October 2, 2018

Assol Kubeisinova
Technical Advisor, NWB
P.O. Box 119
Gjoa Haven, NU X0B 1J0

RE: Submission of 2018 Geotechnical Inspection Report No. 1 (Jul/Aug. 2018)

Under Part D, Item 18 of Baffinland Iron Mines Corporation's (Baffinland) Type "A" Water Licence 2AM-MRY1325 Amendment No. 1 (Water Licence), there is a requirement to conduct biannual geotechnical inspections of specified Mary River Project (the 'Project") infrastructure. Part D, Item 18, of the Water Licence states that:

> "The Licensee shall conduct inspections of the earthworks and geological and hydrological regimes of the Project biannually during the summer or as otherwise approved by the Board in writing. The inspection shall be conducted by a Geotechnical Engineer and the inspection report shall be submitted to the Board within sixty (60) days of the inspection, including a cover letter from the Licensee outlining an implementation plan to respond to the Engineer's recommendations."

The first biannual geotechnical field inspection for 2018 was conducted by Barry Martin of Barry H. Martin Consulting Engineer and Architect (BMCE) of Timmins, Ontario. The focus of the inspection was on the Water Licence related infrastructure located at the main camp sites, known as the Mary River Mine Site and Milne Port. Mr. Barry Martin has been conducting annual geotechnical inspections for the Project since 2008. The attached report covers the first inspection that was conducted between July 24th and August 1st, 2018.

During the July/August 2018 inspection, the following site facilities were inspected:

Mary River Mine Site

- Bulk Fuel Storage Containment (MS-HWB-7)
- Generator Fuel Storage Facility Containment
- Polishing/Waste Stabilization Pond No. 1
- Polishing/Waste Stabilization Ponds Nos. 2 and 3
- Helicopter Fuel Cell Containment
- Enviro-Tank Storage (MS-HWB-1)
- Hazardous Waste Storage (MS-HWB-2)
- Barrel Fuel Containment (MS-HWB-3 and MS-HWB-4)
- Stove Oil Storage (MS-HWB-5)
- Jet Fuel Tank and Pump Containment
- Solid Waste Disposal Site (Landfill)
- Mine Site Fuel Tank Farm Containment
- Quarry (QMR2)

- Crusher Pad Drainage Containment
- Waste Pile Drainage Containment
- Jet "A" Aircraft Containment
- Hazardous Waste Containment (MS-HWB-6)

Milne Port

- Hazardous Waste Storage (MP-HWB-3, and MP-HWB-4)
- Port Site Fuel Tank Farm Containment
- Polishing/Waste Stabilization Pond (PWSP)
- Land Farm
- Contaminated Snow Containment
- Sedimentation Ponds East and West
- Quarry (Q1)
- Loading Area Contaminated Storage (MP-HWB-1)
- Fuelling Facility Containment

Site plans for the Mary River and Milne Port showing most structures reviewed are included in the inspection report (refer to Attachment 1).

The attached report (refer to Attachment 1) presents the findings of the August 2018 inspection and recommendations for the aforementioned structures. The following subsections of this letter summarize Baffinland's plan for implementing recommendations. Where there is no mention of particular infrastructure, there were no concerns identified by BMCE during the inspection.

Recommendations for the Mary River Mine Site Infrastructure

Bulk Fuel Storage Facility (Exploration Phase Bladder Farm)

We have no recommendations with respect to this containment structure other than to repair the puncture in the liner.

Baffinland Action: The liner of this storage facility was repaired in August 2018. This repair will be monitored in further inspections to confirm integrity.

Enviro Tank Storage (Now MS-HWB-1)

We recommend that the geotextile over the liner be checked and the granular cover be made good prior to continuing use of this cell.

Baffinland Action: The cell is currently not being used and has been left empty. The Site Services Department supervisors are aware that this area shall not be used for the storage of hazardous waste or substances until it has been repaired. Alternatively, this facility may be decommissioned.

Crusher Pad Drainage Containment

We recommend that the drainage ditch at the edge of the new pad expansion be revised slightly to provide a uniform gradient to this ditch.

Baffinland Action: Baffinland will ensure ongoing maintenance of ditches conforms with design drawings.

Hazardous Waste Containment (MS-HWB-6)

We have no recommendations with respect to this structure other than making repairs to the damaged enviroliner. The side dykes should be also built up to keep traffic off them.

Baffinland Action: Baffinland has repaired the enviroliner at this facility and will monitor the status in the future.

Recommendations for Milne Port Infrastructure

Fuel Tank Farm

We have no recommendations with respect to the containment at this time other than to make sumps at the north end operational, to readily facilitate water removal.

Baffinland Action: Baffinland will review sumps in the north end of the tank farm and evaluate if further excavation is required.

Landfarm Containment

We recommend that the remaining dyke structure without protective cover over it be covered as per the design drawings. This however, is not an absolute requirement.

Baffinland Action: Baffinland will cover exposed liner around perimeter of landfarm by July 2019.

Sedimentation Pond East

We recommend review of the use of a ballast (possibly tires) on the exposed liner at the dyke to prevent wind uplift.

Baffinland Action: Baffinland will review ballast currently used on the exposed liner and place additional used tire ballast, as required.

Sedimentation Pond West

We have no concerns other than that of possible wind damage to the liner and recommend the use of tires as ballast.

Baffinland Action: Baffinland will review ballast currently used on the exposed liner and place additional used tire ballast, as required.

Loading Area Contaminated Storage (MP-HWB-1)

We have no recommendations with respect to this structure other than to repair the tear identified.

Baffinland Action: Baffinland will repair the torn liner by the end June 2019. In the meantime, stormwater and snowmelt in the berm will not be allowed to reach the height of the tear.

Fueling Facility Containment
We recommend that 4" to 6" of "mud" be removed without disturbing the gravel layer over the liner at the base and sides of the fuel tank.

Baffinland Action: Baffinland will remove built up material from the fueling facility by the end June 2019.

We trust that this submittal meets the requirements for geotechnical inspections as outlined in the Water Licence. Should you have any questions, please do not hesitate to contact the undersigned or William Bowden.

Regards,

Connor Devereaux
Environmental Superintendent

Attachments:
Attachment 1: 2018 Geotechnical Inspection Report No. 1

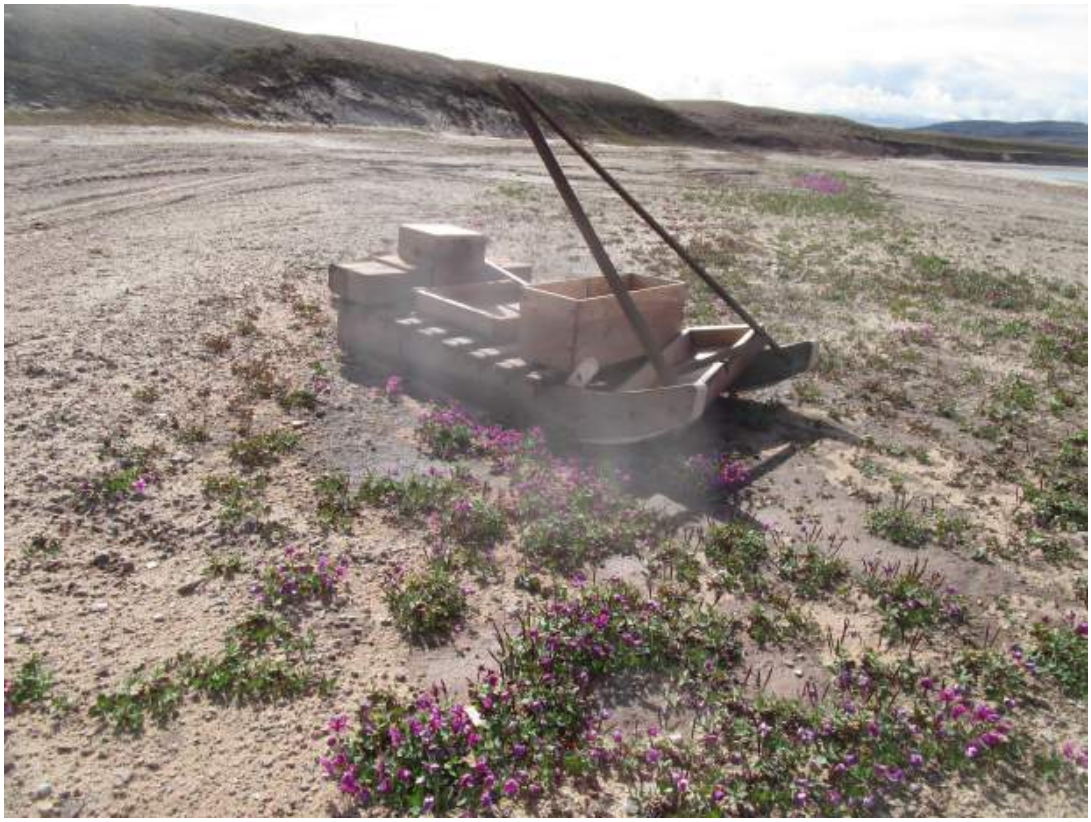
Cc: Karén Kharatyan (NWB)
Fai Ndofor, Sean Joseph (QIA)
Sarah Forte, Bridget Campbell, Ian Parsons, Jonathan Mesher (CIRNAC)
Tim Sewell, Grant Goddard, Megan Lorde-Hoyle, Christopher Murray, Sylvain Proulx, Gordon Mudryk (Baffinland)

Attachment 1
2018 Geotechnical Inspection Report No. 1

BHM Project No. 18-068

BAFFINLAND IRON MINES CORPORATION

ANNUAL GEOTECHNICAL INSPECTIONS
MARY RIVER PROJECT
FIRST INSPECTION OF TWO
August 2018



Prepared for:

Mr. Jeff Bush
Site Services Superintendent
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, Ontario L6H 0C3

and

Mr. William Bowden
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, Ontario L6H 0C3

Barry H. Martin, P. Eng., MRAIC, Consulting Engineer and Architect
1499 Kraft Creek Road
Timmins, Ontario P4N 7C5
Tel: 705-268-5621
barry.martin@barryhmartin.com

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Oct 1st, 2017

Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, Ontario
L6H 0C3

Attention: Jeff Bush
jeff.bush@baffinland.com

William Bowden
William.bowden@baffinland.com

RE: ANNUAL GEOTECHNICAL INSPECTIONS
BAFFINLAND IRON MINES CORPORATION
OUR REFERENCE NO. 18-068

1.0 INTRODUCTION

Barry H. Martin, P. Eng., Consulting Engineer, completed the tenth annual water licence geotechnical inspection of the following on-site engineered facilities as required by Licence No. 2AM-MRY 1325 of the Nunavut Water Board:

Pit Walls
Quarries
Landfills
Land Farms
Bulk Fuel Storage Facilities
Sediment Ponds
Collection Ponds
Polishing and Waste Stabilization Ponds

The inspection that took place July 24th to August 1st is the first phase of a biannual inspection to be carried out within the open water shipping season at Mary River, the mine site, and Milne Inlet, the port site. As we arrived in Mary River, the ships had started to arrive in Milne Inlet.

The inspections were carried out in accordance with the guidelines set out in "Dam Safety Guidelines 2007" as published by the Canadian Dam Association.

The inspections were completed by Mr. Barry H. Martin, P. Eng., the design Engineer for the initial containment facilities both at Mary River and Milne Inlet, the runway extension, initial bridges on the connecting road, the solid waste disposal site as well as continuing construction of select mine infrastructure.

The nine previous annual water licences geotechnical inspections were completed by Mr. Martin. You shall note that Hazardous Waste Containment Structures have been assigned new designations in the report as compared to past years and are now identified by both the new designation and the past descriptive designation.

The facilities inspected are as per the following:

Mary River Site

Bulk Fuel Storage Containment
Generator Fuel Storage Facility Containment
Polishing/Waste Stabilization Pond No. 1
Polishing/Waste Stabilization Ponds Nos. 2 and 3 (constructed as a two-cell structure)
Helicopter Fuel Cell Containment
Barrel Fuel Containment (constructed as a two-cell structure) (MS-HWB-3 and MS-HWB-4)
Hazardous Waste Storage (MS-HWB-2)
Enviro-Tank Storage (constructed contiguous with hazardous waste storage and stove oil storage) (MS-HWB-1)
Stove Oil Storage (MS-HWB-5)
Jet Fuel Tank and Pump Containment
Solid Waste Disposal Site
Mine Site Fuel Tank Farm Containment
Quarry
Crusher Pad Drainage Containment
Waste Pile Drainage Containment
Jet "A" Aircraft Containment
Hazardous Waste Containment (MS-HWB-6)

A site plan for the Mary River site showing most structures reviewed is attached.

