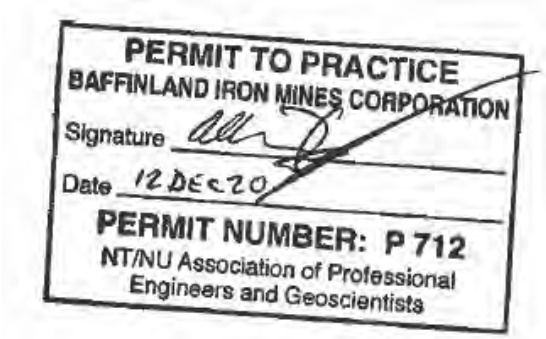
BAFFINLAND IRON MINES CORPORATION

MARY RIVER PROJECT

Construction Summary Report

Km106 Run of Mine Stockpile & Sedimentation Pond



2020-12-12	0	
		Allan Knowlton, P.Eng.
Date	**Rev.**	**Prepared By**

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Name and Operator of the Mine:	**Baffinland Iron Mines - Mary River Project** **Baffinland Iron Mines Corporation**
Contact information of the Operator of the Mine:	In its capacity as General Partner of Baffinland Iron Mines Corporation 2275 Upper Middle Road East, Suite 300. Oakville, Ontario. contact@baffinland.com T: +1-647-253-0596

1. FACILITY DESCRIPTION

1.1 PURPOSE

Baffinland Iron Mines Corporation (Baffinland) operates an iron mine at the Mary River Project (the Project) in the North Baffin Region of Nunavut. Ore is mined from Deposit 1, crushed on site, and hauled to Milne Port (approximately 100 km from site) where it is stockpiled and shipped off-site for processing. As part of Baffinland's mining strategy, a long term stockpile is required to stockpile run-of-mine ore material. In order to control and contain run-off water from the stockpile, diversion berms and a sedimentation pond will be utilized. The location of the stockpile and structures is provided in Appendix A.

Containment for the Km106 Stockpile Sediment Pond is provided by a berm in conjunction with natural topography, utilizing an LLDPE geomembrane as the low permeability element.

The new sediment pond will have a maximum operating design capacity of 3,500 m^3 with 0.3m freeboard. As-built information has calculated the maximum capacity of the pond to be 7,865.54 m^3 (operating capacity of 4,392.35 m^3 with 0.7m freeboard). The slight increase in capacity is attributed to actual field depth and straightening of the north dip for constructability of the sediment pond.

1.2 DESIGN BASIS

In general, the 106km Stockpile and Sedimentation will provide sediment control for runoff originating from the following catchment areas: Km106 Stockpile area, localized area between stockpile and pond, and the pond itself. This runoff will flow directly to the pond by gravity and directed via perimeter diversion berms. Non impacted runoff from upstream catchment areas will be diverted around the Km106 Stockpile and Sedimentation Pond.

The Sedimentation Pond has been designed in accordance with:

- The recommendations provided by the Canadian Dam Association (CDA) per Knight Piesold Consulting. (KP)
- KM106 Stockpile and Runoff Management Measures Report (Appendix F)
- Canadian Dam Association's Dam Safety Guidelines (CDA 2007 & 2013 – Classified as Low consequence structure); and
- The provisions of Water License No. 2AM-MRY1325-Amendment No. 1.

The design of the KM106 Stockpile and Sedimentation Pond is provided on the KP Issued for Construction (IFC) drawings (Appendix F).

1.3 GENERAL SCOPE OF WORK

The Km106 Stockpile and Sedimentation Pond involved the following scope of work:

- Conducting pre-disturbance inspections in accordance with Baffinland's Environmental Protection Plan prior to commencing work;

- Prepare sedimentation pond bottom area and berm area foundation by removing organic and overburden material, snow and ice;
- Construct access road;
- Construct the Km106 Sedimentation Pond berm to crest elevation 268.5 meters above sea level (masl), compacting in no greater than 1 meter lifts;
- Construct the diversion berms around stockpile perimeter area
- Install non-woven geotextile fabric on diversion beams and riprap;
- Construction of the emergency spillway;
- Placing of the geomembrane bedding materials compacting each lift; and,
- Installation of the geotextile fabric on sedimentation pond bottom and interior berm crest;
- Installation of the LLDPE geomembrane on sedimentation pond bottom and interior berm crest; and,
- Install geotextile fabric and riprap at sedimentation pond inlet

1.4 LOCATION AND BASE ELEVATIONS

The crest of the new pond berm was designed for elevation 268.5 masl and surveyed between 268.413 masl and 268.659 masl. The bottom of pond elevation varies from 264.872 masl (lowest) in the southeast corner to 268.653 masl at its highest in the north west corner. The spillway outlet elevation varies from 267.941 to 267.888 masl. The diversion berms were surveyed verifying positive gravity flow of minimum 1% gradient to the pond.

Location	Northing	Easting	Elev. (masl)
Pond Inlet (west extent)	7913066.917	563386.348	268.653
Pond Inlet (east extent)	7913075.618	563427.481	268.673
Pond Bottom NW Corner	7913060.803	563393.029	266.366
Pond Bottom NE Corner	7913106.443	563548.851	267.926
Pond Bottom SW Corner	7913041.402	563403.193	265.329
Pond Bottom SE Corner	7913077.460	563546.761	264.872
Berm Crest Upstream NW Corner	7913063.243	563385.049	268.659
Berm Crest Upstream NE Corner	7913109.992	563550.958	268.567
Berm Crest Upstream SW Corner	7913030.221	563397.561	268.413
Berm Crest Upstream SE Corner	7913069.546	563558.386	268.454
Inlet Riprap NW Corner	7913110.399	563363.028	276.114
Inlet Riprap NE Corner	7913125.295	563415.196	275.963

Inlet Riprap SW Corner	7913066.917	563386.348	268.653
Inlet Riprap SE Corner	7913075.618	563427.481	268.673
Spillway Northside Outlet	7913084.062	563554.331	267.941
Spillway Southside Outlet	7913079.458	563555.939	267.888
Spillway Northside End	7913079.986	563602.718	264.605
Spillway Southside End	7913075.353	563601.143	263.784
Diversion Berm West Perimeter Toe1	7913059.720	563381.202	268.620
Diversion Berm West Perimeter Toe2	7913098.803	563369.427	273.955
Diversion Berm West Perimeter Toe3	7913155.501	563346.402	279.236
Diversion Berm West Perimeter Toe4	7913183.408	563342.695	280.579
Diversion Berm West Perimeter Toe5	7913250.379	563350.384	287.813
Diversion Berm East Perimeter Toe1	7913076.834	563427.720	268.485
Diversion Berm East Perimeter Toe2	7913118.760	563417.616	275.086
Diversion Berm East Perimeter Toe3	7913129.685	563412.876	276.234
Diversion Berm East Perimeter Toe4	7913132.6715	563427.762	276.577
Diversion Berm East Perimeter Toe5	7913137.835	563461.239	277.072
Diversion Berm East Perimeter Toe6	7913142.6865	563486.4985	277.4475
Diversion Berm East Perimeter Toe7	7913154.012	563511.411	277.812
Diversion Berm East Perimeter Toe8	7913164.718	563533.224	278.405
Diversion Berm East Perimeter Toe9	7913179.585	563547.197	278.632
Diversion Berm East Perimeter Toe10	7913203.1945	563566.927	279.090
Diversion Berm East Perimeter Toe11	7913244.9405	563602.1835	279.590
Diversion Berm East Perimeter Toe12	7913283.260	563634.541	280.192
Diversion Berm East Perimeter Toe13	7913320.6465	563663.631	281.135
Diversion Berm East Perimeter Toe14	7913373.400	563659.696	290.697
Diversion Berm East Perimeter Toe15	7913429.415	563635.346	306.8575
Diversion Berm East Perimeter Toe16	7913463.812	563616.410	316.226

Diversion Berm East Perimeter Toe17	7913481.325	563599.532	324.058
Upper Access Road East Side	7913477.315	563565.656	327.500
Upper Access Road West Side	7913455.6965	563526.105	325.000

2. CONSTRUCTION MATERIALS

Materials specifications for constructing the facility were derived from the KP specifications shown in Appendix F, and included:

- 500 mm minus rockfill (ROQ)
- Berm fill – 150 mm minus
- Upstream Berm fill – 32mm minus added per KP site instruction (See section 7. Field Decisions and Deviations)
- Intermediate bedding material (3/4" minus) modified per KP site instruction (See section 7. Field Decisions and Deviations)
- Fine riprap (d50 = 150 mm)
- Coarse Riprap (d50 = 300 mm)
- Non-woven geotextile
- Atarfil LLDPE 40mil geomembrane liner (Appendix F)

All construction aggregate was obtained from the former D1Q1 quarry area of Deposit 1.

