Agnico Eagle Mines
Meliadine Environment Department

Freshet Inspection Report

Location: Mine Site, Exploration Camp

Owner: Sites Services/Environment

DATE :	2019-05-04	Inspected By :	MG, RS

Applicable Management Plans:
- Freshet Action Plan – March 2019 – Version 5

Applicable Licence
- Water Licence No: 2AM-MEL1631 – April 2016

Exploration Camp Area & Road

Specific Risks:
- TSS transport from core stockpile
- TSS transport across road
- Snow pad and runoff at the back of Explo towards Mel. Lake
- TSS transport on downstream end of J1 Culvert towards Mel. Lake
- Ensure snow storage and padding is done in designated area

Observations:

- Snow piles located around exploration camp wings.

Mitigation Measures:
- Snow piles located around exploration camp wings should be padded out as per the Snow Management Procedure. This will prevent drifting upon the unlikely occurrence of a blizzard and will encourage sublimation and minimize potential for incision into the tundra upon runoff. This is a low priority item relative to others on this inspection.

Pictures No.: 1

Exploration Camp Road to Portal No. 1

Specific Risks:
- Ponding and runoff (erosion potential) across road from temporary stockpile to P3
- Ensure snow storage and padding is done in designated area

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Landfarm B and Fuel Farm B

Specific Risks:
- Water level within berm (i.e., required pumping)
- Seepage through berm
- Excessive snow amongst fuel tanks causing high runoff adjacent to Landfarm B

Observations:

- The large snow banks located in front of Landfarm B (photo 2) will likely flow across the road and may result in a washout and TSS movement to pond J5.

Mitigation Measures:

- To prevent this, the snow should be moved across the road and padded out in the current snow pad. Moving this snow will also provide access to the Landfarm B containment area, which will require pumping the same as it did last year. The **pumping will need to be carried out to ensure that water levels do not exceed the top of the berm**.
- In order to prevent the volume of pumping required from the Landfarm B berm, we suggest removing the snow drifted within the bermed area (photo 3). As this snow is not in contact with contaminated material, it could be deposited in the snow pad area across the road. Once water is melted within the bermed area it will need to be pumped and transported to the snow cell (or Landfarm A if the snow cell becomes full).
- These actions are a **high priority** relative to others on this inspection.

Pictures No.: 2 and 3

SP1

Specific Risks:
- Slumping or failure of bedrock and overburden walls
- Slumping, erosion, or cracking of downstream berm
- Ensure no unplanned inputs
- Water levels exceeding lowest bedrock elevation

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

SP2

Specific Risks:
- Slumping or failure of bedrock and overburden walls
- Ensure no unplanned inputs

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

D-CP5/CP5

Specific Risks:
- Water levels approaching toe of dike
- Ponding in D-CP5 trench
- Ensure snow is cleared from downstream toe to ensure no seepage to key trench
- Seepage through the downstream dike slope
- Ensure no unplanned inputs

Observations:

- Snow on downstream side of D-CP5 should be cleared prior to freshet in order to minimize required pumping from the trench to CP5. The snow should be placed in a designated snow storage or snow pad area. If this is not easily accomplished, snow can be placed in CP5.

Mitigation Measures:

Pictures No.:

Channel 5

Specific Risks:
- Blockages in channel
- Slope failure
- Water levels flooding back and impounding against Berm 3
- Inflows to channels on site which are not part of the water management system

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Berm 3

Specific Risks:
- Slumping, cracking or erosion of berm
- Pooling at upstream toe and resultant seepage through berm
- Flow along downstream toe of berm - TSS entrainment

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

P3 and DP3

Specific Risks:
- Seepage under dike trench and toward CP5
- Water levels approaching base of SP3 liner
- Ensure no unplanned inputs

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Fuel Farm

Specific Risks:
- Erosion, slumping, or cracking of perimeter berms
- Sump water level
- Seepage away from containment

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

SP3

Specific Risks:
- Cracking or slumping of SP3 pad/base
- Seepage from containment

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Portal No.1

Specific Risks:
- Channelized flow down the portal
- Significant ponding adjacent to the portal

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

ANFO Plant

Specific Risks:
- TSS transport off of laydown
- Incision of tundra and TSS transport due to snowmelt from snowpad

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

CP4 and Berm-CP4

Specific Risks:
- Water level within CP4 nearing OMM (bedrock elevation)
- Greater than expected TSS transport from WRSF or surrounding area to CP4
- Slumping and cracking of upstream Berm-CP4
- Ensure no unplanned inputs

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Channel 4

Specific Risks:
- Channel is not completed, but initial blasts done
- Slope failure
- Therefore look for TSS migration from blasted area
- Incision due to channelized flow and associated TSS transport
- Inflows to channels on site which are not part of the water management system

Observations:

- No concerns noted. Construction ongoing. If not completed by the time runoff in the area begins, we will need to monitor and sample/install TSS mitigation measures accordingly.