Milne Inlet Site

Hazardous Waste Storage (constructed as a two-cell structure) (MP-HWB-3 and MP-HWB-4)
Port Site Fuel Tank Farm Containment
Polishing/Waste Stabilization Pond (PWSP)
Land Farm
Contaminated Snow Containment
Sediment Ponds East and West
Quarry (Q01)
Loading Area Contaminated Storage (MP-HWB-1)
Fuelling Facility Containment

A site plan for the Milne Inlet site showing most structures reviewed is attached.

2.0 METHODOLOGY FOR INSPECTION

The geotechnical inspector was Barry H. Martin, P. Eng., who also reviewed both sites in the past 9 years during the open water season.

The inspections primarily focused on the following aspects:

1. The structures were inspected for conformance with the design basis as presented in "as constructed" and "as-built" drawings (provided in the first and subsequent reports).

2. The structures were specifically inspected for settlement, cracking, and seepage through the berms.

3. The areas around the structures were examined for evidence of seepage.

4. Quarry walls were reviewed for relative stability. I note that the quarries are active removal areas and long term stability was not yet established.

5. New structures under construction were reviewed for conformity with design drawings.

6. Photographs were taken to document observations made during the inspection and are attached.

3.0 MARY RIVER CAMP

3.01 General

There had been rain events at the Mary River site for a number of days prior to and during the inspection, hence the integrity of the containment structures could be verified by water ponding in the containment structures.

A monitoring program is in place to test storm water that does accumulate within the containment structures. As reviewed, the water that does not meet the water licence effluent requirements is treated on site prior to release. For small amounts, the water is pumped out and transported to where treatment takes place.

At the Bulk Fuel Storage Facility Containment, the water that collects within the dyke is treated at the end of the containment structure. At the time of this inspection, the treatment was not actively taking place.

Bladders and associated piping have been removed from the Bulk Fuel Storage Containment (Exploration Phase Bladder Farm). The Bulk Fuel Storage Containment is currently being used to store barrels of fuel, lubricant cubes, and a large fuel tank at this time. The north end of the berm is being used to store hydrocarbon contaminated water.

The unloading area is now utilized as an entrance to the containment with some storage.

3.02 Bulk Fuel Storage Facility (Exploration Phase Bladder Farm)

General Conditions

The Bulk Fuel Storage Facility still exists but it is no longer utilized as a bulk fuel storage facility. There are a number of full fuel barrels and lubricant cubes now stored within the berms, as well as a large fuel tank.

The granular cover over the geotextile and liner is still in place within the containment structure with a fair amount of water at one end awaiting treatment.

There is now a ramp over the north end of the containment to permit access over the dyke for placing barrels and cubes in storage. There is also some cube/barrel storage in this area.

At the south end this access is through the former fuel unloading area.

Stability

At the time of this initial review, water had not been removed from within the containment and water was ponding above the level of the gravel within the bottom of the containment at the south end of the facility.

At the load-out end of the facility there was water ponding within the dykes. At the former fuel unloading area at the north end there is minor water ponding within the dykes.

The soil structure is considered stable in the present condition and is in conformance with the design basis for the facility.

The presence of water within the structure and at the load-out area is an indication of the liners integrity.

The dykes have been built up two years ago to reinforce the concept of no loader travel over the dykes.

There is one area along the interior of the west dyke where the liner integrity as been compromised by a loader operator that has punctured the membrane. At this time the puncture is above the water level in the cell.

Recommendations

We have no recommendations with respect to this containment structure other than to repair the puncture in the liner.

3.03 Generator Fuel Storage Containment (Exploration Phase)

This particular containment structure is currently being decommissioned.

The granular fill over the geotextile and liner shall eventually require landfarming with the material from the bulk fuel storage facility.

There is no indication that the liner is compromised and decommissioning should proceed when the granular cover is either moved to a land farm or other containment. There is water ponding within the structure confirming the integrity of the containment.

3.04 Polishing/Waste Stabilization Pond #1

General Conditions

PWSP No. 1 continues to be utilized as a holding facility for sewage plant effluent that does not meet water effluent quality criteria.

Currently the pond is being used primarily as a repository for off spec sewage and sewage sludge forming in lift stations.

The supernatant from PWSP No. 1 is periodically decanted to PWSPs Nos. 2 and 3 where it is tested and treated as required to meet Water Licence effluent requirements.

At the time of our visit there was approximately fifty percent of capacity to accommodate further sewage and the structure readily conforms to its design intent.

Stability

Our review of this area around the pond at the base of the slopes showed no sign of seepage and hence we conclude that the liner has been effective in containing sewage and there are no tears or ruptures in the membrane, excepting some minor tears from past activity at the top of the dyke well above the allowable effluent level in the structure in the horizontal portion of the membrane.

A review of the top of the dyke showed no indication of cracking or settlement which would indicate stresses within the structure.

Many of the tears that had occurred in the liner on the top of the dyke have been patched during the period between reviews in 2008 and 2009 and are holding well. As well, there are no signs of weather related deterioration of the liner where it is exposed.

There appears to be no sign of erosion of the dykes, even with the precipitation that has occurred over the lifetime of the facility.

The minor settlements have had little effect on the integrity of the structure.

Recommendations

We have no recommendations with respect to this containment facility.

3.05 Polishing Ponds/Waste Stabilization Ponds #2 and #3

General Conditions

The structure was designed and constructed as a two-cell structure.

The supernatant from PWSP #1 is currently discharged to PWSPs Nos. 2 and 3. The treated effluent is tested for Water Licence effluent requirements, treated if necessary, and discharged to the environment.

At the time of our visit there was considerable freeboard to accommodate further sewage and the structure readily conforms to its design intent. Both cells were was operating at approximately 50% of capacity.

Stability

Our review of the area around the pond at the base of the slopes showed no sign of seepage and hence we conclude that the liner has been effective in containing the sewage and there are no tears or ruptures in the membrane.

Longitudinal cracking which appeared in the dykes of PWSP #3 due to the melt of permafrost wedges in 2009 has not reoccurred and we consider this structure to be stable in its present condition.

Monitoring points have been set upon the top of the dyke and have been monitored since 2009. Settlements have occurred since that time. These settlements have not led to any stress cracks in the structure. Monitoring was discontinued three years ago.

There appears to be no sign of erosion of the dykes and plants are continuing to seed themselves on the dykes. This growth is still minimal, however.

Recommendations

We have no recommendations with respect to this containment facility.

3.06 Helicopter Fuel Tank Containment

General Conditions

The structure was designed and constructed as a single cell structure that contains a 1000 gal fuel storage tank.

The structure currently conforms to its design intent.

In the past, a liner clad wood curb had been added to the top of the berm to prevent the erosion of gravel off the berm, caused by pulling the fuel hose from within the dyke out to the helicopters to provide them with fuel.

The temporary fuel containment cell that was set up last year has been removed since our last inspection in 2017.

Stability

Our review of the area around the pond at the base of the slopes showed no sign of seepage.

A review of the exterior and the top of the berms showed no sign of cracking or settlement which would indicate stress within the structure.

The structure is considered to be stable in its present condition and contains water that attests to its integrity.

Recommendations

We have no recommendations with respect to this structure.

3.07 Barrel Fuel Containment (Now MS-HWB-3 and MS-HWB-4)

General Conditions

This particular structure which we called “Barrel Fuel Containment” in our previous inspection reports is a two-cell structure currently used to accommodate contaminated waste in the east cell and barrels of fuel in the west cell.

Stability

Our review of the area around this containment structure showed no sign of seepage. There is some water ponding in this structure attesting to its integrity

A review of the exterior and top of the dyke showed no sign of cracking or settlement which would indicate stresses within the structure.

The structure is considered to be stable in its present condition.

Recommendations

We have no recommendations at this time.

3.08 Hazardous Waste Storage (Now MS-HWB-2)

General Conditions

This particular cell was constructed contiguous with an existing cell, which is referred to on site as the "Enviro Tank Storage", from drawings by our office in 2010 and conforms to our drawings. It is also contiguous with the Stove Oil Storage cell.

This structure contains hazardous waste.

Stability

Our review of the area around this cell at the base of the slopes, showed no sign of seepage. There is water ponding in this structure.

The structure appears to be stable in its present condition. The water in the cell confirms the integrity of the liner.

Recommendations

There are no recommendations at this time.

3.09 Enviro Tank Storage (Now MS-HWB-1)

General Conditions

This particular structure is constructed contiguous with the Hazardous Waste Storage constructed in 2010 and the Stove Oil Storage cell. It is currently not being utilized and access is blocked.

Stability

Two years ago, there was concern for the integrity of this cell as the cell was dry and the geotextile was exposed from heavy traffic during our initial inspection. During our second inspection, the cell was holding a small amount of water confirming limited integrity of the liner.

The cell was dry last year during the second inspection raising concerns anew on the integrity of the liner. This inspection showed minor water present.

Recommendations

We recommend that the geotextile over the liner be checked and the granular cover be made good prior to continuing use of this cell.

3.10 Stove Oil Storage (Now MS-HWB-5)

General Conditions

This particular structure had been used to store barrels of stove fuel in 2011.

The structure again contains barrels of stove oil and some cubes of lubricant.

This structure was constructed in accordance with a standardized drawing provided by this office utilizing a one piece liner.

Stability

Our review of the exterior at the base of the dyke showed no sign of seepage. This shows that there is reasonably little chance of tearing or rupture of the membrane having taken place.

A review of the exterior and the top of the dyke showed no sign of cracking or settlement which would indicate stresses with the structure.

There is water contained within the cell confirming the integrity of the liner.

The structure is considered to be stable in its present condition.

3.11 Jet Fuel Tank and Pump Containment

General Conditions

This particular structure was reconstructed based on our recommendation of the 2012 Geotechnical Inspection.

The construction was completed in accordance with our recommendations for such structures and the liner was constructed as a one piece liner with geotextile protection on both sides and gravel over the geotextile as protection.

The construction appears proper and the structure is in good condition.

Minor water ponding confirms the integrity of the liner.

At this time as in our earlier inspection report two years ago, the jet fuel tank and pump have been removed and the cell is empty.

Stability

Our review of the area around the cell at the base of the slopes showed no sign of seepage and water is ponding within the cell.

The structure is stable in its present condition.

Recommendations

There are no recommendations at this time.

3.12 Solid Waste Disposal Site

The solid waste disposal site is currently in the second phase of its construction. The first lift of solid waste has been placed and covered fully and appears to be doing exactly what it was proposed to do at the design stage. Since our inspections last year, the second lift has been undertaken. Some of the second lift has now been covered and some awaits cover.

Work is currently continuing on building a berm on three sides of the disposal site at the level of the second lift. The berm on the second level is being constructed as per the berm on the first level that served well over the past several years.

There is some material dumped on the second lift for use as cover for the second lift where waste is being placed.

3.13 Mine Site Fuel Tank Farm Containment

General Conditions

There is water ponding in the bottom of the containment confirming the integrity of the liner. This ponding of water is now well above the cover on the bottom of the containment. (6” to 8”)

Stability

All work appears to have been completed in accordance with drawings and we have no concerns with the stability of this containment structure.

3.14 Quarry (QMR2)

General Conditions

The quarry has well defined benches. The quarry faces at the benches are clean on the lower lift. Where blasting occurred in the late fall, the edges and back slopes are well protected with large rocks. (2’ x 3’)

Recommendations

We have no recommendations with respect to the manner in which quarrying is being carried out.

3.15 Crusher Pad Drainage Containment

General Conditions

The crusher pad has been increased in size. A catchment channel has been created to conduct water from the large pad to the drainage containment. Water from the containment is now pumped to an outfall.

Stability

The structure has been completed in a most satisfactory manner.

Recommendations

We recommend that the drainage ditch at the edge of the new pad expansion be revised slightly to provide a uniform gradient to this ditch

3.16 Waste Stockpile Drainage Containment

Stability

The dyke appears stable at this time.

This particular structure has now been totally completed.

Water from the sides of the drainage area is collected below the catchment pond and pumped back to the pond.

Water from the pond is now pumped back to a pH adjustment facility and then pumped to the watershed as in past years.