3. CONSTRUCTION ACTIVITY SUMMARY

The following sequence of construction occurred at the Km106 Stockpile and Sedimentation Pond:

1) Prepare founding level of stockpile – Started June 22, 2020. Completed September 28, 2020
   a) Survey extents of stockpile and diversion berm area
   b) Clear snow, remove large boulders, strip organic and overburden materials
   c) Place ROQ fill and spread with dozer
2) Prepare Founding level of Sedimentation Pond - Started June 23, 2020. Completed July 12, 2020
   a) Survey pond berm control points and offset lines
   b) Remove boulders and outcroppings
   c) Remove organic and overburden materials
3) Construct Berm Raise for sedimentation pond – Started June 25, 2020. Completed September 11 2020.
   a) Place ROQ in 1 m lifts. Compact ROQ lifts
   b) Place 150mm minus lift on berm upstream side (lifts not greater than 1m) and compact
   c) Place 32mm minus lift on berm upstream side (lifts 0.2m thick) and compact

   d) Place ¾" minus lift on berm upstream side (lifts 0.2m thick) and compact
4) Construct Pond Bottom – Started July 11, 2020. Completed September 4, 2020.
   a) In large depressions or crevices, place 150mm minus (lifts not greater than 1m) and compact
   b) In large depressions or crevices, place 32mm minus aggregate over the 150mm minus aggregate layer (0.2m depth) and compact
   c) Over entire pond bottom place 0.2m thick layer of ¾" minus. Compact
5) Construct Stockpile Perimeter Diversion Berms – Started July 15, 2020. Completed August 6, 2020
   a) Survey diversion berm control points and offset lines.
   b) Install access road of 1m thick ROQ for building berms on interior side of diversion berm toe (this will act as levelled pad for stockpile after construction)
   c) Place 150mm minus in lifts not greater than 1m. Compact
   d) Install geotextile fabric on upstream side
   e) Place Fine riprap over geotextile fabric in 0.3m layer
6) Construct Spillway – Started July 29, 2020. Completed August 5, 2020
   a) Install ROQ in layers not greater than 1m. Compact.
   b) Install 150mm minus in 0.2m layer. Compact
   c) Install geotextile fabric
   d) Install coarse riprap
   e) Install fine riprap
7) Install geotextile fabric and liner on pond bottom and berm slope into anchor locations – Started September 5, 2020. Completed September 9, 2020.
8) Construct Stockpile North Pond Diversion Berm – Started September 11, 2020. Completed September 14, 2020
   a) Survey diversion berm control points and offset lines.
   b) Place 32mm minus in lifts not greater than 1m. Compact
   c) Install geotextile fabric on upstream side
   d) Place Fine riprap over geotextile fabric in 0.3m layer
9) Backfill all anchor trenches with 32mm minus material – Started September 7, 2020. Completed September 11, 2020
10) Install geotextile at pond inlet - Started September 12, 2020, Completed September 15, 2020
11) Install fine riprap at pond inlet –Started September 13, 2020. Completed September 18, 2020

In summary, construction activities for the earthworks began June 22, 2020 and were completed September 28, 2020. The construction activities for the geomembrane installation began September 5, 2020 and were completed September 9, 2020.

4. CONSTRUCTION QUALITY CONTROL

4.1 SCOPE

Construction Quality Control (CQC) refers to measures implemented by Baffinland and its Contractors to verify that materials used in construction and their workmanship meet the requirements of the Issued for Construction (IFC) drawings, design criteria, and specifications. The CQC actions included, but were not limited to: verifying the suitability of construction material properties with field testing and/or visual inspection, documenting testing procedures and results, and documenting construction activities including verification of design geometry through survey and maintaining photographic records.
The CQC activities carried out by Baffinland are described below.

4.2 INSPECTIONS, DOCUMENTATION OF CONSTRUCTION ACTIVITIES, AND TESTING

Allan Knowlton, P.Eng. of Baffinland, Les Dunkley of Baffinland, and Jaan Pedjase of Pedjase & Associates provided daily visual inspections throughout the entire construction period to verify compliance with the IFC drawings and design criteria.

Nuna East (Earthworks Contractor) & Western Tank & Lining (Liner Installer) provided daily construction reports to Baffinland (see Appendix D), and daily photos were taken of the construction progress (Section 5). Prior to the use or change of use of materials, Allan Knowlton, P.Eng., visually verified its suitability for construction use and the onsite Geologist verified its suitability as a construction material. If the product did not meet the design criteria it was rejected (i.e. excessive moisture content, maximum aggregate size exceeded, excessive fines content). A fulltime surveyor was utilized to ensure maximum lift height was not exceeded and to provide layout/placement controls. Each berm lift was documented and recorded by the surveyor. See as-built documentation for final construction contours based on the survey data (Appendix C.1).

Western Tank & Lining provided daily QA/QC reports including performing and documenting their testing per the requirements of the IFC specifications (Appendix F, E.1 to E.11).

5. PHOTOGRAPHIC RECORDS

Aerial Photo – June 1, 2020 (Pre-Construction)

Aerial Photo – June 22, 2020 (Construction Start)

Aerial Photo – September 6, 2020 (Liner Installation)

Aerial Photo – September 9, 2020 (Post Liner Installation)

Prepare Foundation – Removal of Large Boulders - 27Jun20

Prepare Foundation – Removal of Organic Material – 1Jul20

Preparing Foundation and Berm Raise 1st Layer – 1Jul20

Stockpile Pad Layer Start – June 22, 2020

Founding Layer of Berm Rise – 1Jul20

Extending 2nd Layer of Berm Rise – 2Jul20

4th Layer of Berm Rise – 5Jul20

Top of 4th Layer of ROQ on Berm - 5Jul20

Berm ROQ Placement - 5Jul20

Filling in a Crevice with ROQ and 150mm minus – 7Jul20

Placing 150mm minus material in Existing Crevices - 8Jul20

Pond Bottom Original Ground - 9Jul20

Pond Bottom Original Ground Preparation - 10Jul20

Pond Bottom Original Ground Preparation - 11Jul20

Placing 32mm minus layer on Pond Bottom - 12Jul20

Placing ROQ on Berm and Placing 32mm minus Pond Bottom Layer - 13Jul20

Placing ROQ in Layers on Berm - 15Jul20

Placement of 150mm Minus on Upstream Side of Berm - 17Jul20

Placement of Intermediate Bedding Prior to Compaction - 19Jul20

Placement of Intermediate Bedding - 20Jul20

Preparing North Liner Anchoring - 21Jul20

Pond Inlet Grading – 8Aug20

Placement of Intermediate Bedding - 20Aug20

Photo – Project Extents Construction Activity - 22Aug20

Completed Intermediate Bedding on Pond Bottom - 2Sep20

Compacting Intermediate Bedding - 3Sep20

Photo of Completed Intermediate Bedding - 4Sep20

Deploying Geotextile Fabric - 5Sep20

Deploying 1st Liner Panel - 5Sep20

Deploying 2nd Liner Panel - 6Sep20

Photo of Spillway and Liner Transition - 9Sep20

Backfilling Liner with ¾” minus Material in Anchor Trench - 9Sep20

Completed Liner Installation - 10Sep20

Placing Geotextile Fabric and Fine Riprap at Inlet - 12Sep20

Completed Fine Riprap Placement at Inlet - 16Sep20

6. AS-BUILT DRAWINGS

See the following Appendices and Figures for the As-Built information. As Built drawings are provided in Appendix C, as follows:

- C.1 - KM106 STOCKPILE & SEDIMENTATION POND – As-built Contours Survey
- C.2 – 300 R0 - ASBUILT
- C.3 - KM106 ASBUILT DETAILS_1
- C.4 - KM106 ASBUILT DETAILS_2
- C.5 - Intermediate Bedding Material Modification
- C.6 - LINER ASBUILT
- C.7 – BERM GRADE CHECK

7. FIELD DECISIONS & DEVIATIONS

The KP Consulting original IFC drawings specified and showed in the drawings, the intermediate bedding layer of 32mm minus material, geotextile fabric, and liner. Allan Knowlton, P.Eng., discussed changing the upper intermediate layer to ¾" minus aggregate material in order to provide more protection to the liner from the intermediate layer, as crushed 32mm minus can be very angular, and the larger angular aggregate size may compromise the liner over time. KP Consulting agreed to the change with the exception of keeping the 32mm minus layer over the 150 mm minus layer to ensure aggregate differential size filter compatibility. See below agreed modification in Figure 1.

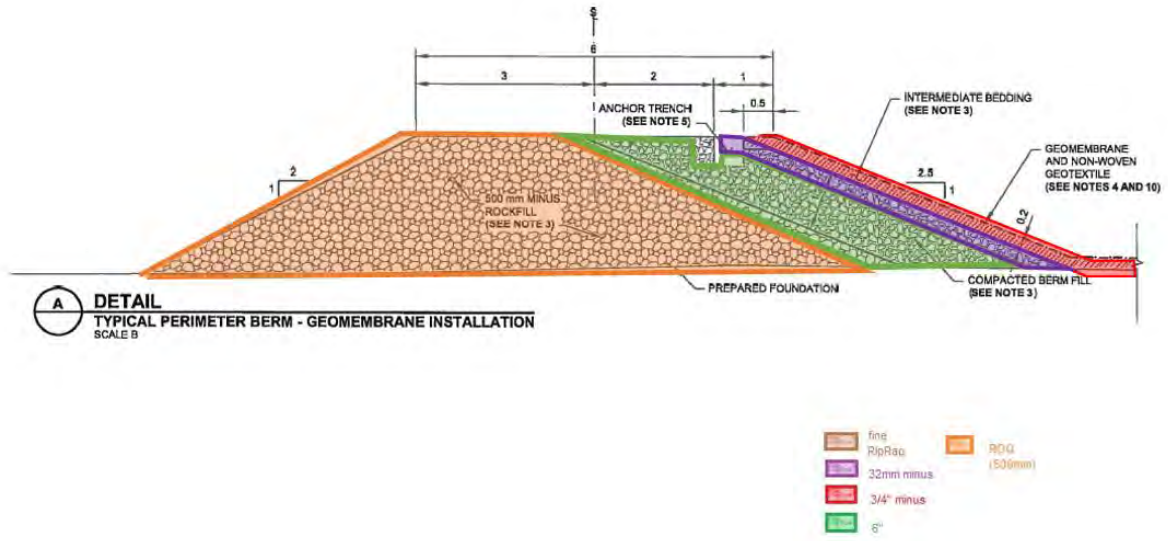

Figure 1: Intermediate Bedding Modification

The east stockpile perimeter diversion berm per the IFC was located along a path that intersected a rock outcropping not identified in the IFC drawings. This created a situation where the diversion berm water flow path was lower than the pond inlet elevation and would trap water. KP Consulting was requested to shift the entire berm northward 10 meters to clear the outcropping. KP agreed to the new positioning, work proceeded and documented in the as-built drawing. See below Figure 2 and Appendix C.2 for berm location modifications.

