAB	March 17, 2021	-	FFAB	Station 0+336, 2.75 mbgs	Gradation, W/C	Pending
PSD-6-AMQ-FFAB	March 17, 2021	-	FFAB	Station 0+336, 2.0 mbgs	Gradation, W/C	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
6	16-Mar-2021	NS	Zone 2B	Sta. 0+310 to 0+355 Key trench Depth 2.5 to 2.7 mbgs	Dry Density	Compliant Average 2074 kg/m^3 % SPD 100.7 (min)
					Moisture Content	Average 5.0%
3	17-Mar-2021	DS	Zone 2B	Sta. 0+317 to 0+338 Key trench Depth 1.75 to 0 mbgs	Dry Density	Compliant Average 2176 kg/m^3 % SPD 105.3 (min)
					Moisture Content	Average 4.1%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued. Note that closed/accepted field changes are not reiterated in subsequent daily reports and the complete list can be found in the weekly reports.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

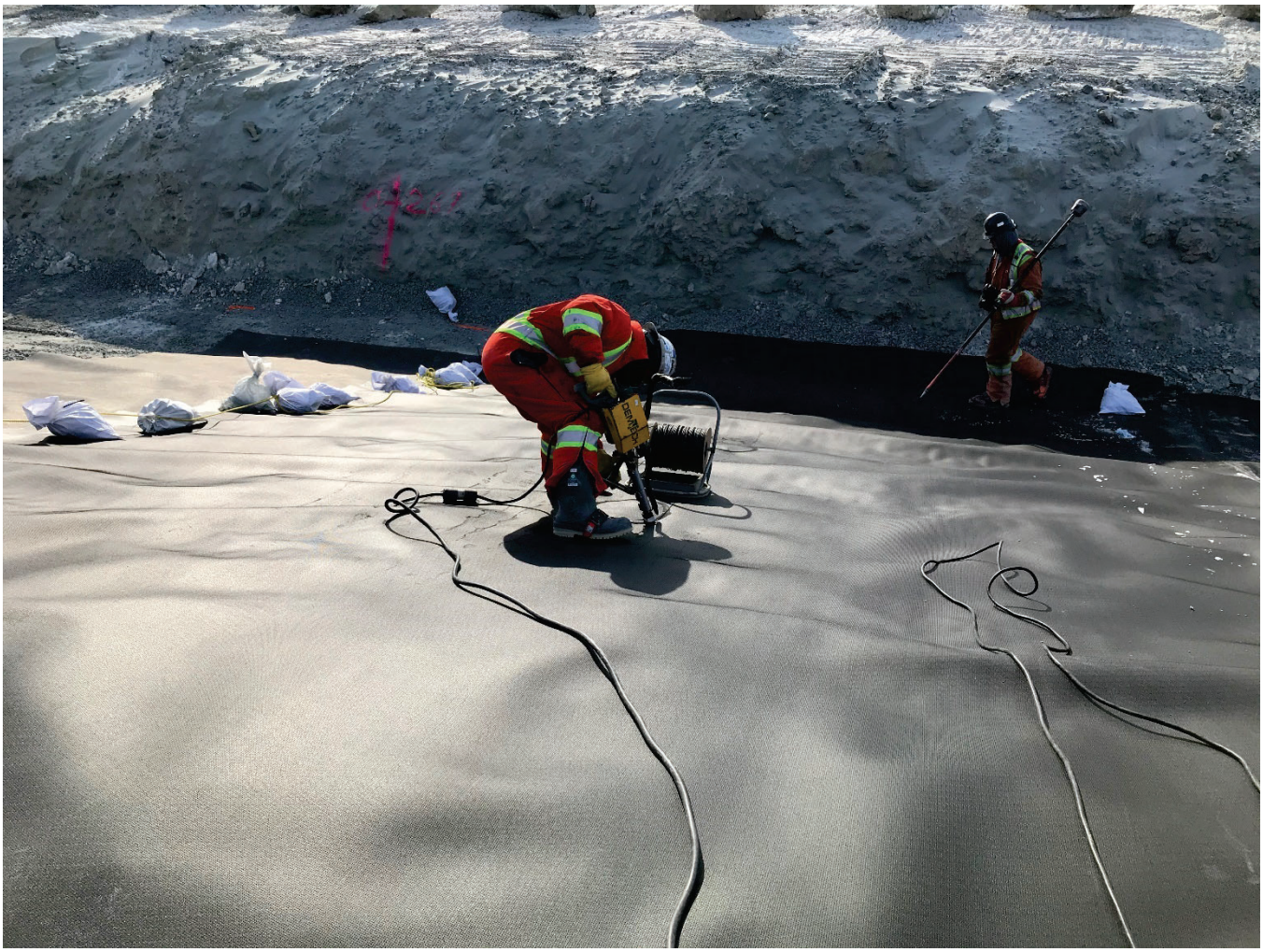
Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2085: Cleaning of bedding surface for LLDPE liner at bottom of slope, Sta. 0+240 view looking SE.



Photograph 2086: Extrusion weld of R3 on Panel 14, Sta. 0+265 view looking S.



Photograph 2087: Completed extrusion weld of patch R3 on Panel 14, Sta. 0+265.



Photograph 2088: Vacuum box test on patch R3, Panel 14. Sta. 0+265.



Photograph 2089: Placement of Zone 2B (FFAB) over LLDPE liner, Sta. 0+200, view looking W.



Photograph 2090: Bedrock in key trench foundation approved for placement of FFAB, Sta. 0+377 looking W.



Photograph 2091: Close-up of weathered/fractured zone of bedrock in key trench wall at approx. Sta. 0+365, view looking N.

12.0 SITE OVERVIEW



QA/QC DAILY REPORT

DATE March 18, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 18TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 17th, 2021 and day shift for March 18th, 2021.

1.0 WEATHER

- High -24°C Low -28°C during night shift, clear
- High -23°C Low -33°C during day shift, overcast

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Laurier Collette (AEM Geotechnical Engineer)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- Construction Survey (AEM)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Close quarters in the trench & multiple equipment working. Communication is key.
- Reminder to watch speed limit entering and exiting the IVR-DIKE.

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General Discussion:

- Bad weather forecasted for the weekend. Snow on Saturday and strong winds on Sunday.
- The waitress at the Mirabel airport tested positive for Covid-19. Workers travelling to site since Tuesday have been advised and may get themselves retested if they want.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- QA representative noticed the fractured bedrock zone in the upstream trench wall is rising higher as the trench progresses East and asked if FFAB should be preferentially placed against the fractured bedrock zone of the upstream trench wall as opposed to the entire length of the trench floor, which is high quality bedrock. Consensus is to continue with current design.
- The mixing at the FFAB mixing station is performed using a scale on the loader bucket. QA/QC will investigate when the last time the scale was calibrated and perform a new calibration if necessary. The contractor has been reminded not to prepare FFAB when conditions are windy. QA/QC will monitor wind conditions and perform regular mixing station visits.
- An additional mixing area has been set up for mixing of 6% bentonite FFAB to prepare 4% and 6% bentonite FFAB separately.
- As discussed between AEM representative and the QA/QC representatives, the Non-Conformity relating to the placement of 4% bentonite FFAB over the bottom LLDPE liner anchor at Sta. 0+175 – 0+200 will be addressed by performing a grain size distribution test on the sample of 4-6% bentonite FFAB obtained and comparing with the grain size distribution of 4% and 6% bentonite FFAB samples. In addition, the PSD summary plots will be updated and additional and appropriate testing will be performed to validate the FFAB gradation method (no wash).

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Foundation approved for backfill of FFAB from Sta. 0+377 to 0+388 (see Section 6.0). Floor of the key trench is composed of high-quality bedrock, grey-brown diorite, with tight joints (minimal aperture) and irregular topography. The top 1 m of bedrock is generally weathered and fractured but was removed during blasting & mucking in the key trench footprint. The bedrock surface will not be grouted as per FC21-03 since the final foundation

Activity or Area	Comments
	bedrock is high quality and outside the MOL footprint. The first few lifts of FFAB must be hand compacted. ■ Mapping of the bedrock was done with a Maptek laser scanning system.
Key trench backfill	■ Zone 2B (FFAB) material was placed from 0+200 to 0+259 on top of liner (approved) in one 250 mm thick lift to a height of ~2 mbgs. The fine filter material looks well graded. It was bucket compacted since compaction is not allowed for less than 2 m of fill on top of LLDPE liner. ■ Zone 2B placement occurred in 7 lifts of 250 mm thickness from Sta. 0+340 to 0+370. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2A placement occurred in 8 lifts of 250-300 mm thickness from Sta. 0+305 to 0+322. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared evenly compacted. It is visually of good quality and well-graded.
Liner installation	■ No LLDPE liner was installed today.

Table 2: Details of LLDEP Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
None				

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
20210318-DS-01	IVR Dyke (Key trench)	0+377 to 0+388	March 18, 2021	Bedrock like previous sections. High quality, tight joints with no in filling. Section mapped by scanner.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
None				

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-5-AMQ-FFAB	March 17, 2021	March 18, 2021	FFAB	Station 0+336, 2.75 mbgs	Gradation, W/C	Material too coarse for fraction > 13 mm. $D15_{max}$ respected. Accepted as per FC21-01.
PSD-6-AMQ-FFAB	March 17, 2021	March 18, 2021	FFAB	Station 0+336, 2.0 mbgs	Gradation, W/C	Material too coarse for fraction > 5 mm. $D15_{max}$ respected. Accepted as per FC21-01.

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
4	17-Mar-2021	NS	Zone 2A	Sta. 0+305 to 0+322 Key trench Elev. 162.2 to 162.5 m	Dry Density	Compliant Average 2166 kg/m^3 % SPD 98.5 (min)
					Moisture Content	Average 3.1%
5	17-Mar-2021	NS	Zone 2B	Sta. 0+340 to 0+370 Key trench Depth 3.0 to 2.6 mbgs	Dry Density	Compliant Average 2079 kg/m^3 % SPD 100.1 (min)
					Moisture Content	Average 4.5%
4	18-Mar-2021	DS	Zone 2A	Sta. 0+309 to 0+320 Key trench Depth 0.9 to 0 mbgs	Dry Density	Compliant Average 2188 kg/m^3 % SPD 100.5 (min)
					Moisture Content	Average 3.2%
3	18-Mar-2021	DS	Zone 2B	Sta. 0+281 to 0+367 Key trench Depth 2.75 to 0 mbgs	Dry Density	Compliant Average 2100 kg/m^3 % SPD 102.6 (min)
					Moisture Content	Average 4.7%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
None				

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2078: Placement of Zone 4 (Coarse Filter) on top of Zone 2B (FFAB) overlying liner. Sta. 0+320, view looking SW.



Photograph 2079: Cleaning of bedrock surface in key trench. Sta. 0+372, view looking SE.



Photograph 2080: Approved key trench foundation, Sta. 0+377 to 0+388.



Photograph 2081: Additional bentonite mixing station set up to mix 4% and 6% bentonite FFAB separately.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 19, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 19TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 18th, 2021 and day shift for March 19th, 2021.

1.0 WEATHER

- High -23°C Low -25°C during night shift, snow then clear
- High -19°C Low -25°C during day shift, clear

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Laurier Collette (AEM Geotechnical Engineer)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- Construction Survey (AEM)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Close quarters in the trench & multiple equipment working. Communication is key.
- A fox was observed trying to steal lunch from the heated seacan on site. Keep food in trucks.

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General Discussion:

- 15 cm of snow in the forecast tomorrow.
- Drill compressor down.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Contractor confirms that a calibration test was performed last week on the loader scale at the bentonite mixing station. They will send QA/QC the calibration results.
- Location of the LLDPE liner rolls should be marked prior to snowfall with cones or flags to prevent accidental damage to liners.
- The quantity of bentonite remaining on site needs to be assessed as there is a potential shortage of that material. Some bentonite may have to be set aside for the critical portion of the dyke.
- Going forward, in order to optimize the QA resources, Golder will group certain types of approvals together for formal documentation:
  - Foundation approvals: one approval form completed for each approved section;
  - Fill approvals: one approval form per material and per QA rotation;
  - Geosynthetics approvals: one approval form per QA rotation.
  - It is emphasized that the QA representative will continue to approve foundations and materials on the field continuously to allow for timely completion of the construction operations.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ None.
Key trench backfill	■ Zone 2B (FFAB) material was placed in one 250 mm thick lift from 0+275 to 0+318 on top of liner (approved). The fine filter material looks well graded. It

Activity or Area	Comments
	was bucket compacted since compaction is not allowed for less than 2 m of fill on top of LLDPE liner. ■ Zone 4 (Coarse Filter) was placed from 0+194 to 0+254 in 300 mm lifts to a height of 1 m on top of Zone 2A (FF) over liner. The coarse filter material was bucket compacted and looked well graded. ■ Zone 2B placement occurred in 3 lifts of 250 mm thickness from Sta. 0+350 to 0+380. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2A placement occurred in 2 lifts of 250-300 mm thickness from Sta. 0+351 to 0+380 on top of FFAB. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared evenly compacted. It is visually of good quality and well-graded.
Liner installation	■ Installation of geotextile from Sta. 0+275 to 0+318. The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner progressed on the key trench slope (2.5H:1V) from 0+275 to 0+318 (panels P15 to P22). The LLDPE was free of folds and holes. Liner surface was approved by QA representative and liner QC representative. ■ Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. There is continuing difficulty in performing the seam tests in cold temperatures. ■ AM and PM calibration results met Technical Specifications. The welding speed had to be decreased in cold temperatures. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. The tensiometer tests are being conducted in warm conditions (at least 20C). ■ No destructive tests were carried out today. ■ Two extrusion fillet welds were performed for hole repairs on the seams between panels P16/P17 and P20/P21, labelled R4 and R5 respectively. The

Activity or Area	Comments
	holes were caused by the welding machine getting stuck. The extrusion machine was calibrated prior to welding. Vacuum box tests were conducted on the patches and no leaks were detected. Seal tests were conducted on the top and bottom portion of the damaged seam. ■ A triangle was cut from Panel P18 and used for the curve of the dyke, at Panel 21. ■ The total fusion seam length is about 220 m. The total extrusion fillet seam length is approximately 5 m.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
R4	IVR Dike (key trench section)	Sta. 0+283	Seam P16/17	Repaired with extrusion weld, vacuum tested
R5	IVR Dike (key trench section)	Sta. 0+310	Seam P20/21	Repaired with extrusion weld, vacuum tested

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
None				Formal approval for placement of fill materials will be issued at end of QA cross shift.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment

None				LLDPE liner inspected and approved for backfill before covering each section. Formal approval form will be issued at QA cross shift.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
MDR-2-FFAB-20210318	March 18, 2021	March 18, 2021	Zone 2B (FFAB) 4% mixing ratio	Mixing station	Single-point frozen Proctor	SPD = 2111 kg/m^3

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	18-Mar-2021	NS	Zone 2B	Sta. 0+270 to 0+320 Key trench Elev. 0.5 m above OG	Dry Density	Compliant Average 2077 kg/m^3 % SPD 101.8 (min)
					Moisture Content	Average 4.8%
2	18-Mar-2021	NS	Zone 2A	Sta. 0+362 to 0+388 Key trench	Dry Density	Compliant Average 2106 kg/m^3

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
				Elev. 0.5 m above OG		% SPD 98.0 (min)
					Moisture Content	Average 4.2%
2	19-Mar-2021	DS	Zone 2A	Sta. 0+366 Key trench Depth 2.2 to 1.9 mbgs	Dry Density	Compliant Average 2198 kg/m^3 % SPD 101.8 (min)
					Moisture Content	Average 3.6%
4	19-Mar-2021	DS	Zone 2B	Sta. 0+354 to 0+378 Key trench Depth 2.6 to 0.6 mbgs	Dry Density	Compliant Average 2112 kg/m^3 % SPD 99.5 (min)
					Moisture Content	Average 4.5%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
None				

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will

of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.				be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2097: Approved bedding surface for geotextile/geomembrane. Sta. 0+315, view looking W.



Photograph 2098: Installation of geotextile under LLDPE liner, Sta. 0+310, view looking NW.



Photograph 2099: Damage to seam P16/17 due to stuck welder, Sta. 0+283.



Photograph 2100: Extrusion welded patch R4 on seam P16/17, Sta. 0+310.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 20, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 20TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 19th, 2021 and day shift for March 20th, 2021.

1.0 WEATHER

- High -21°C Low -25°C during night shift, clear, fog
- High -16°C Low -22°C during day shift, overcast

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Laurier Collette (AEM Geotechnical Engineer)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- Construction Survey (AEM)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Close quarters in the trench & multiple equipment working. Communication is key.
- No safety issues observed on site. Keep up the good work.

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General Discussion:

- We are in good shape for the snowstorm this evening (exposed liner has been backfilled, FFAB has been covered with coarse filter material, first lift of FFAB placed on bedrock).

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Wind conditions are getting worse. Preparation of Zone 2B (FFAB) material is not allowed during windy conditions due to loss of fines. Mixing operations shall be suspended at QA/QC's discretion.
- The problem of bentonite supply on site is still being sorted out.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Foundation approved for backfill of FFAB from Sta. 0+408 to 0+423 (see Section 6.0). Floor of the key trench is composed of high-quality bedrock, grey-brown diorite, with tight joints (minimal aperture) and irregular topography. The top 1 m of bedrock is generally weathered and fractured but was removed during blasting & mucking in the key trench footprint. The bedrock surface will not be grouted as per FC21-03 since the final foundation bedrock is high quality and outside the MOL footprint. The first few lifts of FFAB must be hand compacted. ■ Mapping of the bedrock was done by hand.
Key trench backfill	■ Zone 2A (FF) material was placed in one 250 mm thick lift on top of approved liner surface from 0+165 to 0+336. The fine filter material looks well graded. It was bucket compacted since compaction is not allowed for less than 2 m of fill on top of LLDPE liner. ■ Zone 4 (Coarse Filter) was placed from 0+170 to 0+300 in 300 mm lifts to a height of 1 m over liner. The coarse filter material was bucket compacted and looked well graded. ■ Zone 2B placement occurred in one lift of 250 mm thickness from Sta. 0+388 to 0+408. Compaction was accomplished with a 10-tonne smooth-drum

Activity or Area	Comments
	compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2A placement occurred in 5 lifts of 300 mm thickness from Sta. 0+320 to 0+370 on top of FFAB. Compaction was accomplished with a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared evenly compacted. It is visually of good quality and well-graded.
Liner installation	■ No liner was installed today.

Table 2: Details of LLDEP Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
None				

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Foundation	20210320-DS-01	0+408 to 0+423	March 20, 2021	
Key trench Zone 2B (FFAB) Under liner - bottom	None			
Key trench Zone 2A (FF) Under liner	None			
Key trench Zone 2B (FFAB) Under liner - top	None			
Key trench	None			

Zone 2B (FFAB) Over liner				
Key trench Zone 2A (FF) Over liner	None			

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
None				

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-6-AMQ-FF-20210319	March 19, 2021	March 19, 2021	Zone 2A (FF)	Zone 2A fillet area, Sta. 0+350	Grain size analysis	Out of spec (too coarse) for fraction > 10 mm. Accepted as per Field Change FC21-01

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
1	19-Mar-2021	NS	Zone 2B	Sta. 0+388 to 0+408 Key trench Elev. 2.5 m below OG	Dry Density	Compliant Average 2076 kg/m^3 % SPD 98.3 (min)
					Moisture Content	Average 5.1%
5	19-Mar-2021	DS	Zone 2A	Sta. 0+339 to 0+367 Key trench Depth 1.2 to 0.25 m below OG	Dry Density	Compliant Average 2250 kg/m^3 % SPD 103.8 (min)
					Moisture Content	Average 3.4%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
None				

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6%	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite

bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.				FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2101: Approved key trench bedrock foundation. Sta. 0+408 to 0+423, view looking S.



Photograph 2102: Zone 2A (Fine FilteR) and Zone 4 (Coarse Filter) on top of LLDPE liner, Sta. 0+165 to 0+300, view looking NE.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 21, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 21ST, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 20th, 2021 and day shift for March 21st, 2021.

1.0 WEATHER

- High -22°C Low -24°C during night shift, blowing snow
- High -19°C Low -32°C during day shift, sun, high winds

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Laurier Collette (AEM Geotechnical Engineer)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- Construction Survey (AEM)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Close quarters in the trench & multiple equipment working. Communication is key.
- No safety issues observed on site. Keep up the good work.

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General Discussion:

- Make sure thermistors are correctly installed in dyke prior to backfill.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Mixing of Zone 2B (FFAB) material was halted this afternoon due to windy conditions.
- Snow on top of Zone 4 (Coarse Filter) material must be removed prior to backfilling.
- The issue of bentonite shortage on site is still being sorted out. Three seacans of additional bentonite were discovered on site (roughly 15-20 tonnes each) and there may be more in Meadowbank and Baker Lake.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Key trench foundation cleaning progressed from 0+423 to 0+445. Floor of the key trench is composed of high-quality bedrock, grey-brown diorite with tight joints (minimal aperture) until 0+435, after which the trench floor becomes overburden (frozen till). ■ Key trench foundation could not be mapped or approved due to snow cover and weather conditions.
Key trench backfill	■ Zone 4 (Coarse Filter) was placed from 0+270 to 0+305 in 300 mm lifts to a height of approx. 1.7 m over liner toe. The coarse filter material was bucket compacted and looked well graded. ■ Zone 2B placement of 4% mix ratio occurred in multiple lifts of 250 mm thickness from Sta. 0+408 to 0+423. Compaction was accomplished with a hand compactor (for lifts in bedrock depressions) and a 10-tonne smooth-drum compactor with vibration (6 passes). Material appeared visually of good quality and well-graded. ■ Zone 2B placement occurred in 2 lifts of 250 mm thickness under the liner hinge from Sta. 0+310 to 0+360. Compaction was accomplished with a 10-

Activity or Area	Comments
	tonne smooth-drum compactor with vibration (6 passes). Material appeared evenly compacted. It is visually of good quality and well-graded.
Liner installation	■ No liner was installed today.

Table 2: Details of LLDEP Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
None				

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Foundation	None			
Key trench Zone 2B (FFAB) Under liner - bottom	None			
Key trench Zone 2A (FF) Under liner	None			
Key trench Zone 2B (FFAB) Under liner - top	None			
Key trench Zone 2B (FFAB) Over liner	None			
Key trench Zone 2A (FF)	None			

Over liner				

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
None				

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-7-AMQ-FFAB-20210320	March 20, 2021	March 20, 2021	Zone 2A (FF)	Zone 2A fillet area, Sta. 0+350	Grain size analysis	Out of spec (too coarse) for fraction > 10 mm. Accepted as per Field Change FC21-01

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-11	8-Mar-21	9-Mar-21	Key trench foundation	Sta. 0+200, OS -1.0 m	WC/IC	WC = 8.4% IC = 0.0%*
QA21-12	9-Mar-21	10-Mar-21	Key trench foundation	Sta. 0+210 OS 0.0 m	WC/IC	Sample lost

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-13	10-Mar-2021	11-Mar-21	Key trench foundation	Sta. 0+230, OS -4.5 m	WC/IC	WC = 36.0% IC = 13.7% Ice-rich
QA21-14	10-Mar-2021	12-Mar-21	Key trench foundation	Sta. 0+240 OS 0 m	WC/IC	WC = 24.7% IC = 5.8% Ice-poor
QA21-15	11-Mar-2021	12-Mar-21	Key trench foundation	Sta. 0+260, OS 0 m	WC/IC	WC = 26.6% IC = 19.9% Ice rich
QA21-16	12-Mar-2021	13-Mar-21	Key trench foundation	Sta. 0+280, OS 0 m	WC/IC	WC = 79.5% IC =56.9% Ice rich
QA21-17	13-Mar-2021	14-Mar-21	Key trench foundation	Sta. 0+300, OS 0 m	WC/IC	WC = 29.1% IC = 15.9% Ice rich
QA21-18	14-Mar-2021	15-Mar-21	Key trench foundation	Sta. 0+320, OS 0 m	WC/IC	WC = 12.9% IC = 1.7% Ice-poor

*Invalid test. Water may have evaporated due to time delay between sampling & testing.

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	20-Mar-2021	NS	Zone 2B	Sta. 0+408 to 0+423 Key trench Elev. 2.5 m below OG	Dry Density	Compliant Average 2083 kg/m^3 % SPD 98.3 (min)

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
					Moisture Content	Average 4.6%
4	20-Mar-2021	NS	Zone 2B	Sta. 0+320 to 0+360 Key trench Depth 0.3 to 0.1 m below OG	Dry Density	Compliant Average 2087 kg/m^3 % SPD 100.4 (min)
					Moisture Content	Average 5.1%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
None				

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

potentially damaging the liner. A sample was taken to confirm bentonite content.				

11.0 PHOTOGRAPHS



Photograph 2101: Key trench bedrock foundation from Sta. 0+423 to 0+445, view looking W.



Photograph 2102: Placement of Zone 4 (Coarse Filter) in key trench, Sta. 0+300, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 22, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR MARCH 22ND, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 21st, 2021 and day shift for March 22nd, 2021.

1.0 WEATHER

- High -26°C Low -30°C during night shift, blowing snow
- High -29°C Low -33°C during day shift, sun, high winds

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Laurier Collette (AEM Geotechnical Engineer)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- Construction Survey (AEM)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Close quarters in the trench & multiple equipment working. Communication is key.

General Discussion:

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- None

4.0 DISCUSSIONS

During the day, the following discussions were held:

- A total of 4 additional seacans of bentonite have been found on site, bringing a total of approximately 70 m.T. of bentonite to the project. This may be enough to execute the current design without changes, pending verifications by AEM.
- About 6 loads of bentonite FFAB 4% were mixed on site yesterday despite notice from QA/QC to cease mixing operations in the high winds. The result is that several loads of FFAB are currently being stockpiled in high winds for a period longer than 24 hours. A Non-Conformity was issued for this. The stockpiled material is planned to be used in the noncritical section of the dam (beyond MOP footprint).
- The overexcavated zone of the key trench at Sta. 0+130 to 0+160 was rebuilt under QC supervision using a manual plate tamper due to lack of space. In situ relative density values of 90.3% to 100.4% were obtained for the Fine Filter material, with the average value (95.0%) falling below the Technical Specifications target of 98%. Maximum compaction effort was achieved with the equipment available. A Non-Conformity has been issued for this.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Key trench foundation from Sta. 0+423 to 0+445 could not be mapped or approved due to snow accumulation in trench.
Key trench backfill	■ Zone 4 (Coarse Filter) was placed above liner toe to surface from 0+165 to 0+318. Snow was removed in between placement of 300 mm lifts. The coarse filter material was roller compacted 2 m above liner and looked well graded. ■ Zone 2A placement occurred along the underbuilt section of underliner fillet at the west end of the key trench (Sta.0+130 to 0+160). Due to the narrowness of the correction lifts, the tamping plate was required to compact the fine filter material in this area. Compaction Technical Specifications were not met (see Non-Conformity section). Material appeared visually of good quality and well-graded.

Activity or Area	Comments
Liner installation	■ No liner was installed today.