A leak is now apparent from the pond and water is currently percolating through the soil under the dyke. From our observations, we suspect a leak through a welded joint in the liner. This could possibly be at the location where the liner is folded at the interior base of dyke. Further investigation is required.

As the percolation points are not particularly close to each other, there could be more than one leak.

3.17 Jet “A” Fuel Containment

General Conditions

This cell was constructed to replace the containment structure near the Weatherhaven Camp.

This cell now contains two double walled tanks and is located north of the air terminal buildings.

Stability

The cell was constructed using a one piece enviroliner with geotextile and was constructed in accordance with standardized drawings prepared in the past for such construction by our office.

There is water ponding in the bottom of the cell confirming the integrity of the liner.

There were no signs of cracking of the dykes.

Recommendations

We have no recommendations with respect to this structure.

3.18 Hazardous Waste Containment (MS-HWB-6)

General Conditions

It is located near the incinerator and is utilized to store barrels of ash from the incinerator.

Stability

The cell was constructed utilizing a one piece enviroliner with geotextile and was constructed in accordance with standardized drawings prepared in the past for such construction by our office.

There is water ponding in the bottom of the cell confirming the integrity of the liner. There are tears in the enviroliner noted with 3 in the west side and one in the south east corner. All waste is in barrels or totes and is contained.

There were no signs of cracking of the dykes or seepage around the exterior of the dykes.

Recommendations

We have no recommendations with respect to this structure other than making repairs to the damaged enviroliner. There are four tears in the side of the liner that should be repaired if use is to continue as we understand it shall. The side dykes should be also built up to keep traffic off them.

3.19 Overview

This report is the annual Geotechnical Inspection at Mary River and Milne Inlet completed by Barry H. Martin on behalf of Baffinland Iron Mines Corporation and will cover the first of two inspections occurring in the 2018 shipping season. This will be the ninth year of annual geotechnical inspection.

As set out in our past reports, there has been little or no erosion taken place from wind or rain and the dykes constructed of the sand/gravel soil have remained stable at slopes of 3:1 and 4:1.

As noted last year, there are signs of settlement appearing at PSWP's 1, 2 and 3. The settlements are not differential settlements of the dykes but are minor overall settlements of the total structures with respect to the surrounding area.

These settlements appear to be settlements within the one metre ± active layer above the permafrost and are of little concern as the PWSP's are temporary structures and the settlements have no effect on the dyke stability.

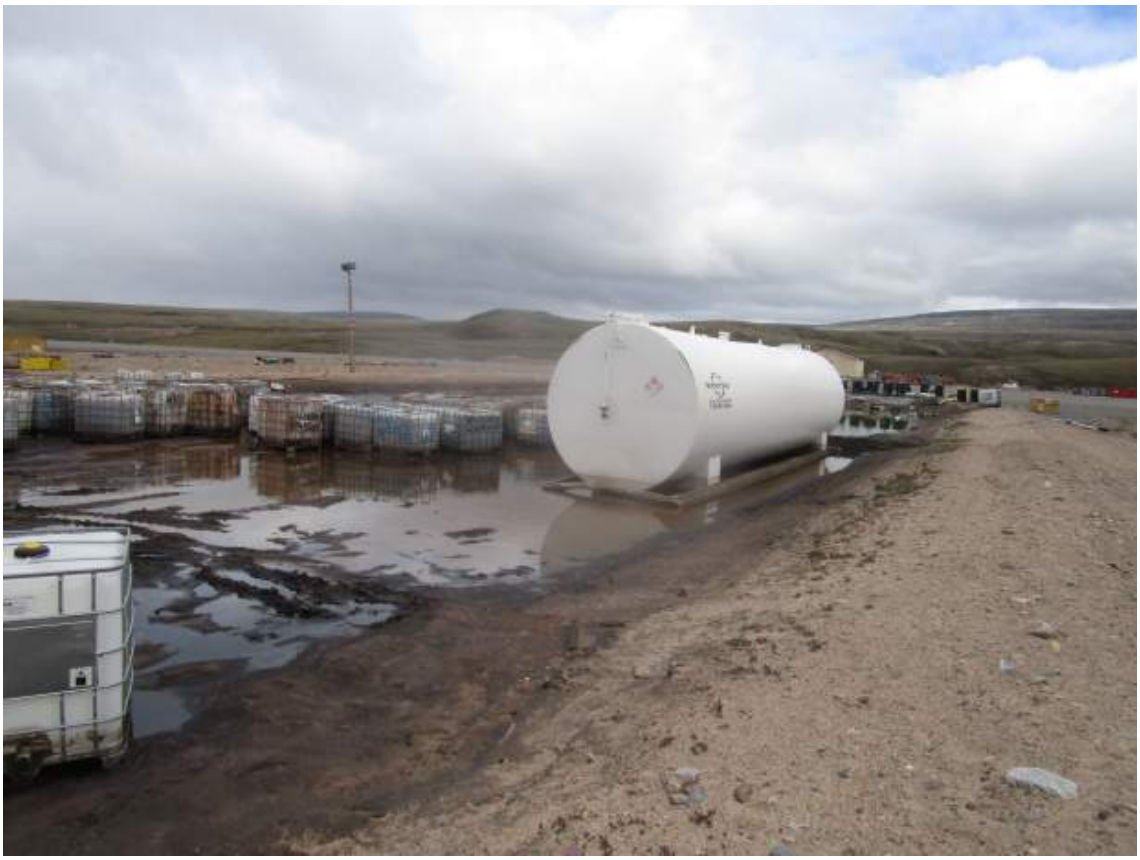
A number of these structures at Mary River are awaiting the construction of a land farm to facilitate the disposal of contaminated granular fill from the bottom of containment cells.

We recommend that where clear water has collected from rainfall and no contamination exists the water be decanted.

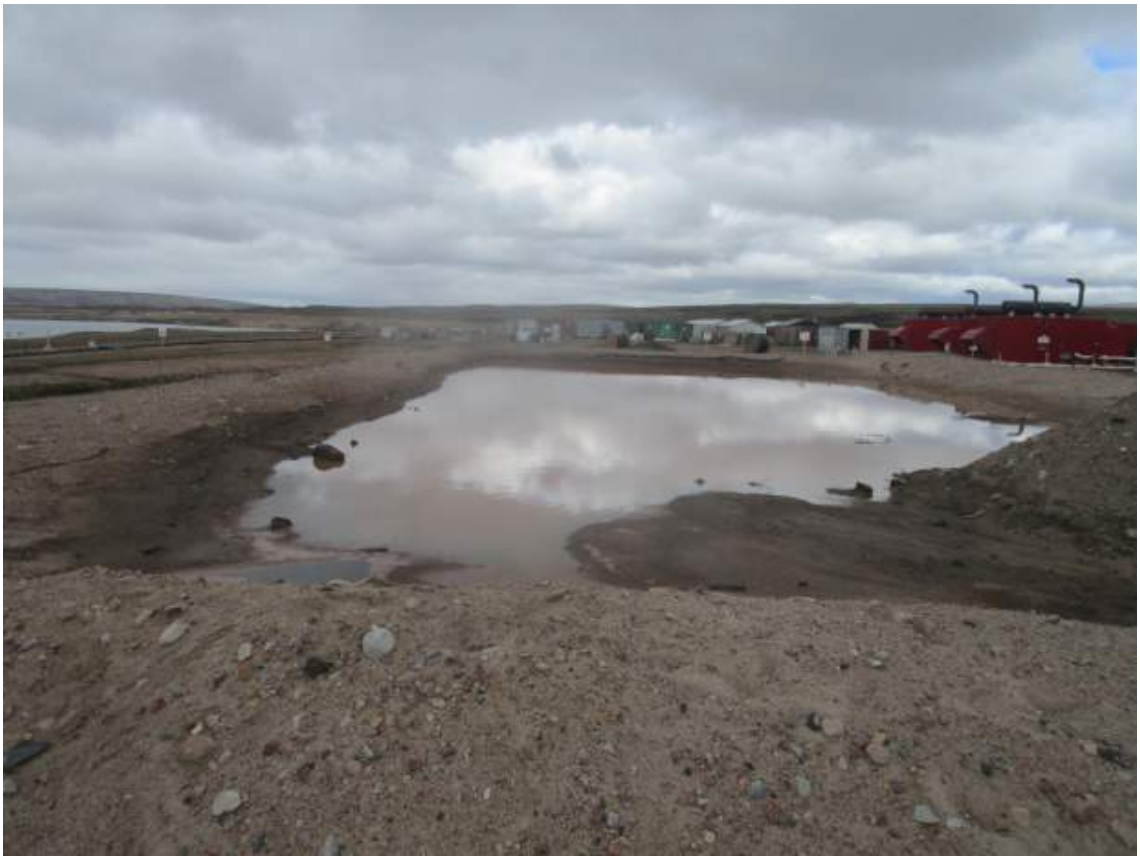
We recommend that where clear water has collected from rainfall and no contamination exists that the water be decanted.

We particularly reviewed the liner membrane where it was exposed. We found no degradation of the liner from exposure.