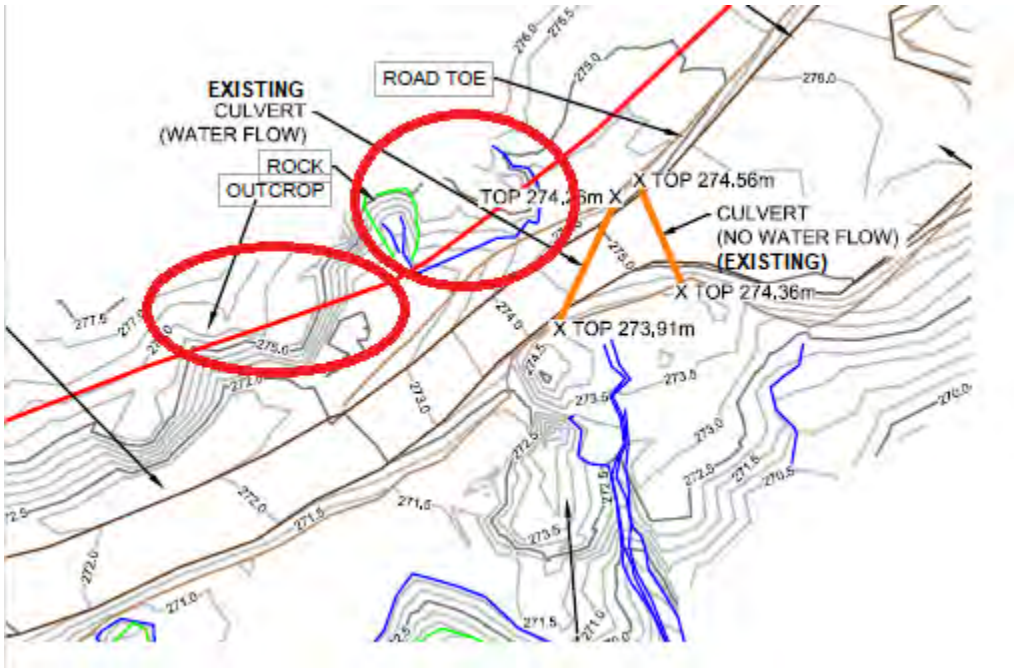

Figure 2: Rock Outcrop and Low Lying Area at East Stockpile Diversion Berm

Another low lying area not identified on the IFC drawings was located at the end of the pond berm at the northeast corner of the pond. An existing low depression, surrounded by a rock outcrop and blocked by the future north pond diversion berm presented an issue which would trap water. The agreed solution with KP Consulting was to fill the depression, excavate a swale to the south east of the depression, install geotextile fabric, and fine rap along the swale. This would direct the water around the pond and spillway. See below Figure 3.

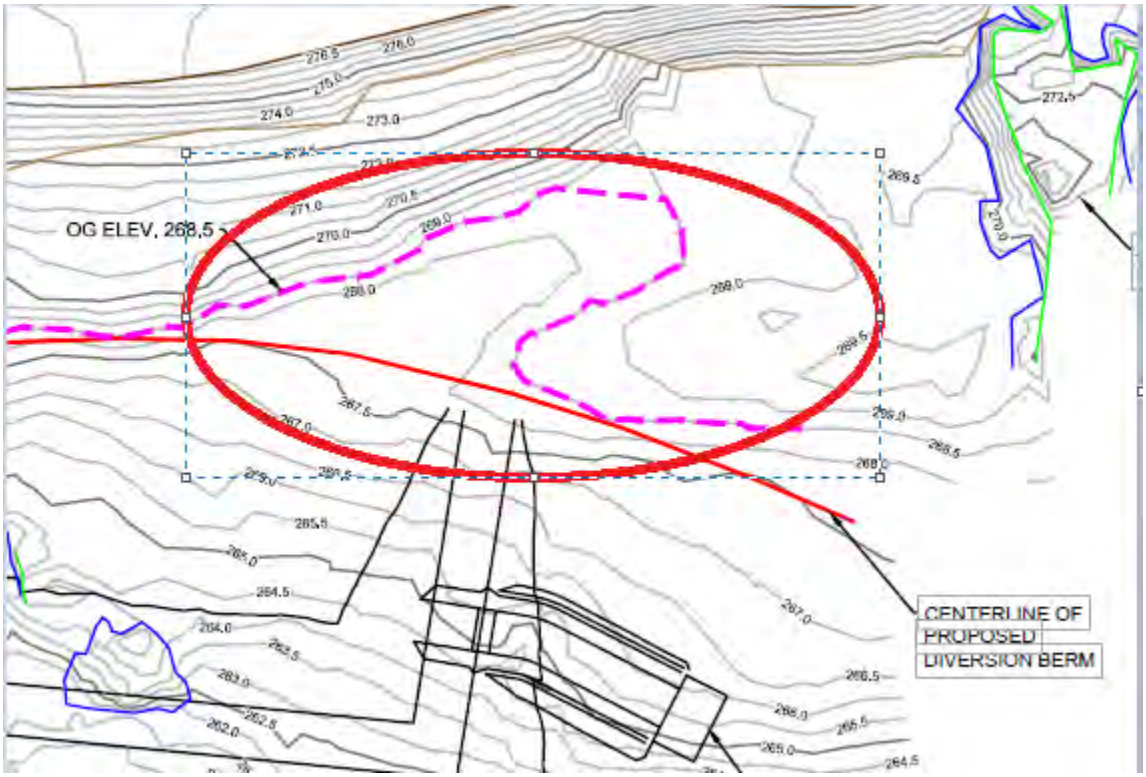

Figure3: Location of Existing Depression

Due to Mine Operations requiring access to the lower portion of the stockpile to load the stockpiled material at future times and existence of an existing access road to the explosive magazine which was not accounted for in the design the berm was not installed in this area. To ensure runoff water from the haul road did not migrate into the stockpile area, and to ensure the stockpile water did not leave the area without reporting to the pond, a wider berm in conjunction with a swale was designed to control the water as shown below in Figure 4 and Appendix C.2. The upper access road will be in continual development as the stockpile grows in size and extends out from the haul road to eventually complete as per the KP Consultant design.

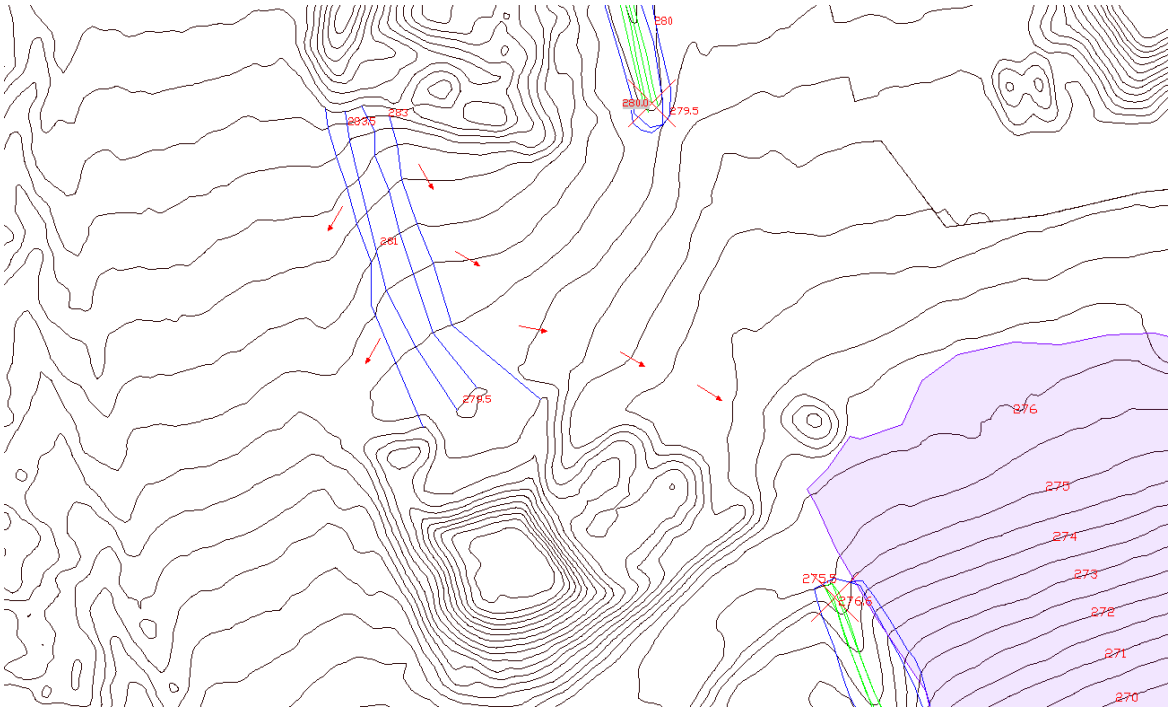

Figure4: Access Road Entry Berm and Swale Water Management Measures

8. PERFORMANCE EVALUATION

Since the construction was completed at the end of September 2020 and during the final days of construction winter had arrived, performance of the new KM106 Run of Mine Stockpile and Sedimentation Pond runoff management measures could not be evaluated at this time and will have to be evaluated during and after freshet 2021 has occurred.