Table 2: Details of LLDEP Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
None				

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Foundation	None			
Key trench Zone 2B (FFAB) Under liner - bottom	None			
Key trench Zone 2A (FF) Under liner	None			
Key trench Zone 2B (FFAB) Under liner - top	None			
Key trench Zone 2B (FFAB) Over liner	None			
Key trench Zone 2A (FF) Over liner	None			

Dam footprint downstream foundation	20210320-DS-06	Sta. 0+165 to 0+318	March 20, 2020	Snow drifts must be removed prior to backfilling rock fill. Approval condition upon removal of ice-rich soil within LLDPE liner slope footprint.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
None				

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
None						

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
6	22-Mar-2021	DS	Zone 2A	Sta. 0+130 to 0+160 Key trench Depth 2.1 to 0.6 m below OG	Dry Density	Non-Compliant Average 2025 kg/m^3 % SPD 95 (min)
					Moisture Content	Average 4.2%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
None				

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

potentially damaging the liner. A sample was taken to confirm bentonite content.				
About 6 loads of bentonite FFAB were mixed on site despite notice from QA/QC to cease mixing operations in the high winds. The result is that several loads of FFAB are currently being stockpiled in high winds for a period longer than 24 hours. The stockpiled material is planned to be used in the noncritical section of the dam (beyond MOP footprint).	Non-conformance	March 22, 2021	Golder, AEM	Golder recommends removing the surface material (about 50 mm deep) of the stockpiles exposed to high winds, where bentonite might have been blown away. It is considered that the center of the stockpile will have retained a good bentonite content.
The overexcavated zone of the key trench at Sta. 0+130 to 0+160 was rebuilt under QC supervision using a manual plate tamper due to lack of space. In situ relative density values of 90.3% to 100.4% were obtained for the Fine Filter material, with the average value (95.0%) falling below the Technical Specifications target of 98%. Maximum compaction effort was achieved with the equipment available.	Non-conformance	March 22, 2021	Golder, AEM	Golder acknowledges that this is the maximum density that could be achieved with the equipment available in winter conditions (no possibility to add moisture). This non-conformity is meant to highlight the risk of settlement in this zone, to be monitored during construction and operation.

11.0 PHOTOGRAPHS



Photograph 2105: Approved downstream dam footprint foundation, Sta. 0+165 to 0+318, view looking W.



Photograph 2106: Rebuilding of overexcavated section, Sta. 0+130 to 0+160, view looking W.



Photograph 2107: Snow filling key trench, Sta. 0+450, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 23, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 23RD, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 22nd, 2021 and day shift for March 23rd, 2021

1.0 WEATHER

- High -29°C Low -33°C clear, high winds

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.
- Shift change: Ensure returning employees are familiar with the changing site conditions at the IVR Dyke.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Reminder for all employees to be vigilant with wearing masks on site.

General Discussion:

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- KCG is currently utilizing one air compressor at the IVR Dyke, second compressor is being used during nightshift for the vent raise but is available if required.
- Zoom boom is still down, KCG to utilize other equipment to facilitate production of FFAB material at the mixing pad.
- KCG excavated material from blast between approx. Sta. 0+090 and Sta. 0+065, worked to correct fine filter slope between approx. Sta. 0+135 and Sta. 0+165 and removed snow over FFAB between Sta. 0+320 and Sta. 0+360.
- KCG workplan for nightshift will be to place FFAB material in base of key trench between approx. Sta.0+370 and Sta. 0+418 and pending weather will begin liner installation from Sta. 0+315 to Sta. 0+355 and Sta. 0+135 to Sta. 0+165.
- AEM noted, 4 additional shipping containers of bentonite have been located on site and sufficiently material should be available to finish the job.
- QA/QC noted additional snow along crest of Zone 2A between Sta. 0+315 to Sta. 0+355 will need to be removed in advance of foundation approval.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM noted full time QA supervision of liner installation is not required at the IVR Dyke. QA representative should oversee calibration testing in the morning and conduct periodic inspections throughout the day to satisfy the testing frequency set out in the design specifications (1 every 5 QC tests).
- Discussions regarding expectations for snow removal from the underliner slope prior to liner placement. Checks are required to ensure no snow layers have been buried within the surface of the fine filter material. This can occur when an excavator is used to scrape snow from placed material surfaces and the material is spread over top of the consolidated snow layer.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. Note, due to shift change QA representative was only on site between 15:00 and 18:00.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ No activity observed.

Activity or Area	Comments
Key trench backfill	■ Zone 2A/2B placed in trench excavation was cut to design lines between approx. Sta. 0+135 and Sta. 0+165. Material appeared visually of good quality and well-graded and was approved for placement of Zone 2B (FFAB). ■ Zone 2B (FFAB) material placement occurred between approx. Sta. 0+315 and Sta. 0+350 in 1 lift of 100 mm thickness following snow removal to achieve design grade.
Liner installation	■ No liner was installed today.

Table 2: Details of LLDEP Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Zone 2A (FF) Under liner - top	20210323-DS-01	Sta. 0+135 to Sta. 0+165	Mar-24	Approved Zone 2A for placement of Zone 2B on top

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Name	Structure	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-3-AMQ-CF-20210321	March 21, 2021	March 21, 2021	Zone 3 (CF)	Overliner backfill, Sta. 0+250, 0.0-0.3 m below OG	Sieve analysis	Compliant (4% oversize observed on 150 mm sieve)

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
1	Mar-23	Day	Zone 2A	Sta. 0+157, Offset +4.0 m, elev. 161.2 m	DD	2108 kg/m3 (98.9%) Compliant
					MC	4.4 %

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description

-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2108: Additional snow removed under Zone 2B (FFAB) material placed along crest at Sta. 0+375, view looking E.



Photograph 2109: Additional Zone 2B (FFAB) material placed along crest between Sta. 0+315 and Sta. 0+250, view looking E.



Photograph 2110: Approved placement of Zone 2A material (FF) at Sta. 0+125, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 24, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 24TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 23rd, 2021 and day shift for March 24th, 2021

1.0 WEATHER

- High -29°C Low -37°C clear, high winds

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Reminder for all employees, safety glasses are required when working in the field.

General Discussion:

- LLDPE liner was installed from Sta. 0+135 to Sta. 0+165 and from Sta. 0+315 to Sta. 0+355. KCG currently cleaning downstream sidewall of trench excavation between Sta. 0+320 and Sta. 0+355, to be approved before nightshift for placement of Zone 2B (FFAB) material.

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- KCG workplan for nightshift will be to place Zone 2B (FFAB) over LLDPE liner installed from Sta. 0+320 to Sta. 0+355 and place Zone 2A (FF) material between Sta. 0+385 and Sta. 0+410 to be ready for Zone 2B material first thing tomorrow morning.
- KCG to differentiate material placed over liner vs. under liner on load counts moving forward.
- QA representative noted, AEM instrumentation technician will be ready to install thermistor at the IVR Dyke. In addition, KCG to be vigilant when removing snow over LLDPE liner following damage this afternoon to panel P29.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM noted, extra bentonite was found on site bringing total quantity to 340 tonnes, an additional 4 seacans possibly remain but will need to be verified. Using estimate provided by Laurier 363 tonnes of bentonite is required, using survey data (1.8 times original quantities) 349 tonnes of bentonite will be required. Required volume does not account for change in reduced FFAB width along bottom of key trench. AEM will maintain full width of FFAB along west abutment and will make adjustments near the east abutment if required.
- Based on available esker material quantities (2500 m^3) on site AEM will be able to place Zone 4 up to elev.163.5 m.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Key trench foundation cleaning progressed from approx. Sta. 0+100 to Sta. 0+130. ■ KCG labourers removed snow along downstream key trench excavation wall and base of Zone 2B (FFAB) between approx. Sta. 0+315 and 0+355 in advance of Zone 2B placement over installed LLDPE.
Key trench backfill	■ Zone 2B placement occurred in three lifts of 250 mm thickness between Sta. 0+385 and Sta. 0+411. Compaction was verified by QC representative and material appeared visually of good quality and well-graded.

Activity or Area	Comments
	■ Zone 2A was placed over Zone 2B along width of key trench in 1 lift of 300 mm thickness from Sta. 0+385 to Sta. 0+411. Compaction was verified by QC representative and material appeared visually of good quality and well-graded.
Liner installation	■ Installation of geotextile from Sta. 0+165 to Sta. 0+135 and from Sta. 0+315 to Sta. 0+355. The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner was installed on the key trench slope (2.5H:1V) from Sta. 0+165 to Sta. 0+135 (panels P29 to P31) and from Sta. 0+315 to Sta. 0+355 (panels P23 to P28). Liner surface was approved by QA representative and liner QC representative. ■ Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications ■ Two calibration tests were conducted and met the Technical Specifications. First calibration test was conducted on smooth-to-smooth liner surfaces at 7 AM and second calibration test was conducted on smooth-to-rough liner surfaces at 10 AM. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. The tensiometer tests are being conducted in warm conditions in shipping container. ■ One destructive test was carried out today at approx. Sta. 0+321 on seam between panels P23 and P24. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. ■ No vacuum box test were conducted.

Table 2: Details of LLDEP Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
DT2	IVR Dike (key trench section)	Sta. 0+321	Seam P23/24	Destructive test, compliant
R6	IVR Dike (key trench section)	Sta. 0+130	Seam P1/P29	Removed smooth part of liner at tie-in due to

				damage caused during snow removal

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

FC liner removing 'smooth' portion of panel P01 at approx. Sta. 0+170 due to damage along seem caused by excavator during snow removal.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B (FFAB) Under liner	20210324-DS-01	Sta. 0+315 to Sta. 0+355	Mar-24	Approved Zone 2B for placement of liner.
Zone 2B (FFAB) Under liner	20210324-DS-02	Sta. 0+135 to Sta. 0+165	Mar-24	Approved Zone 2B for placement of liner.
Key trench Zone 2B (FFAB)	20210324-DS-05	Sta. 0+385 to Sta. 0+418	Mar-24	Approved Zone 2B for placement of Zone 2A
Key trench Zone 2B (FFAB) downstream of liner	20210324-DS-06	Sta. 0+315 to Sta. 0+355	Mar-24	Approved downstream trench excavation sidewall and base of Zone 2B for placement of Zone 2B over liner

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (key trench)	20210324-DS-03	Sta. 0+315 to Sta. 0+355	Mar-24	Approved liner for placement of Zone 2B.
Liner (key trench)	20210324-DS-04	Sta. 0+135 to Sta. 0+165	Mar-24	Approved liner for placement of Zone 2B.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-8-AMQ-FFAB	Mar-24	Mar-24	Zone 2B (FFAB)	Sta. 0+400, key trench under liner	GSA	Compliant, well graded with some coarse particles
					MC	1.9 %
PSD-7-AMQ-FF	Mar-24	-	Zone 2A	Sta. 0+415, key trench under liner	GSA/MC	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-19	Mar-24	-	Zone 2A	Sta. 0+305, key trench, elev. 162.0 m	GSA	Pending

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
1	Mar-23	Night	Zone 2B	Sta. 0+408 to Sta. 0+424, key trench, elev. 2.4 mbgs	DD	2075 kg/m3 (98.3%), compliant
					MC	5.3 %

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
3	Mar-23	Night	Zone 2B	Sta. 0+140 to Sta. 0+170, liner hinge, elev. 0 to 0.2 m	DD	2018-2091 kg/m3 (99.0% to 102.6%), compliant
					MC	4.9% to 6.1%
3	Mar-24	Day	Zone 2B	Sta. 0+385 to Sta. 0+418, key trench, elev. 161.5 m to 162.0 m	DD	2094-2150 kg/m3 (99.2% to 101.8%), compliant
					MC	5.3% to 5.6%
1	Mar-24	Day	Zone 2A	Sta. 0+385 to Sta. 0+418, key trench, elev. 162.2 m	DD	2138 kg/m3 (100.3%), compliant
					MC	4.0 %

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with

(withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.				average 4% and 6% bentonite FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2111: Fill placement of Zone 2B material (FFAB) under liner at Sta. 0+315, view looking E.



Photograph 2112: Liner QC conducting first calibration test at 7 AM, loads at failure in peel and shear were greater than minimum values presented in Technical Specifications.



Photograph 2113: Excavator shaping Zone 2A (FF) to design lines at approx. Sta. 0+175, view looking NW.



Photograph 2114: FC liner welding LLDPE liner Sta. 0+321 between panel seams P23/P24, view looking S.



Photograph 2115: Geotextile installed over LLDPE liner between approx. Sta.0+335 and Sta. 0+315, view looking W.



Photograph 2116: Slope of Zone 2A (FF) material under liner at approx. Sta. 0+165, view looking W.



Photograph 2117: FC liner removing ‘smooth’ portion of panel P01 at approx. Sta. 0+170 due to damage along seem caused by excavator during snow removal.



Photograph 2118: FC liner installing LLDPE between approx. Sta. 0+165 and Sta. 0+135, view looking SW.



Photograph 2119: Geotextile installed over LLDPE liner between approx. Sta.0+165 and Sta. 0+135, view looking W.



Photograph 2120: Snow removed along lower portion of downstream trench excavation sidewall and base of Zone 2B in preparation for Zone 2B placement over installed LLDPE at approx. Sta. 0+315, view looking E.



Photograph 2120: QC conducting compaction testing on placed Zone 2B (FFAB) material at approx. Sta. 0+405, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 25, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 25TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 24th, 2021 and day shift for March 25th, 2021

1.0 WEATHER

- High -29°C Low -33°C clear, minimal wind

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- House keeping at the IVR dyke has been exceptional, KCG to keep up the good work.

General Discussion:

- Zone 2A (FF) and 2B (FFAB) material placed to design between Sta. 0+315 and Sta. 0+355, Zone 3 placement currently on going. Zone 2B placement between Sta. 0+385 and Sta. 0+406 progressing well, KCG to be ready for liner installation by 17:30.

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- KCG continuing to prepare foundation of key trench between Sta. 0+130 and Sta. 0+080 and will be looking to place Zone 2B (FFAB) between Sta. 0+130 and Sta. 0+100 during nightshift.
- With high winds in the forecast for tomorrow FC liner to install LLDPE along prepared section of slope this evening, QA to stay late to oversee start of liner installation.
- QA representative noted, AEM engineering currently scanning prepared bedrock surface between Sta. 0+130 and Sta. 0+100. QA to approve prepared foundation in key trench after meeting.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Due to inclement weather AEM requested FC liner to install LLDPE between Sta. 0+385 and Sta. 0+406 once area is approved at 17:30. QA representative to oversee start of liner installation but will not be able to work past 20:00 due to company's fatigue policy.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Excavator continued key trench foundation preparation between approx. Sta. 0+105 to Sta. 0+080. Bottom of key trench appeared to consist of frozen overburden till and bedrock. ■ Foundation approved for backfill of FFAB from Sta. 0+130 to Sta. 0+105 (see Section 6.0). Floor of key trench is composed of good-quality bedrock, grey diorite, with tight joints (minimal aperture) and irregular topography. The bedrock surface will not be grouted as per FC21-03 since the final foundation bedrock is of good quality. The first few lifts of FFAB must be hand compacted. ■ Mapping of the bedrock was done by AEM survey scanner.
Key trench backfill	■ Zone 2A (FF) placement occurred in two lifts of 300 mm thickness for under liner slope from Sta. 0+385 to Sta. 0+406. Compaction was verified by QC representative and material appeared visually of good quality and well-graded. ■ Zone 2B (FFAB) placement occurred in two lifts of 250 mm thickness for under liner slope between Sta. 0+385 and Sta. 0+406. Compaction was verified by

Activity or Area	Comments
	QC representative and material appeared visually of good quality and well-graded. ■ Zone 2B (FFAB) was placed above the LLDPE liner in one lift of 250 mm thickness from Sta. 0+315 to Sta. 0+355. Bucket compaction was verified by QC representative and material appeared visually of good quality and well-graded. ■ Zone 2A (FF) was placed above the LLDPE liner in one lift of 300 mm thickness from Sta. 0+315 to Sta. 0+355. Bucket compaction was verified by QC representative and material appeared visually of good quality and well-graded. ■ Zone 3 was placed over Zone 2A in two lifts of 500 mm thickness from Sta. 0+315 to Sta. 0+355. Material appeared visually of good quality and well-graded.
Liner installation	■ Installation of geotextile from Sta. 0+385 to Sta. 0+406.The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner was installed on the key trench slope (2.5H:1V) from Sta. 0+385 to Sta. 0+406 (panels P32 to P38). Liner surface was approved by QA representative and liner QC representative. ■ Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ One calibration test was conducted at 6 PM and met the Technical Specifications. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. The tensiometer tests are being conducted in warm conditions in shipping container. ■ No destructive or vacuum box tests were carried out today. ■ QA present for installation of LLDPE between panels P32 to P36.

Table 2: Details of LLDEP Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

FC liner removing 'smooth' portion of panel P01 at approx. Sta. 0+170 due to damage along seem caused by excavator during snow removal.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B (FFAB) over liner	20210325-DS-01	Sta. 0+315 to Sta. 0+355	Mar-25	Approved Zone 2B for placement of Zone 2A.
Key trench Zone 2B (FFAB) downstream of liner	20210325-DS-02	Sta. 0+150 to Sta. 0+170	Mar-25	Approved downstream trench excavation sidewall and base of Zone 2B for placement of Zone 2B over liner
Zone 2A (FF) under liner	20210324-DS-03	Sta. 0+385 to Sta. 0+406	Mar-25	Approved Zone 2A for placement Zone 2B.
Zone 2A (FF) over liner	20210324-DS-04	Sta. 0+315 to Sta. 0+355	Mar-25	Approved Zone 2A for placement of Zone 3.
Zone 2B (FFAB) under liner	20210324-DS-05	Sta. 0+385 to Sta. 0+406	Mar-25	Approved Zone 2B for placement of liner.
Key trench Foundation	20210324-DS-06	Sta. 0+130 to Sta. 0+105	Mar-25	Approved for placement of Zone 2B.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment

Liner (key trench)	20210325-DS-07	Sta. 0+385 to Sta. 0+406	Mar-25	Approved liner for placement of Zone 2B.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-7-AMQ-FF	Mar-24	Mar-25	Zone 2A	Sta. 0+415, key trench under liner	GSA	Compliant, well graded with some coarse particles
					MC	2.42%

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-19	Mar-24	-	Zone 2A	Sta. 0+305, key trench, elev. 162.0 m	GSA/MC	Pending

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
12	Mar-24	Night	Zone 2A (FF)	Sta. 0+370 to Sta. 0+410, fine filter under liner, elev. 1.9 to 0.9 mbgs	DD	2090-2180 kg/m3 (98.1% to 102.2%), compliant
					MC	3.6% to 5.3%

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	Mar-25	Day	Zone 2A (FF)	Sta. 0+370 to Sta. 0+410, fine filter under liner, elev. 163.6 m to 164.1 m	DD	2079-2161 kg/m3 (97.6% to 101.4%), compliant
					MC	4.4% to 4.5%
2	Mar-25	Day	Zone 2B (FFAB)	Sta. 0+370 to Sta. 0+410, fine filter under liner, elev. 164.5 m to 164.7 m	DD	2078-2137 kg/m3 (98.4% to 101.2%), compliant
					MC	4.5% to 4.6%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess

considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.				the actual bentonite content.

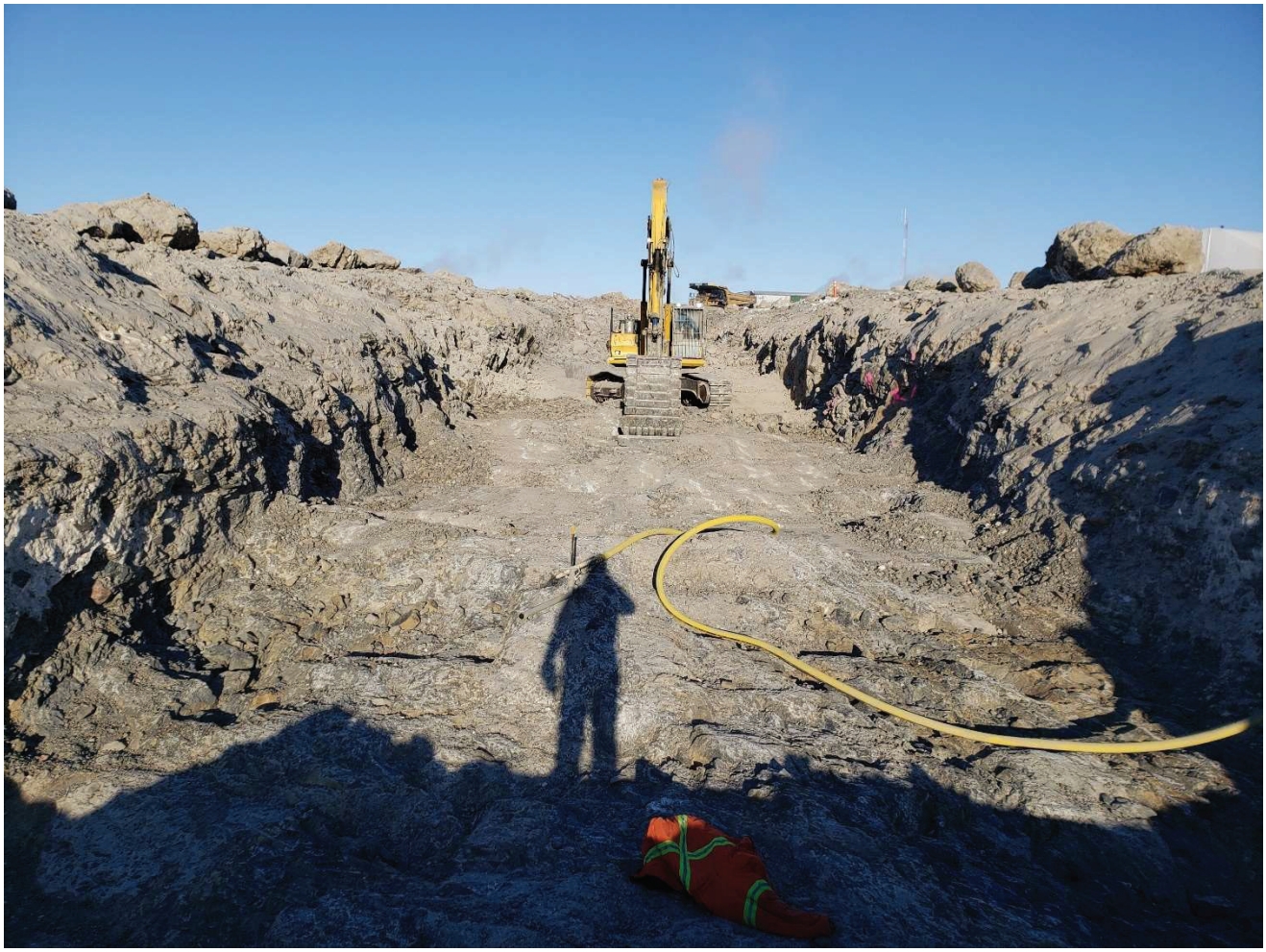
11.0 PHOTOGRAPHS



Photograph 2122: Approved placement of Zone 2B (FFAB) material over LLDPE liner at approx. Sta. 0+330, view looking SE.



Photograph 2123: Excavator shaping Zone 2A (FF) to design lines at approx. Sta. 0+395, view looking W.



Photograph 2124: Excavator continuing to prepare key trench foundation at approx. Sta. 0+110, view looking W.



Photograph 2125: AEM installing thermistor along installed LLDPE at approx. Sta. 0+135, view looking SW.



Photograph 2126: Excavator placing Zone 2A (FF) over installed LLDPE at approx. Sta. 0+320, view looking E.



Photograph 2127: Prepared section of key trench at Sta. 0+115, view looking E.



Photograph 2128: Excavator placing Zone 3 over Zone 2A/2B at approx. Sta. 0+320, view looking W.



Photograph 2129: Geotextile installed between Sta. 0+385 and Sta. 0+400 in advance on LLDPE liner installation, view looking E.



Photograph 2130: FC liner installing LLDPE between Sta. 0+150 and Sta. 0+170, view looking SW.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 26, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 26TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 25th, 2021 and day shift for March 26th, 2021

1.0 WEATHER

- High -21°C Low -26°C clear, moderate to high wind speeds

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- High winds: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Incident occurred yesterday during cleaning of key trench at the IVR Dyke. One of three clamps on air hose failed resulting in blow pipe backfiring and injuring KCG labourer. Incident investigation on-going and report to be issued tomorrow.

General Discussion:

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- Zone 3 coarse filter material placed to design between Sta. 0+170 and Sta. 0+385, Zone 1 currently being placed from Sta. 0+170 progressing east. KCG to start producing FFAB material this afternoon for placement in key trench between Sta. 0+130 and Sta. 0+105 and will be ready for placement of FF between stations tomorrow morning.
- KCG continuing foundation preparation in key trench between approx. Sta. 0+105 and Sta. 0+050 and are prepared to grout if required.
- KCG equipment availability on site includes 2 packers, 3 excavators, 4 haul trucks, dozer and zoom boom.
- Liner installation team scheduled off-site Friday, April 2, FC Liner to determine crew availability to verify opportunity to have part of team stay an extra week to completed LLDPE installation in key trench.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM survey to provide updated plan view of installed LLDPE liner with as-built key trench excavation lines.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Excavator continued key trench foundation preparation between approx. Sta. 0+105 to Sta. 0+080. Bottom of key trench appeared to consist predominantly of bedrock.
Key trench backfill	■ Zone 3 was placed over Zone 2A in two lifts of 500 mm thickness from Sta. 0+170 to Sta. 0+150. Material was bucket compacted above LLDPE liner, QC representative verified compaction effort. Material appeared visually of good quality and well-graded.
Dyke backfill	■ Zone 1 was placed over Zone 3 and original ground in one lift of 1000 mm thickness from Sta. 0+170 to Sta. 0+210. Material appeared visually of good quality and well-graded.
Liner installation	■ No installation of liner during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2A (FF) Over liner	20210326-DS-01	Sta. 0+140 to Sta. 0+165	Mar-26	Approved Zone 2A for placement of Zone 3.
Zone 3 (CF) Over liner	20210326-DS-02	Sta. 0+170 to Sta. 0+385	Mar-26	Approved Zone 3/Foundation for placement of Zone 1

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-19	Mar-24	-	Zone 2A	Sta. 0+305, key trench, elev. 162.0 m	GSA	Compliant, well graded with some coarse particles and insufficient fines (4.3%)
					MC	2.3%

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
1	Mar-25	Night	Zone 2B (FFAB)	Sta. 0+105 to Sta. 0+130, Key Trench, elev. 3.0 mbgs	DD	2089 kg/m3 (98%), compliant
					MC	4.7 %

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2131: Approved placement of Zone 2A (FF) material over LLDPE liner at approx. Sta. 0+180, view looking W.



Photograph 2132: Excavator placing Zone 1 rockfill within footprint of downstream shell at approx. Sta. 0+200, view looking E.



Photograph 2133: Excavator continuing to prepare key trench foundation at approx. Sta. 0+060, view looking W.



Photograph 2134: Snow removed over previously placed Zone 2B(FFAB) in preparation for additional placement during nightshift.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 27, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 27TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 26th, 2021 and day shift for March 27th, 2021

1.0 WEATHER

- High -23°C Low -31°C clear, low wind

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Report for incident that occurred on March 26th has been completed, corrective actions include additional clamps on air hose and pressure now being controlled from compressor.