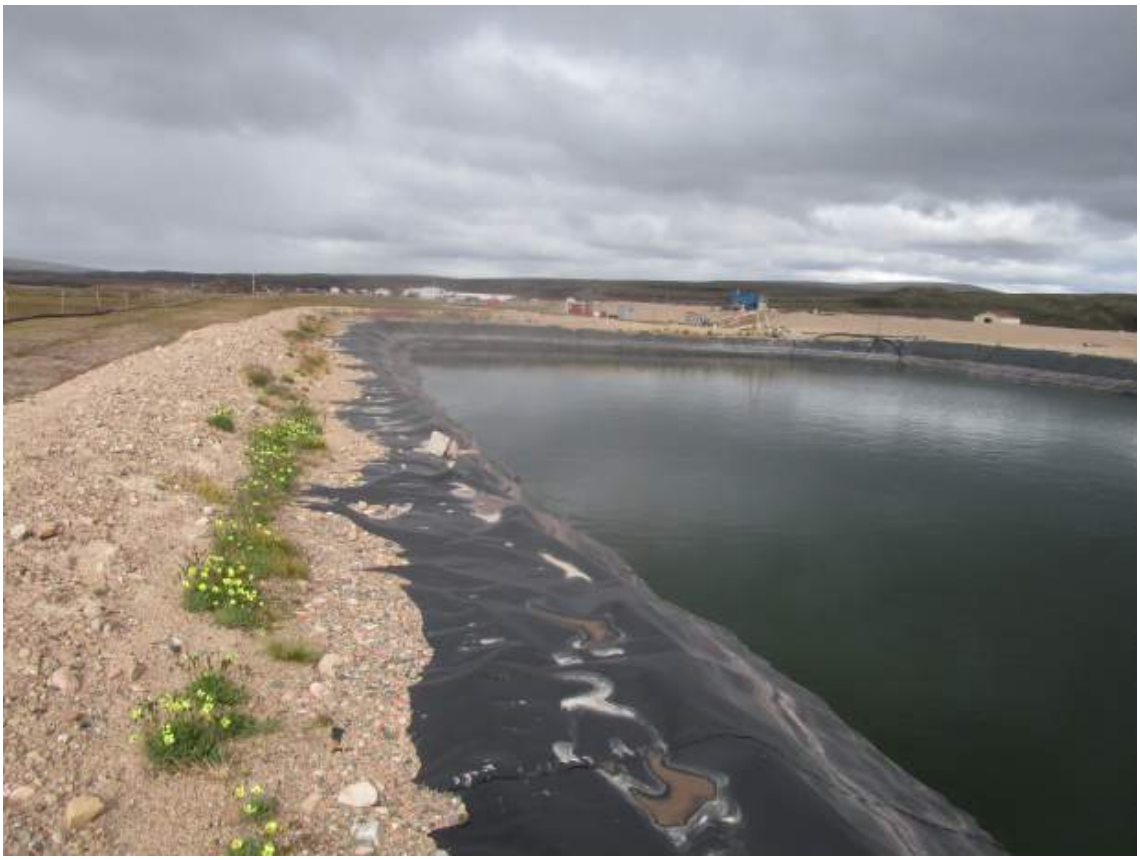
MARY RIVER PHOTOS



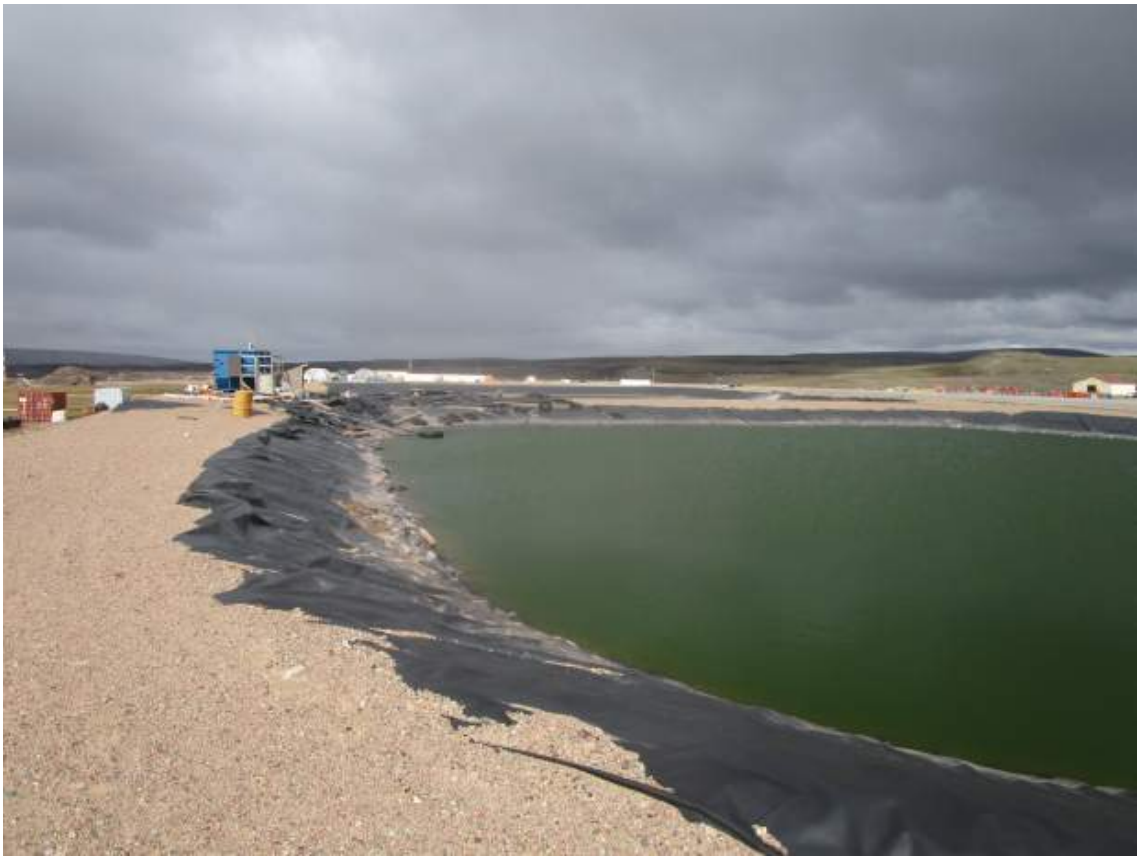
1. Bulk Fuel Storage Facility.



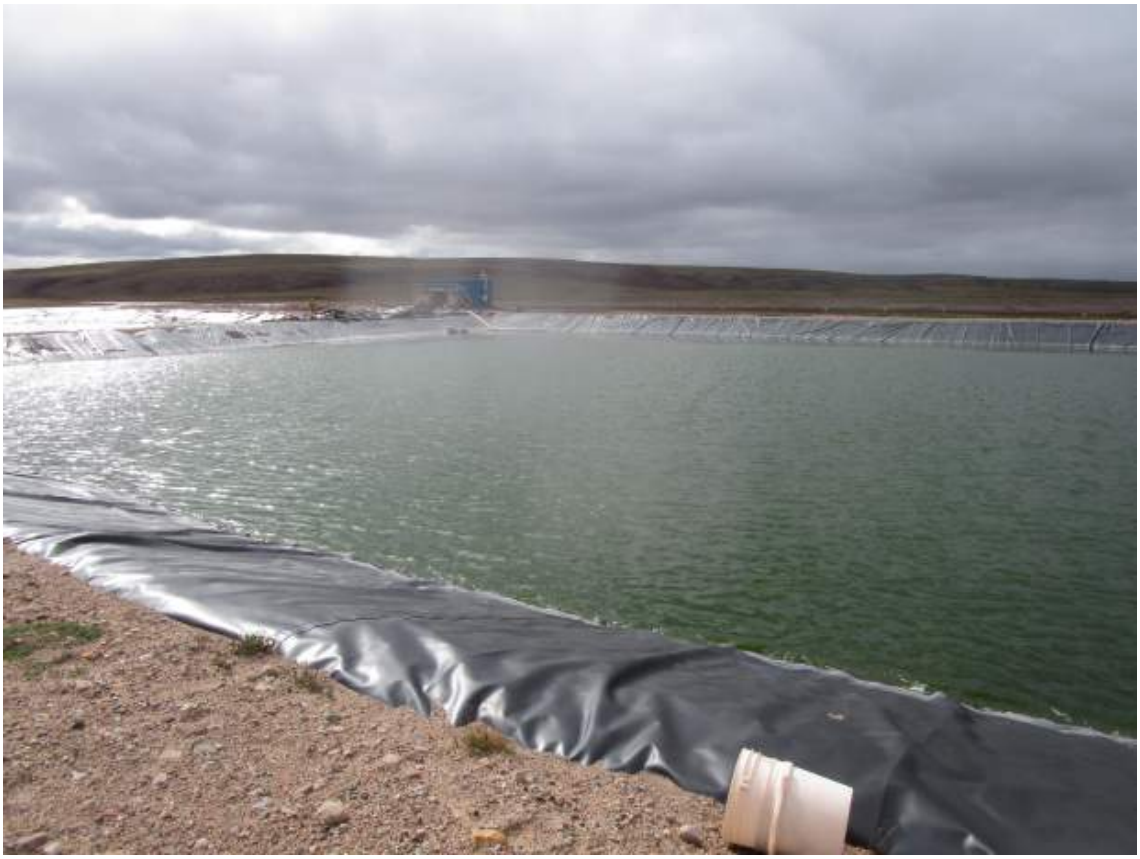
2. Generator Fuel Storage Containment.