The liner installed at the project was tested in both the field and at the manufacturers facility. All testing conformed to the engineering specification noted in Appendix F and the manufacturers requirements. The non-destructive and destructive testing is documented in Appendix E.

9. VIBRATION MONITORING AND QUARRY ACTIVITY

No vibration monitoring was conducted during the construction of the KM106 Run of Mine Stockpile and Sedimentation Pond as it was not deemed necessary based on the scope of activities required for construction.

Control for quarrying activity was conducted as per the project's specific management plans:

A. BAF-PH1-830-P16-0004 (H349000-1000-07-126-0011): Borrow Pit and Quarry Management Plan

10. ENVIRONMENTAL MONITORING

Environmental monitoring during the construction of the KM106 Run of Mine Stockpile and Sedimentation Pond was conducted as per the Environmental Protection Plan (EPP), (BAF-PH1-830-P16-0008).
In addition to the EPP, all construction follows the requirements of the Environmental Health and Safety Management Framework (BAF-PH1-830-STD-0001).

The Baffinland on-site Environmental Management Team was responsible for environmental monitoring at all sites during construction and following-up with the construction team(s) if there were any reported environmental incidents or non-conformances.

KM106 Run of Mine Stockpile and Sedimentation Pond construction was also required to follow the requirements of the Surface Water and Aquatic Ecosystems Management Plan, BAF-PH1-830-P16-0026. This management plan outlines the best management practices implemented to limit the potential for adverse impacts to receiving waters, aquatic ecosystems, fish and fish habitat during construction. In addition, this plan details the systems in place to mitigate and manage drainage and runoff at the building sites, address point and non-point discharges to surface waters and assess those discharges on water quality and quantity relative to their receiving water systems. The Spill Contingency Plan (BAF-PH1-830-P16-0036) in conjunction with the Emergency Response Plan (BAF-PH1-830-P16-0007) provides guidance and instructions for first responders and Baffinland Management in the event of a spill event or other emergency such as fire or accident.

The risks to the water quality in the respective rivers and streams as a result of construction of the KM106 Run of Mine Stockpile and Sedimentation Pond would originate from the following sources based on construction methodology:

- Spills from equipment

There were no recorded spills from equipment used at the construction site. In consideration of the above, the environmental mitigation strategies were effective in maintaining runoff water quality.

11. UNANTICIPATED OBSERVATIONS

The pre-construction field survey identified that the KP Consultants grades and contours used to design the IFC drawings for the pond were slightly higher than the actual field survey. The chosen area for building the sedimentation pond was significantly covered with cobbles, boulders, and rock outcroppings which were not identified during the original design work due to insufficient resolution of the original ground topography. The situation was remedied by removing the cobbles, boulders and rock outcroppings prior to starting construction.

12. SURFACE MONITORING

Not conducted.

13. REQUIRED MAINTENANCE

As noted in the KP consulting report, material placement and runoff management for the KM106 Stockpile will need to be closely monitored during operation of the stockpile area, including use of the Access Road, and operation of the Sedimentation Pond and runoff management measures. The Sedimentation Pond will need to be emptied in a timely manner following a runoff event or during freshet such that the pond is empty during normal operating conditions. Ongoing inspections and maintenance will be required to ensure that each of these structures are being operated as designed and that the Collection/Diversion Berms and Sedimentation Pond water removal system and Emergency Overflow Spillway are performing as designed. The recommended inspections are described below:

As required, based on Baffinland's standard operating procedures and OMS Manual (see appendix D).

- Inspect the Access Road for any cracks, settlement or rutting of the road surface.
- Inspect the Safety Berms along the Access Road to ensure they are in good condition and have the design configuration.
- Inspect the water removal system from the Sedimentation Pond to ensure each component is performing as designed.
- Inspect the Sedimentation Pond to ensure the liner is in good condition, there are no visible holes or leaks, there is no erosion of the berms, and the berms and spillway are performing as designed
- Inspect the collection/diversion berms to ensure there is no erosion of the berms and that no material is blocking flow along the collection/diversion berms

Prior to Freshet, following Freshet and after any large storm event

- Inspect access road to ensure there is no erosion of fill materials
- Inspect the collection/diversion berms to ensure there is no erosion of the berms and that no material is blocking the flow along the collection/diversion berms
- Inspect the Sedimentation Pond to ensure the liner is in good condition, there are no visible holes or leaks, there is no erosion of the berms, and the berms and spillway are performing as designed

Biannually

- In accordance with Part D, clause 18 of the Mary River Water License (NWB, 2014), "Inspections of earthworks and geological and hydrological regimes of the Project will be conducted biannually during the summer or as otherwise approved by the board in writing. These inspections shall be conducted by a Geotechnical Engineer…"

14. ADAPTIVE MANAGEMENT

For discussion of adaptive management principles and practices applied during the Construction Phase of the Project and their overall effectiveness please refer to the 2020 Annual Report to the Nunavut Impact Review Board. An example of adaptive management utilized on this project would be when it was discovered that the IFC diversion berm on the east side of the stockpile area would trap water between a rock outcropping and low lying area. The location of the diversion berm was shifted northward to bypass this area and allow the minimum of 1% gravity flow to the pond inlet.

APPENDIX A

LOCATION OF CONSTRUCTION RELATIVE TO LEASE BOUNDARIES

554,000 555,000 556,000 557,000 558,000 559,000 560,000 561,000 562,000 563,000 564,000 565,000

7,917,000 7,916,000 7,915,000 7,914,000 7,913,000 7,912,000

KM106 RUN OF MINE STOCKPILE

SEDIMENTATION POND

0 65 130 Meters

OPEN BURN LOCATION

KM 97 BORROW SOURCE

Camp Lake

WASTE MANAGEMENT BUILDING

HAZARDOUS WASTE BERM

SITE SERVICES SHOP

HELICOPTER PAD AERODROME

QMR2

WAREHOUSE

AIRSTRIP

ORE HAUL TRUCK PAD

MINE SITE TANK FARM

SAILIIVIK CAMP

MINE SITE COMPLEX

LAYDOWN 2

Sheardown Lake NW

WASTE ROCK FACILITY WATER TREATMENT PLANT

SURFACE WATER MANAGEMENT POND

WASTE ROCK FACILITY

MS-08 DISCHARGE LINE

110 KM LAYDOWN AREA

ULTIMATE DEPOSIT 1 PIT LIMITS

HAUL ROAD

QUARRY D1Q1

ACTIVE MINING AREA

QUARRY D1Q2

EXPLOSIVE MAGAZINE

MARY RIVER TRIBUTARY F

MARY RIVER

CRUSHER FACILITY

SURFACE WATER MANAGEMENT POND

LANDFILL

EMULSION PLANT

EFFLUENT DISCHARGE LOCATION

Sheardown Lake SE

554,000 555,000 556,000 557,000 558,000 559,000 560,000 561,000 562,000 563,000 564,000 565,000

LEGEND

- Borrow Area
- Quarry Area
- Project Development Area
- Commercial Lease Boundary
- Current Infrastructure
- KM106 Run of Mine Stockpile and Sedimentation Pond

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KM 106 Run of Mine Stockpile and Sedimentation Pond

Projection: NAD 1983 UTM ZONE 17N.
Base Map: © 2020 Digital Globe, Inc.
Imagery and Infrastructure are representative as of August 2020.

0 100 200 400 600 800 Meters
Scale 1:30,000

N

Baffinland

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FIGURE 1

SAVED: C:\Users\katie.mcguire\Documents\4 - Maps\Reporting\CSR\KM106 ROM\BIM_Fig 1 MineSite KM106 ROM.mxd: 07-Dec-20

APPENDIX B

CONCORDANCE TABLES

Type 'A' Water License 2AM-MRY1325 Requirements and Concordance Table:

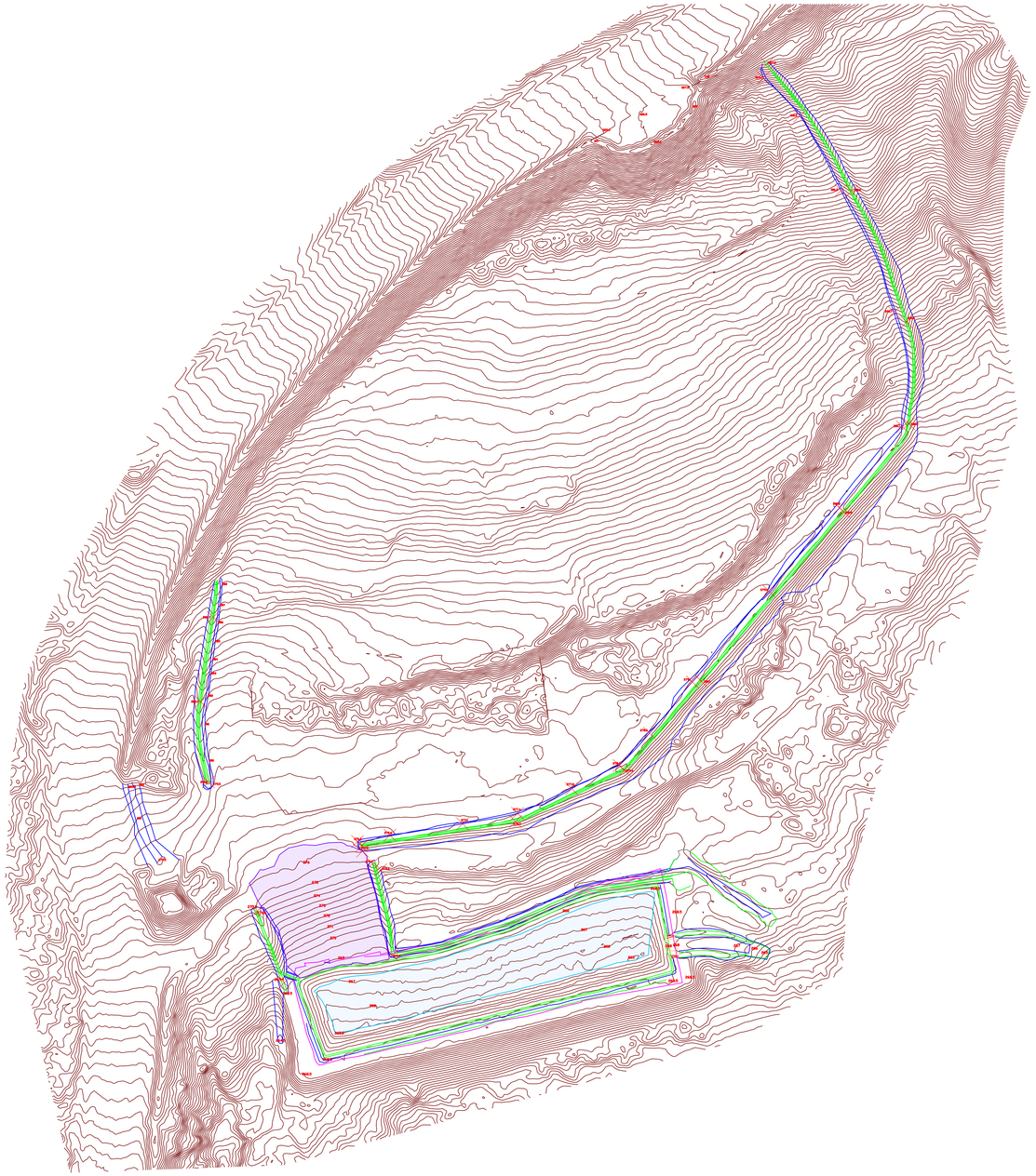
Schedule D Item No.	Minimal Information Requirements	Corresponding Section of this Report
a	Description of all infrastructure and facilities designed to contain, withhold, divert or retain Water and/or Waste	Section 1
b	A summary of construction activities including photographic records, before, during and after construction of the facilities and infrastructure designed to contain, withhold, divert or retain Water and /or Waste	Section 3 Section 5
c	As-built drawings and design for facilities and infrastructure, in item (a) of this schedule, designed and constructed to contain, withhold, divert or retain Water and/or Waste	Appendix C
d	Documentation of field decisions that deviate from the original plans and any data used to support or develop facilities and infrastructure to withhold, divert or retain Water and /or Waste	Section 7
e	A comparison of measured versus predicted performance of infrastructure and facilities	Section 8
f	Any blast vibration monitoring and control for quarrying activity carried out in close proximity to fish bearing waters	Section 9
g	Monitoring conducted for sediment and explosives residue release from construction areas	Section 10
h	Monitoring undertaken in accordance with Part D of the License during construction phase of the project	Section 10
i	Details confirming that the requirements of the CCME guidance document entitled "Aboveground Storage Tank Systems for Petroleum and Allied Petroleum Products (2003)" have been met by the Licensee	N/A
j	Data collected from instrumentation used to monitor earthworks and the interpretation of that data	N/A
k	A discussion of any unanticipated observations including changes in risk and mitigation measures implemented to reduce risk during construction	Section 11
l	An overview of any method including frequency used to monitor deformations, seepage and geothermal responses	N/A

Baffinland Iron Mines Qikiqtani Inuit Association
Commercial Lease No.: Q13C301
Construction Summary Reports (As-Built Reports)

Component	Minimum Information Requirements	Corresponding Section of this Report
1	The name and contact information of the person and company responsible for completing the construction, construction monitoring and preparing the As-Built Report.	Page 3
2	The name and contact information of the Baffinland representative(s) that QIA can contact should it have any questions or comments regarding the As-Built Report.	Page 1
3	An introduction to the infrastructure or facilities including but not limited to the construction background, concept and construction history.	Section 1
4	Construction records including As-Built drawings signed and stamped by a professional engineer detailing surveys, planar and cross sections that illustrate all designed components. This should be provided in PDF format, and if requested in native file (e,g. CAD, .dxf, etc.).	Section 6
5	Detailed description of any deviations from the For-Construction Design. Deviations that should be noted include, but are not limited to; changes in design and construction materials, construction methodology or monitoring.	Section 7
6	Observed performance of the construction including a comparison to predicted performance. Recommendations for performance monitoring based on observations during construction if applicable.	Section 8
7	A description and list of instrumentation installed, if applicable, and results of construction monitoring and post construction monitoring, including all environmental data. Recommendations for additional performance or environmental monitoring based on observations and monitoring results, if applicable.	N/A
8	A summary of quality assurance testing results, if applicable, and comparison of these results to construction/design requirements to ensure performance of the infrastructure or facilities.	Section 4, Appendix E
9	A summary of adaptive management principles and practices related to environmental management and monitoring applied during the relevant phases of the Project and their overall effectiveness.	Section 14
10	Photographic records before, during and after construction of the facilities or infrastructure	Section 5
11	Map(s) to illustrate the completed construction in relation to Lease boundaries, and water bodies. The minimum distance from completed or modifiedfacilities and infrastructure to the surveyed boundary of the Property, surveyed boundary of the Impact Area, and the ordinary high water mark should be provided.	Appendix A

APPENDIX C

ASBUILT DOCUMENTATION



LEGEND:

- POND BOTTOM
- INLET RIPRAP
- COLLECTION/DIVERSION BERM TOE
- COLLECTION/DIVERSION BERM CREST
- LINER EXTENTS
- GRADE CONTOUR
- GRADE POINT

PERMIT TO PRACTICE
BAFFINLAND IRON MINES CORPORATION
Signature
Date 12 Dec 20
PERMIT NUMBER: P 712
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
A.B. KNOWLTON
LICENSEE
12 Dec 20
NT/NU

SCALE A 25 12.5 25 50 75 100 125

DRAWING NO.	DRAWING TITLE
321 – R0	106KM STOCKPILE – SEDIMENTATION POND SECTIONS & DETAILS
320 – R0	106KM STOCKPILE – SEDIMENTATION POND & RUNOFF MANAGEMENT
310 – R0	106KM STOCKPILE – ACCESS ROAD, PLAN & SECTIONS
300 – R0	106KM STOCKPILE – GENERAL ARRANGEMENT

REFERENCE DRAWINGS

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REV.	ISSUE FOR	AUTH. BY	DATE
	As–Built	AK	2Dec20

ISSUE AUTHORIZATION

Baffinland

DESIGNED BY Knight Piesold DATE	DRAWN BY Allan Knowlton DATE 2Dec20
CHECKED BY Allan Knowlton DATE 2Dec20	DISCIP. ENGR. Allan Knowlton DATE 2Dec20
PROJ. SURVEYOR Allan Knowlton DATE 2Dec20	PROJ. ENGR. Allan Knowlton DATE 2Dec20
PROJ. MGR. Allan Knowlton DATE 2Dec20	

Baffinland

Mary River

Km106 Stackpile & Sedimentation Pond

AS–Built Grades and Contours

SCALE 1:1250 OR AS NOTED

DWG. NO. km106_As-built_001

REV.