General Discussion:

- Zone 2A (FF) material was placed over LLDPE liner between approx. Sta. 0+355 and Sta. 0+400, KCG progressing with Zone 3 placement between stations for trench backfill. Zone 2A (FF) currently being

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placed for under liner slope from Sta. 0+105 and Sta. 0+130, KCG planning to start Zone 2B (FFAB) placement during nightshift.
- Liner installation scheduled for tomorrow morning between Sta. 0+110 and Sta. 0+135.
- FC liner to verify personnel availability Monday, QC representative currently unable to extend rotation another week.
- AEM survey noted high spots in bedrock encountered along west abutment beyond Sta. 0+090. Golder and AEM to determine path forward in this section.
- QA noted QC representative to complete approval form and verify survey as-built has been completed for Zone 2A (FF) prior to placement of Zone 2B (FFAB) between Sta. 0+130 and Sta. 0+105.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM surveyor and QA representative regarding high spots in bedrock along west abutment of IVR dyke. AEM surveyor noted between Sta. 0+090 and Sta. 0+070 bedrock is up to 250 mm above minimum 3.0 m excavation depth in localized areas. Beyond Sta. 0+070 bedrock increases to 500 mm above minimum excavation depth, full extent to be verified following additional foundation preparation.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Excavator continued key trench foundation preparation between approx. Sta. 0+090 to Sta. 0+060. Bottom of key trench appeared to consist predominantly of bedrock. ■ Excavator continued key trench foundation preparation between approx. Sta. 0+ 440 to Sta. 0+480. Bottom of key trench appeared to consist of frozen glacial till and bedrock. ■ Foundation approved for backfill of FFAB from Sta. 0+105 to Sta. 0+090 (see Section 6.0). Floor of key trench is composed of good-quality bedrock, grey-brown diorite, with tight joints (minimal aperture) and irregular topography. The bedrock surface will not be grouted as per FC21-03 since the final foundation bedrock is of good quality. The first few lifts of FFAB must be hand compacted. ■ Mapping of the bedrock was done by manually by QA representative.

Activity or Area	Comments
Key trench backfill	■ Zone 2A (FF) was placed over LLDPE liner in one lift of 300 mm thickness from Sta. 0+355 to Sta. 0+400. Bucket compaction was verified by QC representative and material appeared visually of good quality and well-graded. ■ Zone 3 was placed over Zone 2A and 2B in two lifts of 500 mm thickness from Sta. 0+355 to Sta. 0+400. Material was bucket compacted above LLDPE liner, QC representative verified compaction effort. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) placement occurred in four lifts of 300 mm thickness for under liner slope between Sta. 0+130 and Sta. 0+105. Compaction was verified by QC representative and material appeared visually of good quality and well-graded.
Dyke backfill	■ Zone 1 was placed over Zone 3 and original ground in one lift of 1000 mm thickness from approx. Sta. 0+210 to Sta. 0+250. Material appeared visually of good quality and well-graded.
Liner installation	■ No installation of liner during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2A/2B Over liner	20210327-DS-01	Sta. 0+385 to Sta. 0+405	Mar-27	Approved Zone 2A/2B for placement of Zone 3.
Zone 2B (FFAB) Under liner	20210327-DS-02	Sta. 0+105 to Sta. 0+130	Mar-27	Approved Zone 2B for placement of Zone 2A

Key trench Foundation	20210327-DS-03	Sta. 0+105 to Sta.0+090	Mar-27	Approved key trench foundation for placement of Zone 2B.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-4-AMQ-CF	Mar-27	-	Zone 3	Sta. 0+370, key trench	GSA/MC	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
6	Mar-26	Night	Zone 2B (FFAB)	Sta. 0+105 to Sta. 0+130, Key Trench, elev. 159.6 m to 160.5 m	DD	2071 to 2126 kg/m3 (98% to 100%), compliant

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
					MC	4.3% to 4.9%
5	Mar-27	Day	Zone 2A (FF)	Sta. 0+100 to Sta. 0+130, Key Trench, elev. 160.6 m to 161.5 m	DD	2075 to 2176 kg/m3 (97.4% to 102.1%), compliant
					MC	4.3% to 4.9%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2135: Approved placement of Zone 2A (FF) material over LLDPE liner at approx. Sta. 0+400, view looking W.



Photograph 2136: Excavator preparing key trench foundation at approx. Sta. 0+450, view looking E.



Photograph 2137: QC representative conducting PNG testing on placed Zone 2A (FF) material at approx. Sta. 0+110, view looking SW.



Photograph 2138: Approved key trench foundation at approx. Sta. 0+085, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 28, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 28TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 27th, 2021 and day shift for March 28th, 2021

1.0 WEATHER

- High -28°C Low -36°C clear, low wind

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Excavator is now mounted with blow pipe in key trench eliminating need for KCG labourer working in the trench with compressed air reducing the risk of potential injury to employees.

General Discussion:

- Zone 2A (FF) and 2B (FFAB) material was placed to design elevation under liner from Sta. 0+130 to Sta. 0+110 and LLDPE liner has been installation between stations. KCGs nightshift workplan will be to start placement of Zone 2A (FF) and Zone 2B (FFAB) and continue key trench foundation preparation along the west abutment.

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- KCG has asked mine ops for NAG material for placement of Zone 1 at the IVR dyke but mine ops is currently unavailable. AEM to coordinate with mine ops to secure NAG material quantities.
- Based on recent production KCG believes they will have LLDPE liner installed and key trench backfilled in 10 days.
- QC representative noted, water pump in lab has been leaking and door to lab entrance needs to be repaired, KCG to address issues.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representatives regarding no QC presence on site tomorrow between 9:00 and 14:00. QA representative to visually observe KCG compaction effort for material placement for period where no QC presence is available.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Excavator continued key trench foundation preparation between approx. Sta. 0+090 to Sta. 0+060. Bottom of key trench consists predominantly of bedrock. KCG utilized rock breaker to remove localized high spots in key trench. ■ Excavator continued key trench foundation preparation between approx. Sta. 0+440 to Sta. 0+480. Bottom of key trench appeared to consist of frozen glacial till and bedrock.
Key trench backfill	■ Zone 2A (FF) placement occurred in one lift of 300 mm thickness for under liner slope between approx. Sta. 0+130 and Sta. 0+110. Bucket compaction was verified by QC representative and material appeared visually of good quality and well-graded. ■ Zone 2B (FFAB) placement occurred in two lifts of 250 mm thickness for under liner slope between approx. Sta. 0+130 and Sta. 0+110. Compaction was verified by QC representative and material appeared visually of good quality and well-graded.

Activity or Area	Comments
Dyke backfill	■ Zone 1 was placed over Zone 3 and original ground in one lift of 1000 mm thickness from approx. Sta. 0+250 to Sta. 0+300. Material appeared visually of good quality and well-graded. Compaction still required prior to subsequent material placement.
Liner installation	■ Installation of geotextile from Sta. 0+150 to Sta. 0+120.The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner was installed on the key trench slope (2.5H:1V) from Sta. 0+150 to Sta. 0+120 (panels P38 to P41). Liner surface was approved by QA representative and liner QC representative. ■ Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ One calibration test was conducted at 2 PM and met the Technical Specifications. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. The tensiometer tests are being conducted in warm conditions in shipping container. ■ One destructive test was carried out today at approx. Sta. 0+136 on seam between panels P39 and P40. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. ■ No vacuum box tests were carried out today.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
DT3	IVR Dike (key trench section)	Sta. 0+136	Seam P39/P40	Destructive test, compliant

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2A/2B Under liner	20210328-DS-01	Sta. 0+385 to Sta. 0+405	Mar-28	Approved Zone 2A/2B for placement of LLDPE liner
Zone 3 / Downstream foundation	20210328-DS-02	Sta. 0+105 to Sta. 0+130	Mar-28	Approved Zone 3/ downstream foundation for placement of Zone 1

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (key trench)	202103248-DS-03	Sta. 0+150 to Sta. 0+120	Mar-27	Approved liner for placement of Zone 2B.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-4-AMQ-CF	Mar-27	-	Zone 3	Sta. 0+370, key trench,	GSA	Compliant
					MC	7.0 % (fines <31.5 mm)
PSD-8-AMQ-FF	Mar-28	Mar-28	Zone 2A	Sta. 0+125, key trench, under liner	GSA/MC	Compliant, well graded with some coarse particles
					MC	2.9%

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
4	Mar-27	Night	Zone 2A (FF)	Sta. 0+110 to Sta. 0+135, Key Trench, elev. 161.7 m to 162.1 m	DD	2112 to 2181 kg/m3 (99% to 102%), compliant
					MC	3.7% to 5.2%
4	Mar-27	Night	Zone 2B (FFAB)	Sta. 0+105 to Sta. 0+095, Key Trench, elev. 160.2 m to 160.9 m	DD	2089 to 2101 kg/m3 (98% to 99%), compliant
					MC	4.3% to 4.7%
1	Mar-28	Day	Zone 2A (FF)	Sta. 0+110 to Sta. 0+135, Key Trench, elev. 162.2	DD	2167 kg/m3 (102%) compliant
					MC	4.6%
2	Mar-28	Day	Zone 2B (FFAB)	Sta. 0+110 to Sta. 0+135, Key Trench, elev. 162.5 m to 162.8 m	DD	2108 to 2141 kg/m3 (100% to 101%), compliant
					MC	4.4% to 5.3%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2139: Excavator placing lift of Zone 2A (FF) material at approx. Sta. 0+130, view looking E.



Photograph 2140: KCG placing Zone 1 for construction of downstream shell at approx. Sta. 0+260, view looking SW.



Photograph 2141: KCG labourers removing snow along toe of Zone 2A (FF) in advance of LLDPE installation at approx. Sta. 0+135, view looking E



Photograph 2142: FC liner installing geotextile at approx. Sta. 0+140, view looking NW.



Photograph 2143: FC liner installing LLDPE at approx. Sta. 0+135, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 29, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 29TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 28th, 2021 and day shift for March 29th, 2021

1.0 WEATHER

- High -26°C Low -31°C clear, low wind

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Dan Seguin (AEM Construction GM)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- AEM safety completed site tour this afternoon and noted things are looking good at the IVR dyke.

General Discussion:

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- Zone 2A (FF) / 2B (FFAB) material placed over liner between Sta. 0+150 and Sta. 0+120 was approved and KCG has proceeded to place Zone 3 to original ground elevation. On going key trench foundation preparation between Sta. 0+075 and Sta. 0+065.
- KCG plan for nightshift will be to complete placement of Zone 2B (FFAB) along prepared foundation of key trench and begin placement of Zone 2A (FF). QC representative to verify Zone 2B material is placed to design prior to placement of Zone 2A.
- Additional hammering maybe required under access ramp along the west abutment, KCG to keep ramp in for time being to allow for better access.
- KCG to place Zone 1 in two lifts of 750 mm thickness to achieve design grade along downstream shell.
- Additional thermistor to be installed at Sta. 0+150 through Zone 3 coarse filter, drilling will be required through coarse filter into bedrock. AEM to extend casings around existing thermistor along downstream shell and new thermistor within key trench.
- QA representative noted, nightshift survey will need to verify Zone 2B (FFAB) lift thickness and placement is to design prior to placement of Zone 2A (FF).

4.0 DISCUSSIONS

During the day, the following discussions were held:

- QA and QC representatives regarding nightshift QC approving Zone 2B (FFAB) placement prior to Zone 2A (FF) placement within the key trench. QC to spot check Zone 2B material thickness with KCG surveyor prior to placement of fine filter.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ Excavator continued key trench foundation preparation between approx. Sta. 0+080 to Sta. 0+065. Bottom of key trench consists predominantly of bedrock. ■ Foundation approved for backfill of FFAB from Sta. 0+090 to Sta. 0+065 (see Section 6.0). Floor of key trench is composed of good-quality bedrock, grey-brown in color, with tight joints (minimal aperture) and irregular topography. The bedrock surface will not be grouted as per FC21-03 since the final foundation bedrock is of good quality and outside the MOL footprint. The first few lifts of FFAB must be hand compacted. ■ Mapping of the bedrock was done by manually by QA representative.

Activity or Area	Comments
Key trench backfill	■ Zone 2B (FFAB) placement occurred in two lifts of 250 mm thickness along base of trench excavation between approx. Sta. 0+100 and Sta. 0+070. Compaction was verified visually (6-8 passes with smooth drum roller) by QA representative. Material appeared visually of good quality and well-graded. FFAB at 6% was placed up to Sta. 0+080 and was transitioned to FFAB at 4% from Sta. 0+080 towards the west abutment.
Dyke backfill	■ Zone 1 was placed over previously placed rockfill in one lift of approximately 750 mm thickness from approx. Sta. 0+300 to Sta. 0+400. Material appeared visually of good quality and well-graded. Compaction still required prior to subsequent material placement.
Liner installation	■ No installation of liner during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2A/2B Over liner	20210328-DS-01	Sta. 0+150 to Sta. 0+120	Mar-28	Approved Zone 2A/2B for placement of Zone 3
Key trench Foundation	20210328-DS-02	Sta. 0+090 to Sta. 0+065	Mar-28	Approved key trench foundation for placement of Zone 2B. Bedrock like previous sections. Good quality, tight joints with no in filling.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
1	Mar-29	Day	Zone 2B (FFAB)	Sta. 0+100 to Sta. 0+070, Key Trench, elev.2.75 mbgs	DD	2116 kg/m3 (100%), compliant
					MC	4.8%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2144: Approved placement of Zone 2A/2B over LLDPE liner at approx. Sta. 0+120, view looking E.



Photograph 2145: Excavator removing snow along crest and downstream side walls of trench excavation at approx. Sta. 0+140, view looking SE.



Photograph 2146: KCG labourer using plate tamper to compact first lift of Zone 2B over bedrock at approx. Sta. 0+085, view looking S.



Photograph 2147: Excavator preparing key trench foundation at approx. Sta. 0+065, view looking SW.



Photograph 2147: Excavator placing second lift of Zone 2B (FFAB) at approx. Sta. 0+080, view looking E.



Photograph 2148: Approved section of key trench foundation at approx. Sta. 0+070, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 30, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 30TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 29th, 2021 and day shift for March 30th, 2021

1.0 WEATHER

- High -28°C Low -37°C clear, low wind

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- No safety incidents to report.

General Discussion:

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- KCG placed Zone 2A (FF) between Sta. 0+110 and Sta. 0+070 for under liner slope and continued trench cleaning along west abutment and between Sta. 0+420 to 0+460. Plan for night shift will be continue cleaning trench along west abutment and start placement of Zone 2B under liner between Sta. 0+100 and Sta. 0+070.
- Rock breaker was utilized to widen portion of key trench along west abutment at Sta. 0+050, along downstream side wall.
- AEM, KCG to limit prepared key trench foundation to 50 m from Sta. 0+420 moving east until west abutment is completed. AEM to verify remaining bentonite quantities before moving forward.
- KCG to have west abutment completed and ready for liner installation by end of day tomorrow.
- KCG to keep boulders out of placed Zone 1 rockfill and ensure snow is not mixed into placed lifts.
- QA noted nightshift to distinguish between 6% FFAB to be placed along the west abutment and 4% along the east section at the IVR dyke.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed ice pockets observed along base of key trench excavation at 4.0 to 4.5 meters below ground surface (mbgs). AEM agreed ice to remain in place as extent of ice over liner footprint and probability of thaw in this area is minimal at 4.0 mbgs. The ice pockets also appear to be wedged into vertical cracks between boulders and not ice-bearing. QA to survey extent of ice lenses for report documentation.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG continued key trench foundation preparation from approx. Sta. 0+065 to Sta. 0+050 and from approx. Sta. 0+425 to Sta. 0+460. Bottom of key trench consists predominantly of bedrock between stations. At approx. Sta. 0+460 foundation of key trench appeared to transition to a glacial till moving towards the east abutment. ■ Foundation approved for backfill of Zone 2B (FFAB) from Sta. 0+423 to Sta. 0+442 (see Section 6.0). The bedrock surface will not be grouted as per FC21-03 since the final foundation bedrock is of good quality and outside the MOL footprint. The first few lifts of FFAB must be hand compacted.

Activity or Area	Comments
	■ Mapping of the bedrock was done by manually by QA representative.
Key trench backfill	■ Zone 2A (FF) placement occurred in six lifts of 300 mm thickness for under liner slope between approx. Sta. 0+110 and Sta. 0+065. Compaction was verified by QC representative and material appeared visually of good quality and well-graded.
Dyke backfill	■ No Zone 1 rockfill material was placed during reporting period.
Liner installation	■ No installation of liner during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Foundation	20210329-DS-01	Sta. 0+423 to Sta. 0+442	Mar-29	Floor of key trench is composed of good-quality bedrock, varying from grey-brown to brown-red in color, with heavily jointed areas, joints were observed to be tight (minimal aperture 0.1-0.25 mm) and irregular topography. Pockets of ice were observed at the following locations: • Sta. 0+435, near U/S wall, 4.4 mbgs, • Sta. 0+436, near D/S wall, 4.0 mbgs, • Sta. 0+438, 3 m D/S of key trench centerline, 4.2 mbgs Ice was removed down to 6-12” from surface and was observed to be continuous, ice lenses were

				not excavated further as the extent of ice over liner footprint and probability of thaw in this area is minimal at 4.0 to 4.5 mbgs.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
7	Mar-29	Night	Zone 2B (FFAB)	Sta. 0+090 to Sta. 0+065, Key Trench, elev.161.1 m to 161.9 m	DD	2081 to 2139 kg/m3 (98% to 101%), compliant

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
					MC	4.4% to 4.7%
2	Mar-29	Night	Zone 2A (FF)	Sta. 0+110 to Sta. 0+065, Under liner, elev.161.4 m to 161.9 m	DD	2101 to 2166 kg/m3 (99% to 102%), one test at 2257 kg/m3 (106%) compliant
					MC	3.5% to 3.6%
5	Mar-30	Day	Zone 2A (FF)	Sta. 0+110 to Sta. 0+065, Under liner, elev.162.2 m to 163.2 m	DD	2090 to 2140 kg/m3 (98% to 100%), compliant
					MC	3.7% to 4.2%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB,	Non-conformance	March 17, 2021	Golder, AEM	Open Grain-size distribution test will be done and compared with average 4% and 6% bentonite

the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid potentially damaging the liner. A sample was taken to confirm bentonite content.				FFAB to assess the actual bentonite content.

11.0 PHOTOGRAPHS



Photograph 2149: KCG compacting placed lift of Zone 2B (FF) material at approx. Sta. 0+090, view looking N.



Photograph 2150: Excavator removing blasted material to prepare key trench foundation at approx. Sta. 0+060, view looking NW.



Photograph 2150: Excavator placing Zone 2A (FF) at approx. Sta. 0+090, view looking SE



Photograph 2153: KCG labourers removing ice and snow within footprint of key trench at approx. Sta. 0+435, view looking SW.



Photograph 2154: Ice pocket observed in bedrock along base of key trench at approx. Sta. 0+438, view looking S.



Photograph 2154: Approved section of key trench at approx. Sta. 0+420, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE March 31, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR MARCH 31ST, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 30th, 2021 and day shift for March 31st, 2021

1.0 WEATHER

- High -29°C Low -34°C clear, low wind

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- FC Liner (Liner Installation Contractor)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- KCG to have employees review and sign off on JSEA for workplan with blow pipe mounted to excavator.

General Discussion:

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- KCG completed trench cleaning along west abutment between Sta. 0+065 and Sta. 0+045 and started placing Zone 2B (FFAB) along base of key trench, will be ready for approval by end of day to start placing Zone 2A (FF).
- Plan for nightshift will be to complete placement of Zone 2A between Sta. 0+065 and Sta. 0+045 and continue placement of Zone 2B between Sta. 0+420 and Sta. 0+440.
- KCG to have west abutment ready for LLDPE liner installation tomorrow morning.
- AEM noted existing thermistor along downstream shell has been repaired and casing is ready to be extended.
- KCG to provide haul sheets for Zone 2B by end of shift, QC to update bentonite tracking sheet to verify remaining quantities on site.
- KCG to verify FC Liner return on April 9th.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed quantity of LLDPE on site. AEM noted, a 20% contingency was added for liner installation and lengths of damaged LLDPE from loader forks should be cut off and stored for use outside the MOWL at the IVR Dyke.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ KCG continued key trench foundation preparation from approx. Sta. 0+065 to Sta. 0+045 and from approx. Sta. 0+440 to Sta. 0+470. Bottom of key trench consists predominantly of bedrock between stations. ■ Foundation approved for backfill of Zone 2B (FFAB) from Sta. 0+065 to Sta. 0+045 (see Section 6.0). Floor of key trench is composed of good-quality bedrock, grey-brown in color, with tight joints (minimal aperture) and irregular topography. The bedrock surface will not be grouted as per FC21-03 since the final foundation bedrock is of good quality and outside the MOL footprint. The first few lifts of FFAB must be hand compacted. ■ Mapping of the bedrock was done by manually by QA representative.

Activity or Area	Comments
Key trench backfill	■ Zone 2B (FFAB) placement occurred in three lifts of 250 mm thickness for base of key trench between approx. Sta. 0+065 and Sta. 0+045. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2B (FFAB) placement occurred in two lifts of 250 mm thickness to fill in deeper pockets in bedrock along base of key trench between approx. Sta. 0+420 and Sta. 0+440. Material was compacted with a minimum of 6 passes with a 1-ton plate tamper, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2B (FFAB) placement occurred in one lift of 250 mm thickness for under liner slope between approx. Sta. 0+110 and Sta. 0+065. Material compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
Dyke backfill	■ No Zone 1 rockfill material was placed during reporting period.
Liner installation	■ Installation of geotextile from Sta. 0+122 to Sta. 0+089.The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner was installed on the key trench slope (2.5H:1V) from Sta. 0+122 to Sta. 0+089 (panels P42 to P46). Liner surface was approved by QA representative and liner QC representative. ■ Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ Two calibration tests were conducted and met the Technical Specifications. First calibration test was conducted on liner seams at 2:00 PM and second calibration test was conduced on liner-patch seams at 3:30 PM. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. The tensiometer tests are being conducted in warm conditions in shipping container. ■ Five vacuum box tests were carried out at Sta. 0+114 on panel P43.

Activity or Area	Comments
	■ No destructive tests were carried out today.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Foundation	20210331-DS-01	Sta. 0+065 to Sta. 0+045	Mar-31	Approved key trench foundation for placement of Zone 2B. Bedrock like previous sections. Good quality, tight joints with no in filling.
Zone 2A/2B Under liner	20210321-DS-02	Sta. 0+110 to Sta. 0+080	Mar-31	Approved Zone 2A/2B for placement of liner.
Key trench Zone 2B (FFAB)	20210331-DS-03	Sta. 0+065 to Sta. 0+045	Mar-31	Approved Zone 2B for placement of Zone 2A

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (key trench)	20210331-DS-04	Sta. 0+122 to Sta. 0+089	Mar-31	Approved liner for placement of Zone 2B/2A.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	Mar-30	Night	Zone 2A (FF)	Sta. 0+080 to Sta. 0+112, Under liner, elev.162.6 m	DD	2091 to 2158 kg/m3 (98% to 101%), compliant
					MC	3.8% to 4.4%
1	Mar-30	Night	Zone 2B (FFAB)	Sta. 0+420 to Sta. 0+425, Key trench, elev.161.0 m	DD	2090 kg/m3 (99%), compliant
					MC	5.4%
4	Mar-30	Night	Zone 2B (FFAB)	Sta. 0+080 to Sta. 0+112, Under liner, elev.162.9 m to 164.2 m	DD	2099 to 2117 kg/m3 (99% to 100%), compliant
					MC	3.8% to 4.4%
1	Mar-31	Day	Zone 2B (FFAB)	Sta. 0+065 to Sta. 0+112, Under liner, 161.8 m	DD	2123 kg/m3 (100%), compliant

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
					MC	4.2%
4	Mar-31	Day	Zone 2B (FFAB)	Sta. 0+065 to Sta. 0+045, Under liner, 161.8 m	DD	2073 to 2173 kg/m3 (98% to 103%), compliant
					MC	3.6% to 4.8%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
Some 4% bentonite Zone 2B material (FFAB) was mixed with 6% bentonite FFAB and placed on top of the lower LLDPE liner anchor in the critical section of the dam, from Sta. 0+175 to 0+200 (withing MOL footprint) to a height of 0.5 m (2.5 mbgs). Due to the mixing with 6% bentonite FFAB, the added bentonite contingency, and the small quantity placed and its location, this is not considered a great concern. Excavation of the material is not recommended to avoid	Non-conformance	March 17, 2021	Golder, AEM	Closed. Results of grain size distribution testing showed similar gradation curves when comparing 6% FFAB and 4-6% mix FFAB. Testing results attached in email.

potentially damaging the liner. A sample was taken to confirm bentonite content.				

11.0 PHOTOGRAPHS



Photograph 2155: KCG continuing to clean key trench between Sta. 0+055 and Sta. 0+045 view looking SW.



Photograph 2156: KCG utilizing plate tamper to compact low spots in key trench at approx. Sta. 0+430, view looking SE.



Photograph 2157: Approved section of key trench foundation at approx. Sta. 0+050, view looking W.



Photograph 2158: Approved section of Zone 2A/2B under liner at approx. Sta. 0+100, view looking W.



Photograph 2159: Excavator utilizing blow pipe to clean key trench foundation at approx. Sta. 0+450, view looking SW.



Photograph 2160: KCG compacting placed lift of Zone 2B (FFAB) at approx. Sta. 0+065, view looking W.



Photograph 2161: LLDPE liner installed between approx. Sta. 0+120 and Sta. 0+089, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 1, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 1ST, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for March 31st, 2021 and day shift for April 1st, 2021

1.0 WEATHER

- High -28°C Low -34°C clear, low wind

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Cold weather: Wear appropriate clothing and monitor for signs of frostbite.

3.0 DAILY CONSTRUCTION MEETING

QA representative overseeing LLDPE installation at the IVR Dyke during daily meeting.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed installation of LLDPE at the IVR dyke, QA to stay late to oversee destructive testing and portion of liner installation along the west abutment.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

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Activity or Area	Comments
Key trench foundation preparation	■ KCG continued key trench foundation preparation from approx. Sta. 0+440 to Sta. 0+470. Bottom of key trench consists predominantly of bedrock between stations. ■ Foundation approved for backfill of Zone 2B (FFAB) from Sta. 0+442 to Sta. 0+465 (see Section 6.0). Floor of key trench is composed a thin layer of glacial till overlaying bedrock and of good-quality bedrock, grey-brown in color, with tight joints (minimal aperture) and irregular topography. The bedrock surface will not be grouted as per FC21-03 since the final foundation bedrock is of good quality and outside the MOL footprint. The first few lifts of FFAB must be hand compacted. ■ Mapping of the bedrock was done by manually by QA representative.
Key trench backfill	■ Zone 2A (FF) placement occurred in one lift of 300 mm thickness for under liner slope between Sta. 0+070 and Sta. 0+054. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) placement occurred in nine lifts of 300 mm thickness for under liner slope between Sta. 0+054 and Sta. 0+045. Material was compacted with a 1-ton plate tamper, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2B (FFAB) placement occurred in two lifts of 250 mm thickness for base of key trench between approx. Sta. 0+070 and Sta. 0+045. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2B (FFAB) placement occurred in two lifts of 250 mm thickness for over liner placement along base of key trench between approx. Sta. 0+110 and Sta. 0+085. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) placement occurred in one lift of 300 mm thickness for over liner placement between approx. Sta. 0+110 and Sta. 0+095. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded.