3. PWSP #1



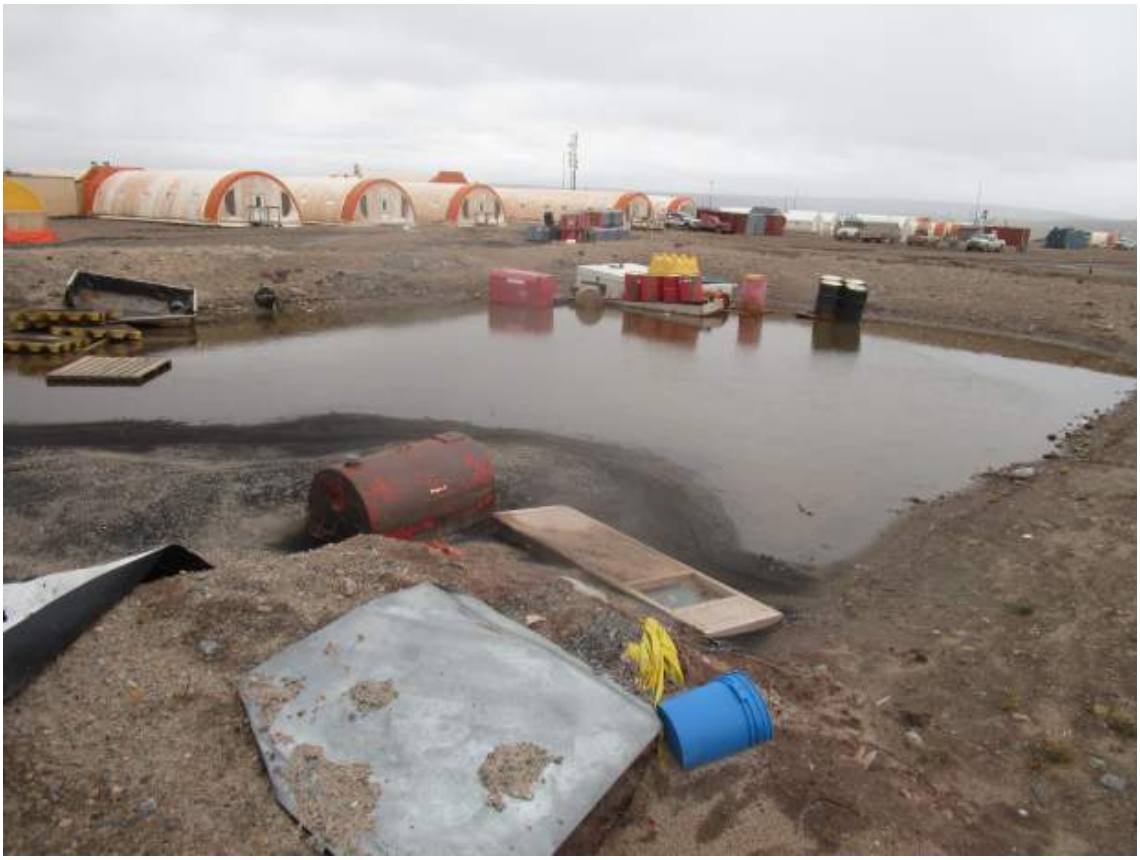
4. PWSP #2



5. PWSP #3

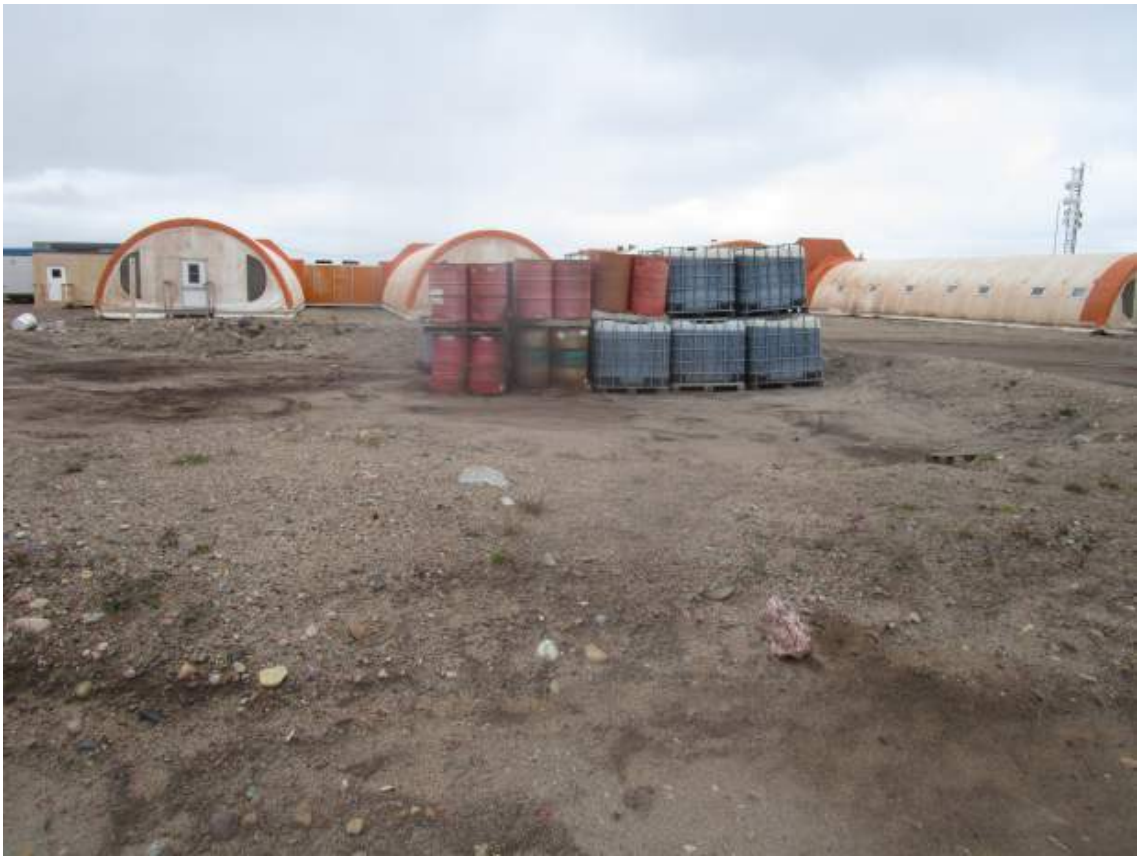
6. Helicopter Fuel Cell Containment

7. Barrel Fuel Containment (MS-HWB-3 and MS-HWB-4)



8. Hazardous Waste Storage (MS-HWB-2)

9. Enviro-Tank Storage

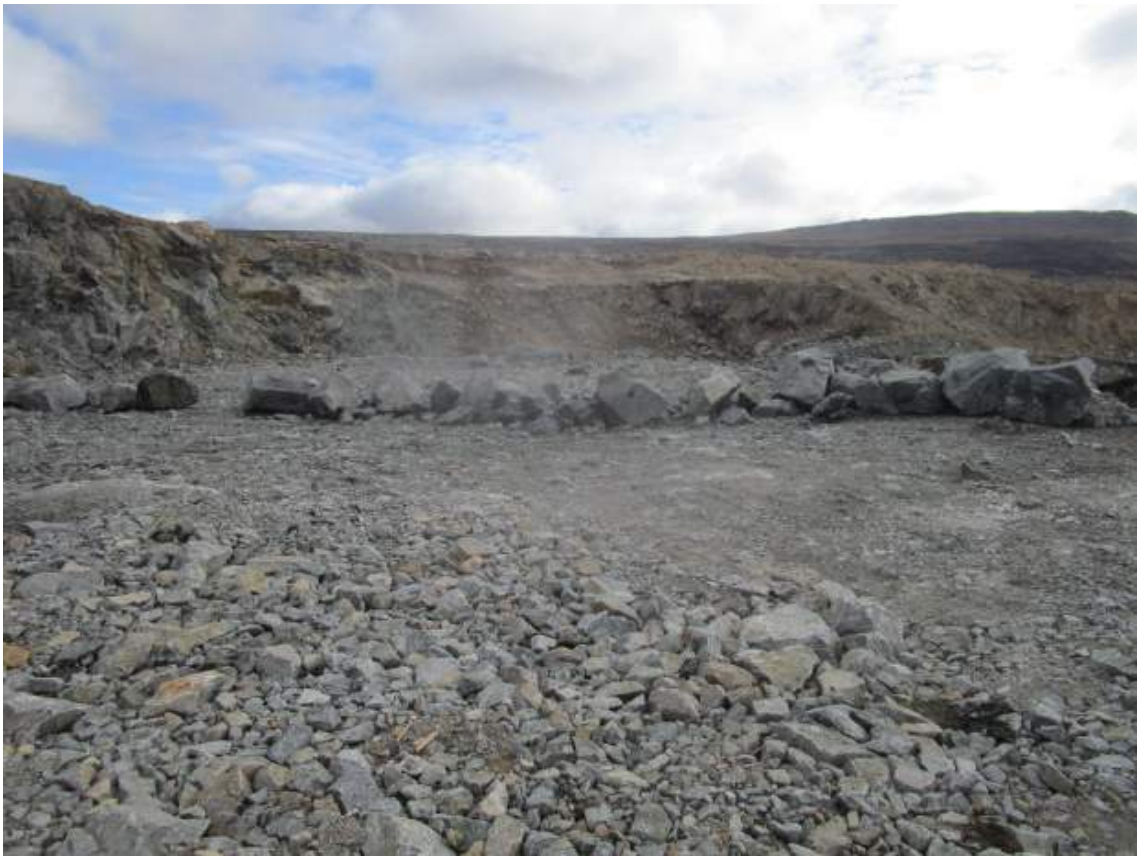


10. Stove Oil Storage (MS-HWB-5)

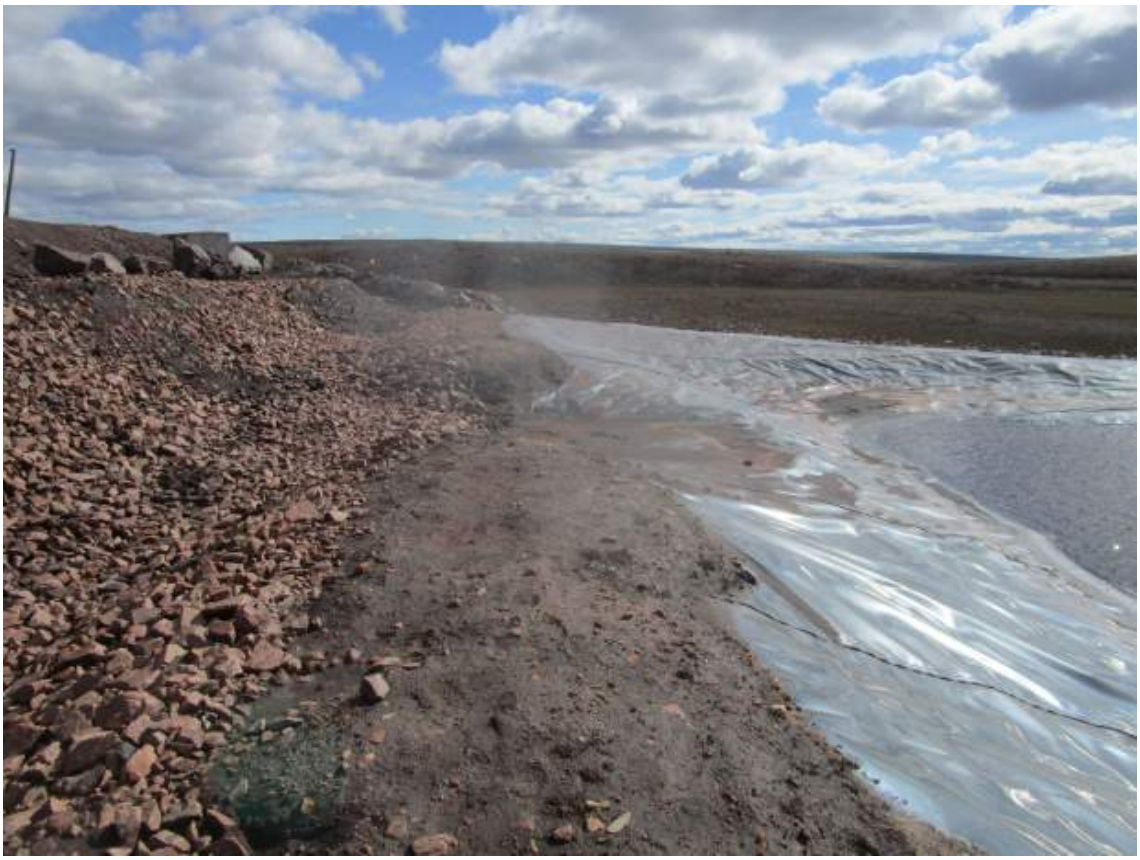
11. Jet Fuel Pump and Tank Containment

12. Solid Waste Disposal Site

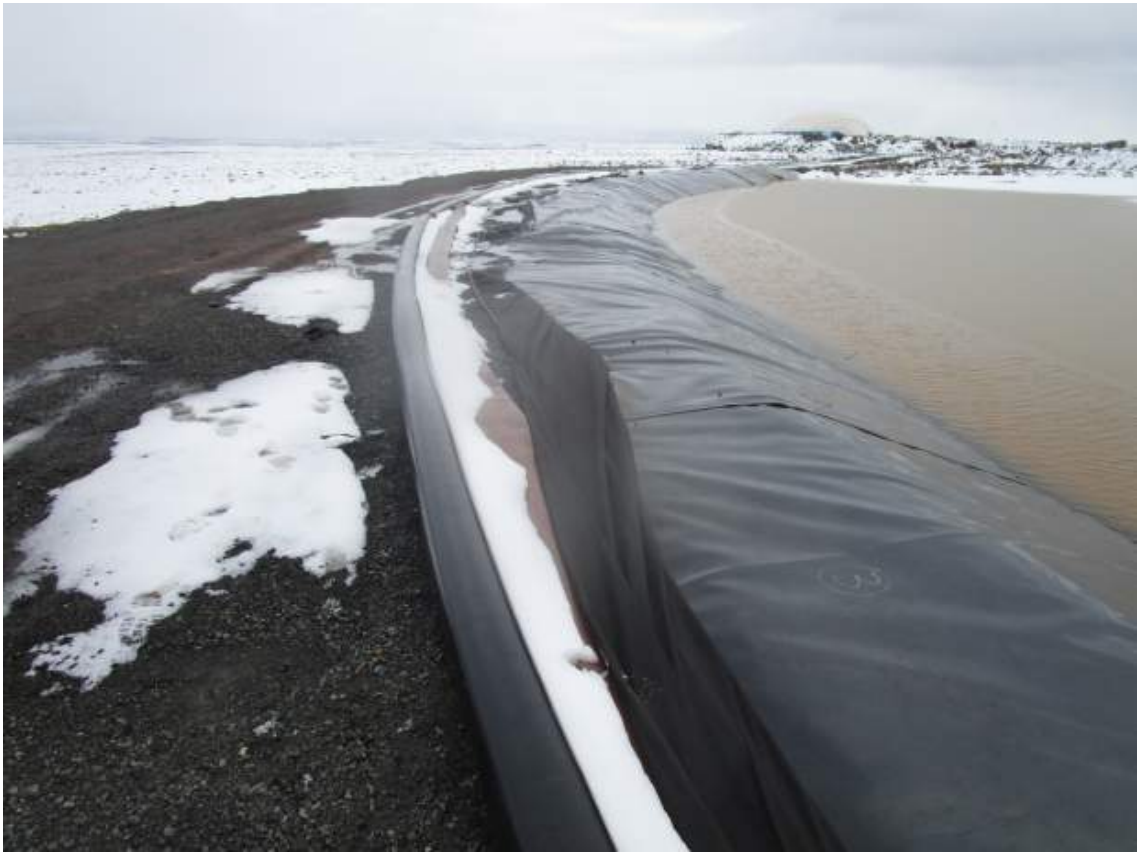
13. Fuel Farm Containment (Mary River)



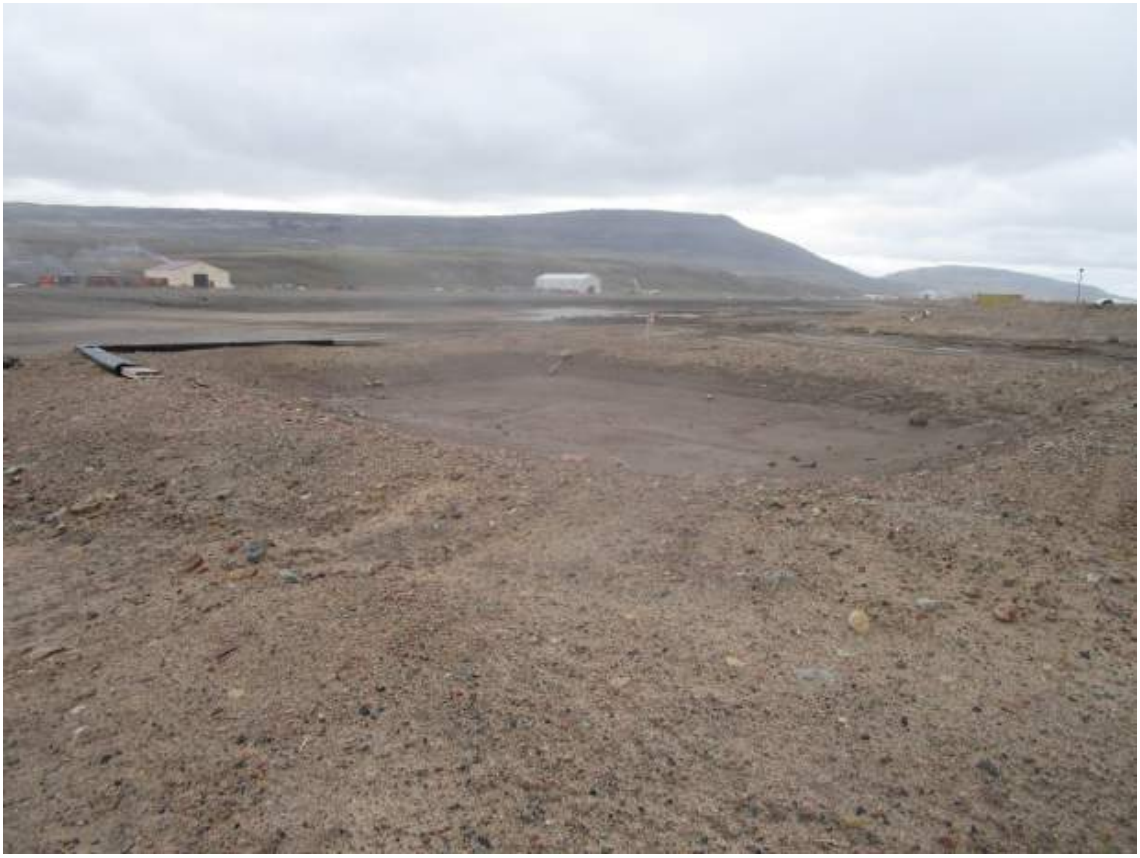
14. Quarry (QMR2)