ORIGINAL SHEET SIZE: ISO ANSI B

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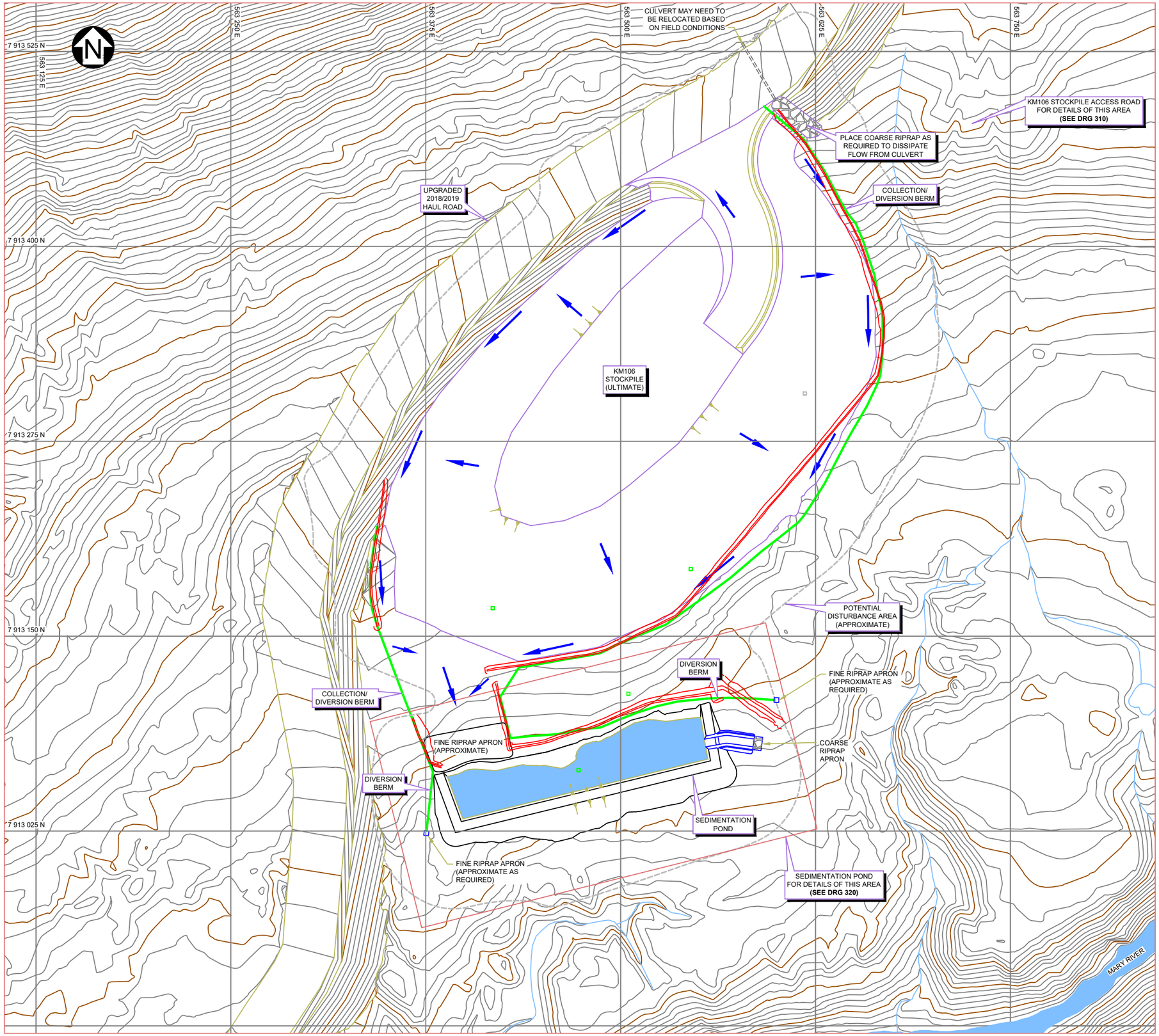


PERMIT TO PRACTICE
BAFFINLAND IRON MINES CORPORATION
Signature
Date 12 DEC 20
PERMIT NUMBER: P 712
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
A.S. KNOWLTON
LICENSEE
12 DEC 20
NT/NU

LEGEND:

- WATER
- COARSE RIPRAP
- CULVERT
- COLLECTION/DIVERSION BERM
- POTENTIAL DISTURBANCE AREA (APPROXIMATE)
- FLOW DIRECTION
- COLLECTION/DIVERSION BERM - AS BUILT

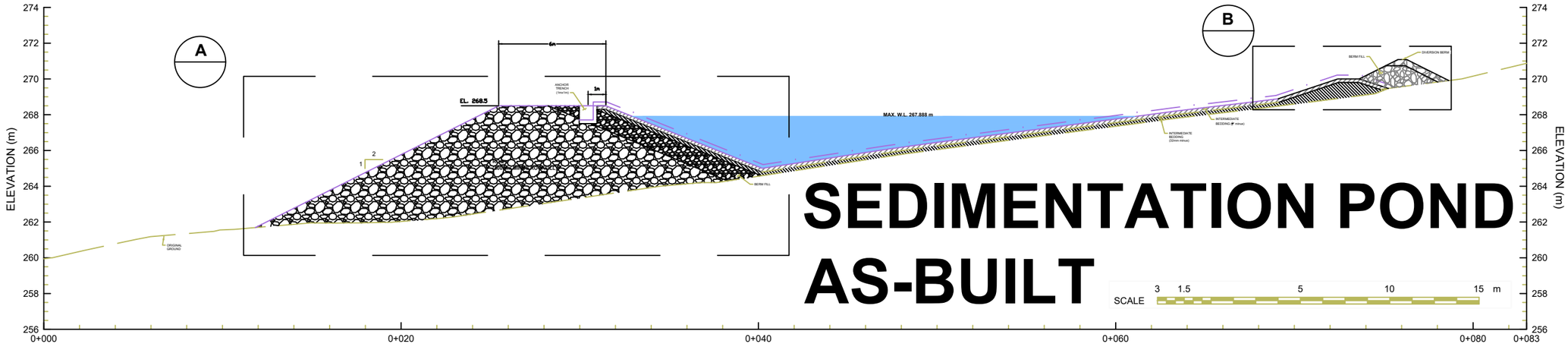
NOTES:

1. COORDINATE GRID IS UTM (NAD83) ZONE 17.
2. TOPOGRAPHY BASED ON INFORMATION PROVIDED BY EAGLE MAPPING (2008).
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 2 m.
4. DIMENSIONS AND ELEVATIONS ARE IN METRES, UNLESS NOTED OTHERWISE.
5. LOCATIONS AND DETAILS OF CONSTRUCTION ITEMS MAY BE MODIFIED TO SUIT ACTUAL SITE CONDITIONS.
6. UPGRADED 2018/2019 HAUL ROAD AND KM106 STOCKPILE PROVIDED BY BAFFINLAND.
7. FINAL SLOPES SHALL BE TRIMMED TO THE LINES AND TOLERANCES INDICATED ON THE DRAWINGS AND IN THE TECHNICAL SPECIFICATIONS.
8. ALL INFRASTRUCTURE SHOWN IS PROPOSED UNLESS NOTED OTHERWISE.
9. THE DRAWING SHALL BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTS AND APPLICABLE TECHNICAL SPECIFICATIONS.
10. FOUNDATION PREPARATION: PROVIDED THE AMOUNT OF ORGANICS AND UNSUITABLE MATERIAL ON THE GROUND IS NEGLIGIBLE, DISTURBANCE TO THE ORIGINAL GROUND (EXCAVATION, SCARIFYING, ETC.) SHOULD BE MINIMIZED SO AS NOT TO IMPACT CURRENT PERMAFROST CONDITIONS. ALTERNATIVE METHODS OF FOUNDATION PREPARATION MAY BE NECESSARY FOR SOME AREAS, AT THE DISCRETION OF THE OWNER'S REPRESENTATIVE. ALL FOUNDATIONS MUST BE MAINTAINED CLEAR OF SNOW, PONDED WATER AND ICE.

25 12.5 0 25 50 75 100 125 m
SCALE A

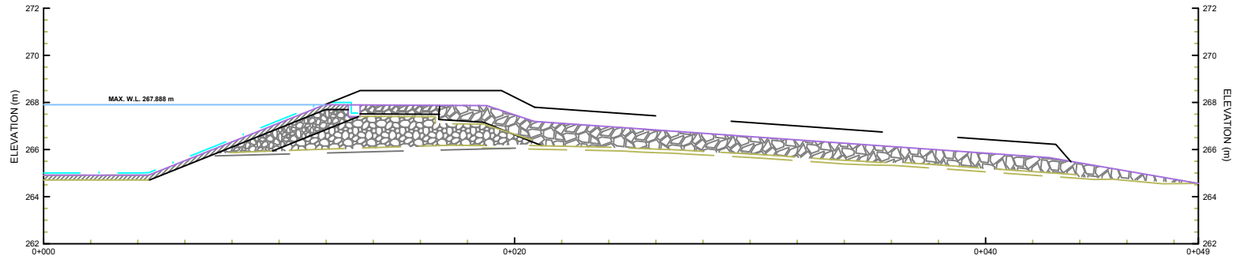
KM106 STOCKPILE GENERAL ARRANGEMENT
DESIGN VS. AS-BUILT

300



SEDIMENTATION POND AS-BUILT

SCALE 3 1.5 5 10 15 m



LEGEND:

- WATER
- 500 mm MINUS ROCKFILL
- COARSE RIPRAP
- FINE RIPRAP
- BERM FILL
- INTERMEDIATE BEDDING
- GEOMEMBRANE WITH NON-WOVEN GEOTEXTILE BELOW
- NON-WOVEN GEOTEXTILE
- ORIGINAL GROUND
- COLLECTION/DIVERSION BERM

SPILLWAY AS-BUILT

SCALE 3 1.5 5 10 15 m

PERMIT TO PRACTICE
BAFFINLAND IRON MINES CORPORATION
Signature
Date 18Dec20
PERMIT NUMBER: P 712
NT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER
A.B. KNOWLTON
LICENSEE
12817
NT/NU

DRAWING NO.	DRAWING TITLE
321 – R0	106KM STOCKPILE – SEDIMENTATION POND SECTIONS & DETAILS
320 – R0	106KM STOCKPILE – SEDIMENTATION POND & RUNOFF MANAGEMENT
310 – R0	106KM STOCKPILE – ACCESS ROAD, PLAN & SECTIONS
300 – R0	106KM STOCKPILE – GENERAL ARRANGEMENT

REFERENCE DRAWINGS

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REV.	ISSUE FOR	AUTH. BY	DATE
As–Built	AK		2Dec20

ISSUE AUTHORIZATION

Baffinland

DESIGNED BY Knight Piesold DATE	DRAWN BY Allan Knowlton DATE 2Dec20
CHECKED BY Allan Knowlton DATE 2Dec20	DISCIP. ENGR. Allan Knowlton DATE 2Dec20
PROJ. SURVEYOR Allan Knowlton DATE 2Dec20	PROJ. ENGR. Allan Knowlton DATE 2Dec20
PROJ. MGR. Allan Knowlton DATE 2Dec20	