Activity or Area	Comments
	■ Zone 2A (FF) placement occurred in two lifts of 300 mm thickness for base of under liner slope between approx. Sta. 0+420 and Sta. 0+440. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
Dyke backfill	■ No Zone 1 rockfill material was placed during reporting period.
Liner installation	■ Installation of geotextile from Sta. 0+089 to Sta. 0+045.The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ Installation of the LLDPE liner was installed on the key trench slope (2.5H:1V) from Sta. 0+089 to Sta. 0+45 (panels P47 to P55). Liner surface was approved by QA representative and liner QC representative. ■ Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ One calibration test was conducted was conducted on liner seams at 3:30 PM and met the Technical Speciation's. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. The tensiometer tests are being conducted in warm conditions in shipping container. ■ One destructive test was carried out today at approx. Sta. 0+075 on seam between panels P48 and P49. Loads at failure in peel and shear were greater than minimum values presented in Technical Specifications. ■ No vacuum box tests were carried out today.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
DT4	IVR Dike (key trench section)	Sta. 0+075	Seam P48/P49	Destructive test, compliant

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Zone 2A/2B Under liner	20210401-DS-01	Sta. 0+089 to Sta. 0+045	Apr-1	Approved Zone 2A/2B for placement of LLDPE liner
Key trench Zone 2A/2B Over liner	20210401-DS-02	Sta. 0+120 to Sta. 0+089	Apr-1	Approved liner and downstream sidewall for placement of Zone 2A/2B over liner.
Key trench Foundation	20210401-DS-04	Sta. 0+442 to Sta. 0+465	Apr-1	Floor of key trench is composed of a thin layer of glacial till overlaying bedrock and of good-quality bedrock, varying from grey-brown to brown-red in color, with heavily jointed areas, joints were observed to be tight (minimal aperture 0.1-0.25 mm) and irregular topography. Pockets of ice were observed at the following locations: • Sta. 0+455, near U/S wall, 4.2 mbgs, Ice was removed down to 6-12” from surface and was observed to be continuous, ice lenses were not excavated further as the extent of ice over liner footprint and probability of thaw in this area is minimal at 4.2 mbgs.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (key trench)	20210401-DS-03	Sta. 0+089 to Sta. 0+045	Apr-01	Approved liner for placement of Zone 2B/2A.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
4	Mar-31	Night	Zone 2B (FFAB)	Sta. 0+045 to Sta. 0+080, Key trench base, elev.161.9 m to 162.9 m	DD	2089 to 2151 kg/m3 (99% to 102%), one test compliant
					MC	4.1% to 4.5%
12	Mar-31	Night	Zone 2A (FF)	Sta. 0+054 to Sta. 0+080, Under liner slope, elev.162.6 m to 164.3 m	DD	2090 to 2215 kg/m3 (98% to 104%), one test compliant
					MC	3.1% to 4.6%
3	Mar-31	Night	Zone 2A (FF)	Sta. 0+054 to Sta. 0+080, Under liner slope, elev.162.2 m to 162.4 m	DD	2121 to 2190 kg/m3 (100% to 103%), one test compliant
					MC	3.2% to 3.4%

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
9	Apr-1	Day	Zone 2A (FF)	Sta. 0+045 to Sta. 0+054, Key trench base, elev.162.1 m to 165.4 m	DD	2090 to 2215 kg/m3 (98% to 104%), one test compliant
					MC	3.2% to 4.3%
2	Apr-1	Day	Zone 2A (FF)	Sta. 0+420 to Sta. 0+440, Key trench base, elev.162.7 m to 163.0 m	DD	2168 to 2170 kg/m3 (102%) compliant
					MC	3.7% to 5.2%
4	Apr-1	Day	Zone 2B (FFAB)	Sta. 0+045 to Sta. 0+080, Key trench base, elev.163.7 m to 165.8 m	DD	2089to 2176 kg/m3 (98% to 102%), one test compliant
					MC	3.9% to 4.6%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2162: KCG placing lift of Zone 2B material at approx. Sta. 0+060, view looking W.



Photograph 2163: Excavator sloping Zone 2B under liner slope to design lines at approx. Sta. 0+050, view looking E.



Photograph 2164: KCG removing snow along downstream key trench excavation wall at approx. Sta. 0+080, view looking E.



Photograph 2165: Approved placement of Zone 2A/2B under liner at approx. Sta. 0+070, view looking W



Photograph 2166: Approved section of key trench at approx. Sta. 0+450, view looking E.



Photograph 2167: Ice pocket at Sta. 0+455 and 4.2 mbgs, view looking W.



Photograph 2168: FC Liner installing LLDPE panels at approx. Sta. 0+070, view looking NW.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 2, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 2ND, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 1st, 2021 and day shift for April 2nd, 2021

1.0 WEATHER

- High -17°C Low -25°C clear, moderate wind

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Inclement weather: Winter storm in the forecast be aware of changing conditions.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- AEM health and safety is looking positive at the IVR Dyke, noted room for improvement with KCG employees filling out work cards more completely.

General Discussion:

- Zone 2A/2B placed over liner was approved this morning and KCG proceeded with placement of Zone 3 (coarse filter) between Sta. 0+090 and Sta. 0+045. Trench backfill to be completed by end of shift.

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- KCG noted workplan for night shift will be to continue Zone 1 rockfill placement along downstream shell and begin sloping upstream slope in preparation for Zone 3 and 2A placement.
- KCG equipment availability; planned maintenance scheduled for Komatsu excavator next week.
- KCG noted no seats were available on the plane for FC Liner on Friday April 9th, will arrange for liner crew to return to site on Monday, April 11th.
- AEM noted, KCG to source Zone 1 from pit for placement during nightshift.
- KCG noted, 4 seacans remain at the mixing pad, 2 additional seacans are also located on-site bring remaining bentonite seacans to 6. KCG to count remaining bentonite bags at mixing pad before end of day.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA/QC representatives regarding remaining bentonite quantities on site. QC to provide updated count of bentonite bags in the 6 remaining seacans by tomorrow morning.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ No key foundation preparation occurred during the reporting period.
Key trench backfill	■ Zone 3 (CF) placement occurred in three lifts of 500 mm thickness for trench backfill between approx. Sta. 0+90 and Sta. 0+045. Material was bucket compacted until trench backfill exceeded 2 meters above liner at which point material was compacted with a minimum 6 passes with a 10-ton roller. Compaction was verified by QC representative and material appeared visually of good quality and well-graded.
Dyke backfill	■ No Zone 1 rockfill material was placed during reporting period.
Liner installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench Zone 2A/2B Over liner	20210402-DS-01	Sta. 0+089 to Sta. 0+045	Apr-2	Approved Zone 2A/2B for placement of Zone 3.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-5-AMQ-CF	Apr-2	-	Zone 3	Sta. 0+120, Offset Centre line of Key Trench	GSA	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-21	Apr-2	-	Zone 3	Sta. 0+070, Offset Centerline of Key Trench	GSA/MC	Pending

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	Apr-1	Night	Zone 2B	Sta. 0+440 to Sta. 0+465, Key trench base, elev.161.1 m to 161.3 m	DD	2137 to 2141 kg/m3 (101%) compliant
					MC	3.9% to 4.0%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2169: Komatsu excavator removing snow along downstream crest of key trench at approx. Sta. 0+070, view looking SE.



Photograph 2170: Approved placement of Zone 2A/2B at approx. Sta. 0+065, view looking SW.



Photograph 2171: KCG compacting placed Zone 2B (FFAB) at approx. Sta. 0+460, view looking E.



Photograph 2172: KCG placing Zone 3 for key trench backfill at approx. Sta. 0+090, view looking SE.



Photograph 2173: Komatsu excavator loading rock truck with stockpiled overburden material at approx. Sta. 0+040, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 3, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 3RD, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 2nd, 2021 and day shift for April 3rd, 2021

1.0 WEATHER

- High -7°C Low -17°C clear, snowstorm, high winds

2.0 HEALTH AND SAFETY

- Blizzard conditions: Due to winter storm work was suspended at the IVR Dyke for the day.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
  Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- First aid incident this morning; worker shoveling snow got finger stuck between door and frame during high winds.
- Following today's snowstorm workers are reminded to clean up equipment and light vehicles before starting work.

General Discussion:

- AEM looking at options to manage remaining bentonite quantities on site (approximately 70 tons). Decision to be made in the coming days, KCG to hold off on additional Zone 2B placement until further notice.
- Weather forecast for week looks poor, warmer temperatures and multiple days of precipitation.

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- KCG to check with E&I highsteer driver to verify any outstanding locations bentonite maybe stored on site.
- KCG workplan for tonight, clear snow within work area at the IVR Dyke and continue with Zone 1 rockfill placement.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA/QC representatives discussed placement of Zone 3 and Zone 2A along slope of Zone 1 rockfill under liner. To facilitate the construction process AEM is looking to place Zone 3 and Zone 2A simultaneously in 500 mm lifts and utilize 10-ton smooth drum roller for compaction of material under liner. QA noted, design specification indicates Zone 2A be placed in 300 mm lifts and bucket packed however, utilizing 10-ton smooth drum roller to compact Zone 2A material will exceed the compaction effort achieved in bucket packing material in 300 mm lifts.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key trench foundation preparation	■ No key foundation preparation occurred during the reporting period.
Key trench backfill	■ No trench backfill was placed during reporting period
Dyke backfill	■ No dyke backfill material was placed during reporting period.
Liner installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-5-AMQ-CF	Apr-2	-	Zone 3	Sta. 0+120, Offset Centre line of Key Trench	GSA	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-21	Apr-2	-	Zone 3	Sta. 0+070, Offset Centerline of Key Trench	GSA/MC	Pending

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2174: Key trench filled with snow following winter storm at approx. Sta. 0+440, view looking SW.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 4, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 4TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 3rd, 2021 and day shift for April 4th, 2021

1.0 WEATHER

- High -17°C Low -26°C clear, clear, low winds

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- A report only was submitted for worker during nightshift who slipped and fell on ice, reminder to all employees to always wear ice cleats when working on site.

General Discussion:

- KCG slopped Zone 1 rockfill to design lines between Sta. 0+365 and Sta. 0+310 and will proceed to start placing Zone 3 between stations. QA noted KCG to pull back plywood over installed geotextile in advance of Zone 2A material placement upstream of Zone 1 under liner.

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- AEM noted, KCG to create work opportunities by opening multiple work fronts for night and dayshift to work more effectively.
- Trench excavation and backfill still on hold, path forward to be determined in the coming days. AEM noted, RFI 05 sets out to minimize bentonite quantity but increases required thermal cover in areas where it is applied.
- KCG crushing operations will not commence till May at the earliest.
- Engineering looking to drill upstream thermistor at Sta. 0+165, AEM to follow up with KCG tomorrow morning.
- AEM noted, rockfill can be placed around existing thermistor casing that has been extended in the downstream shell at approx. Sta. 0+185.
- AEM Engineering to verify field fit layout of spillway at the IVR Dyke.
- AEM surveyor to start nightshift tomorrow night.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM still considering options for remaining Zone 2B (FFAB) material placement at the IVR Dyke. KCG to pause trench foundation preparation while awaiting path forward.
- AEM and QA representative discussed existing rockfill laydown along west abutment at the IVR dyke, existing laydown to remain in place.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Snow Removal	■ KCG continued to remove snow within their work area at the IVR Dyke.
Key Trench Backfill	■ No trench backfill was placed during reporting period
Dyke Backfill	■ Zone 1 was placed over previously placed rockfill in one to two lifts of approximately 750 mm thickness from approx. Sta. 0+100 to Sta. 0+310. Material appeared visually of good quality and well-graded. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded.

Activity or Area	Comments
	■ Zone 1 was sloped to design lines between approx. Sta. 0+365 and Sta. 0+310. In preparation for Zone 3 and Zone 2A placement under liner. ■ Zone 2A placement occurred in one lift of 300 mm thickness for over liner between approx. Sta. 0+365 and Sta. 0+310. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
Liner Installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 1	20210404-DS-01	Sta. 0+365 to Sta. 0+310	Apr-4	Approved upstream slope of Zone 1 for placement of Zone 3 and Zone 2A material for under liner slope.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-9-AMQ-FFAB	Apr-1	Apr-3	Zone 2B (4%)	Stockpile	GSA	Compliant, well graded with some oversize particles
					MC	2.6%
PSD-5-AMQ-CF	Apr-2	-	Zone 3	Sta. 0+120, Offset Centre line of Key Trench	GSA	Compliant
					MC	3.9%

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-21	Apr-2	Apr-4	Zone 3	Sta. 0+070, Offset Centerline of Key Trench	GSA	Compliant, well graded with one rock >150 mm
					MC	1.4%

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2175: Komatsu excavator removing snow upstream of hinge point at approx. Sta. 0+320, view looking W.



Photograph 2176: Zone 1 rockfill sloped to design lines at approx. Sta. 0+360, view looking W.



Photograph 2177: Dozer placing lift of Zone 1 rockfill at approx. Sta. 0+200, view looking E.



Photograph 2178: KCG compacting placed lift of Zone 1 rockfill material at approx. Sta. 0+185, view looking SE.

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Photograph 2179: CAT excavator removing within footprint of downstream shell near existing thermistor installed at approx. Sta. 0+185, view looking SE.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 5, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 5TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 4th, 2021 and day shift for April 5th, 2021

1.0 WEATHER

- High -19°C Low -25°C clear, clear, low winds

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- One reported incident involving pick up and broken back window when worker was driver around the IVR Dyke. Maintenance has been scheduled and should be repaired by tomorrow.
- KCG near miss involving pick up entering c-pad along wrong side of road, AEM willing to acquiring signage to indicate access through this area.

General Discussion:

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- KCG continued to remove snow and place Zone 1 rockfill at the IVR Dyke and has started sloping upstream Zone 1 slope to design lines in preparation for Zone 3 coarse filter placement.
- Weather outlook for Thursday-Friday looks poor with 15-20 cm of precipitation in the forecast. KCG to focus on backfilling over liner in advance of inclement weather.
- AEM noted, KCG should save rockfill placement for days of poor weather and focus on sloping and preparing additional work fronts at the IVR Dyke.
- AEM to coordinate with highsteer to transport remaining bentonite seacans on site to the mixing station.
- Drill has arrived at the IVR dyke KCG to coordinate with AEM engineering to execute thermistor to be installed through rockfill at Sta. 0+165.
- AEM, path forward for trench construction will be determined in the coming days. An additional 30 tons of bentonite has been identified at Meliadine, current plan will be to apply RFI 05 from Sta. 0+440 towards the East abutment still awaiting approval before final decision is made.
- QA representative will be flying out tomorrow and cross shift is scheduled to arrive in the afternoon.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA/QC representatives discussed placement of Zone 3 and Zone 2A along slope of Zone 1 rockfill under liner. AEM noted, lifts of Zone 2A under liner to be limited to 300 mm thickness and compacted with a 10-ton smooth drum roller moving forward.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Snow Removal	■ KCG continued to remove snow along previously placed Zone 2A (FF) over liner between approx. Sta. 0+ 300 to Sta. 0+150, in preparation for Zone 3 (CF) placement.
Key Trench Backfill	■ No trench backfill was placed during reporting period
Dyke Backfill	■ Zone 1 was placed over previously placed rockfill in one lift of approximately 750 mm thickness from approx. Sta. 0+185 to Sta. 0+150. Material appeared visually of good quality and well-graded. Material was compacted with a minimum 6 passes with a 10-ton roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded.

Activity or Area	Comments
Liner Installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2180: Lift of Zone 3 (CF) and Zone 2A (FF) placed during KCG nightshift at approx. Sta. 0+310, view looking E.



Photograph 2181: KCG removing snow over previously placed Zone 2A (FF) at approx. Sta. 0+200, view looking SW.



Photograph 2182: CAT excavator sloping Zone 1 rockfill to design lines along upstream slope at approx. Sta. 0+165, view looking SE.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 6, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spillberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 6TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 5th, 2021 and day shift for April 6th, 2021

1.0 WEATHER

- Night shift: High -27°C Low -42°C with wind chill, clear.
- Day shift: High -16°C Low -25°C with wind chill, sunny; clear.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Near miss between haul truck and long-haul truck at the East entrance to the dyke area. Always establish communication with LHT operators on Pit Operations radio channel.

General Discussion:

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- 10 to 15 cm of snow in the forecast for Thursday (April 8). Site works will be planned accordingly. Priority is to cover the LLDPE liner.
- Vertical thermistor to be installed at 0+160. Casing will need to be welded as material is placed.
- AEM Civil Team Lead requested daily follow up of bentonite quantities used and remaining.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Snow was cleaned from Zone 2B (FFAB) and Zone 3 (CF) on top of the liner from 0+100 to 0+195. Chunks of hard-packed snow were encountered and had to be removed. Some material wastage.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ No trench backfill was placed during reporting period
Dyke Backfill	■ The upstream rockfill slope, Zone 3 (CF) and Zone 2A (FF) at toe of slope were approved for simultaneous placement of Zone 2A (FF) and Zone 3 (CF) on upstream slope of rockfill. ■ Snow was cleaned at the bottom of the slope from Zone 2B (FFAB) and Zone 3 (CF) on top of the liner from 0+100 to 0+195. Chunks of hard-packed snow were encountered and had to be removed. ■ The Zone 3 (CF) and Zone 2A (FF) material was placed in 300 mm lifts, bucket compacted and appeared well graded and free of snow. The rockfill was placed in 1 m lifts and compacted with a 10T smooth-drum roller, 6 passes in each direction. The rockfill appeared well graded and free of snow.
Liner Installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 1 (Rockfill)	Pending	Sta. 0+100 to 0+195	April 6, 2021	Authorized for placement of Zone 2A (FF) and Zone 3 (CF) on upstream slope of rockfill.
Zone 3 (CF) under liner at upstream toe of rockfill slope	Pending	Sta. 0+100 to 0+195	April 6, 2021	Authorized for placement of Zone 2A (FF) and Zone 3 (CF) on upstream slope of rockfill.
Zone 2A (FF) under liner at upstream toe of rockfill slope	Pending	Sta. 0+100 to 0+195	April 6, 2021	Authorized for placement of Zone 2A (FF) and Zone 3 (CF) on upstream slope of rockfill.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-5-AMQ-CF-20210405	April 5, 2021	-	Zone 3 (CF)	0+313	Sieve	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2183: Cleaning snow from Zone 2B (FFAB) on top of liner, Sta. 0+150 to 0+195, view looking W.



Photograph 2184: Cleaning snow from Zone 2B (FFAB) on top of liner, Sta. 0+100 to 0+150, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 7, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spillberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 7TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 6th, 2021 and day shift for April 7th, 2021

1.0 WEATHER

- Night shift: High -26°C Low -33°C with wind chill; windy, light snow.
- Day shift: High -16°C Low -18°C, with wind chill; sunny, clear.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Jennifer Pyliuk (AEM Civil Team Lead)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Reminder to stay at least 2 m away from edge of trench.

General Discussion:

- A blizzard/snowfall is forecasted for Thursday. Construction focus prior to blizzard will be: 1) at the trench; and 2) placing Zone 2A and Zone 3 along the downstream underliner along dike core.

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- Discussed construction progress on shift. On nightshift, rough cleaning of the trench was completed from Sta. 0+465 to Sta. 0+482. In the morning, inspection of the cleaning confirmed that further cleaning and blowing of the loose material was required. Both blowers broke down in the morning which delayed cleaning and approval of the key trench foundation. The excavator continued cleaning until Sta. 0+490. Blowing and dental cleaning in the trench was approved by Golder QA (Shai Spilberg) until Sta. 0+482 at end of day. Construction also continued with subsequent lift placement of Zone 3 (CF) and Zone 2A (FF) material along the downstream underliner portion of the trench; the rest of lift #2 and lift #3 from Sta. 0+100 to 0+368 were placed, and the 4th is in progress.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Zone 3 material tends to segregate on the outside of the stockpile, with coarse material falling to the base. QA/QC recommended thoroughly mixing the material prior to placing it in lifts.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ No trench backfill was placed during reporting period. ■ The key trench foundation was approved for placement of Zone 2B (FFAB) and Zone 2A (FF) material from Sta. 0+442 to 0+465. See Section 6.0 for details. The trench floor consisted mostly of overburden, with bedrock exposed on the North and East section of the approved area. The bedrock was observed to dip abruptly South, with approximately 2 m of bedrock observed in the upstream trench wall and no bedrock observed in the downstream wall. The bedrock is grey but becomes reddish brown near the surface due to oxidation. It was mapped manually using a Brunton compass. Several closely spaced joint sets are visible in the bedrock at this location. One spot of bedrock around Sta. 0+480 is about 50 mm higher than grade. This is considered acceptable. The overburden did not visually appear ice rich. A sample was taken at Sta. 0+465 for ice content testing.

Activity or Area	Comments
Dyke Backfill	■ Placement of Zone 2A (FF) and Zone 3 (CF) along the downstream underliner of the rockfill core from Sta. 0+100 to Sta.0+365. The material is placed in 300 mm lifts and is compacted using the vibratory drum roller ■ over each lift in 6 passes. The 1st lift of material was packed with light vibration and the subsequent lifts were packed with full vibration. ■ The Zone 2A (FF) and Zone 3 (CF) appeared visually to be well graded and well compacted. Slight segregation of the Zone 3 (CF) material was observed at the outside of the CF stockpile. QA/QC recommended thoroughly mixing the material prior to placing it in lifts.
Liner Installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench foundation	20210407-DS-01	Sta. 0+465 to 0+482	April 7, 2021	Authorized for placement of Zone 2A (FF) and Zone 2B (FFAB). The trench floor consisted mostly of overburden, with bedrock exposed on the North and East section of the approved area. The bedrock was observed to dip abruptly South, with approximately 2 m of bedrock observed in the upstream trench

				wall and no bedrock observed in the downstream wall. The bedrock is grey but becomes reddish brown near the surface due to oxidation. Several closely spaced joint sets are visible in the bedrock at this location. The overburden did not visually appear ice rich. A sample was taken at Sta. 0+465 for ice content testing.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-6-AMQ-CF-20210405	April 5, 2021	April 6, 2021	Zone 3 (CF)	0+313	Sieve	Compliant

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-22	April 7, 2021	-	Foundation	0+465/ 0 m o/s	Ice Content	Pending

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
9	April 6, 2021	NS	Zone 2A (FF)	Zone 2A Stockpile	DD	Avg. 2113 kg/m^3 SPD 98.0% (min) Compliant
					MC	Avg 3.8%
7	April 7, 2021	DS	Zone 2a (FF)	Zone 2A Stockpile	DD	Avg. 2098 kg/m^3 SPD 98.0% (min) Compliant
					MC	Avg 3.8%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2185: Key trench foundation approved from Sta. 0+465 to 0+482, view looking E.



Photograph 2186: Placement of Zone 3 (CF) material on upstream side of liner. Sta. 0+200, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 8, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spillberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 8TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 7th, 2021 and day shift for April 8th, 2021

1.0 WEATHER

- Night shift: High -29°C Low -37°C with wind chill; clear.
- Day shift: High -16°C Low -18°C, with wind chill; sunny, clear.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Good day at the dyke. No safety issues.

General Discussion:

- Work on spillway has started. Alignment should be confirmed by end of day.
- A new esker source may be available for Zone 4 material. A test pit needs to be dug to see if the material is excavatable. If so, samples are to be taken to assess whether the material is within Specifications.

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- Snowstorm tonight with high temperatures expected (up to -1C at 4AM). After the storm, a full week of good weather is expected.
- LLDPE liner installation crew scheduled to arrive Monday, April 12th.
- Reminder to preserve bentonite quantities on site.
- A thermal berm will be installed on the Eastern abutment of the dyke after Station 0+465, in conformance with RFI-5.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Key trench foundation from 0+482 onwards consists of good quality bedrock. A depression is present from approx. 0+485 to 0+490. The surface could not be approved for placement of Zone 2A and 2B material due to inclement weather conditions (mixing of FFAB material not permitted in high winds).
- Spillway alignment was confirmed at end of shift and snow from the spillway area was thoroughly cleaned as per QA/QC instructions. The elevation of the LLDPE liner at the entry to the spillway channel was confirmed to be 164.75 m. Spillway design elevation is 164.8 m.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ Zone 2A (FF) and Zone 2B (FFAB) were placed as per RFI-5 in the key trench from Sta. 0+445 to 0+482. Two 300 mm lifts of each material were placed side by side and compacted with a CAT76XT roller doing 6 passes. The material appeared visually well graded and free of contaminants.
Dyke Backfill	■ Placement of Zone 2A (FF) and Zone 3 (CF) along the downstream underliner of the rockfill core from Sta. 0+100 to Sta.0+365. The material was placed in several 300 mm lifts and was compacted by 6 passes with the vibratory drum roller. ■ The Zone 2A (FF) and Zone 3 (CF) appeared visually to be well graded and well compacted.
Spillway	■ The emergency spillway was placed at 0+71.5 to 0+76.5 and snow from the spillway area was thoroughly cleaned as per QA/QC instructions. The

Activity or Area	Comments
	elevation of the LLDPE liner at the entry to the spillway was confirmed to be 164.75 m. Spillway design elevation is 164.8 m. It was also confirmed that the spillway is lower than the original ground elevation at the West dam abutment.
Liner Installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
None				

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
SWELL-12-AMQFFAB-20210408	April 8, 2021	-	Zone 2B (FFAB 4%)	Sta. 0+450	Swell	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	April 7, 2021	NS	Zone 2B (FFAB 4%)	Mixing station	DD	Avg. 2209 kg/m^3 SPD 98.4% (min) Compliant
					MC	Avg 4.0%
15	April 7, 2021	NS	Zone 2A (FF)	Zone 2A Stockpile	DD	Avg. 2119 kg/m^3 SPD 98.4% (min) Compliant
					MC	Avg 3.6%
7	April 8, 2021	DS	Zone 2A (FF)	Zone 2A Stockpile	DD	Avg. 2117 kg/m^3 SPD 98.1% (min) Compliant
					MC	Avg 3.7%
2	April 8, 2021	DS	Zone 2B (FFAB 4%)	Mixing station	DD	Avg. 2194 kg/m^3 SPD 98.8% (min) Compliant

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
					MC	Avg 4.1%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2187: Placement of Zone 2A (FF) underliner lifts, Sta. 0+300, view looking W.



Photograph 2188: Spillway area cleaned of snow, Sta. 0+000, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 8, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spillberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 9TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 8th, 2021 and day shift for April 9th, 2021

1.0 WEATHER

- Night shift: High -29°C Low -37°C with wind chill; clear.
- Day shift: High -16°C Low -18°C, with wind chill; sunny, clear.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Reminder to workers to inspect compressor before each use & ensure whip checks are installed.

General Discussion:

- Lots of snow accumulation on site from last night's blizzard. Snow clearing operations underway.
- Snow removal at current end of LLDPE liner (0+365) requires a spotter & manual snow removal so as not to damage liner.

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4.0 DISCUSSIONS

During the day, the following discussions were held:

- When clearing snow, use the blower when possible instead of the excavator, which tends to pack the snow into the material.
- Dust from dumping often conceals snow. Continual probing for hidden snow pockets is necessary.
- Frozen chunks of FF should be removed from under the liner slope.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ Zone 2A (FF) and Zone 2B (FFAB) were placed as per RFI-5 in the key trench from Sta. 0+445 to 0+482. Two 300 mm lifts of each material were placed side by side and compacted with a CAT76XT roller doing 6 passes. The material appeared visually well graded and free of contaminants.
Dyke Backfill	■ Zone 2A (FF) and Zone 3 (CF) were placed and compacted along the downstream underliner of the rockfill core from Sta. 0+100 to Sta.0+365. The material was placed in 300 mm lifts and was compacted using the CAT76XT vibratory drum roller in 6 passes. The 1st lift of material is to be packed with light vibration and the subsequent lifts are to be packed with full vibration, per AEM direction. Each lift was survey controlled. The material appeared visually well graded and free of contaminants. Snow was removed by blowpipe prior to material placement. ■ Zone 1 (RF) was placed at the east abutment area for construction of a berm and from Sta. 0+208 to 0+070 during night shift. ■ Zone 2A (FF) underliner placement within the upstream side of the cut-off trench from Sta. 0+440 to Sta. 0+480. Material was placed with excavator and compacted using the vibratory smooth drum packer for a minimum of six passes. Survey grade control was used for each lift. Lifts were placed in steps

Activity or Area	Comments
	to avoid a cold joint between backfilled sections. The material appeared well graded and free of contaminants.
Spillway	■ No work done on spillway during reporting period.
Liner Installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
None				

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-10-AMQ-FF-20210408	April 8, 2021	-	Zone 2A (FF)	Zone 2A Stockpile	Sieve Analysis	Pending
PSD-7-AMQ-CF-20210409	April 9, 2021	-	Zone 3 (CF)	0+150	Sieve Analysis	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-22	April 7, 2021	April 9, 2021	Foundation	0+465 o/s 0 m	Ice Content	IC = 1.2% WC = 18.3% Compliant

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	April 8, 2021	NS	Zone 2A (FF)	Zone 2A Stockpile	DD	Avg. 2095 kg/m^3 SPD 98.1% (min) Compliant
					MC	Avg 3.6%
4	April 9, 2021	DS	Zone 2A (FF)	Zone 2A Stockpile	DD	Avg. 2141 kg/m^3 SPD 98.1% (min) Compliant
					MC	Avg 3.9%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2189: Snow removal from upstream underliner, Sta. 0+200, view looking E.