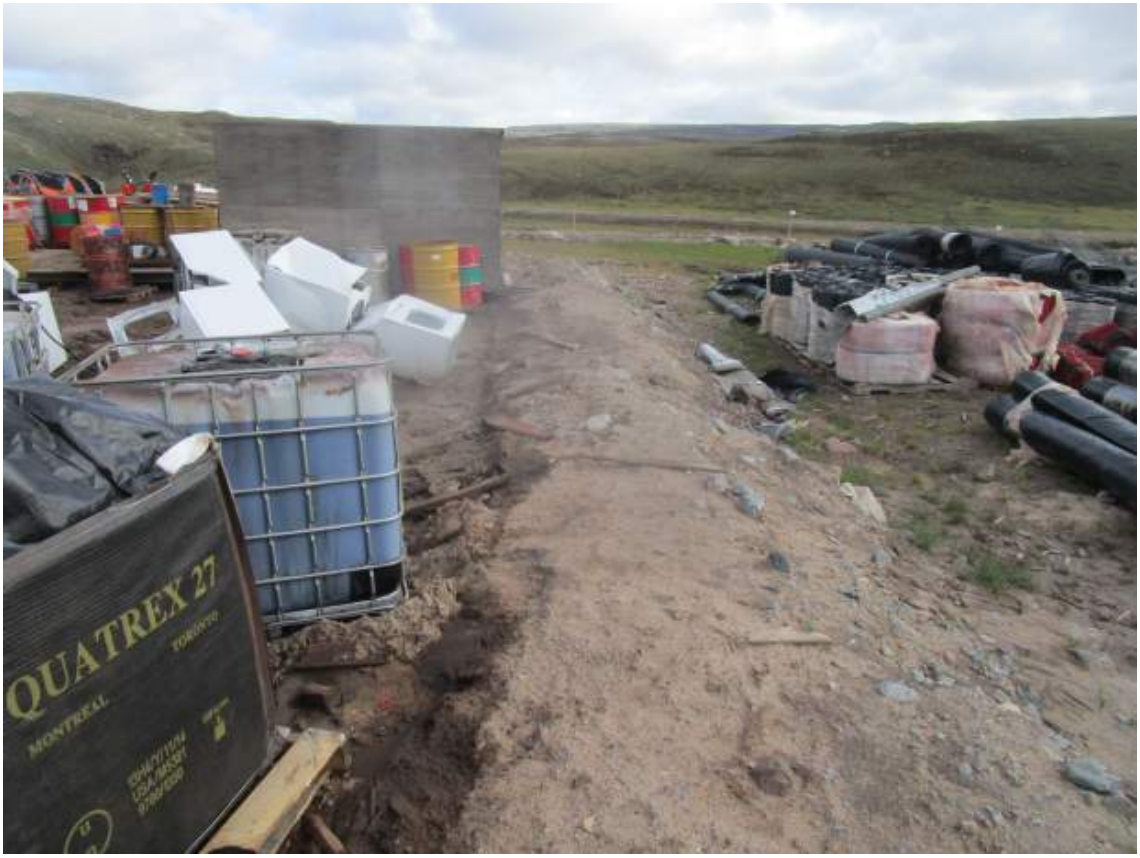
15. Crusher Pad Drainage Containment



16. Waste Pile Drainage Containment

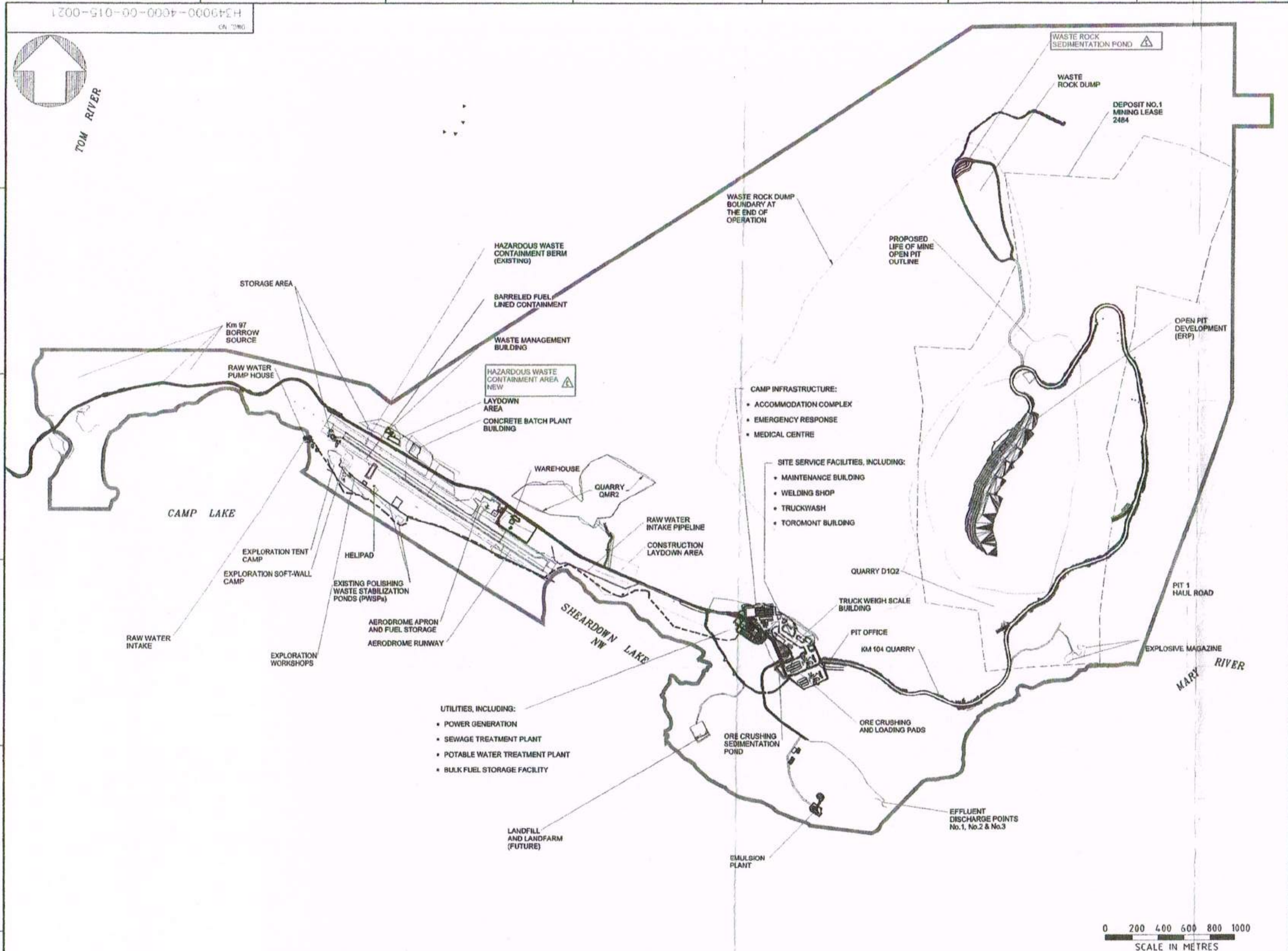


17. Jet ‘A” Aircraft Containment



18. Hazardous Waste Containment (MS-HWB-6)

MARY RIVER DRAWINGS


TOM RIVER
CAMP LAKE
SHEARDOWN NW LAKE
MARY RIVER
WASTE ROCK SEDIMENTATION POND
WASTE ROCK DUMP
DEPOSIT NO.1 MINING LEASE 2484
WASTE ROCK DUMP BOUNDARY AT THE END OF OPERATION
PROPOSED LIFE OF MINE OPEN PIT OUTLINE
OPEN PIT DEVELOPMENT (ERP)
HAZARDOUS WASTE CONTAINMENT BERM (EXISTING)
BARRELED FUEL LINED CONTAINMENT
WASTE MANAGEMENT BUILDING
HAZARDOUS WASTE CONTAINMENT AREA NEW
LAYDOWN AREA
CONCRETE BATCH PLANT BUILDING
STORAGE AREA
Km 97 BORROW SOURCE
RAW WATER PUMP HOUSE
WAREHOUSE
QUARRY QMR2
RAW WATER INTAKE PIPELINE
CONSTRUCTION LAYDOWN AREA
CAMP INFRASTRUCTURE:
• ACCOMMODATION COMPLEX
• EMERGENCY RESPONSE
• MEDICAL CENTRE
SITE SERVICE FACILITIES, INCLUDING:
• MAINTENANCE BUILDING
• WELDING SHOP
• TRUCKWASH
• TOROMONT BUILDING
QUARRY D1Q2
TRUCK WEIGH SCALE BUILDING
PIT OFFICE
KM 104 QUARRY
PIT 1 HAUL ROAD
EXPLOSIVE MAGAZINE
EXPLORATION TENT CAMP
EXPLORATION SOFT-WALL CAMP
HELIPAD
EXISTING POLISHING WASTE STABILIZATION PONDS (PWSPs)
AERODROME APRON AND FUEL STORAGE
AERODROME RUNWAY
RAW WATER INTAKE
EXPLORATION WORKSHOPS
UTILITIES, INCLUDING:
• POWER GENERATION
• SEWAGE TREATMENT PLANT
• POTABLE WATER TREATMENT PLANT
• BULK FUEL STORAGE FACILITY
ORE CRUSHING SEDIMENTATION POND
ORE CRUSHING AND LOADING PADS
EFFLUENT DISCHARGE POINTS No.1, No.2 & No.3
LANDFILL AND LANDFARM (FUTURE)
EMULSION PLANT
0 200 400 600 800 1000
SCALE IN METRES

DWG. NO. H349000-4000-00-015-0021

MILNE PORT

MINE SITE

KEYPLAN

FOR INFORMATION

NOTES:

1. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
2. 2016 WORK SHOWN IN RED TEXT.

LEGEND:

WATER — QUARRY — BORROW AREA — ROAD — RIVER/STREAM/DRAINAGE — RAW WATER INTAKE PIPELINE — COMMERCIAL LEASE — PROJECT DEVELOPMENT AREA

REV	ISSUE FOR	AUTH BY	DATE
C	ISSUED FOR USE	M.B. J.B.	2015-10-15
B	ISSUE FOR USE	S.M. T.M.	2014-12-18
A	ISSUE FOR USE	C.L. A.G.	2014-10-31

ISSUE AUTHORIZATION

HATCH

DESIGNED BY C. LEISTNER DATE 2014-10-21 — DRAWN BY J. BAJAGIC DATE 2014-10-21
CHECKED BY S. POTTER DATE 2014-10-21 — DISCIP. ENGR. A. GRZEGORCZYK DATE 2014-10-21
PROJ. DES. COORD. T. THERTELL DATE 2014-10-21 — PROJ. ENGR. J. CLELAND DATE 2014-10-21
PROJ. MGR. J. CLELAND DATE 2014-10-21

Baffinland

MARY RIVER PROJECT

MINE SITE
INFRASTRUCTURE FOOTPRINT
WORK PLAN 2016

SCALE 1:15000 — DWG. NO. H349000-4000-00-015-0021 — REV C

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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4.0 MILNE INLET

4.01 General

There are still changes taking place at Milne Inlet, even since our previous inspection in September/October of last year.

4.02 Hazardous Waste Storage (MP-HWB-3 and MP-HWB-4)

General Conditions

This particular structure has been constructed as a two-cell structure and is still only utilized to store sea cans that contain scraps of enviroliner and geotextile removed from the decommissioning of the exploration phase bulk fuel bladder farm.

A new hazardous waste storage facility has been constructed near the loadout area for storing hazardous waste to be shipped out and is in full operation. As in a former report, MP-HWB-5 is now decommissioned.

Stability

There is water ponding in both cells of the original structure, confirming the integrity of the enviroliner at this time.