Mitigation Measures:

- Monitor and be ready to install required TSS mitigation measures (i.e., straw logs).

Pictures No.:

P2

Specific Risks:

- Changes or increases in previously observed cracking, slumping, and erosion of DP2-A
- Water levels above OMM
- Ensure no unplanned inputs

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

P1

Specific Risks:

- Changes or increases in previously observed cracking, slumping, and erosion of DP1-A and DP1-B
  Migration of water from DP1-B trench towards CP1 or Portal 2
- Water level in Contaminated Snow Cell
- Ensure no unplanned inputs

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Portal No. 1 Haul Road to Industrial Pad

Specific Risks:
- Ponding along roadside (particularly close to Portal 2)
- Ensure no snow storage outside of designated snow pad areas (P2/P3)

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Portal 2

Specific Risks:
- Any sort of ponding near Portal 2
- Cracking, slumping, and erosion of backfill material

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Culvert 2, 15, 16

Specific Risks:
- Blockages impeding flow
- Damage to in the inlet or outlet which may impede flow capacity
- Ensure no snow cover or snow piles, which would prevent routing of water into or out of the culvert
- Ensure no bed erosion upstream and downstream

Observations:

- No concerns noted. Culvert 2 and outlet of Culvert 16 will need to be cleared prior to freshet, if it does not open up naturally from melt/sublimation.

Mitigation Measures:

Pictures No.:

Channel 1

Specific Risks:
- Blockages impeding flow
- Cracking, slumping, and erosion of rip-rap slopes underneath ramp
- Greater than expected TSS transport
- Prolonged overtopping of banks
- Inflows to channels on site which are not part of the water management system

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Landfill A

Specific Risks:
- Cracking, sluping, and erosion of landfill berm
- Exceesive seepage through landfill berm
- Excessive pooling within landfill (or snow drifted within which will pool upon thaw)

Observations:

- No concerns noted. There is potential for minor pooling in the base of the Landfill but is unlikely to cause seepage and will evaporate.

Mitigation Measures:

Pictures No.:

H15

Specific Risks:
- TSS transport from TSF

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

TSF

Specific Risks:
- Excessive snow/runoff on tailings and resultant flow channeling Ponding water
- Unusual settlement or slumping of waste rock cover
- Integrity of Waste Rock perimeter

Observations:

- No concerns noted. Previous noted impediments to flow (overburden near CP3 and bridge across Channel 3) have been corrected.

Mitigation Measures:

Pictures No.:

Culvert 18

Specific risks :
- Blockages impeding flow
- Damage to in the inlet or outlet which may impede flow capacity
- Ensure no snow cover or snow piles, which would prevent routing of water into or out of the culvert
- Ensure no bed erosion upstream and downstream

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

CP3 and Berm-CP3

Specific Risks:
- Water level within CP3 nearing OMM (bedrock elevation)
- Greater than expected TSS transport from TSF to CP3
- Slumping, cracking, and erosion of upstream Berm-CP3
- Ensure no unplanned inputs

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Channel 3

Specific Risks:
- Bridge constructed (and removed) for waste rock transport – ensure no TSS entrainment in this area
- Blockages impeding flow
- Overtopping of banks
- Inflows to channels on site which are not part of the water management system

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Berm 2

Specific Risks:
- Slumping, cracking or erosion of berm
- Pooling at upstream toe and resultant seepage through berm
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Observations:

- No concerns noted.

Mitigation Measures:
Pictures No.:

Emulsion Plant and Road

Specific Risks:
- Flow across road (take GPS coordinates of significant flow to plan culverts)
- TSS transport to the Environment (install straw logs if flow off site observed)

- Flow from laydown or snow pads towards environment that is causing incision and TSS transport
- Ensure snow is padded off the side of emulsion laydown
- Ensure no snow piles along road
- Blockage of pad drainage ditch

Observations:

- Not observed. Could not reach Dyno on radio for access.

Mitigation Measures:

Pictures No.:

Culvert 13

Specific risks :

- Blockages impeding flow
- Damage to in the inlet or outlet which may impede flow capacity
- Ensure no snow cover or snow piles, which would prevent routing of water into or out of the culvert
- Ensure no bed erosion upstream and downstream

Observations:

- Not observed.

Mitigation Measures:

Pictures No.:

Channel 2

Specific Risks:

- Slope failure
- Overtopping banks
- Greater than expected TSS transport
- Inflows to channels on site which are not part of the water management system

Observations:

- No concerns noted.

Mitigation Measures:

Pictures No.:

Main Camp Area

Specific Risks:
- Runoff at back of camp causing incision or TSS transport to Channel 2
- Significant flow or ponding on pad or parking areas
- Ensure no snow storage outside of designated snow pad (CP1)

Observations:

- Snow piles around camp and camp parking lot. Producing runoff downslope towards the industrial pad and resulting in erosion.