Photograph 2190: Sloping of Zone 2A (FF) upstream underliner, Sta. 0+200, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 8, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spillberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 10TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 9th, 2021 and day shift for April 10th, 2021

1.0 WEATHER

- Night shift: High -29°C Low -37°C with wind chill; clear.
- Day shift: High -16°C Low -18°C, with wind chill; sunny, clear.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Reminder to workers to inspect compressor before each use & ensure whip checks are installed.
- Safety meeting tomorrow at 6:00.

General Discussion:

- High Northerly winds today as storm system travels East. Winds should drop below 30 km/hr around 23:00.

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- Thermistor at 0+145 needs to be installed on top of liner slope prior to backfill.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Remaining section of key trench foundation (Sta. 0+482 to 0+526) has been cleaned and approved for backfill of Zone 2A (FF) and Zone 2B (FFAB 4%) as per RFI-5. Placement of FFAB should not proceed in windy conditions and wind-blown snow may need to be removed as per QA/QA directive.
- Configuration of Zone 2B (FFAB) has been established for the East abutment LLDPE liner tie-in, to address the bentonite shortage. FFAB will continue to be placed as per RFI-05 and stop at 7 m from the abutment.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ The key trench foundation was cleaned and approved from 0+482 to 0+526 (termination of dam). The trench floor at this location consists of an irregular bedrock surface, ice-rich, with ice-filled joints and localized pockets of ice. During cleaning, the ice pockets were chipped down at least 10 cm before stopping. Aside for a few wide, ice-filled joints, the bedrock quality is very good. There are some closely spaced joint sets/fracture zones on the downstream side of the key trench that dip towards the downstream side of the dam. The upstream and downstream trench walls are consistent with observations made elsewhere in the trench. The top 1-2 m of bedrock is generally weathered/fractured and becomes good quality with depth. The bedrock foundation was approved for fill of Zone 2A/2B material as per RFI-5, with no treatment necessary. The basis for this decision is consideration of the following facts: ▪ The bottom of the trench is at least 3 m below original ground surface and the ice should remain frozen at all times. ▪ A thermal berm will be added in this area. ▪ Joint orientation/aperture is generally not favourable to preferential flow under the dam.

Activity or Area	Comments
	▪ The foundation in this area is outside the footprint of the Maximum Operating Level of the basin (low gradient). The bedrock surface was mapped by hand using a Brunton compass. ■ Zone 2A (FF) material was placed as per RFI-5 in the key trench from Sta. 0+482 to 0+515. Bedrock depressions were filled and hand-compacted to the satisfaction of QA/QC representatives. One lift to 3.0 mbgs was placed and vibration compacted by 6 passes of the CAT76XT roller. The material appeared visually well graded and free of contaminants.
Dyke Backfill	■ Snow removal by blower/hand shovel progressed from Sta. 0+100 to 0+365. Snow removal by excavator was avoided as per QA directive. ■ Zone 2A (FF) and Zone 3 (CF) were placed and compacted along the downstream underliner of the rockfill core from Sta. 0+80 to Sta. 0+95. The material was placed in 300 mm lifts and was compacted using the CAT76XT vibratory drum roller in 6 passes. The 1st lift of material is to be packed with light vibration and the subsequent lifts are to be packed with full vibration, per AEM direction. Each lift was survey controlled. The material appeared visually well graded and free of contaminants. Snow was removed by blowpipe prior to material placement. ■ Zone 2A (FF) underliner placement within the upstream side of the cut-off trench from Sta. 0+415 to Sta. 0+450. Material was placed in 5 lifts to 0.55 mbgs with excavator and compacted using the vibratory smooth drum packer for a minimum of six passes. Survey grade control was used for each lift. Lifts were placed in steps to avoid a cold joint between backfilled sections. The material appeared well graded and free of contaminants. ■ Zone 2A (FF) underliner was sloped from Sta. 0+260 to 0+368. Sloped surface appears well graded and free of snow.
Spillway	■ No work done on spillway during reporting period.
Liner Installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Key trench foundation	20210410-DS-01	Sta. 0+482 to 0+526 (Eastern termination of dam alignment)	April 10, 2021	Trench floor is ice-rich bedrock with ice-filled joints and localized ice-filled depressions. The ice-filled joints are at most 20 cm wide. The ice-filled depressions are generally 1-2 m^2 in extent. Ice in the trench floor was chipped down at least 10 cm before stopping. Large joint set/fracture zone observed on downstream side of trench, dipping towards downstream side of dyke. Top 1-2 m of bedrock in trench walls is fractured & weathered, like other sections. Foundation accepted as-is, without treatment. Some remaining debris to be removed under night shift QC supervision. Bedrock mapped with Brunton compass.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-10-AMQ-FF-20210408	April 8, 2021	-	Zone 2A (FF)	Zone 2A Stockpile	Sieve Analysis	Non-compliant Material is too coarse for all fractions greater than 2 mm. $D15_{max}$ is respected. Accepted as per Field Change FC21-2

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
11	April 9, 2021	NS	Zone 2A (FF)	Sta. 0+080 to 0+090 and Sta. 0+415 to 0+465	DD	Avg. 2146 kg/m^3 SPD 98.2% (min)

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
						Compliant
					MC	Avg 3.4%
1	April 10, 2021	DS	Zone 2A (FF)	Sta. 0+478 to 0+515	DD	Avg. 2125 kg/m^3 SPD 99.7% (min) Compliant
					MC	Avg 3.3%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2191: Approved key trench bedrock foundation surface, Sta. 0+482 to 0+515, view looking E.



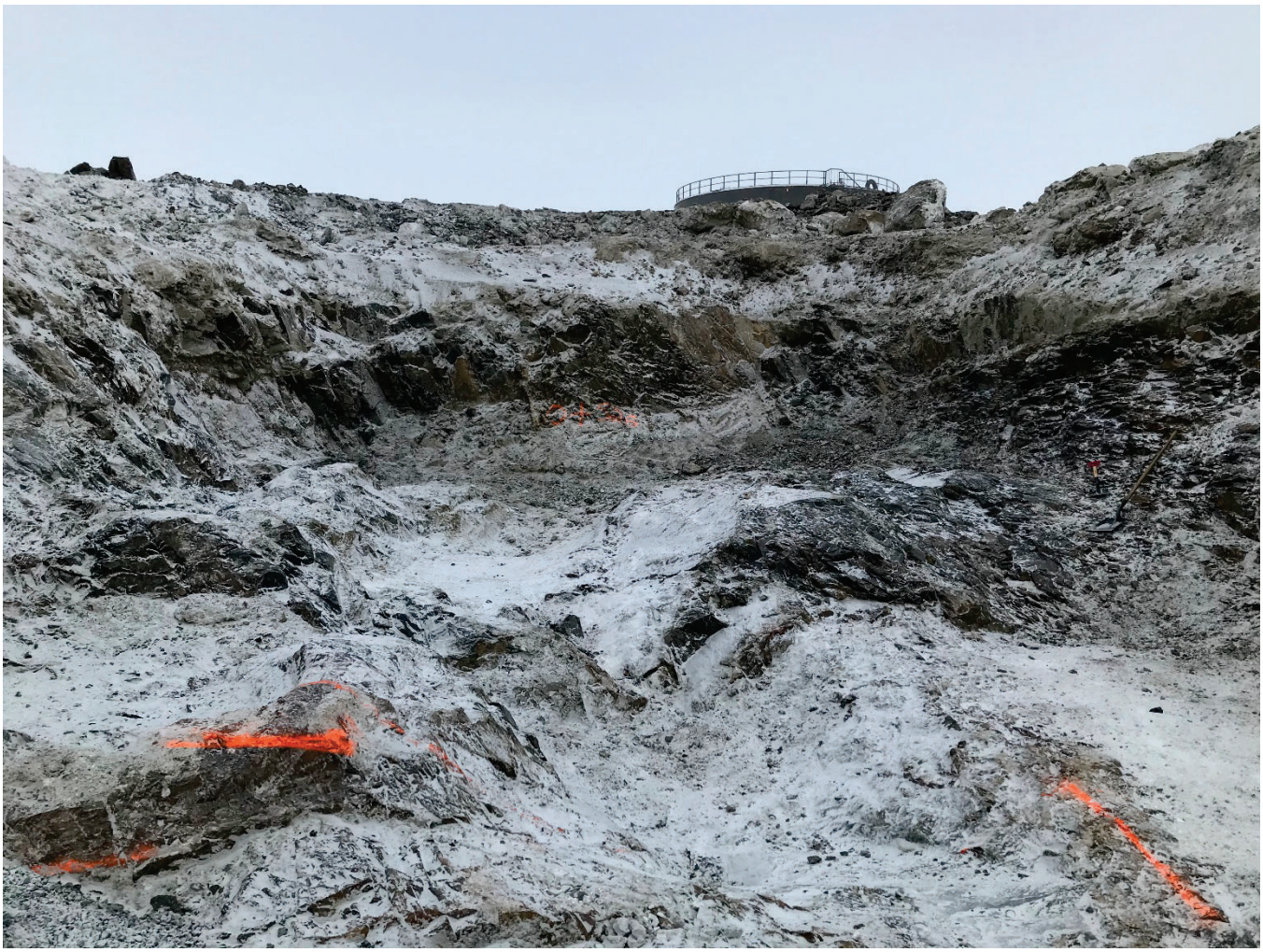
Photograph 2192: Ice-filled joint at Sta. 0+500 (joint #4 on bedrock map), view looking N.



Photograph 2193: Approved key trench bedrock foundation, Sta. 0+482 to 0+515, view looking W.



Photograph 2194: Approved key trench bedrock foundation from Sta. 0+515 to 0+526, view looking W. Ice pockets visible on left and right sides of photograph.



Photograph 2195: Termination of dam alignment (Eastern abutment) in key trench, Sta. 0+515, view looking E.



Photograph 2196: Closely spaced joint set/fracture zone on downstream side of key trench foundation, Sta. 0+520, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 11, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spillberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 11TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 10th, 2021 and day shift for April 11th, 2021

1.0 WEATHER

- Night shift: High -29°C Low -39°C with wind chill; high winds, light snow.
- Day shift: High -20°C Low -24°; sunny, windy.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- April and May are the worst months for safety incidents in Canada because the weather is getting nicer and people are thinking about summer plans. It is important to remain focused on the job.
- Reminder that it is AEM policy that checking cell phones & walking at same time is not allowed.

General Discussion:

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- Reminder to operators to manage frustration. Some jobs take time to do right. Reminder that that is part of the work.
- Thermistor installations at Sta. 0+160 – installation of thermistor along LLDPE liner will require 90-degree angles in liner tie-in. Elbows will be required. For the vertical thermistor installation, the LLDPE liner will be cut at the top of the slope to accommodate its casing.
- Tony (AEM Foreman) asks if we can get thermal berm dimensions because workfront is reaching that sector soon.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- Frozen chunks observed in the Zone 2A (FF) should not be placed in the dyke as they interfere with compaction. QC monitored placement of Zone 2A in the trench to ensure the frozen chunks were separated out.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	**Comments**
Key Trench Backfill	■ Zone 2A (FF) material was placed as per RFI-5 in the key trench from Sta. 0+482 to 0+526. The material was vibration compacted by 6 passes of the CAT76XT roller. Lifts were survey controlled. The material appeared visually well graded and free of contaminants. ■ Zone 2B (FFAB 4%) material was placed as per RFI-5 in the key trench from Sta. 0+482 to 0+500. The material was vibration compacted by 6 passes of the CAT76XT roller. Lifts were survey controlled. The material appeared visually well graded and free of contaminants. Placement did not occur in high winds.
Dyke Backfill	■ Snow clearing and sloping to 3H:1V of the upstream Zone 2A (FF) took place from Sta. 0+090 to 0+368 in preparation for LLDPE liner installation. ■ Sloping to 2H:1V of downstream Zone 1 (rockfill) from Sta. 0+105 to 0+200. ■ Hauling of Zone 4 (esker) material to the IVR dyke is complete.

Activity or Area	Comments
	■ The dyke crest was finalized from Sta. 0+105 to 0+345 and local depressions were filled with Zone 2A (FF) material as per AEM discretion.
Spillway	■ Zone 2A (FF) material was placed from Sta. 074 to 085 in the spillway in 300 mm lifts and compacter with a vibratory roller. The material appears well graded and free of contaminants.
Liner Installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
None				

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD -7-AMQ-CF-20210409	April 9, 2021	April 10, 2021	Zone 3 (CF)	0+150	Sieve Analysis	Compliant
PSD-11-AMQ-FF-20210411	April 11, 2021	-	Zone 2A (7000 m^3)		Sieve Analysis	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	April 10, 2021	NS	Zone 2A (FF)	Sta. 0+080 to 0+095 and Sta. 0+482 to 0+515	DD	Avg. 2115 kg/m^3 SPD 99.6% (min) Compliant
					MC	Avg 3.4%
1	April 10, 2021	NS	Zone 2B (FFAB 4%)	Sta. 0+478 to 0+515	DD	Avg. 2125 kg/m^3 SPD 99.7% (min) Compliant
					MC	Avg 3.3%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2197: Placement of Zone 2A (FF) in key trench, Sta. 0+482 to 0+526, view looking W.



Photograph 2198: Spillway at Sta. 0+75, view looking S.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 12, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spillberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 12TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 11th, 2021 and day shift for April 12th, 2021

1.0 WEATHER

- Night shift: High -30°C Low -42°C with wind chill; clear.
- Day shift: High -20°C Low -24°; sunny, windy.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Reminder of AEM's policy not to tolerate discrimination or harassment.

General Discussion:

- Some bentonite was found in a seacan used to build the mixing station. Each seacan at the mixing station should be inspected for possible bentonite.
- Configuration of thermal berm to be confirmed.

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4.0 DISCUSSIONS

During the day, the following discussions were held:

- Breaking up frozen chunks of Zone 2A (FF) at the Zone 2A stockpile is contrary to the goal of not placing them in the dyke. Instead, frozen areas of the stockpile should be avoided, and frozen chunks should be sorted out at the stockpile prior to hauling to the dyke. The same procedure applies to any material requiring compaction.
- QA representative will ship samples of Zone 2B (FFAB) 4%, 4.4%, and 6.6% to Golder laboratories for possible permeability testing.
- The Fine Filter material used to weigh down the plywood boards at the LLDPE liner hinge point is contaminated with snow and must be discarded.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ Zone 2A (FF) material was placed as per RFI-5 in the key trench from Sta. 0+482 to 0+526. The material was vibration compacted by 6 passes of the CAT76XT roller. Lifts were survey controlled. The material appeared visually well graded and free of contaminants. ■ Zone 2B (FFAB 4%) material was placed as per RFI-5 in the key trench from Sta. 0+482 to 0+519. The material was vibration compacted by 6 passes of the CAT76XT roller. Lifts were survey controlled. The material appeared visually well graded and free of contaminants. Placement did not occur in high winds. ■ Re-construction of Zone 2B (FFAB) material at depth of 2.5 m from original ground from Sta. 0+380 to Sta. 0+420. The previous lift was disturbed from snow removal over the area.
Dyke Backfill	■ Sloping to 3H:1V of the upstream Zone 2A (FF) took place from Sta. 0+402 to 0+450 in preparation for LLDPE liner installation. ■ Sloping to 2H:1V of downstream Zone 1 (rockfill) from Sta. 0+271 to 0+361.
Spillway	■ None

Activity or Area	Comments
Liner Installation	■ No liner installation occurred during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2A (Fine Filter) under LLDPE liner slope (bottom)	Pending	Sta. 0+403 to 0+445	April 12, 2021	Material placed in 300 mm lifts and compacted with a vibratory roller compacter with minimum 6 passes. Material appears well graded and free of contaminants. Embedded snow in the Zone 2B (FFAB) at the connection point (Sta. 0+403) must be removed prior to Zone 2B placement.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD -11-AMQ-FF-20210411	April 11, 2021	-	Zone 2A (FF)	0+490	Sieve Analysis	Pending
PSD-10-AMQ-FFAB-20210411	April 11, 2021	-	Zone 2B (FFAB)	0+515	Sieve Analysis	Pending
SWELL-12-AMQ-FFAB-20210411	April 11, 2021	-	Zone 2B (FFAB 4%)	0+482	Swell	Compliant
SWELL-13-AMQ-FFAB-20210411	April 12, 2021	-	Zone 2B (FFAB 4%)	0+420	Swell	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
7	April 11, 2021	NS	Zone 2A (FF)	Sta. 0+482 to 0+526	DD	Avg. 2131 kg/m^3 SPD 98.1% (min) Compliant
					MC	Avg 3.4%
7	April 11, 2021	NS	Zone 2B (FFAB 4%)	Sta. 0+482 to 0+526	DD	Avg. 2134 kg/m^3 SPD 99.5% (min)

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
						Compliant
					MC	Avg 3.8%
3	April 12, 2021	DS	Zone 2A (FF)	Sta. 0+402 to 0+526	DD	Avg. 2114 kg/m^3 SPD 98.2% (min) Compliant
					MC	Avg 4.3%
4	April 12, 2021	DS	Zone 2B (FFAB)	Sta. 0+380 to 0+526	DD	Avg. 2113 kg/m^3 SPD 98.3% (min) Compliant
					MC	Avg 4.6%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2199: Zone 2A (FF) in key trench sloped 3H:1V in preparation for LLDPE liner installation, Sta. 0+400, view looking E.



Photograph 2200: Crest of dam, Sta. 0+400, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 13, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spillberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 13TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 12th, 2021 and day shift for April 13th, 2021

1.0 WEATHER

- Night shift: High -31°C Low -37°C with wind chill; clear, light wind.
- Day shift: High -21°C Low -26°; sunny, cloudy.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Reminder of AEM's policy not to tolerate discrimination or harassment.

General Discussion:

- See QC report.

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4.0 DISCUSSIONS

During the day, the following discussions were held:

- LLDPE liner installation has restarted from Sta. 0+403 in the key trench. Installation will progress from Sta. 0+403 to 0+526 in the key trench prior to starting the upper liner installation.
- QA representative instructed LLDPE liner installation foreman to use the damaged rolls in the non-critical section of the dyke (Sta. 0+080 to 0+320) and reserve the less damaged rolls for the critical section. All damages will be patched regardless.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ Zone 2A (FF) material was placed and compacted in the key trench from Sta. 0+465 to 0+526. The material was vibration compacted by 6 passes of the CAT76XT roller. Lifts were survey controlled. The material appeared visually well graded and free of contaminants. ■ Zone 2B (FFAB) material was placed and compacted for the underliner hinge point from Sta. 0+450 to 0+526. The material was vibration compacted with a CAT76XT roller performing 6 passes. Lifts were survey controlled and compaction tested. The material appeared visually well graded and free of contaminants. ■ Sloping of Zone 2A (FF) to 3H:1V from Sta. 0+450 to 0+526.
Dyke Backfill	■ Sloping of Zone 1 (rockfill) to 2H:1V from Sta. 0+275 to 0+361.
Spillway	■ None
Liner Installation	■ Six LLDPE panels were installed from Sta. 0+403 to 0+437 in the key trench (panels P56 to P61). The bedding surface was approved prior to geotextile placement under the LLDPE liner by the QA representative and liner QC representative. Large rocks or frozen chunks were removed from the bedding surface prior to installation.

Activity or Area	Comments
	■ The filet weld machine was calibrated prior to welding. Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ Four repairs (R14 to R17) were performed on panel P59 and five repairs (R18 to R22) on panel P60 that were damaged by loader forks during transport. The extrusion welder machine was calibrated prior to repair. Vacuum box tests were conducted on each repair and no leaks were observed. ■ No destructive tests were performed during the reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
R14	IVR Dike (key trench section)	Sta. 0+420	Panel 59	Patched holes made by forklift. Vacuum tested and compliant.
R15	IVR Dike (key trench section)	Sta. 0+420	Panel 59	Patched holes made by forklift. Vacuum tested and compliant.
R16	IVR Dike (key trench section)	Sta. 0+420	Panel 59	Patched holes made by forklift. Vacuum tested and compliant.
R17	IVR Dike (key trench section)	Sta. 0+420	Panel 59	Patched holes made by forklift. Vacuum tested and compliant.
R18	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift. Vacuum tested and compliant.
R19	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift. Vacuum tested and compliant.

R20	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift
R21	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift. Vacuum tested and compliant.
R22	IVR Dike (key trench section)	Sta. 0+427	Panel 60	Patched holes made by forklift. Vacuum tested and compliant.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2A (Fine Filter) under LLDPE liner slope (bottom)	Pending	Sta. 0+445 to 0+520	April 13, 2021	Material placed in 300 mm lifts and compacted with a vibratory roller compacter with minimum 6 passes. Material appears well graded and free of contaminants.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
LLDPE liner in key trench	Pending	0+403 to 0+437	April 13, 2021	9 repairs done on panels P59 and P60 due to damage during transport.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD -11-AMQ-FF-20210411	April 11, 2021	April 12, 2021	Zone 2A (FF)	0+490	Sieve Analysis	Non-Compliant. Sample too coarse. Accepted as per FC21-01.
PSD-10-AMQ-FFAB-20210411	April 11, 2021	April 12, 2021	Zone 2B (FFAB 4%)	0+515	Sieve Analysis	Non-Compliant. Sample too coarse. Accepted as per FC21-01.
SWELL-12-AMQ-FFAB-20210411	April 11, 2021	-	Zone 2B (FFAB 4%)	0+482	Swell	Compliant
SWELL-13-AMQ-FFAB-20210411	April 12, 2021	-	Zone 2B (FFAB 4%)	0+420	Swell	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
7	April 11, 2021	NS	Zone 2A (FF)	Sta. 0+482 to 0+526	DD	Avg. 2131 kg/m^3 SPD 98.1% (min) Compliant
					MC	Avg 3.4%
7	April 11, 2021	NS	Zone 2B (FFAB 4%)	Sta. 0+482 to 0+526	DD	Avg. 2134 kg/m^3 SPD 99.5% (min)

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
						Compliant
					MC	Avg 3.8%
3	April 12, 2021	DS	Zone 2A (FF)	Sta. 0+402 to 0+526	DD	Avg. 2114 kg/m^3 SPD 98.2% (min) Compliant
					MC	Avg 4.3%
4	April 12, 2021	DS	Zone 2B (FFAB)	Sta. 0+380 to 0+526	DD	Avg. 2113 kg/m^3 SPD 98.3% (min) Compliant
					MC	Avg 4.6%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

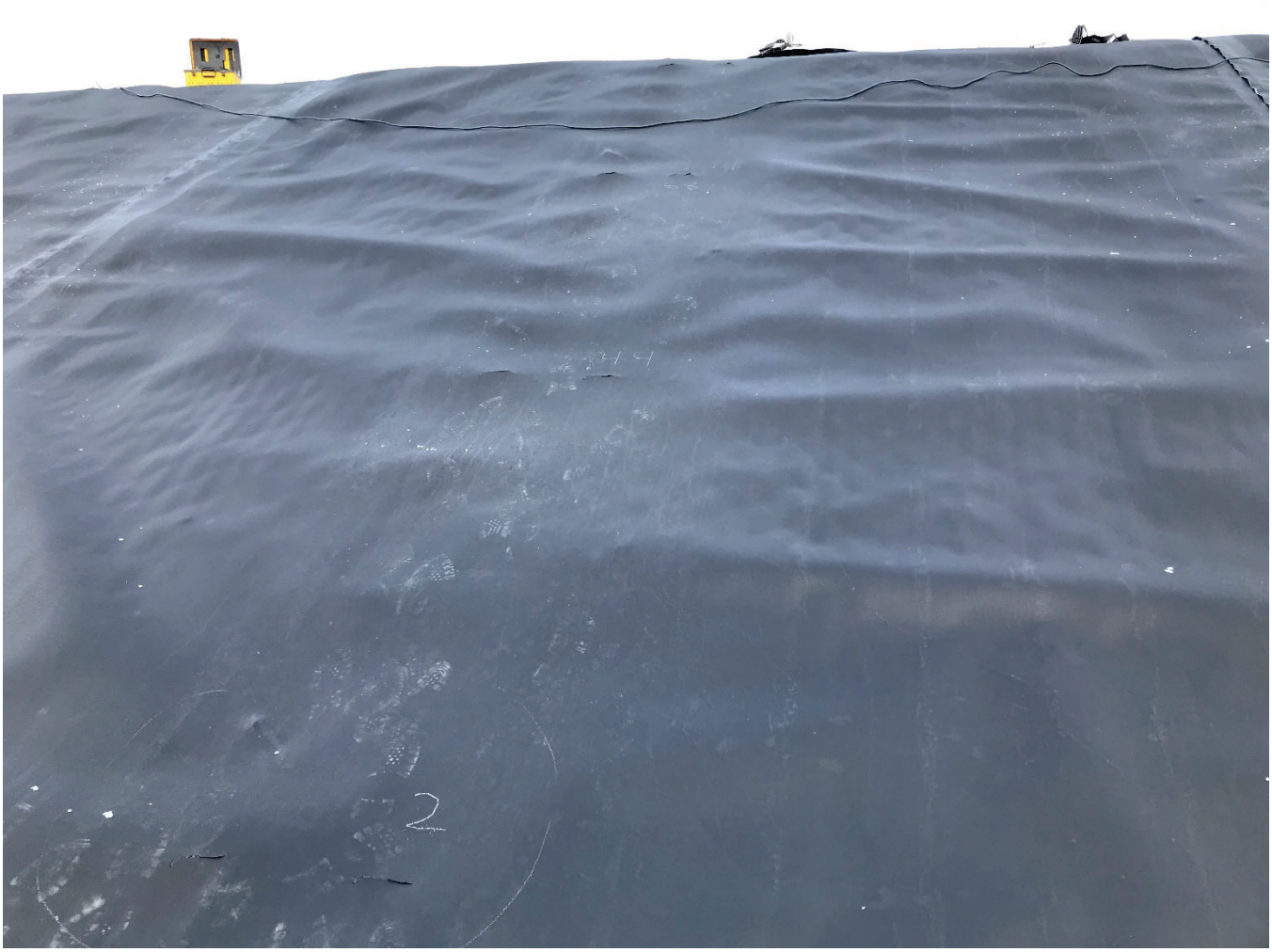
11.0 PHOTOGRAPHS



Photograph 2201: Prepared surface for LLDPE liner installation, Sta. 0+403 to 0+437, view looking E.



Photograph 2202: Installed LLDPE liner, Sta. 0+403 to 0+437, view looking E.



Photograph 2203: Forklift holes on panel P59, Sta. 0+420, view looking N.



Photograph 2204: Patches R14-R17 on panel P59, Sta. 0+420, view looking N.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 13, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 14TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 13th, 2021 and day shift for April 14th, 2021

1.0 WEATHER

- Night shift: High -31°C Low -37°C with wind chill; clear, light wind.
- Day shift: High -21°C Low -26°; sunny, cloudy.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sébastian Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Beware of windy conditions during liner install.
- A caribou has been observed on site recently. AEM is monitoring situation.
- Contractor has requested that light vehicles be parked away from dyke due to equipment activity during liner installation.
- Minor slope failure observed at the esker stockpile. Notice to workers to stay a safe distance from stockpile.