Baffinland

Mary River
Km106 Stockpile & Sedimentation Pond

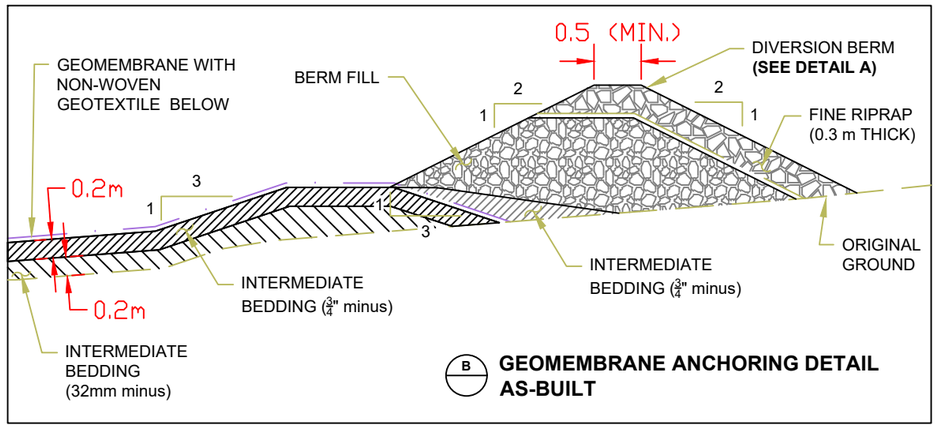
AS–Built Grades and Contours
SECTION DETAILS 1

SCALE NTS OR AS NOTED
DWG. NO. km106_As–built_002
REV.
ORIGINAL SHEET SIZE: ISO ANSI B

1 2 3 4 5 6 7 8

PERMIT TO PRACTICE
BAFFINLAND IRON MINES CORPORATION
Signature
Date 12 DEC 20
PERMIT NUMBER: P 712
NT/NU Association of Professional Engineers and Geoscientists

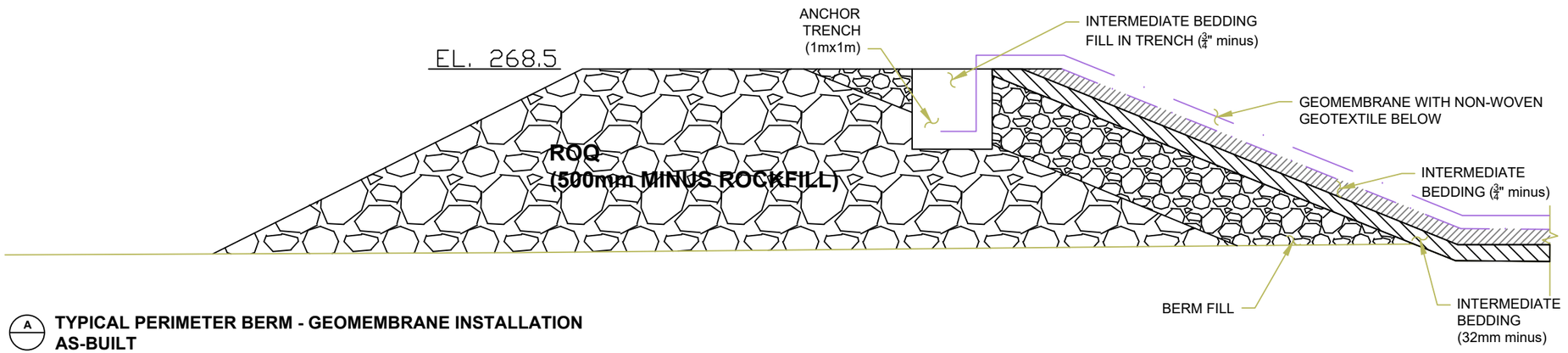
REGISTERED PROFESSIONAL ENGINEER
A.S. KNOWLTON
LICENSEE
12 DEC 20
NT/NU



B **GEOMEMBRANE ANCHORING DETAIL AS-BUILT**

LEGEND:

- WATER
- 32 mm MINUS INTERMEDIATE BEDDING
- 500 mm MINUS ROCKFILL
- FINE RIPRAP
- BERM FILL
- 3/4" MINUS INTERMEDIATE BEDDING
- GEOMEMBRANE WITH NON-WOVEN GEOTEXTILE BELOW
- NON-WOVEN GEOTEXTILE
- ORIGINAL GROUND



A **TYPICAL PERIMETER BERM - GEOMEMBRANE INSTALLATION AS-BUILT**

SCALE 3 1.5 5 10 15 m

DRAWING NO.	DRAWING TITLE
321 – R0	106KM STOCKPILE – SEDIMENTATION POND SECTIONS & DETAILS
320 – R0	106KM STOCKPILE – SEDIMENTATION POND & RUNOFF MANAGEMENT
310 – R0	106KM STOCKPILE – ACCESS ROAD, PLAN & SECTIONS
300 – R0	106KM STOCKPILE – GENERAL ARRANGEMENT

REFERENCE DRAWINGS

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

REVISIONS

REV.	ISSUE FOR	AUTH. BY	DATE
As–Built	AK		2Dec20

ISSUE AUTHORIZATION

Baffinland

DESIGNED BY Knight Piesold DATE	DRAWN BY Allan Knowlton DATE 2Dec20
CHECKED BY Allan Knowlton DATE 2Dec20	DISCIP. ENGR. Allan Knowlton DATE 2Dec20
PROJ. SURVEYOR Allan Knowlton DATE 2Dec20	PROJ. ENGR. Allan Knowlton DATE 2Dec20
PROJ. MGR. Allan Knowlton DATE 2Dec20	

Baffinland

Mary River

Km106 Stockpile & Sedimentation Pond

AS–Built Grades and Contours SECTION DETAILS 2

SCALE NTS OR AS NOTED

DWG. NO. km106_As–built_003

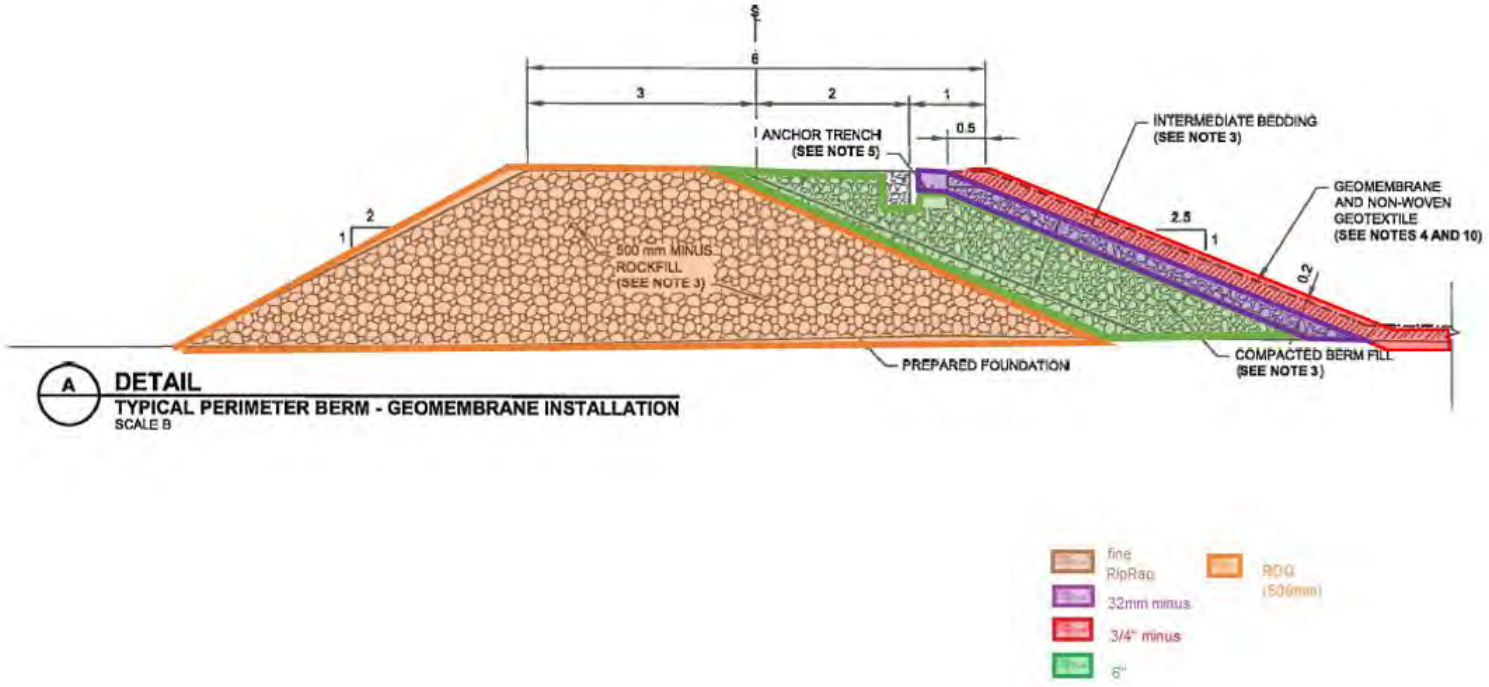
REV.