Our review of the area around the dykes, at the base of the slopes, showed no sign of seepage. The structure is considered stable.

Recommendations

We have no recommendations with respect to the use of these two cells at this time.

4.03 Fuel Tank Farm

General Conditions

Since both 2012 and 2013 the fuel tank farm has been expanded considerably with the addition of a number of new tanks. Another tank has been constructed since the last inspection.

Two sumps have been installed in the north end (low end) of the containment. Water is currently ponding in the low end of the containment, confirming the integrity of the enviroliner.

This water is currently 6” to 10” in depth.

Stability

All containment dykes are in excellent condition and there are no signs of weakness.

Recommendations

We have no recommendations with respect to the containment at this time.

4.04 New Effluent Pond (PWSP)

General Conditions

This pond was put into operation in 2014.

The containment pond was operating at fifty percent of capacity at the time of our inspection.

Stability

We noted no sign of weakness in any of the construction.

Recommendations

We have no recommendations with respect to the use of this structure

4.05 Landfarm Containment

General Conditions

The landfarm containment is complete except for soil cover on the dykes in the area of the sump.

The landfarm was constructed to accommodate approximately 9000 m^3 of oil contaminated soil and seasonal water accumulation.

At the time of our inspection the landfarm was in operation and sorting of contaminated materials had taken place. Since our last inspection, there is still minor sorting to take place including the removal of waste and contaminated waste.

There is still some contaminated waste in the landfarm in addition to contaminated soil. No land farming or treatment of contaminated soil has taken place.

It appears the structure has been constructed in accordance with good construction practice for structures of this type.

Stability

The structure appears stable as constructed. There has been some minor settlement at the north top side of the dyke.

Recommendations

We recommend that the remaining dyke structure without protective cover over it be covered as per the design drawings. This however, is not an absolute requirement. Since our last inspection, the exposed liner has been covered with a non-woven geotextile but has not been covered with soil.

4.06 Contaminated Snow Containment

General Conditions

The construction of the contaminated snow containment structure is contiguous with the east end of the landfarm.

It appears as though the structure has been constructed in accordance with good construction practice for structures of this type.

The snow containment facility has a containment volume of 929 m^3 based on estimates of volume

The structure has been constructed with good quality control.

Stability

The structure appears stable as constructed.

Recommendations

We have no recommendations with respect to this construction at this time. The structure appears as it did in our September/October review in 2017.

4.07 Sediment Pond East

General Conditions

The construction of this sedimentation pond for drainage from the east side of the ore pad is complete.

The basin is shaped and the liner has been installed throughout the basin from inlet to the berms on the north side of the basin.

There has been no cover placed over the liner to this point although some tire ballast has been placed over the liner on the north side.

The two inlets to the pond have recently been upgraded and the enviroliner repaired at these locations. It is performing well, particularly at the culvert entrance.

Stability

We have concerns over the stability of the liner on this pond and recommend possibly further tire ballast over the liner which appears possibly subject to wind damage. This shall provide a function for used tires

Recommendations

We further recommend review of the use of a ballast (possibly tires) on the exposed liner at the dyke to prevent wind uplift. I do note that there is no deterioration of the exposed liner.

4.08 Sediment Pond West

General Conditions

The construction of this sedimentation pond for drainage from the west side of the site is now complete with repairs recommended in our past reports having been completed.

The inlet where the water was being conducted under the liner with gravel has been rectified via reconstruction of the inlet.

Stability

We have some concern over the stability of the liner on this pond as we have with the east pond and further recommend that used tire ballast be further considered.

Recommendations

We have no concerns other than that of possible wind damage to the liner and recommend the use of tires as ballast.

4.09 Quarry (MPQ1)

General Conditions

The quarry was not in operation during our review and has been expanded since our last inspection.

Stability

Rock faces appear stable.

A rock berm has been left in place along the face. I assume this is to contain falling rock during the cleaning of the upper face prior to blasting. This an excellent idea.

Recommendations

We have no recommendations to be made with respect to the quarry.

4.10 Loading Area Contaminated Storage (Now MP-HWB-1)

General Conditions

This area has been constructed near the loading dock to facilitate assembly of hazardous materials for shipment out.

Most hazardous waste has now been removed from the containment and shipped out.

Construction appears to have taken place in accordance with standardized drawings prepared in the past.

Stability

Construction appears stable. However there is one exposed tear in the liner at the dyke that requires repair. This was noted last year and awaits repair. This tear is where travel took place over the berm on the north side of the structure.

Recommendations

We have no recommendations with respect to this structure other than the liner repair.

4.11 Fuelling Facility Containment

General Condition

A new fueling facility for the fueling of B trains has been constructed utilizing design drawings prepared by our office for a double fueling facility.

Work conforms to the design drawing. However, I note that "mud" and the like apparently has been falling from the underside of trucks and trailers to an extent where it is now filling the void set aside to contain a fuel spill.

4.13 Recommendations

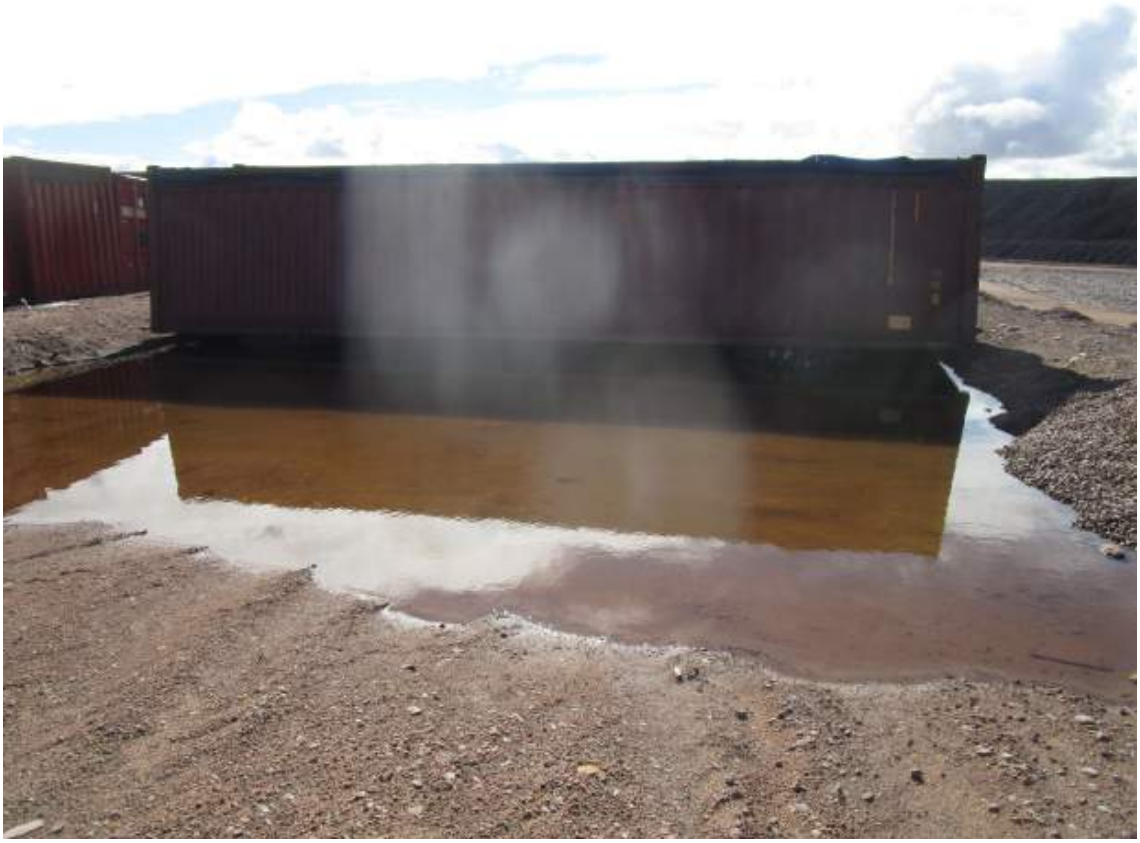
We recommend that 4" to 6" this "mud" be removed without disturbing the gravel layer over the liner at the base of the structure or the liner in both sides of the fuel tank.

4.12 Overview

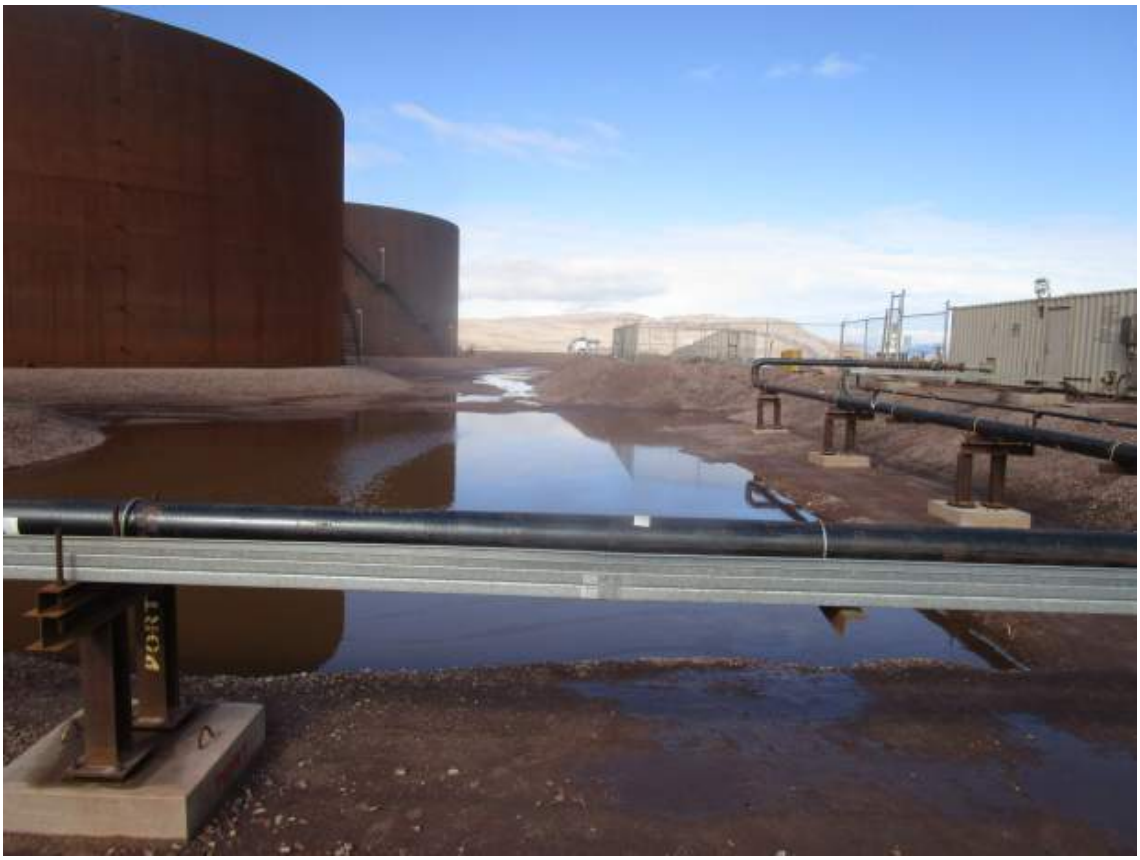
Work on containment structures except for maintenance appears complete.