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General Discussion:

- Thermal berm and LLDPE liner tie-in details have been confirmed by AEM.
- Reminder not to damage instruments when moving plywood sheets off LLDPE liner hinge point.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- The rockfill stockpiles on downstream side of dyke were inspected for lack of fines due to wind action. The material appeared acceptable.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ Zone 2A (FF) material was placed and bucket compacted in the key trench over liner in 500 mm lifts from Sta. 0+390 to 0+434. The material appeared well graded and free of contaminants. ■ Zone 2B (FFAB) material was placed and bucket compacted in the key trench over liner in 300 mm lifts from Sta. 0+390 to 0+434. The material appeared well graded and free of contaminants. ■ Zone 3 (CF) material was placed in the key trench over liner from Sta. 0+370 to 0+430 in 300 mm lifts. The first lift was bucket compacted, second and third lifts were roller compacted without vibration and the fourth lift was compacted with vibration. The material appeared well graded and free of contaminants.
Dyke Backfill	■ None
Spillway	■ None
Liner Installation	■ Twelve LLDPE panels were installed from Sta. 0+437 to 0+519 in the key trench (panels P62 to P73). The bedding surface was approved prior to geotextile placement under the LLDPE liner by the QA representative and liner

Activity or Area	Comments
	QC representative. Snow was removed from the bedding surface prior to liner installation. ■ The filet weld machine was calibrated prior to welding. Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ One repair (R18) was performed on panel P59 and five repairs (R18 to R22) on panel P60 that were damaged by loader forks during transport. The extrusion welder machine was calibrated prior to repair. Vacuum box tests were conducted on each repair and no leaks were observed. ■ One destructive test sample (DT5) was obtained from the seam between liner panels P63 to P64. The results of the shear and peel tests met Technical Specifications. The hole left by taking the sample was patched and passed vacuum box testing. ■ Geotextile was placed over the LLDPE liner following installation and inspection. The geotextile was inspected prior to backfill and appeared in good condition.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
R23	IVR Dike (key trench section)	Sta. 0+450	Seam P63/P64	Patched hole made by destructive testing at bottom of slope. Vacuum tested and compliant.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2A (FF) and Zone 2B (FFAB)	Pending	Sta. 0+390 to 0+434	April 13, 2021	Material approved by night shift QC for placement of Zone 3 (CF).

over liner in key trench				

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
LLDPE liner in key trench	Pending	0+437 to 0+519	April 14, 2021	Seam tested and compliant. One destructive test performed. Hole patched and vacuum box tested.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-3-AMQ-Esker-20210413	April 13, 2021	April 14, 2021	Zone 4 (Esker)	Stockpile	Sieve Analysis	Minor non-compliance. Sample slightly too coarse. Accepted provided care is taken to avoid segregation.
PSD-4-AMQ-Esker-20210413	April 13, 2021	April 14, 2021	Zone 4 (Esker)	Stockpile	Sieve Analysis	Minor non-compliance. Sample slightly too coarse. Accepted provided care is taken to avoid segregation.

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
1	April 13, 2021	NS	Zone 2B (FFAB)	Sta. 0+520 to 0+526	DD	Avg. 2141 kg/m^3 SPD 101.4% (min) Compliant
					MC	Avg 4.2%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

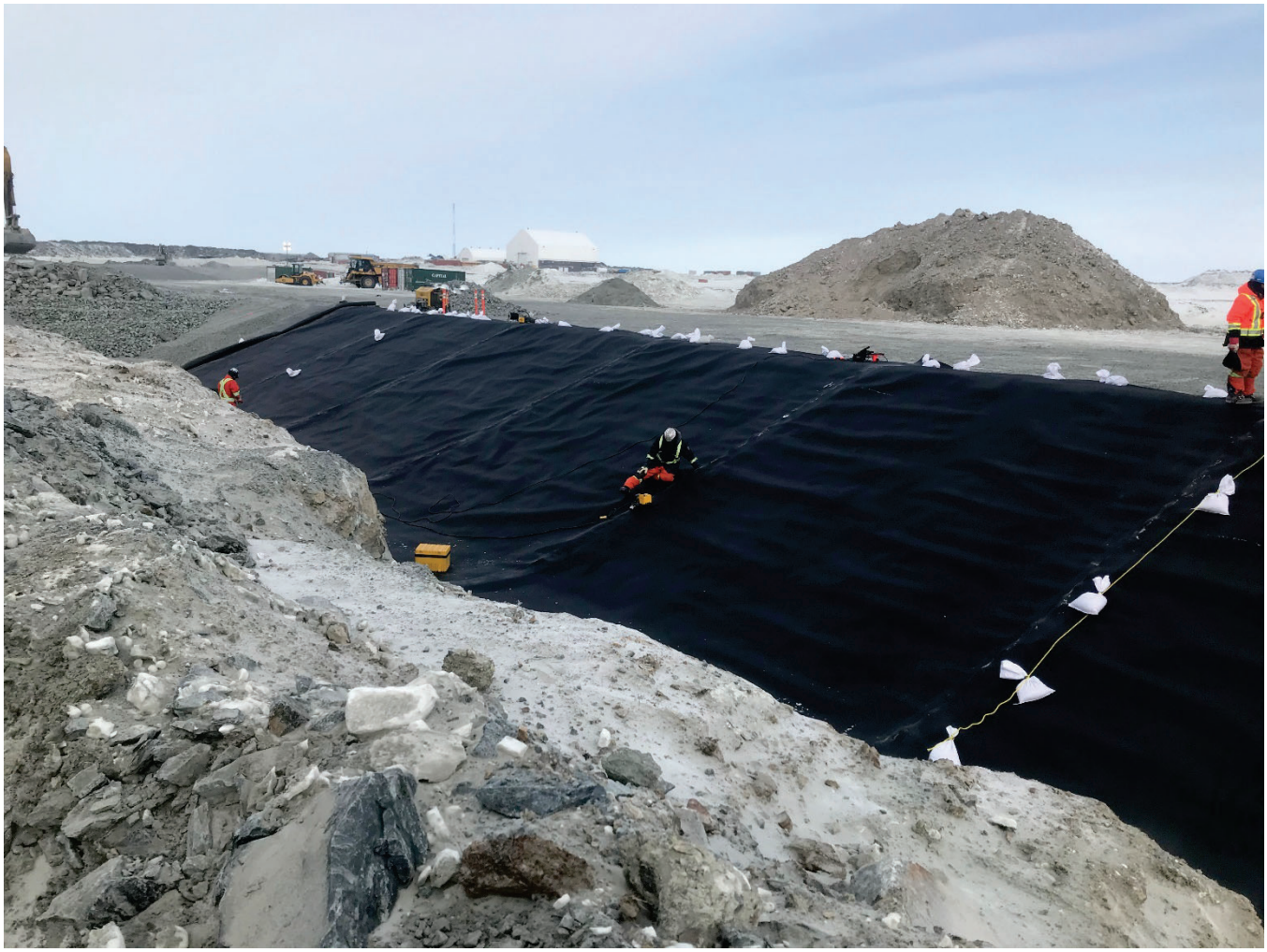
10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2205: Liner installation, Sta. 0+437 to 0+519, view looking NW.



Photograph 2202: Placement of Zone 2B and Zone 2A on top of LLDPE liner, Sta. 0+437, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 15, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 15TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 14th, 2021 and day shift for April 15th, 2021

1.0 WEATHER

- Night shift: High -7°C Low -9°C; clear.
- Day shift: High -8°C Low -15°; overcast.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Presence of caribou on site. AEM is monitoring the situation.

General Discussion:

- The “Northwest” esker source has been determined to be excavatable. The material was sampled and found to be slightly coarser than Specifications. It can be mixed with the other esker material to produce a finer material.

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- It may be possible to install the upper LLDPE liner in one horizontal panel instead of many vertical panels for a section of the dyke. This would greatly reduce the number of seams in the liner for that section. This option is being evaluated based on dyke geometry and available material.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- With warmer weather arriving, the temperature in the heat shack is very variable (+35C when the frostfighter is on, +5C when it is off). The testing equipment should be moved to a more controlled temperature environment for consistent testing conditions. Ideally, LLDPE liner tensiometer tests should be done around 20 to 25 degrees Celsius.
- During night shift, a truckload of Zone 2B (FFAB) was dumped in the trench on top of the liner at Sta. 0+477 causing the liner to fold upwards and some creases and small puncture holes (<1 cm diameter) in the horizontal liner toe anchor. The liner was hand-excavated and placed back in position, and the damage was inspected by the QA representative. Given that the damage was limited to the liner toe anchor, it was considered acceptable to continue backfilling.
- To comply with RFI-5, a 2.1 m wide section of Zone 2A (FF) material was excavated at the East dyke abutment (Sta. 0+526) and the opening was filled with Zones 2B (FFAB) and 2A (FF) compacted in 250 mm lifts with a manual plate tamper. Installation of LLDPE liner at this location was temporarily halted.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ Zone 2A (FF) material was placed and bucket compacted in the key trench over liner in 500 mm lifts from Sta. 0+468 to 0+510. The material appeared well graded and free of contaminants. ■ Zone 2B (FFAB) material was placed and bucket compacted in the key trench over liner in 300 mm lifts from Sta. 0+468 to 0+515. The material appeared well graded and free of contaminants. ■ Zone 3 (CF) material was placed in the key trench over liner from Sta. 0+433 to 0+510. The first lift was bucket compacted, second and third lifts were roller compacted without vibration in 6 passes and the fourth lift was compacted with

Activity or Area	Comments
	vibration in 6 passes. The material appeared well graded and free of contaminants.
Dyke Backfill	■ Placement of Zone 1 (rockfill) from Sta. 0+410 to 0+500. Material was compacted with a smooth drum vibratory roller in 6 passes.
Spillway	■ None
Liner Installation	■ Eight LLDPE liner panels, P74 to P81, were installed from Sta. 0+276 to 0+226 on the upstream slope of the dyke. They were extrusion welded to panels P9 to P16 in the key trench. The bedding surface was approved prior to geotextile placement by the QA representative and liner QC representative. ■ The extrusion welding machine was calibrated prior to welding. Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ Vacuum box tests were performed along the whole length of the horizontal extrusion weld connecting the upper LLDPE liner to the lower liner in the key trench. No leaks were observed. The extrusion weld was performed minimum 0.5 m from the bottom of the liner slope, as per design. ■ One destructive test sample (DT6) was performed on the seam between liner panels P74 to P75. The sample was taken from the top of the slope. The results of the shear and peel tests met Technical Specifications. ■ Geotextile was placed over the installed liner prior to backfill.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
DT6	IVR dyke upper liner section	0+283	P74/P75	Test results compliant.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2A (FF) and Zone 2B (FFAB) over liner in key trench	Pending	Sta. 0+434 to 0+519	April 15, 2021	Material approved by night shift QC for placement of Zone 3 (CF).

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Upper LLDPE liner in dyke	Pending	0+220 to 0+276	April 14, 2021 (NS)	Seam tested and compliant. One destructive test performed and compliant.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
None						

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
1	April 15, 2021	DS	Zone 2A (FF)	Sta. 0+061	DD	Avg. 2099 kg/m^3 SPD 98.5% (min) Compliant
					MC	Avg 3.2%
2	April 15, 2021	DS	Zone 2B (FFAB)	0+523	DD	Avg. 2060 kg/m^3 SPD 96.6% (min) Non-compliant Material compacted using the tamping plate due to inaccessibility with the drum roller.
					MC	Avg 4.5%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
None				

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2207: Liner installation, Sta. 0+226 to 0+276, view looking W.



Photograph 2208: Excavation of Zone 2A (FF) at dyke East abutment for placement of Zone 2B (FFAB) and Zone 2A (FF) to comply with RFI-5, Sta. 0+526, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 16, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 16TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 15th, 2021 and day shift for April 16th, 2021

1.0 WEATHER

- Night shift: High -7°C Low -9°C; clear.
- Day shift: High -8°C Low -20°; clear.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Presence of caribou on site. AEM is monitoring the situation.
- Warm weather today. Beware of slips, trips, and falls and worsening road conditions for trucks.

General Discussion:

- Additional bentonite has been received on site.

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4.0 DISCUSSIONS

During the day, the following discussions were held:

- On warm days, snow should be removed from the exposed LLDPE liner slope to prevent thawing and freezing on the geotextile.
- Filling of the key trench has been completed. Approval forms for materials in the key trench will be issued shortly.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ Zone 2A (FF) material was placed and bucket compacted in the key trench over liner in 500 mm lifts from Sta. 0+415 to 0+529. The material appeared well graded and free of contaminants. ■ Zone 2B (FFAB) was placed over liner in the key trench in 300 mm lifts from Sta. 0+519 to 0+529. Material was bucket compacted and appeared well graded and free of contaminants. ■ Zone 3 (CF) material was placed in the key trench over liner from Sta. 0+415 to 0+529. The first lift was bucket compacted, second and third lifts were roller compacted without vibration in 6 passes and the fourth lift was compacted with vibration in 6 passes. The material appeared well graded and free of contaminants.
Dyke Backfill	■ The liner tie-in at the top of the dyke was backfilled with Zone 3 (CF) and Zone 2A (FF) material from Sta. 0+230 to 0+270. The material was bucket compacted and appeared well graded and free of contaminants.
Spillway	■ None
Liner Installation	■ Five LLDPE liner panels, P73, P82 to P85, were installed at 0+528 at the filet corner of the East dyke abutment. The bedding surface was approved prior to geotextile placement by the QA representative and liner QC representative. Air

Activity or Area	Comments
	channel tests were conducted on the seams and results were compliant. Geotextile was placed over the installed liner prior to backfill. ■ Seven LLDPE liner panels, P86 to P92, were installed from Sta. 0+220 to 0+175 on the upstream slope of the dyke. They were extrusion welded to panels P8 to P1 in the key trench. The bedding surface was approved prior to geotextile placement by the QA representative and liner QC representative. ■ The extrusion welding machine was calibrated prior to welding. Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ Vacuum box tests were performed along the whole length of the horizontal extrusion weld connecting the upper LLDPE liner to the lower liner in the key trench. No leaks were observed. The extrusion weld was performed minimum 0.5 m from the bottom of the liner slope as per design. ■ One destructive test sample (DT7) was performed on the seam between liner panels P86/P87. The sample was taken from the top of the slope. The results of the shear and peel tests met Technical Specifications. ■ Geotextile was placed over the installed liner prior to backfill. The geotextile was installed with 6-inch overlaps that were heat welded with a blowtorch.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
DT7	IVR dyke upper liner section	0+239	P86/P87	Test results compliant.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment

Zone 2A (FF) and Zone 2B (FFAB) over liner in key trench	Pending	Sta. 0+519 to 0+529	April 16, 2021	Material approved for placement of Zone 3 (CF).

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Upper LLDPE liner in dyke	Pending	0+220 to 0+175	April 16, 202	Seam tested and compliant. One destructive test performed and compliant.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-8-AMQ-CF-20210416	April 16, 2021	April 16, 2021	Zone 3 (CF)	Sta. 0+440	Sieve analysis	Non-compliant, slightly too coarse between 31.5 mm to 9.5 mm. Accepted provided care is taken to avoid segregation.
PSD-12-AMQ-FF	April 16, 2021	-	Zone 2A (FF)	Sta. 0+460	Sieve analysis	Pending
PSD-9-AMQ-CF	April 16, 2021	-	Zone 3 (CF)	Sta. 0+505	Sieve analysis	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
8	April 15, 2021	NS	Zone 2A (FF)	Sta. 0+525	DD	Avg. 2129 kg/m^3 SPD 98.2% (min) Compliant
					MC	Avg 4.5%
1	April 16, 2021	DS	Zone 2A (FF)	Sta. 0+460	DD	Avg. 2129 kg/m^3 SPD 99.9% (min) Compliant
					MC	Avg 5.3%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
None				

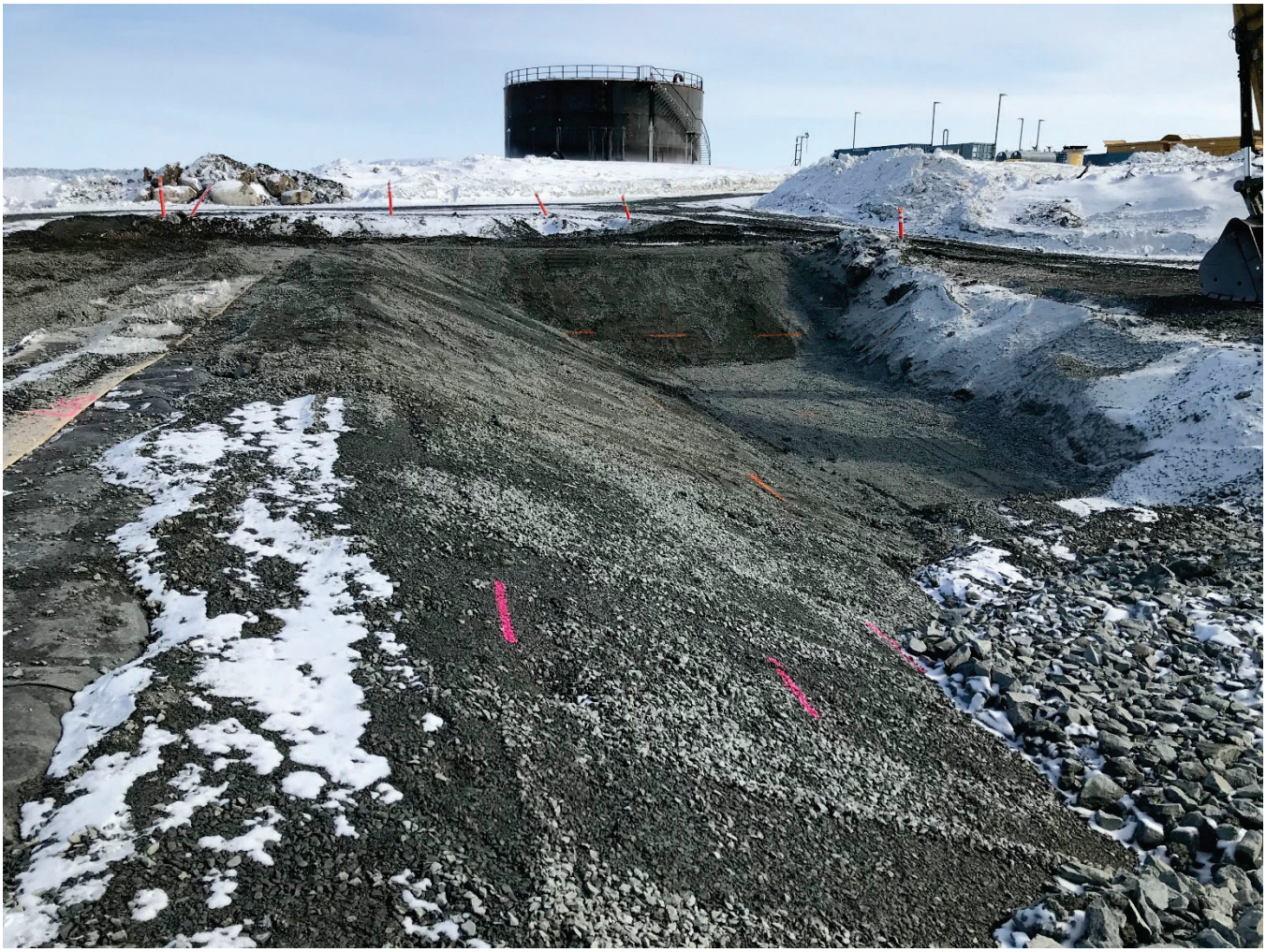
10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2209: East dyke abutment, 0+515, view looking E.



Photograph 2208: Trench for LLDPE liner tie-in, Sta. 0+230, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 17, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 17TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 16th, 2021 and day shift for April 17th, 2021

1.0 WEATHER

- Night shift: High -7°C Low -9°C; clear.
- Day shift: High -8°C Low -20°; clear.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Reminder not to idle equipment on site.
- Beware of windy conditions during liner installation.

General Discussion:

- None

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4.0 DISCUSSIONS

During the day, the following discussions were held:

- The esker material will be mixed with esker from the “Northwest” borrow pit in a 2:1 ratio. A sample will be obtained from the final product for grain size analysis.
- The tensiometer for LLDPE liner testing was moved back to the field shack. A system has been set up to ensure 20-25C temperatures in the field shack during testing.
- Prior to placement of Zone 2B (FFAB) material over the LLDPE liner hinge point, the liner at the bottom of the slope was trimmed to accommodate Field Change FC21-05 (Section 9.0). A section of the hinge point extrusion weld was inadvertently cut from Sta. 0+197 to 0+217 and the section was backfilled with Zone 2B (FFAB) material over night shift. The following day, the mistake was realized and the LLDPE liner trimmings were located to determine the extent of damage. It was determined from the liner trimmings that the extrusion weld connecting panels P86-P89 to panels P8-P4 was cut (Photo 2212). The hinge weld at this location was hand excavated under supervision of the surveyor and QA representative (Photo 2213). Four test pits at Stations 0+232, 0+244, 0+255, and 0+267 were also done to ensure the integrity of the hinge weld in the rest of the backfilled section (0+217 to 0+272). The trimmings from that section did not reveal any damage.

  The damaged hinge weld was repaired by cleaning the area and performing an extrusion weld in compliance with FC21-05. Care was taken to ensure there were no rocks between the liner panels. The repair was visually inspected by the liner QC representative and QA representative and no deficiencies were observed. The section was re-approved for Zone 2B (FFAB) backfill.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Key Trench Backfill	■ Zone 3 (CF) material was placed in the key trench over liner from Sta. 0+500 to 0+525. The first lift was bucket compacted, second and third lifts were roller compacted without vibration in 6 passes and the fourth lift was compacted with vibration in 6 passes. The material appeared well graded and free of contaminants.
Dyke Backfill	■ Zone 2B (FFAB) was placed over liner hinge in one 300 mm lift from Sta. 0+178 to 0+272. Material was bucket compacted and appeared well graded

Activity or Area	Comments
	and free of contaminants. Adequate thickness and liner cover was attained. Zone 2B (FFAB) from 0+178 to 0+217 was removed for the LLDPE liner hinge weld repair. Following the repair, the material was replaced and bucket compacted to the satisfaction of the QA representative.
Spillway	■ None
Liner Installation	■ LLDPE liner hinge weld was exposed and repaired from Sta. 0+197 to 0+217 on panels P86 to P89 welded to P8 to P4. All rocks were removed between the panels. The extrusion welder was calibrated prior to welding. The repair could not be vacuum box tested due to being at the end of the liner; however, a visual inspection was carried out by the liner QC representative and QA representative to their satisfaction.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
R24	IVR dyke hinge weld	Sta. 0+197 to 0+217	P86 to P89 welded to P8 to P4	Repair visually inspected to satisfaction of QC and QA representatives.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B (FFAB) under liner	Pending	Sta. 0+272 to 0+280	April 17, 2021	Material approved for placement of Zone 2B (FFAB) over liner.
Zone 2B (FFAB) over liner	Pending	Sta. 0+187 to 0+273	April 17, 2021	Material approved for placement of Zone 4 (esker)
Zone 2A (FF) over liner slope	Pending	Sta. 0+187 to 0+273	April 17, 2021	Material approved for placement of Zone 4 (esker) and Zone 3 (CF)

Foundation of Zone 4 (esker) on upstream side of dyke	Pending	Sta. 0+187 to 0+273	April 17, 2021	Foundation approved for placement of Zone 4 (esker). Snow and aggregate to be scraped from surface prior to fill to night shift QC satisfaction.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
Hinge weld repair	Pending	Sta. 0+197 to 0+217	April 17, 2021	Repair visually inspected to satisfaction of QC and QA representatives.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-12-AMQ-FF-20210416	April 16, 2021	April 17, 2021	Zone 2A (FF)	Sta. 0+460	Sieve analysis	Minor non-compliance. Accepted as per FC21-01.
PSD-11-AMQ-FFAB	April 16, 2021	April 17, 2021	Zone 2B (FFAB)	Sta. 0+198	Sieve analysis; swell test	Noncompliant, slight oversize particles; Bentonite present. Accepted as per FC21-01.

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-05	Configuration of Zone 2B (FFAB) on top of liner hinge	April 17, 2021	Favourable opinion from Golder	Inside the MOL (Sta. 0+100 to 0+280), the Zone 2B (FFAB) shall be 0.3 m thick over LLDPE liner hinge and the crest of the FFAB shall be 0.5 beyond the end of the liner. The liner hinge overlap shall be 1 m. The bentonite content shall be 6%. Outside the MOL (Sta. 0+045 to 0+100; Sta. 0+280 to 0+529), the Zone 2B (FFAB) shall be 0.25 m thick over LLDPE liner hinge and the crest of the FFAB shall be 0.5 beyond the end of the liner. The liner hinge overlap shall be 1 m. The bentonite content shall be 4%.

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2211: Liner trimmings showing damaged hinge weld.



Photograph 2212: Exposed hinge weld damage, Sta. 0+200, view looking E.



Photograph 2213: Extrusion weld repair of damaged hinge weld, Sta. 0+205, view looking W.



Photograph 2214: Hinge weld repair, Sta. 0+205, view looking E.



Photograph 2215: Snow removal and tie-in trench preparation for LLDPE liner installation, Sta. 0+220, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 18, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 18TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 17th, 2021 and day shift for April 18th, 2021

1.0 WEATHER

- Night shift: High -15°C Low -19°C; clear, blowing snow after 6:00.
- Day shift: High -13°C Low -18°; cloudy, wind.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Do not use ratchet strap used to tow geotextile rolls, use proper slings & shackles;
- Lots of traffic and activity on site. Space is decreasing due to material placement.

General Discussion:

- Crew change tomorrow.

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4.0 DISCUSSIONS

During the day, the following discussions were held:

- The stockpile of Zone 2B (FFAB) taken from the bottom of the mixing station stockpile was tested for swell testing. Many frozen chunks were observed in the material. This material is not to be used within the MOL section of the dyke until the frozen chunks are removed or broken up, and the results of the swell test are positive.
- The Zone 4 (esker) material tapers off towards the East in the drawings. Since this material contains boulders a field fit will need to be done on site at the taper location.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 2A (FF) material was placed over liner slope from Sta. 0+233 to 0+266. The material was bucket compacted and appeared well graded. Adequate thickness of 500 mm was achieved.
Spillway	■ None
Liner Installation	■ Fourteen LLDPE liner panels, P93 to P106 welded to panels P16 to P33, were installed from Sta. 0+264 to 0+369 on the upstream slope of the dyke. They were extrusion welded to panels P16 to P33 in the key trench. The bedding surface was approved prior to geotextile placement by the QA representative and liner QC representative. ■ The extrusion welding machine was calibrated prior to welding. Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ Vacuum box tests were performed along the whole length of the horizontal extrusion weld connecting the upper LLDPE liner to the lower liner in the key trench. No leaks were observed. The extrusion weld was performed minimum 0.5 m from the bottom of the liner slope as per design.