ORIGINAL SHEET SIZE: ISO ANSI B

1 2 3 4 5 6 7 8

Hi Allan,
I understand that you want to use ¾ in material to better protect the liner. This is a good idea, however I have the following comments and recommendations:

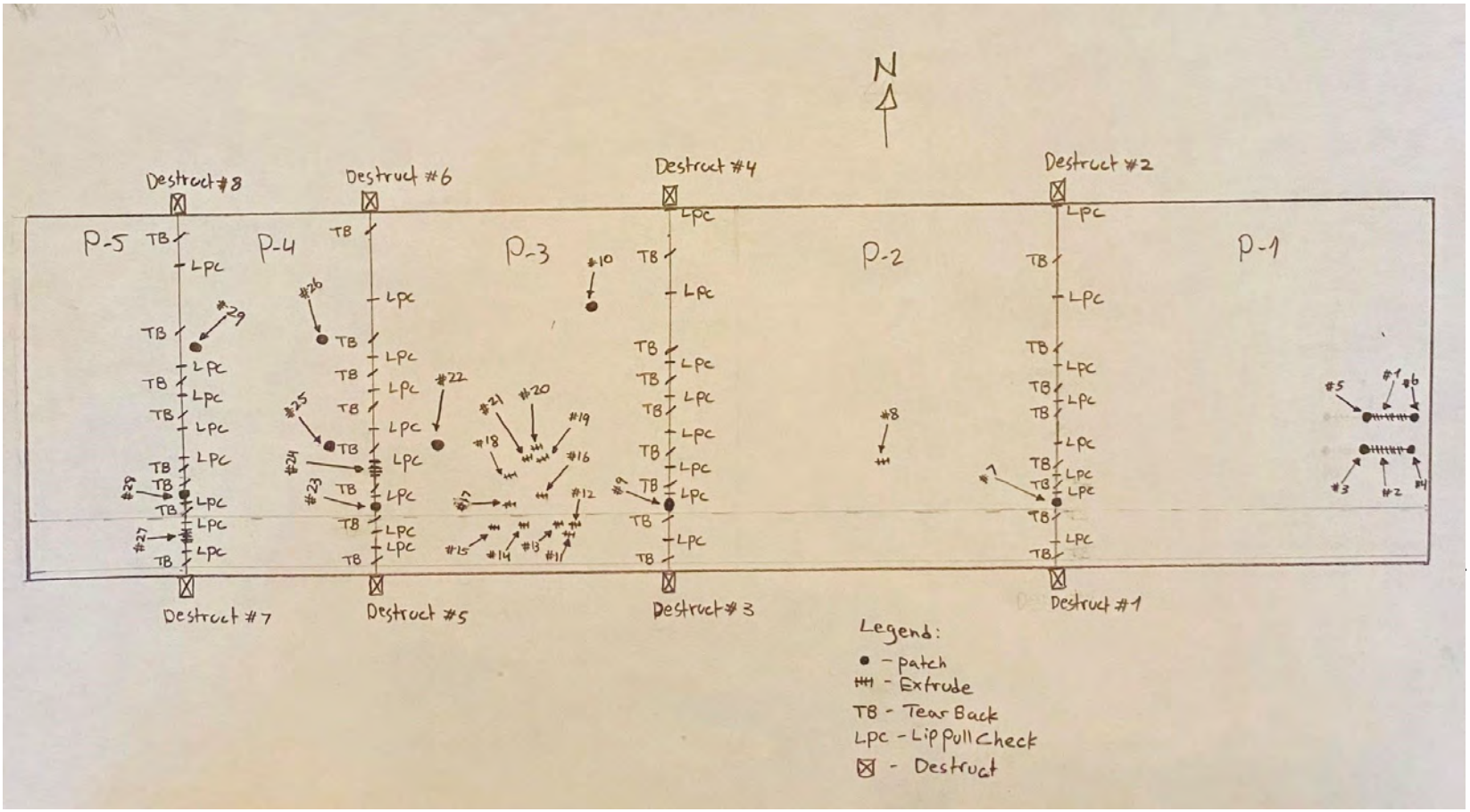
- **Perimeter Berm** – I recommend that the ¾ in minus material be added as a new zone on the upstream slope, and that both the 6 inch minus and 32 mm minus material be placed as planned (see sketch below). The new zone of ¾ inch minus material should be 0.2 m thick and you can reduce the width of the 500 mm minus rockfill zone by 0.2 m to accommodate this new zone without compromising capacity in the pond. In my experience, replacing the 32 mm minus material with ¾ minus material directly adjacent to the 6 in minus material could result in loss of the ¾ in minus material into the voids of the larger 6 in minus material. If this were to happen, the liner could be damaged due to the development of underlying voids, or more susceptible to puncture from exposure to the 6 inch minus material. My recommendation is based on experience and rules of thumb - if you are able to provide gradations for the different materials, then I could confirm the filter compatibility between the ¾ in minus and 6 in minus material and verify if the 32 mm minus material could be eliminated without compromising the liner.



Thanks,
Amy

Amy Adams, Ph.D, P.Eng, P.E.
Senior Engineer
Knight Piésold Ltd.

T: +1 705 476 2165
1650 Main Street West
North Bay | Ontario | Canada | P1B 8G5



CONSTRUCTION AS-BUILT

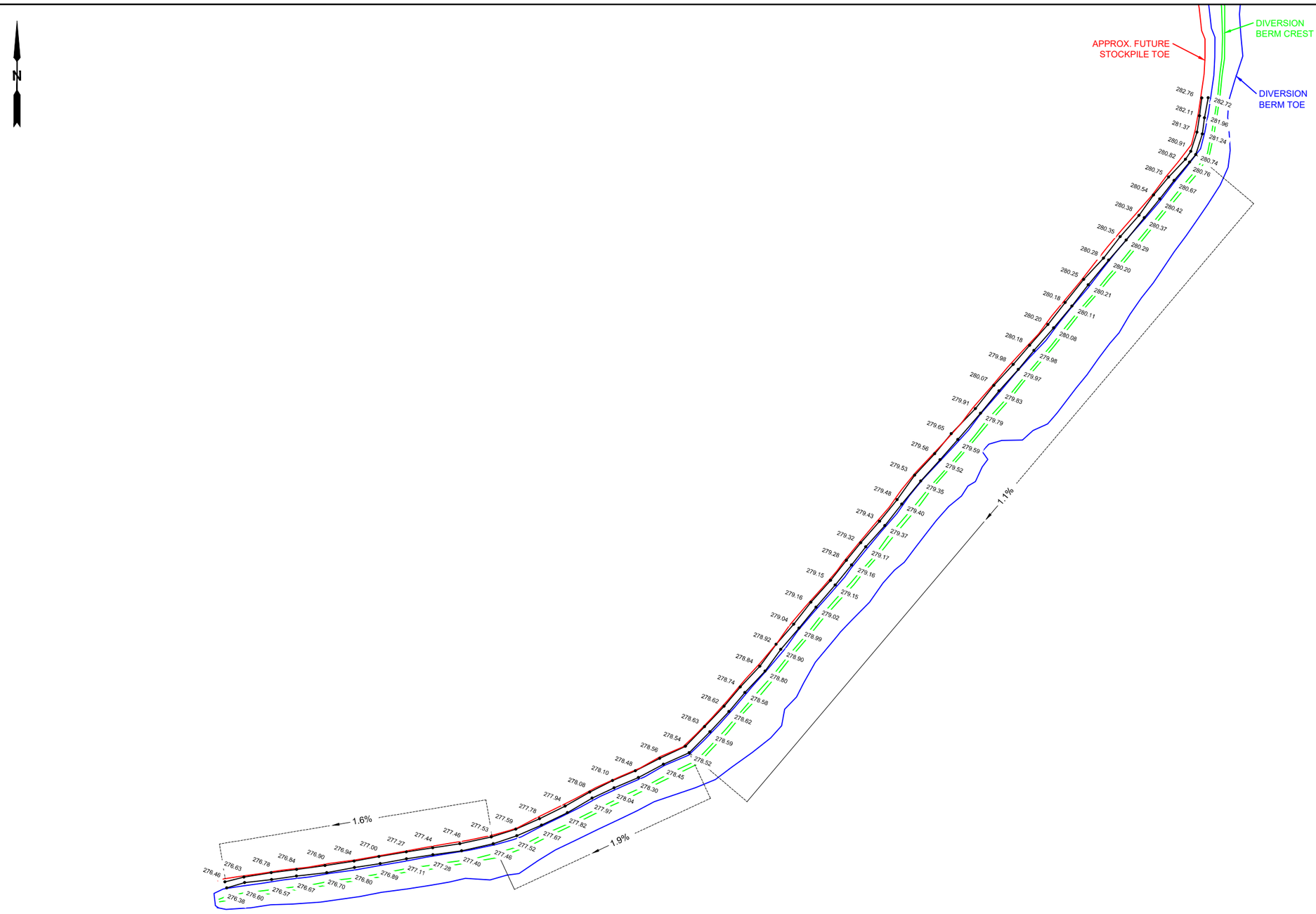
REV.	DESCRIPTION	DRAWN	CHECK
0	AS-BUILT PANEL AYOUT		

WESTERN TANK & LINING LTD.

PROJECT: Marry River Mine

TITLE: GEOMEMBRANE LINER AS-BUILT

SCALE	JOB NO.	FIG. NO.
TS	2004	1



	OWNER: BAFFINLAND IRON MINES LP PROJECT: MARY RIVER EXPANSION PROJECT	PREPARED BY: NUNA EAST LTD. PO Box 370 Pond Inlet, NU X0A 0X0	NUNA	KM 106 STOCKPILE DRAWING TITLE: CHANNEL GRADE *SURVEYED SEPTEMBER 6, 2020*
		DRAWN BY: M. GOREHAM	SCALE: N.T.S. / DATE: Sept. 6, 2020	DRAWING NAME (YYMMDD): 200906 KM 106 CHANNEL GRADE.dwg