Barry H. Martin, P. Eng., MRAIC

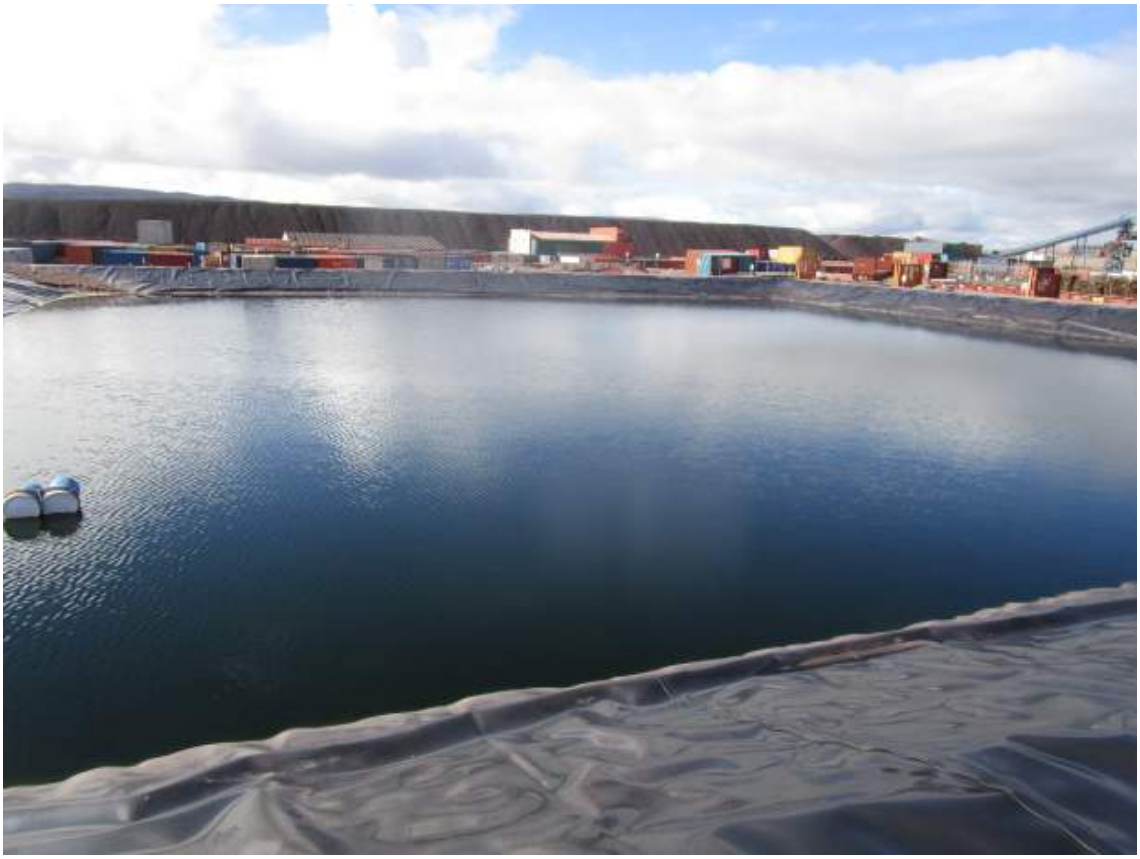
MILNE INLET PHOTOS



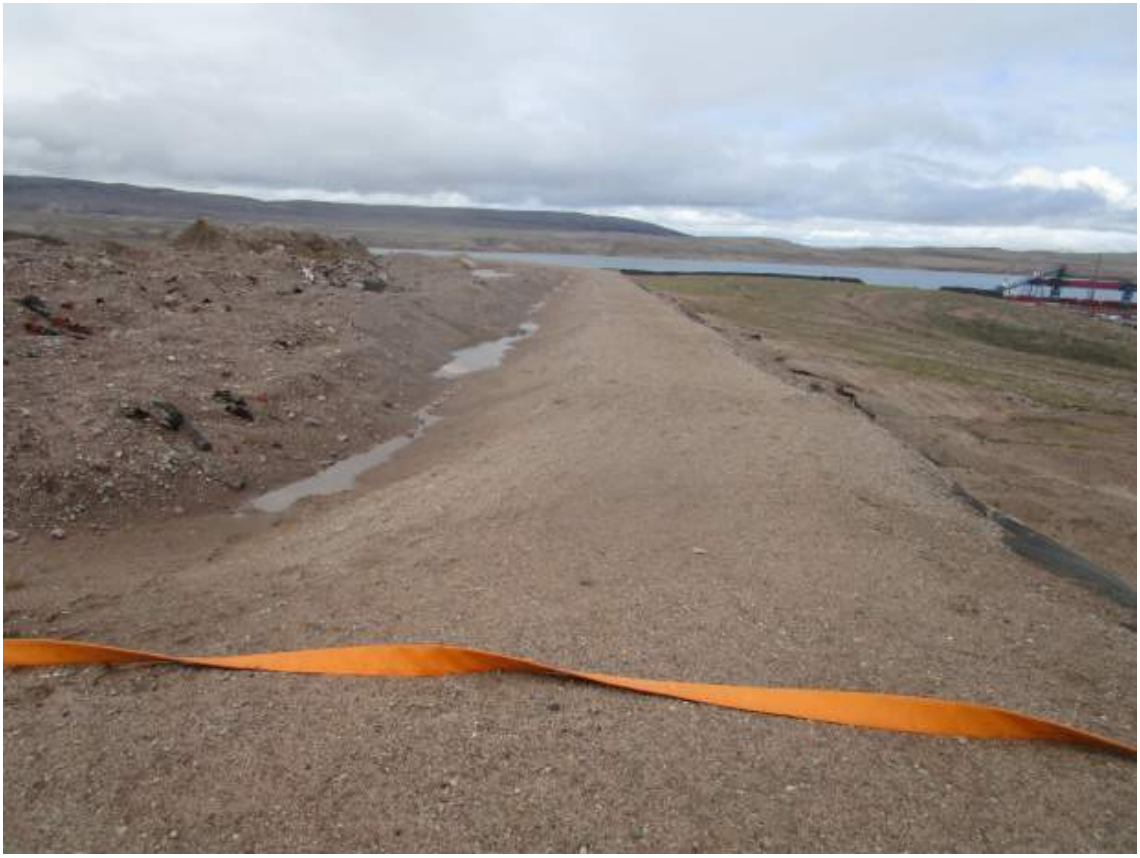
1. Hazardous Waste Storage (MP-HWB-3 and MP-HWB-4)



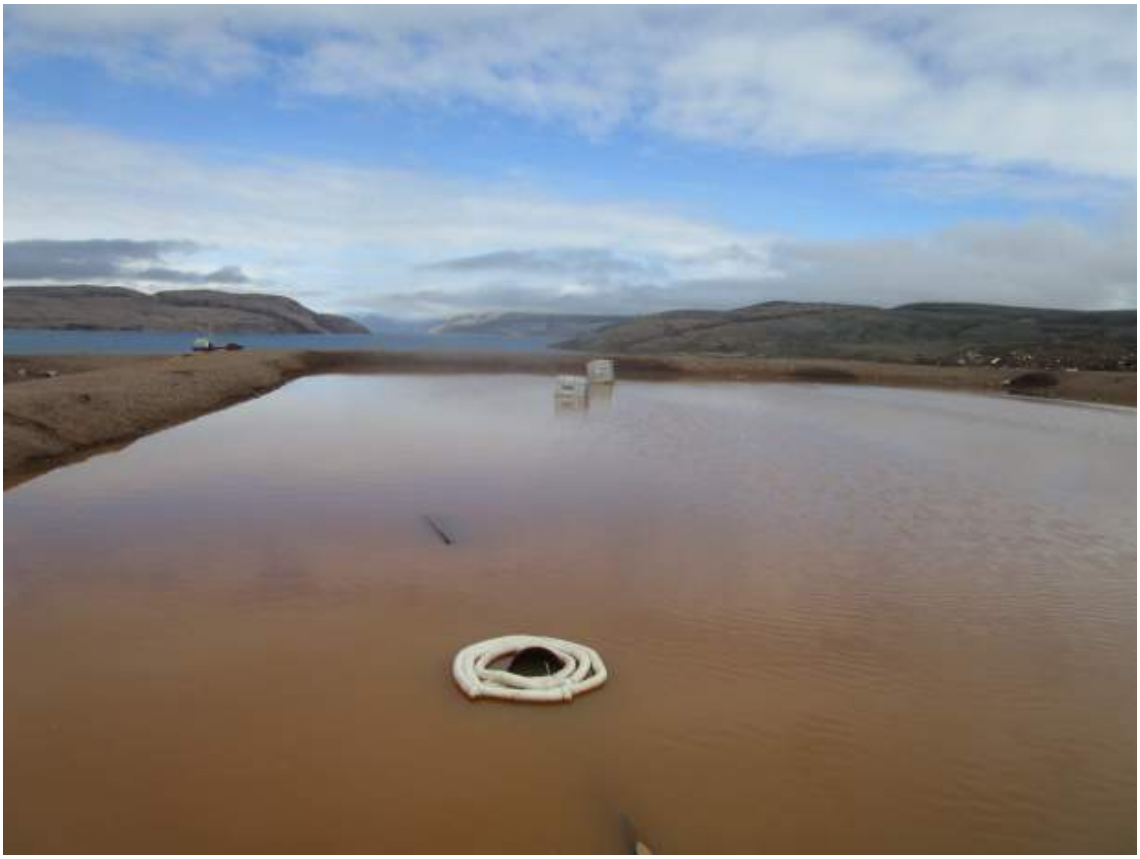
2. Port Site Fuel Tank Farm



3. Polishing/Waste Stabilization Pond (PWSP)



4. Land Farm Containment



5. Contaminated Snow Containment

6. Sediment Pond West

7. Sediment Pond East

8. Quarry (MPQ1)

9. Loading Area Contaminated Storage (MP-HWB-1)

10. Fueling Facility Containment

MILNE INLET DRAWINGS

H349000-2000-00-015-0021

MILNE INLET

AANDC NUNAVUT LEASE 47H/16-1-2

SHIPLOADER

ORE DOCK

ORE STOCKPILE SETTLING PONDS

FUTURE AIRSTRIP

ORE STOCKPILE PAD

ADDITIONAL LAYDOWN AREA

POTABLE WATER SUPPLY

CONVERT EXISTING CONCRETE BATCH PLANT BUILDING TO MAINTENENACE BUILDING

PHILLIPS CREEK

FUTURE POLISHING WASTE STABILIZATION POND

TOTE ROAD

SEALIFT BARGE LANDING AREA

RAMP TO BEACH

FUEL TANK FARM

EFFLUENT DISCHARGE LOCATION
N 7976341
E 503639

HAZARDOUS WASTE BERMS

LAYDOWN AREA

SERVICES AREA PAD
SITE FACILITIES, INCLUDING:

- MAINTENANCE BUILDING
- WELDING SHOP BUILDING
- WORKSHOP OFFICE BUILDING
- TOROMONT MAINTENANCE BUILDING

POWER GENERATORS

INCINERATOR HAZARDOUS WASTE BERM

POLISHING WASTE STABILIZATION POND

EXISTING HAZARDOUS WASTE BERM

MATRIX CAMP

CAMP INFRASTRUCTURE PAD
SITE FACILITIES, INCLUDING:

- ACCOMMODATION COMPLEX
- EMERGENCY RESPONSE OFFICE
- EMERGENCY RESPONSE GARAGE
- SEWAGE TREATMENT PLANT
- POTABLE WATER TREATMENT PLANT
- WASTE MANAGEMENT FACILITY

LAND FARM

ROCK QUARRY N0.1 BOUNDARY

EXTENT OF QUARRY Q1

PERMITTED OPEN BURN PIT AREA

KM2 BORROW AREAS

EXISTING HTO CABIN

MILNE PORT

MINE SITE

KLYP_AN

FOR INFORMATION

NOTES:

1. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
2. 2016 WORK SHOWN IN RED TEXT.

0 50 100 150 200 250
SCALE IN METRES

LEGEND:

- WATER
- QUARRY
- COMMERCIAL LEASE
- AANDC LEASE 47H/16-1-2
- RIVER/STREAM/DRAINAGE
- ROAD
- PROJECT DEVELOPMENT AREA
- BORROW AREAS

REV.	ISSUE FOR	AUTH. BY	DATE
D	ISSUED FOR USE	M.R.	J.B. 20'5.10.15
C	ISSUE FOR USE	S.N.	T.M. 20'4-12-10
B	ISSUE FOR USE	C.L.	T.M. 2014-10-31
A	ISSUE FOR USE	C.L.	A.G. 2014-06-19

ISSUE AUTHORIZATION

HATCH

DESIGNED BY C. LEISTNER DATE 2014-10-20
DRAWN BY J. BAJAGIC DATE 2014-10-20
CHECKED BY S. POTTER DATE 2014-10-20
DISCIP. ENGR. A. GRZEGORCZYK DATE 2014-10-20
PROJ. DES. COORD. T. THERTELL DATE 2014-10-20
PROJ. ENGR. J. CLELAND DATE 2014-06-19
PROJ. MGR. J. CLELAND DATE 2014-06-19

Baffinland

MARY RIVER PROJECT

MILNE PORT
INFRASTRUCTURE FOOTPRINT
WORK PLAN 2016

SCALE 1:5000 OR AS NOTED

DWG. NO. H349000-2000-00-015-0021

REV. D