Activity or Area	Comments
	■ One repair (R28) was done on panel P101 that was damaged by forklift forks. The repair was extrusion welded and vacuum box tested. Results were compliant. ■ One destructive test sample (DT8) was performed on the seam between liner panels P99/P98. The sample was taken from the top of the slope. The results of the shear and peel tests met Technical Specifications. ■ Geotextile was placed over the installed liner prior to backfill. The geotextile was installed with 6-inch overlaps that were heat welded with a blowtorch

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
R28	Hole from forklift damage	0+330	P101	Vacuum box tested and compliant.
DT8	Destructive test	0+314	Seam P99/98	Shear and peel test results compliant.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B (FFAB) under liner	Pending	Sta. 0+272 to 0+280	April 18, 2021	Material approved for placement of Zone 2B (FFAB) over liner.
Zone 2B (FFAB) over liner	Pending	Sta. 0+179 to 0+187 Sta. 0+273 to 0+323	April 18, 2021	Material approved for placement of Zone 4 (esker)
Zone 2A (FF) over liner slope	Pending	Sta. 0+200 to 0+319	April 18, 2021	Material approved for placement of Zone 4 (esker) and Zone 3 (CF)
Foundation of Zone 4 (esker) on	Pending	Sta. 0+179 to 0+187	April 18, 2021	Foundation approved for placement of Zone 4 (esker).

upstream side of dyke				Snow and aggregate to be scraped from surface prior to fill to night shift QC satisfaction.
Zone 4 (esker)	Pending	Sta. 0+200 to 0+252	April 18, 2021	Material approved for placement of Zone 1 (rockfill)

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
LLDPE liner (upper)	Pending	Sta. 0+140 to 0+197	April 18, 2021	Snow removed, bottom of slope resloped, and low spot in crest filled to grade prior to liner install.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-9-AMQ-CF-20210416	April 16, 2021	April 17, 2021	Zone 3 (CF)	Sta. 0+505	Sieve analysis	Minor noncompliance, one oversized particle in sample. Accepted for use on the dike.
PSD-5-AMQ-Esker-20210417	April 17, 2021	April 18, 2021	Zone 4 (esker)	Sta. 0+198	Sieve analysis	Pending
PSD-5-AMQ-Esker	April 17, 2021	April 18, 2021	Esker	Sta. 0+194	Sieve analysis	Compliant
MDR-3-AMQ-Esker	April 17, 2021	April 18, 2021	Esker	Sta. 0+194	Frozen proctor	MDD: 1863 kg/m3; OMC: 7.3%

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
None				

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

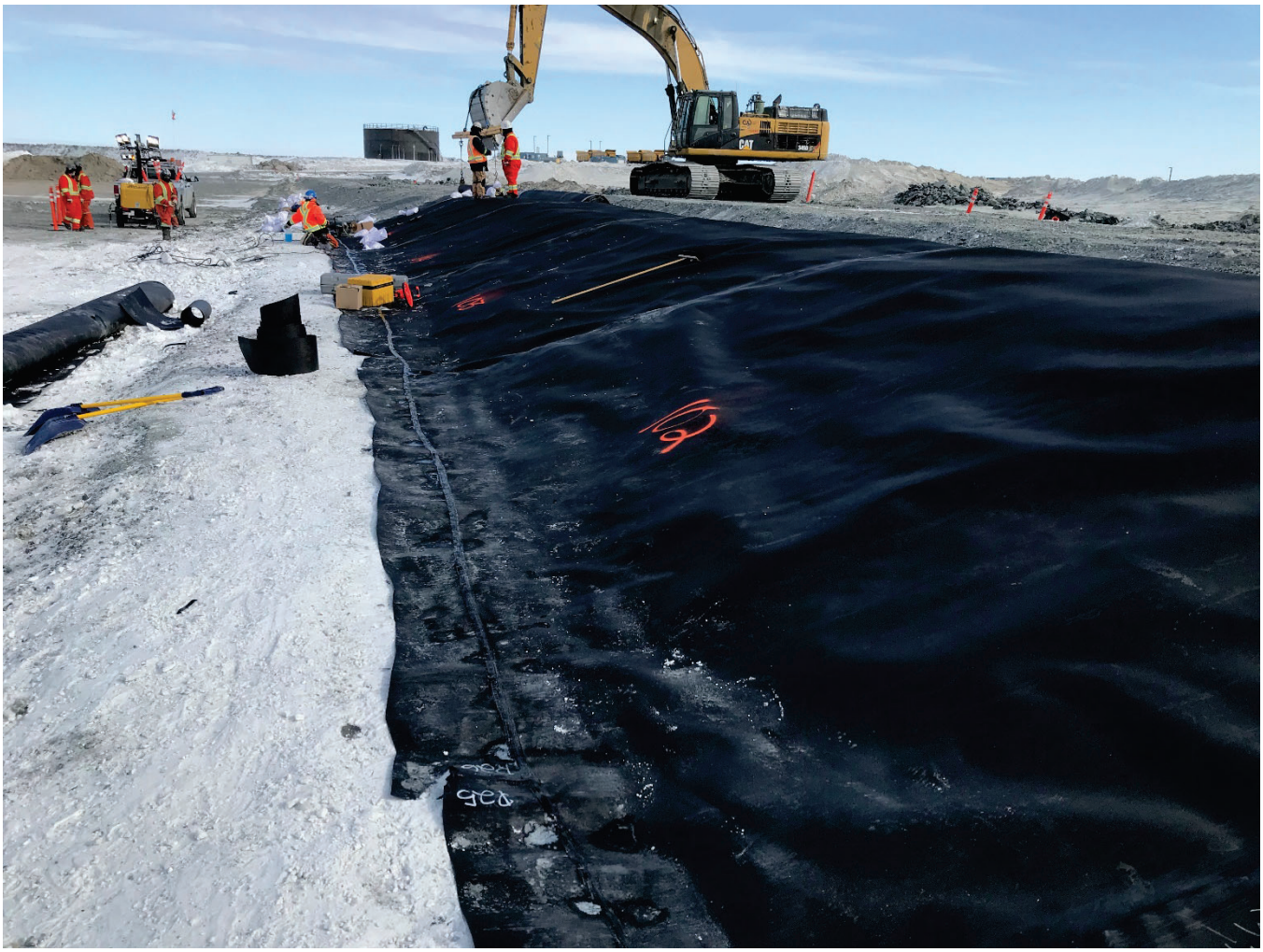
11.0 PHOTOGRAPHS



Photograph 2216: Zone 2B (FFAB) on top of LLDPE liner hinge and Zone 2A (FF) placement on slope, Sta. 0+310, view looking W.



Photograph 2217: Esker material placed and sloped, Sta. 0+280, view looking W.



Photograph 2218: LLDPE liner installation, Sta. 0+340, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 20, 2021 **N° de projet** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Shai Spilberg **EMAIL shai_spilberg@golder.com**

QA/QC DAILY REPORT FOR APRIL 19TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 18th, 2021 and day shift for April 19th, 2021

1.0 WEATHER

- Night shift: High -15°C Low -19°C; clear, blowing snow after 6:00.
- Day shift: High -13°C Low -18°; cloudy, wind.

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Anthony Stewart (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Lots of traffic and activity on site.

General Discussion:

- Approx. 1 ft berm will be added on East end of dyke to anchor LLDPE liner.
- Excess rockfill on downstream side will be moved to upstream side.

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4.0 DISCUSSIONS

During the day, the following discussions were held:

- The stockpile of Zone 2B (FFAB) taken from the bottom of the mixing station stockpile did not pass the swell test (no swelling observed). This material should not be used as Zone 2B.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 4 (Esker) material was placed and compacted from Sta. 0+266 to 0+319 in 3 lifts 300 mm thick. The material appears well graded and free of contaminants. Compaction was done by 6 passes of a roller compactor. Compaction confirmed by visual inspection. ■ Zone 3 (CF) material was placed over liner slope from Sta. 0+187 to 0+266. The material was bucket compacted and appeared well graded. Adequate thickness of 300 mm was achieved. ■ Zone 1 (Rockfill) material was placed from Sta. 0+187 to 0+260 in three 500 mm lifts and roller compacted. Material appears well graded and free of contaminants.
Spillway	■ None
Liner Installation	■ Five LLDPE liner panels, P107 to P111, were installed from Sta. 0+140 to 0+174 on the upstream slope of the dyke. They were extrusion welded to panels P1, P29, P30, P31, and P32 in the key trench. The bedding surface was approved prior to geotextile placement by the QA representative and liner QC representative. ■ The extrusion welding machine was calibrated prior to welding. Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ Vacuum box tests were performed along the whole length of the horizontal extrusion weld connecting the upper LLDPE liner to the lower liner in the key

Activity or Area	Comments
	trench. No leaks were observed. The extrusion weld was performed minimum 0.5 m from the bottom of the liner slope as per design. ■ One destructive test sample (DT9) was performed on the seam between liner panels P108/P109. The sample was taken from the top of the slope. The results of the shear and peel tests met Technical Specifications. ■ Geotextile was placed over the installed liner prior to backfill. The geotextile was installed with 6-inch overlaps that were heat welded with a blowtorch

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
DT9	Destructive test	0+153.5	Seam P108/109	Shear and peel test results compliant.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B (FFAB) over liner	Pending	Sta. 0+323 to 0+345	April 19, 2021	Material approved for placement of Zone 4 (esker)
Zone 2A (FF) over liner slope	Pending	Sta. 0+188 to 0+200	April 19, 2021	Material approved for placement of Zone 4 (esker) and Zone 3 (CF)
Zone 3 (CF) over liner slope	Pending	Sta. 0+198 to 0+257	April 19, 2021	Material approved for placement of Zone 1 (rockfill)
Zone 4 (Esker)	Pending	Sta. 0+252 to 0+316	April 19, 2021	Material approved for placement of Zone 1 (rockfill)

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
LLDPE liner (upper)	Pending	Sta. 0+140 to 0+197	April 19, 2021	Snow removed, bottom of slope resloped, and low spot in crest filled to grade prior to liner install.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
FFAB grab sample	April 18, 2021	April 18, 2021	Zone 2B (FFAB) Mix pad floor material	Mix pad floor material	Swell test	Non-compliant. Material did not swell.
FFAB grab sample	April 18, 2021	April 18, 2021	Zone 2B (FFAB) 6% mix	Mix pad floor material	Swell test	Compliant

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
None						

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
14	April 18, 2021	NS	Zone 4 (Esker)	Sta. 0+194 to 0+306	DD	Avg 1562 kg/m^3 Standard Proctor value not applicable

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
						due to frozen material. Material visually inspected for compaction.
					MC	Avg 9.6%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
None				

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2219: Zone 4 (Esker) on upstream side of dyke, Sta. 0+320, view looking W.



Photograph 2220: Zone 3 (CF) placed on upstream slope, Sta. 0+250, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 20, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 20TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 19th, 2021 and day shift for April 20th, 2021

1.0 WEATHER

- High -13°C Low -18°C; overcast

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Golder QA representative not on site during daily meeting.

4.0 DISCUSSIONS

No discussions during reporting period.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. QA representative arrived on site at 16:30.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 2B (FFAB) material was placed from approx. Sta. 0+140 to 0+120 in 1 lift of 300 mm thickness. The material appears well graded and free of contaminants. Material still requires compaction.

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Activity or Area	Comments
Liner Installation	■ LLDPE liner panels, P112 to 120, were installed from Sta. 0+140 to Sta. 0+192 and one LLDPE liner panel, P121 was installed horizontally from Sta. 0+385 and Sta. 0+360 on the upstream slope of the dyke. The bedding surface was approved prior to geotextile placement by the liner QC representative. ■ One destructive test sample (DT10) was performed on the seam between liner panels P119/P120. The results of the shear and peel tests met Technical Specifications. ■ QA representative was not on site during LDDPE installation.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
DT10	Destructive Test	Sta. 0+178	Seam P118/P119	Shear and peel test results compliant.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 2B Under Liner	202104020-DS-01	Sta. 0+140 to Sta. 0+080	Apr-20	Approved Zone 2B under liner for placement of Zone 2B over liner.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	April 19, 2021	NS	Zone 4 (Esker)	Sta. 0+320 to 0+345, Upstream of LLDPE, elev. 164.2 m to 164.5 m	DD	1496 to 1699 kg/m^3 Standard Proctor value not applicable due to frozen material. Material visually inspected for compaction.
					MC	9.0% to 10.9%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2221: Komatsu excavator placing Zone 2B (FFAB) over liner at approx. Sta. 0+130, view looking E.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 21, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 21ST, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 20th, 2021 and day shift for April 21st, 2021

1.0 WEATHER

- High -6°C Low -20°C; overcast with periods of light snow

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Jennifer Pyliuk (AEM Civil Team Lead)
- Stephane Gionet (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- AEM to lock out line running downstream of IVR dyke near the future spillway in advance in construction in this area.

General Discussion:

- KCG continuing the placement of Zone 2A (FF) and Zone 3 (CF) along slope and crest of liner installed this afternoon.

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- Last batch of FFAB was mixed this afternoon, AEM to double remaining bentonite quantities, KCG to leave 2 full bags to complete remaining work along west abutment.
- KCG nightshift to continue with Zone 4 placement and spillway preparation. Will begin placing overbuilt Zone 1 along upstream shell if time allows.
- AEM noted KCG nightshift to have remaining slope along east abutment prepared in advance of liner installation tomorrow morning.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed compaction of Zone 4 (esker) material over installed LLDPE liner. KCG to utilize smooth drum roller outside footprint of liner for first lift of Zone 4 placement, once second lift of Zone 4 is placed KCG to pack full width of Zone 4 material placed upstream of LLDPE.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Foundation Preparation	■ KCG removed snow over overburden in advance of placement of Zone 4 (Esker) material between approx. Sta. 0+140 and Sta. 0+080.
Dyke Backfill	■ Zone 2B (FFAB) placement occurred in one lift of 250 mm thickness over installed LLDPE liner between approx. Sta. 0+365 and Sta. 0+480. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) placement occurred in one lifts of 300 mm thickness along upstream slope of installed LLDPE liner between approx. Sta. 0+365 and Sta. 0+400. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 3 (CF) placement occurred in one lift of 500 mm thickness over installed LLDPE liner along dyke crest between approx. Sta. 0+365 and Sta. 0+400. Material appeared visually of good quality and well-graded, compaction still required. ■ Zone 4 (Esker) placement occurred in 2 lifts of 500 mm thickness upstream of installed LLDPE liner between approx. Sta. 0+140 and Sta. 0+080. Material

Activity or Area	Comments
	was compacted with a minimum of 8 passes with 10-ton smooth drum roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
Liner Installation	■ Installation of geotextile from Sta. 0+385 to Sta. 0+483.The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ LLDPE liner panels, P122 to P124, were installed horizontally from Sta. 0+385 to 0+483 on the upstream slope of the dyke. The bedding surface was approved prior to LLDPE placement by the QA representative and liner QC representative. ■ The extrusion welding machine was calibrated prior to welding. Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ Vacuum box tests were performed along the entire length of the horizontal extrusion weld connecting the upper LLDPE liner to the lower liner in the key trench. No leaks were observed. The extrusion weld was performed minimum 0.5 m from the bottom of the liner slope as per design. ■ Geotextile was placed over the installed liner prior to backfill. The geotextile was installed with 6-inch overlaps that were heat welded with a blowtorch ■ No destructive tests were conducted during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (upper slope)	20210422-DS-01	Sta. 0+385 to Sta. 0+483	Apr-21	Approved liner for placement of Zone 2B/2A.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-6-AMQ-Esker	Apr-21	-	Zone 4	Sta. 0+135, upstream shell	GSA	Pending

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-23	Apr-21	-	Zone 2B	Sta. 0+400, over liner hinge	GSA	Pending
QA21-24	Apr-21	-	Zone 4	Sta. 0+120, upstream of liner	GSA	Pending

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	April 20, 2021	NS	Zone 4 (Esker)	Sta. 0+155 to 0+180, upstream of LLDPE, elev. 162.5 m	DD	1551 to 1587 kg/m^3 Standard Proctor value not applicable due to frozen material. Material visually inspected for compaction.
					MC	9.4% to 10.7%
3	April 21, 2021	DS	Zone 4 (Esker)	Sta. 0+155 to Sta 0+100, upstream of LLDPE, elev. 162.5 m to 163.0 m	DD	1623 to 1719 kg/m^3 Standard Proctor value not applicable due to frozen material. Material visually inspected for compaction.
					MC	6.8% to 9.2%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2222: Komatsu excavator trimming Zone 2A (FF) slope to design lines at approx. Sta. 0+450, view looking W.



Photograph 2223: FC Liner installing LLDPE for upper slope at approx. Sta. 0+460, view looking SE.



Photograph 2224: Komatsu excavator placing Zone 4 (esker) material at approx. Sta. 0+130 upstream of installed LLDPE, view looking E.



Photograph 2225: Komatsu excavator placing Zone 2A (FF) along east abutment in advance of liner placement at approx. Sta 0+500, view looking E.



Photograph 2226: FC liner conducting extrusion weld between installed LLDPE panels at approx. Sta. 0+400, view looking E.



Photograph 2227 KCG utilizing smooth drum roller to compact placed Zone 4 material at approx. Sta. 0+100, view looking W.



Photograph 2228: Komatsu excavator placing Zone 3 (CF) along dyke crest over installed LLDPE at approx. Sta. 0+380, view looking SW.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 22, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 22ND, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 21st, 2021 and day shift for April 22nd, 2021

1.0 WEATHER

- High -14°C Low -22°C; sunny

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Blast scheduled today for 12:45 in the pit: Be clear of blast area and check in with supervisor prior to blast.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Near miss involving light vehicle and 50 tonner at the IVR Dyke this morning, workers reminded to follow positive communication procedures when traveling on site.

General Discussion:

- Electrical cable running downstream of spillway to be unlocked and reinstated once work has been completed at the end of the shift.

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- FC liner has completed installing geotextile/geomembrane at the IVR Dyke, KCG to proceed with Zone 2B (FFAB) material placement over LLDPE installed this afternoon.
- KCG to focus on constructing spillway during nightshift in preparation for BGM installation scheduled for tomorrow.
- AEM and QA representative to coordinate with warehouse to ship samples of Zone 2B to laboratory for permeability testing.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed outlet of spillway at the IVR Dyke, spillway to be cut short by approximately 10 feet due to presence of existing electrical cable. QA noted, additional work maybe required during the summer to ensure spillway will allow water to flow towards existing culverts and away from the downstream toe of the dyke.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. QA representative arrived on site at 16:30.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 2B (FFAB) placement occurred in one lift of 250 mm thickness over installed LLDPE liner between approx. Sta. 0+483 and Sta. 0+500. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
Spillway Construction	■ KCG removed snow and overburden material within the footprint of the spillway channel between approx. Sta. 0+000 and Sta. 0+035 (spillway chainage). ■ Zone 3 (CF) placement occurred in one lift up to a maximum thickness of 300 mm within the footprint of the spillway channel between approx. Sta. 0+035 and Sta. 0+020 (spillway chainage). Material was compacted with a minimum of 6 passes with 10-ton smooth drum roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
Liner Installation	■ Installation of geotextile from approx. Sta. 0+483 to Sta. 0+523 and from approx. Sta. 0+080 and Sta. 0+045.The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing

Activity or Area	Comments
	the geotextile. The geotextile surface was inspected before being covered with LLDPE. ■ LLDPE liner panels, P125 to P131, were installed approx. Sta. 0+483 to Sta. 0+523 and from approx. Sta. 0+080 and Sta. 0+045 along the upstream slope of the dyke. The bedding surface was approved prior to geotextile placement by the QA representative and liner QC representative. ■ The extrusion welding machine was calibrated prior to welding. Liner QC representative performed seam tests (air channel tests) on liner seams. The seam tests met the Technical Specifications. ■ Liner QC unable to perform air channel test between panels P124/P125 due to blockage welded seam, FC liner proceeded to apply extrusion weld between panels. Vacuum box tests were performed along the length of weld, no leaks were observed. ■ Vacuum box tests were performed along the entire length of the horizontal extrusion weld connecting the upper LLDPE liner to the lower liner in the key trench. No leaks were observed. The extrusion weld was performed minimum 0.5 m from the bottom of the liner slope as per design. ■ Geotextile was placed over the installed liner prior to backfill. The geotextile was installed with 6-inch overlaps that were heat welded with a blowtorch. ■ No destructive tests were conducted during reporting period.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment

Spillway Foundation	20210422-DS-02	Spillway Footprint	Apr-22	Approved foundation of spillway for placement of Zone 3 (CF)

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
Liner (upper slope)	20210422-DS-01	From Sta. 0+483 to Sta. 0+523 and from Sta. 0+080 to Sta. 0+045	Apr-22	Approved liner for placement of Zone 2B/2A.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-6-AMQ-Esker	Apr-21	Apr-22	Zone 4	Sta. 0+135, upstream shell	GSA	Minor oversize on 56 mm sieve (77% passing), compliant.

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-23	Apr-21	-	Zone 2B	Sta. 0+400, over liner hinge	GSA	Pending
QA21-24	Apr-21	-	Zone 4	Sta. 0+120, upstream of liner	GSA	Pending

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
6	April 21, 2021	NS	Zone 4 (Esker)	Sta. 0+180 to Sta. 0+080, upstream of LLDPE, elev. 162.7 m to 164.0 m	DD	1600 to 1687 kg/m^3 Standard Proctor value not applicable due to frozen material. Material visually inspected for compaction.
					MC	6.6% to 8.9%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2229: FC liner installing geotextile over Zone 2A (FF) material at approx. Sta. 0+490, view looking W.



Photograph 2230: KCG removing snow and ice over LLDPE liner in advance of extrusion weld at approx. Sta. 0+500, view looking E.



Photograph 2231: Komatsu excavator placing Zone 2A (FF) along west abutment for upper liner slope at approx. Sta. 0+050, view looking W.



Photograph 2232: Extrusion weld between panels P124/P125 at approx. Sta. 0+483, view looking SE.



Photograph 2233: FC liner conducting extrusion weld on LLDPE panels at approx. Sta. 0+500, view looking E.



Photograph 2234: Geotextile installed over LLDPE liner placed along east abutment at approx. Sta. 0+520, view looking W.



Photograph 2235: Komatsu excavator removing snow and ice from foundation of key trench, view looking S.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 23, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 23RD, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 22nd, 2021 and day shift for April 23rd, 2021

1.0 WEATHER

- High -15°C Low -22°C; sunny

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- AEM conducting partial investigation into yesterdays near miss involving light vehicle and 50 tonner at the IVR Dyke, report to be issued in the coming days.

General Discussion:

- Placement of Zone 2B (FFAB) has been completed at the dyke, approximately 100 metres of Zone 2A (FF) remains along the west and east abutments.
- FC liner beginning to instal geotextile/BGM in spillway channel, work to be completed by tomorrow.

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- KCG nightshift to focus on Zone 4 (Esker) placement, sloping Zone 4 to design lines and Zone 1 (Rockfill) placement.
- QA representative noted, KCG to clean up outlet of spillway prior to placing oversize rock.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative spillway construction at the IVR Dyke, AEM noted, geotextile will be installed underneath GBM throughout the spillway channel.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. QA representative arrived on site at 16:30.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 2B (FFAB) placement occurred in one lift of 250 mm thickness over installed LLDPE liner between approx. Sta. 0+500 and Sta. 0+523. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 4 (Esker) was sloped to design lines between approx. Sta. 0+180 and Sta. 0+120. Overbuilt material was used for placement between Sta. 0+120 and Sta. 0+100, material still requires compaction.
Spillway Construction	■ Zone 2A (FF) placement occurred in one lift of 300 mm thickness along slopes of the spillway channel between approx. Sta. 0+000 and Sta. 0+035 (spillway chainage). Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
BGM Installation	■ Installation of geotextile from approx. Sta. 0+015 to Sta. 0+035 (spillway chainage). The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. The geotextile surface was inspected before being covered with BGM. ■ BGM panels, P1 to P7, were installed within the footprint of the spillway between approx. Sta. 0+015 and Sta. 0+035 (spillway chainage). Panels were overlapped 0.2 m and welded using blowtorch.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Spillway	20210423-DS-01	Spillway Footprint	Apr-23	Approved placement of Zone 2A (FF) for installation of BGM liner.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
BGM (Spillway)	20210423-DS-02	From Sta. 0+035 to Sta. 0+015	Apr-23	Approved installation of BGM liner through footprint of spillway.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-12-AMQ-FFAB	Apr-22	Apr-23	Zone 2B	Sta. 0+515, over liner hinge	GSA	Compliant
					MC	3.4%
PSD-13-AMQ-FF	Apr-23	Apr-23	Zone 2A	Sta. 0+515, over liner hinge	GSA	Slightly to fine with 12% passing 75 µm sieve. Complaint
					MC	3.5%

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-23	Apr-21	Apr-23	Zone 2B	Sta. 0+400, over liner hinge	GSA	Oversize on 19 mm (85% passing). Complaint
					MC	8.5 %
QA21-24	Apr-21	Apr-23	Zone 4	Sta. 0+120, upstream of liner	GSA	Complaint
					MC	10.6 %

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	April 22, 2021	NS	Zone 2A (FF)	Sta. 0+020 to Sta. 0+030, spillway channel, elev. 164.3 m to 164.5 m	DD	2103 to 2117 kg/m3 (98% to 99%), compliant
					MC	6.6% to 8.9%

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
2	April 22, 2021	NS	Zone 4 (Esker)	Sta. 0+100 to Sta. 0+150, upstream of LLDPE, elev. 164.1 m	DD	1547 to 1677 kg/m^3 Standard Proctor value not applicable due to frozen material. Material visually inspected for compaction.
					MC	8.8% to 10.5%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2236: Komatsu excavator placing Zone 2A (FF) over spillway slopes at approx. Sta. 0+030, view looking S.



Photograph 2237: Approved placement of Zone 2A in spillway channel at approx. Sta. 0+030, view looking N.



Photograph 2238: GBM installed along spillway channel at approx. Sta. 0+025, view looking SW.



Photograph 2239: FC Liner heat welding GBM panels P1/P2 at approx. Sta. 0+015, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 24, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 24TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 23rd, 2021 and day shift for April 24th, 2021

1.0 WEATHER

- High -15°C Low -22°C; sunny

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Blast today in the open pit at 12:45: Be clear of blast area and check in with supervisor prior to blast.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- First aid incident involving FC liner employee and small burn near eye when installing BGM at the IVR dyke.

General Discussion:

- Installation of geotextile/BGM through spillway complete, KCG proceeding with backfilling spillway sides with Zone 1 rockfill.
- KCG nightshift to continue placement of Zone 4 esker and Zone 1 along upstream shell at the IVR Dyke.

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- AEM noted, Zone 3 (CF) will be widened along west abutment to fully cover Zone 2B (FFAB) prior to placement of Zone 1 (rockfill).
- QC representative to arrange necessary paperwork to ship PNG off site.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed shipping samples of Zone 2B (FFAB), AEM to provide shipping form to attach to samples when dropping off at the warehouse.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. QA representative arrived on site at 16:30.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Foundation Preparation	■ KCG removed snow within footprint of upstream shell in advance of Zone 4 (esker) material placement between approx. Sta. 0+375 and Sta. 0+425.
Dyke Backfill	■ Zone 3 (CF) placement occurred in one lift of 500 mm thickness upstream of LLDPE liner Sta. 0+100 and Sta. 0+080. Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 4 (Esker) placement occurred in one lift up to a maximum thickness of 500 mm upstream of LLDPE liner between approx. Sta. 0+370 and Sta. 0+390. Material appeared visually of good quality and well-graded, lift still requires compaction.
Spillway Construction	■ Zone 3 (CF) placement occurred in one lift up to a maximum of 500 mm thickness along slopes of the spillway channel between approx. Sta. 0-005 and Sta. 0-010 (spillway chainage). Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 2A (FF) placement occurred in one lift of 300 mm thickness along slopes of the spillway channel between approx. Sta. 0-005 and Sta. 0-010 (spillway chainage). Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded.

Activity or Area	Comments
BGM Installation	■ Installation of geotextile from approx. Sta. 0+015 to Sta. 0-010 (spillway chainage). The bedding surface was inspected and approved by liner QC representative and QA representative prior to installing the geotextile. Two layers of geotextile were installed over existing LLDPE liner. The original design did not plan for installation of geotextile through spillway channel, QA is of the opinion additional geotextile will not negatively impact design intent. ■ BGM panels, P8 to P16, were installed within the footprint of the spillway between approx. Sta. 0+015 and Sta. 0-010 (spillway chainage). Panels were overlapped 0.2 m and welded using blowtorch. BGM was extended beyond placement of geotextile at inlet of spillway at Sta. 0-010.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Spillway	20210424-DS-01	Spillway from Sta. 0+015 to Sta. 0-010	Apr-24	Approved placement of Zone 2A (FF) for installation of BGM liner.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
BGM (Spillway)	20210424-DS-02	Spillway from Sta. 0+015 to Sta. 0-010	Apr-24	Approved installation of BGM liner through footprint of spillway.

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-7-AMQ-Esker	Apr-23	Apr-24	Zone 4	Sta. 0+110, upstream of liner	GSA	Compliant
					MC	10.6%
PSD-10-AMQ-CF	Apr-24	Apr-24	Zone 3	Sta. 0+060, over liner	GSA	Compliant
					MC	6.8% (fines)

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-25	Apr-23	Apr-24	Zone 2A	Spillway, Sta. 0+020	GSA	Oversize on 19 mm sieve (89% passing). Complaint
					MC	3.6 %

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
8	April 23, 2021	NS	Zone 4 (Esker)	Sta. 0+200 to Sta. 0+080, upstream of LLDPE, elev. 164.0 m to 164.5 m	DD	1589 to 1734 kg/m^3 Standard Proctor value not applicable due to frozen material. Material visually inspected for compaction.

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
					MC	7.8% to 10.8%

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

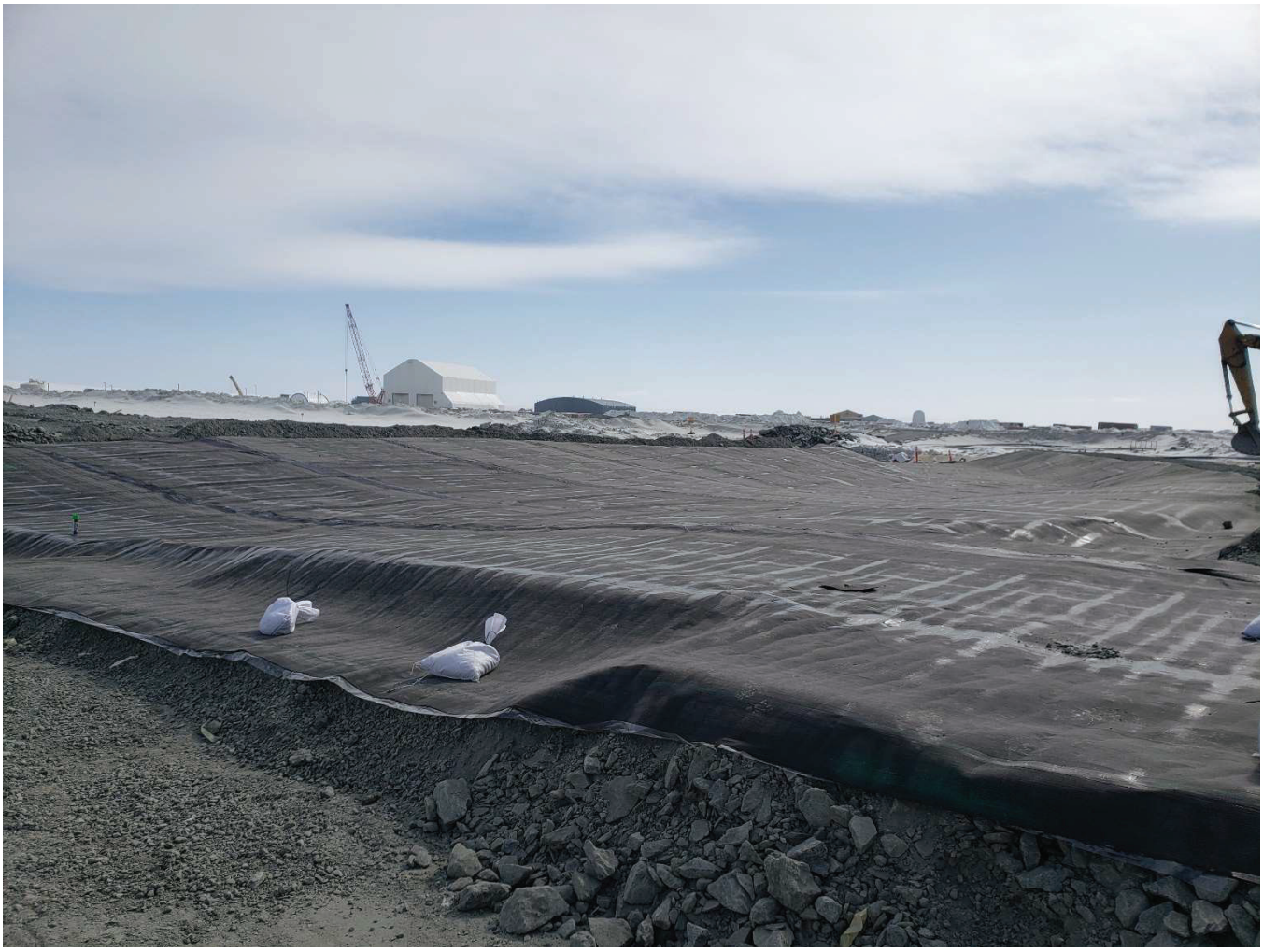
11.0 PHOTOGRAPHS



Photograph 2240: FC liner installing geotextile through spillway channel at approx. Sta. 0+010, view looking W.



Photograph 2241: FC Liner heat welding GBM panels P10/P11 at approx. Sta. 0+000, view looking N.



Photograph 2242: Approved placement of GBM through spillway at approx. Sta. 0-010, view looking S.



Photograph 2243: Komatsu excavator removing snow over footprint of upstream shell in advance of Zone 4 (esker) placement at approx. Sta. 0+375 view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 25, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 25TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 24th, 2021 and day shift for April 25th, 2021

1.0 WEATHER

- High -17°C Low -24°C; sunny

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- Partial investigation being conducted for first aid incident involving FC liner employee, report to be completed in the coming days.

General Discussion:

- KCG continued cleaning up worksite in preparation of inclement weather on Monday/Tuesday.
- KCG to have spillway completed by end of shift, nightshift to focus on Zone 1 (rockfill) placement, KCG to use 100 toners to place material directly at the dyke.

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- Additional placement of Zone 2A/3 will be required along dyke abutments as part of added thermal berm, AEM to verify details in coming days.
- AEM to verify location of remaining bentonite bags to be stored on site.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed thermal berm covering along east and west abutments at the IVR dyke. An additional 2.5 m of rockfill to be placed along abutments, fine filter and coarse filter to be placed in advance in areas where there is exposed LLDPE liner.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. QA representative arrived on site at 16:30.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 1 (Rockfill) placement occurred in two lifts up to a maximum thickness of 1500 mm upstream of LLDPE liner between Sta. 0+080 and Sta. 0+400. Material was compacted with a minimum 6 passes with a 10-ton smooth drum roller, compaction verified by QC representative. Material appeared visually of good quality and well-graded.
Spillway Construction	■ Zone 2A (FF) placement occurred in one lift up to a maximum thickness of 300 mm over installed geotextile and GBM between. Sta. 0+040 and Sta. 0+000 (spillway chainage). Material was bucket compacted, compaction verified by QC representative. Material appeared visually of good quality and well-graded. ■ Zone 1 (Rockfill) placement occurred in one lift up to a maximum of 1500 mm along eastern spillway sidewall between approx. Sta. 0+040 and Sta. 0+010 (spillway chainage). Material appeared visually of good quality and well-graded, material still requires compaction.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Dyke Foundation	20210425-DS-01	Sta. 0+085 to Sta. 0+414	Apr-25	Approved footprint of Zone 4 upstream of liner for placement of Esker material.
Fill Placement Zone 4 (Esker)	20210425-DS-02	Sta. 0+085 to Sta. 0+414	Apr-25	Approved placement of Zone 4 for Zone 1 rockfill material.

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
PSD-14-AMQ-FF	Apr-25	Apr-25	Zone 2A	Sta. 0+110, upstream of liner	GSA	Minor oversize on 19 mm sieve (8% retained). Compliant.
					MC	3.2%

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
QA21-28	Apr-25	Apr-25	Zone 3	Spillway, Sta. 0+030	GSA	Compliant

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
FC21-06	Spillway: Installation of Geotextile under BGM	Apr-25	Approved by AEM. Favourable opinion from Golder.	Geotextile was installed prior to placement of BGM over the full footprint of the spillway channel between Sta. 0+048 and Sta. -0+012 (spillway chainage). The original design did not plan for installation of geotextile through this area. BGM was extended beyond placement of geotextile at spillway inlet at Sta. -0+012. QA is of the opinion additional geotextile will not significantly impact the design intent but should have been stopped short from -0+012 to the connection between the BGM and installed LLDPE, as an added precaution to minimize the seepage potential upstream and through the non-welded connection by promoting contact between the liners. QA does not believe the extension of geotextile through the spillway area will significantly impact the performance of the structure in the event the spillway is activated.

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2244: Komatsu excavator placing Zone 1 rockfill at approx. Sta. 0+325, view looking W.



Photograph 2245: CAT excavator placing Zone 2A (FF) over installed geotextile/GBM at the spillway at approx. Sta. 0+030, view looking S.



Photograph 2246: CAT excavator placing Zone 1 rockfill to construct east sidewall of spillway at approx. Sta. 0+030, view looking N.



Photograph 2247: KCG utilizing smooth drum roller to compact placed Zone 1 rockfill at approx. Sta. 0+280, view looking NW.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 26, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 26TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 25th, 2021 and day shift for April 26th, 2021

1.0 WEATHER

- High -18°C Low -23°C; sunny

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Jennifer Pyliuk (AEM Civil Team Lead)
- Stephane Gionet (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)

Health, Safety & Environment:

- Inclement weather in the forecast for tomorrow afternoon into Wednesday evening, prepare accordingly.

General Discussion:

- KCG to finish placing remaining Zone 3 (CF) along east and west abutments and proceed with Zone 1 (rockfill) for upstream shell.

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- An additional 3000 m^3 of rockfill is required to complete the project (not including thermal berm), approximately 10,000 m^3 of rockfill is remaining at Pad E.
- KCG to start working on 3 m Zone 1 extension along upstream shell, AEM to coordinate with instrumentation technician to raise existing thermistor casing along upstream at approx. Sta. 0+090.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed planned work for the day, KCG to shape upstream slope to design and continue with Zone 1 (rockfill) placement.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. QA representative arrived on site at 16:30.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 1 (rockfill) placement occurred in one lift of 1000 mm thickness upstream of LLDPE liner between approx. Sta. 0+250 and Sta. 0+410. Material appeared visually of good quality and well-graded. Material still requires compaction. ■ KCG shaped Zone 1 (rockfill) to design lines upstream of LLDPE liner between approx. Sta. 0+080 and Sta. 0+250. Overbuilt material was used for placement between stations. ■ Zone 2A (FF) placement occurred in two lifts of 250 mm over LLDPE liner along east and west abutments from approx. Sta. 0+ 527 to Sta. 0+520 and from approx. Sta. 0+045 to Sta. 0+050. Material was bucket compacted, compaction verified by QC/QA representatives. Material appeared visually of good quality and well-graded.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
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8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

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ID	Item	Date	Acceptance	Description
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10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2248: Komatsu excavator shaping Zone 1 (rockfill) to design lines at approx. Sta. 0+120, view looking W.



Photograph 2249: CAT excavator bucket packing placed lift of Zone 2A (FF) at approx. Sta. 0+045, view looking W.



Photograph 2250: Dozer spreading Zone 1 (rockfill) at approx. Sta. 0+270, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 27, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 27TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 26th, 2021 and day shift for April 27th, 2021

1.0 WEATHER

- High -13°C Low -17°C; snow and high winds

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.
- Inclement weather: 10-15 cm of snow in the forecast with high winds starting this afternoon, monitor weather conditions and plan accordingly.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Jennifer Pyliuk (AEM Civil Team Lead)
- Stephane Gionet (AEM Construction General Foreman)
- Laurier Collette (AEM Engineering)
- Robert Howe (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)
- QC Representatives (Tetra Tech Canada Inc.)

Health, Safety & Environment:

- AEM safety conducted site tour this morning, things looking good. KCG reminded to clean up work area once weather improves.

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General Discussion:

- AEM to place 300 mm of Zone 2A (FF) followed by 300 mm of Zone 3 (CF) over exposed liner along the dyke crest in advance of Zone 1 (rockfill) placement for thermal berm.
- KCG to utilize rockfill material from pit for placement of Zone 1 along upstream shell. KCG to verify truck counts that place directly on the dyke.
- AEM requested KCG provide LMEs as soon as possible.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed poor weather conditions, work temporarily shut down at the IVR Dyke until further notice.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond. QA representative arrived on site at 16:30.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 1 (rockfill) placement occurred in two lifts of 1000 mm thickness over previously placed Zone 3 (CF) along east and west abutments from approx. Sta. 0+527 to Sta. 0+520 and from approx. Sta. 0+045 to Sta. 0+060. Material was compacted with a minimum of 6 passes with a 10-ton smooth drum roller, QA/QC verified compaction effort. Material appeared visually of good quality and well-graded. ■ KCG shaped Zone 1 (rockfill) to design lines upstream of LLDPE liner between approx. Sta. 0+100 and Sta. 0+200. Overbuilt material was used for placement between stations.

Table 2: Details of LLDPE Liner Destructive Testing and Follow-up on Repairs

Name	Description	Station	Seam or Panel	Comment
-	-	-	-	-

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 3: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

7.0 GEOSYNTHETICS APPROVAL

The following geosynthetics approvals were done during the reporting period.

Table 4: Details of the geosynthetics Approvals /

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

8.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6, Table 7 and Table 8 present the samples collected or tested by the QA and QC as well as PNG field results.

Table 5: Samples taken by QC

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Sta./Offset/Elev.)	Test	Testing Result
-	-	-	-	-	-	-

Table 6: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

Table 7: PNG testing completed by QC

Number of Tests	Date Tested	Shift	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

9.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 8: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

10.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 9: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

11.0 PHOTOGRAPHS



Photograph 2251: Komatsu excavator sloping upstream rockfill to design lines at approx. Sta. 0+200, view looking E.



Photograph 2252: CAT excavator placing Zone 1 (rockfill) along west abutment at approx. Sta. 0+050, view looking W.

12.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 28, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA/QC DAILY REPORT FOR APRIL 28TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

This report covers night shift for April 27th, 2021 and day shift for April 28th, 2021

1.0 WEATHER

- High -13°C Low -24°C; snow and high winds

2.0 HEALTH AND SAFETY

- Multiple work fronts at the IVR Dyke: follow positive communication procedures, be aware of blind spots and maintain visual contact with the operators.

3.0 DAILY CONSTRUCTION MEETING

Daily constructing meeting was cancelled.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed poor weather conditions, work still shut down at the IVR Dyke, Conditions improved in the afternoon and work resumed around 14:00.
- Weekly Technical Meeting: AEM and QA representative discussed as-built report, Golder to provide draft report within 60 days following the end of construction for AEM review.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

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Activity or Area	Comments
Dyke Foundation Preparation	■ CAT excavator and loader removed snow and ice over footprint of upstream shell from approx. Sta. 0+420 to Sta. 0+500 in preparation for Zone 1 (rockfill) placement.
Dyke Backfill	■ Komatsu excavator shaped upstream Zone 1 (rockfill) slope to design lines between approx. Sta. 0+200 and Sta. 0+225.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 2: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 present the samples collected or tested by the QA.

Table 3: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 4: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 5: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

10.0 PHOTOGRAPHS



Photograph 2253: CAT excavator removing snow/ice within footprint of Zone 1 rockfill at approx. Sta. 0+430, view looking W.



Photograph 2253: Komatsu excavator shaping upstream Zone 1 (rockfill) slope to design lines at approx. Sta. 0+225, view looking W.

11.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 29, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA DAILY REPORT FOR APRIL 29TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- High -6°C Low -24°C; sunny

2.0 HEALTH AND SAFETY

- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Daily constructing meeting was cancelled.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative placement of Zone 1 (rockfill) at the IVR dyke, AEM to continue full width of Zone 1 along east abutment at the IVR dyke.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 2A (FF) placement occurred in one lift of 300 mm thickness over installed LLDPE liner from approx. Sta. 0+523 to Sta. 0+430 and from approx. Sta. 0+080 to Sta. 0+100. Material was bucket compacted, compaction verified

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Activity or Area	Comments
	by QA representative. Material appeared visually of good quality and well-graded. ■ Zone 3 (CF) placement occurred in one lift of 300 mm thickness over Zone 2A (FF) from approx. Sta. 0+523 to Sta. 0+430 and from approx. Sta. 0+080 to Sta. 0+100. Material was bucket compacted, compaction verified by QA representative. Material appeared visually of good quality and well-graded. ■ Zone 1 (rockfill) placement occurred in one lift of 1000 mm thickness upstream of LLDPE liner between approx. Sta. 0+200 and Sta. 0+300. Material appeared visually of good quality and well-graded. Material still requires compaction. ■ Zone 1 (rockfill) was shaped to design lines along downstream slope between approx. Sta. 0+400 and Sta. 0+450.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 2: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 present the samples collected or tested by the QA.

Table 3: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 4: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 5: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

10.0 PHOTOGRAPHS



Photograph 2255: CAT excavator placing Zone 2A (FF) over installed LLDPE liner at approx. Sta. 0+515, view looking W.



Photograph 2256: CAT excavator placing Zone 3 (CF) over previously placed Zone 2A (FF) at approx. Sta. 0+515, view looking W.



Photograph 2257: Komatsu excavator shaping downstream Zone 1 (rockfill) slope at approx. Sta. 0+400, view looking NW.



Photograph 2258: Dozer spreading lift of Zone 1 (rockfill) at approx. Sta. 0+200, view looking W.



Photograph 2259: Zone 2A (FF) and Zone 3 (CF) placed over existing LLDPE liner at approx. Sta. 0+090, view looking E.

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11.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE April 30, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA DAILY REPORT FOR APRIL 30TH, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- High -9°C Low -17°C; sunny

2.0 HEALTH AND SAFETY

- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sebastien Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)

Health, Safety & Environment:

- Accident involving KCG employee rolling ankle while surveying during nightshift, AEM safety classified injury as report only. Reminder for all employees to stay focused when nearing the end of the project.

General Discussion:

- Thermal cover along east abutment nearly complete. KCG nightshift to continue with Zone 1 (rockfill) placement along west abutment and begin removing access ramp located along downstream shell at approx. Sta. 0+225.
- Planned work execution for tomorrow; KCG to continue shaping upstream/downstream slopes to design lines, site clean up and begin finalizing dyke crest.
- AEM to place up to 150 mm of Zone 3 over exposed LLDPE liner along the dyke crest.
- AEM to coordinate extension of thermistor cables along downstream shell towards dyke crest.

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- KCG to remove snow along existing culverts downstream of the IVR dyke.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed placement of Zone 1 (rockfill) for thermal cover at the IVR dyke, AEM to place lifts of Zone 1 up to 1500 mm in thickness.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 1 (rockfill) placement occurred in one lift of 1500 mm thickness for thermal berm along east abutment between approx. Sta. 0+545 and Sta. 0+430. Material appeared visually of good quality and well-graded. Material still requires compaction. ■ Zone 1 (rockfill) was shaped to design lines along upstream slope between approx. Sta. 0+300 and Sta. 0+350.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 2: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 present the samples collected or tested by the QA.

Table 3: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 4: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 5: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

10.0 PHOTOGRAPHS



Photograph 2260: Komatsu dozer placing Zone 1 (rockfill) material for thermal berm at approx. Sta. 0+490, view looking E.



Photograph 2261: Komatsu excavator shaping upstream Zone 1 (rockfill) to design lines at approx. Sta. 0+300, view looking E.

11.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE May 1, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA DAILY REPORT FOR MAY 1ST, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- High -6°C Low -16°C; sunny

2.0 HEALTH AND SAFETY

- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sebastien Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)

Health, Safety & Environment:

- AEM noted, things are looking good at the dyke and reminded all employees to stay focused as we near the end of the project.

General Discussion:

- Thermal cover nearly complete along west abutment, remaining rockfill placement along spillway inlet still required.
- KCG continuing to remove seacans and blast mats upstream of the dyke and will start removing signage.
- KCG nightshift to continue shaping downstream and upstream rockfill slopes to design lines and finish remaining work at spillway.
- Final walk-through inspection of the dyke scheduled for Monday afternoon.

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4.0 DISCUSSIONS

During the day, the following discussions were held:

- None.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Zone 1 (rockfill) placement occurred in one lift up to 1000 mm thickness between Sta. 0+085 to Sta. 0+090 to achieve design grades. Material appeared visually of good quality and well-graded. Material still requires compaction. ■ Zone 1 (rockfill) was shaped to design lines along upstream and downstream slopes from approx. Sta. 0+523 to Sta. 0+450 and from approx. Sta. 0+025 to Sta. 0+065.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 2: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Foundation approval Zone 1	20210501-DS-01	Sta. 0+025 to Sta. 0+527	May-01	Approved foundation for placement of Zone 1 (rockfill) upstream of LLDPE liner.

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 present the samples collected or tested by the QA.

Table 3: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 4: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 5: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

10.0 PHOTOGRAPHS



Photograph 2262: Komatsu excavator shaping upstream Zone 1 slope to design line at approx. Sta. 0+450, view looking E.



Photograph 2263: Upstream Zone 1 slope shaped to design lines at approx. Sta. 0+410, view looking SE.



Photograph 2264: CAT excavator placing Zone 1 (rockfill) at approx. Sta. 0+085, view looking N.



Photograph 2265: CAT excavator removing snow within footprint of spillway at approx. Sta. 0+080, view looking W.

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11.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE May 2, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA DAILY REPORT FOR MAY 2ND, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- High 1°C Low -6°C; sunny

2.0 HEALTH AND SAFETY

- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Attendance:

- Stephane Gionet (AEM Construction General Foreman)
- Patrice Gagnon (AEM Engineering)
- Sebastien Gionet (AEM Safety)
- Qamaniituaq SANA Representatives (Construction Contractor KCG)
- QA Representative (Golder Associates Inc.)

Health, Safety & Environment:

- AEM noted, entrance to IVR dyke to be closed off to light vehicles until boulders are placed along crest of dyke.

General Discussion:

- Spillway inlet has been completed, KCG nightshift to continue sloping downstream side and begin placement of Zone 2A (FF) along dyke crest.
- Walk through inspection scheduled for Monday at 16:00.

4.0 DISCUSSIONS

During the day, the following discussions were held:

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- None.

5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ KCG utilized smooth drum roller to compact placed Zone 1 (rockfill) between Sta. 0+085 and Sta. 0+105. Material was compacted with a minimum 6 passes with a 10-ton smooth drum roller, compaction verified by QA representative ■ Komatsu excavator finalized upstream Zone 1 (rockfill) slope to design lines between approx. Sta. 0+105 and Sta. 0+400.
Other	■ KCG continued to remove overburden/rock piles and blast mats upstream of the IVR Dyke.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 2: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
-	-	-	-	-

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 present the samples collected or tested by the QA.

Table 3: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 4: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 5: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

10.0 PHOTOGRAPHS



Photograph 2266: KCG utilizing smooth drum roller to compact placed Zone 1 (rockfill) at approx. Sta. 0+090, view looking SE.



Photograph 2267: Komatsu loader loading rock truck with overburden/rock upstream of dyke at approx. Sta.0+500, view looking N.



Photograph 2268: Komatsu excavator finalizing upstream slope at approx. Sta. 0+200, view looking W.

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11.0 SITE OVERVIEW



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QA/QC DAILY REPORT

DATE May 3, 2021 **Project No.** 21452873-1599-MT-Rev0

TO Laurier Collette, Patrice Gagnon, Jennifer Pyliuk
Agnico Eagle Mines Ltd, Meadowbank Division

FROM Brandon Gray **EMAIL bgray@golder.com**

QA DAILY REPORT FOR MAY 3RD, 2021 – IVR D1 DYKE ATTENUTATION POND CONSTRUCTION - AMARUQ (21452873)

1.0 WEATHER

- High 1°C Low -1°C; overcast with periods of light snow

2.0 HEALTH AND SAFETY

- Wildlife activity around IVR D1 Dyke: Reduce driving speed and avoid encounters.

3.0 DAILY CONSTRUCTION MEETING

Daily constructing meeting was cancelled.

4.0 DISCUSSIONS

During the day, the following discussions were held:

- AEM and QA representative discussed remaining punch lists items at the IVR Dyke from walk down inspection:
  - Dyke crest to be topped up and leveled from approx. Sta. 0+430 to Sta. 0+400 and entire dyke crest to be compacted with smooth drum roller.
  - Rock pile located D/S at Sta. 0+250 to be removed and small ditch along D/S at Sta. 0+250 to be created to allow water to flow away from toe of dyke.
  - Boulders to be placed along the east and west entrances to the dyke to block off access to light vehicles.
  - Additional work required at outlet of spillway channel once pipes and cables are relocated to allow water to flow to existing culverts downstream of the IVR dyke.

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5.0 QA OBSERVATIONS

The QA activities by Golder are based on periodic inspections performed to monitor the construction activities and progress of the structure of the D1 Dyke at the attenuation pond.

Table 1: QA observations for IVR D1 Dyke

Activity or Area	Comments
Dyke Backfill	■ Komatsu excavator levelled out high spots along dyke crest between approx. Sta. 0+200 and Sta. 0+400.
Other	■ KCG continued to remove overburden/rock piles downstream of the IVR Dyke. ■ Komatsu dozer flattened snow stockpiled upstream of the IVR Dyke.

6.0 FOUNDATION/FILL APPROVAL

The following foundation and fill approvals were done during the reporting period.

Table 2: Details of the Foundation/Fill Approvals

Structure	Name	Sta. and Offset	Date of Approval	Comment
Zone 1 (rockfill) placement	20210503-DS-01	Sta. 0+25 to Sta. 0+527	May-03	Approved placement of Zone 1 (rockfill) material.

7.0 SAMPLING, LABORATORY AND FIELD TESTING

Table 6 present the samples collected or tested by the QA.

Table 3: Samples taken by QA

Sample ID	Date Sampled	Date Tested	Fill Material Type	Location (Station/Offset Elevation)	Test	Testing Result
-	-	-	-	-	-	-

8.0 FIELD CHANGES

The following tables summarizes a list of field changes made during construction. A detailed description of the change can be found in the daily report when the change was issued.

Table 4: List of field changes.

ID	Item	Date	Acceptance	Description
-	-	-	-	-

9.0 FOLLOW-UP ITEMS AND NON-CONFORMANCES

The following items constitute aspects to resolve.

Table 5: List of follow-up items and non-conformances

Item	Type of Observation	Date of Observation	Responsible	Status
-	-	-	-	-

10.0 PHOTOGRAPHS



Photograph 2269: Loader loading rock truck with overburden/waste rock material downstream of IVR dyke at approx. Sta. 0+500, view looking E.



Photograph 2270: Komatsu dozer flattening snow stockpiles upstream of the IVR Dyke at approx. Sta. 0+490, view looking NE.



Photograph 2271: Komatsu excavator leveling dyke crest at approx. Sta. 0+300, view looking E.



Photograph 2272: Upstream Zone 1 (rockfill) sloped to design lines at approx. Sta. 0+125, view looking E.



Photograph 2273: Downstream Zone 1 (rockfill) sloped to design lines at approx. Sta. 0+200, view looking E.



Photograph 2274: Crest of dyke at approx. Sta. 0+300, view looking E.

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11.0 SITE OVERVIEW



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