Mitigation Measures:

- We suggest to remove snow to the CP1 snow dump to minimize the amount of runoff and damage to road/pad.

Pictures No.: 4

Meliadine Esker

Specific Risks:
- TSS transport to Meliadine Lake due to quarrying

Observations:

- Many snow piles around the esker. Likely not an issue as runoff will enter CP1.

Mitigation Measures:

- Monitor for TSS transport to CP1 upon melt.

Pictures No.:

Landfarm A

Specific Risks:
- Erosion, slumping, or cracking of perimeter berms, particularly south-east corner
- Sump water level
- Seepage towards CP1 or away from Landfarm

Observations:

- No concerns.

Mitigation Measures:

Pictures No.:

Industrial Pad Site

Specific Risks:
- Significant pooling causing erosion with vehicle traffic
- Flow across pads or roads causing increased TSS runoff to water management system
- Snow banks or piles causing erosion upon melt
- Esnure no snow storage outside of designated snow pad (CP1)

Observations:

- There are many snow banks around the industrial pad which are currently and will continue to runoff along the road and pad. This includes snow beside the construction offices and main camp parking lot and to the northwest of the warehouse/MSB (photo 5). The main impact here will be damage to the roads and industrial pad. There will also be TSS movement here but it will remain on site.

Mitigation Measures:
- Move snow to CP1. This correction will prevent damage to the road and associated repairs that would be required. There are many other small snow piles which could be removed to further reduce runoff, if it is decided that clean-up of the industrial pad is possible with available equipment.

Pictures No.: 5

Service Road

Specific Risks:
- Flow or pooling along roadside causing TSS transport or washout concerns
- Ensure no snow storage along roadside

Observations:

- No concerns observed.

Mitigation Measures:

Pictures No.:

Culvert 3

Specific Risks:
- Blockages impeding flow
- Damage to in the inlet or outlet which may impede flow capacity
- Ensure no snow cover or snow piles, which would prevent routing of water into or out of the culvert
- Ensure no bed erosion upstream and downstream

Observations:

- Covered in snow. Will need to be cleared prior to freshet if does not clear naturally due to sublimation/melt.

Mitigation Measures:

Pictures No.:

Culvert 4

Specific Risks:
- Blockages impeding flow
- Greater than expected TSS transport
- Damage to in the inlet or outlet which may impede flow capacity
- Ensure no snow cover or snow piles, which would prevent routing of water into or out of the culvert
- Ensure no bed erosion upstream and downstream

Observations:

- No concerns observed.

Mitigation Measures:

Pictures No.:

CP1 and D-CP1

Specific Risks:
- Overtopping of containment area on downstream end of D-CP1
- Changes or increases in previously observed cracking, slumping, and erosion of D-CP1
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- Ensure no unplanned inputs

- Seepage through the downstream dike slope

Observations:

- No concerns observed.

Mitigation Measures:

Pictures No.:

H5

Specific Risks:
- Runoff from D-CP1 to H5 (transporting TDS or TSS)

Observations:

- No concerns observed.

Mitigation Measures:

Pictures No.:

AWAR and Bypass Road

Specific Risks:
- Blockages in culverts impeding flow
- Ice dams upstream or downstream of bridges
- Flow across or along roads (install straw logs as needed)
- Slumping of roadside
- TSS transport from quarries along AWAR into water bodies or streams
- Ensure no snow banks or piles along roadside
- Damage to in the inlet or outlet of culverts which may impede flow capacity
- Ensure no snow cover or snow piles, which would prevent routing of water into or out of the culverts
- Ensure no bed erosion upstream and downstream of watercourse crossing structures
- Ensure no scour under bridge abutments and abutment foundations
- Ensure no erosion along cutslopes and fillslopes of embankments

Observations:

- To be inspected tomorrow (May 5th 2019)

Mitigation Measures:

Pictures No.:

Itivia

Specific Risks:

- Blockages of main culvert impeding flow
- Integrity of strawlogs, silt fences, and check dams installed to control TSS
- Any runoff from lease area towards Melvin Bay (sample as needed, install straw logs/silt fences)
- Cracking, slumping, or erosion of perimeter berms
- Integrity of liner/geotextile
- Integrity of all geotechnical structures, laydowns, etc.
- TSS transport from Itivia Quarry
- Ensure snow is stored in designated snow pad
- Damage to in the inlet or outlet of the culvert which may impede flow capacity
- Ensure no snow cover or snow piles, which would prevent routing of water into or out of the culvert
- Ensure no bed erosion upstream and downstream of Culvert
- Ensure no erosion along cutslopes and fillslopes of embankments

Observations:

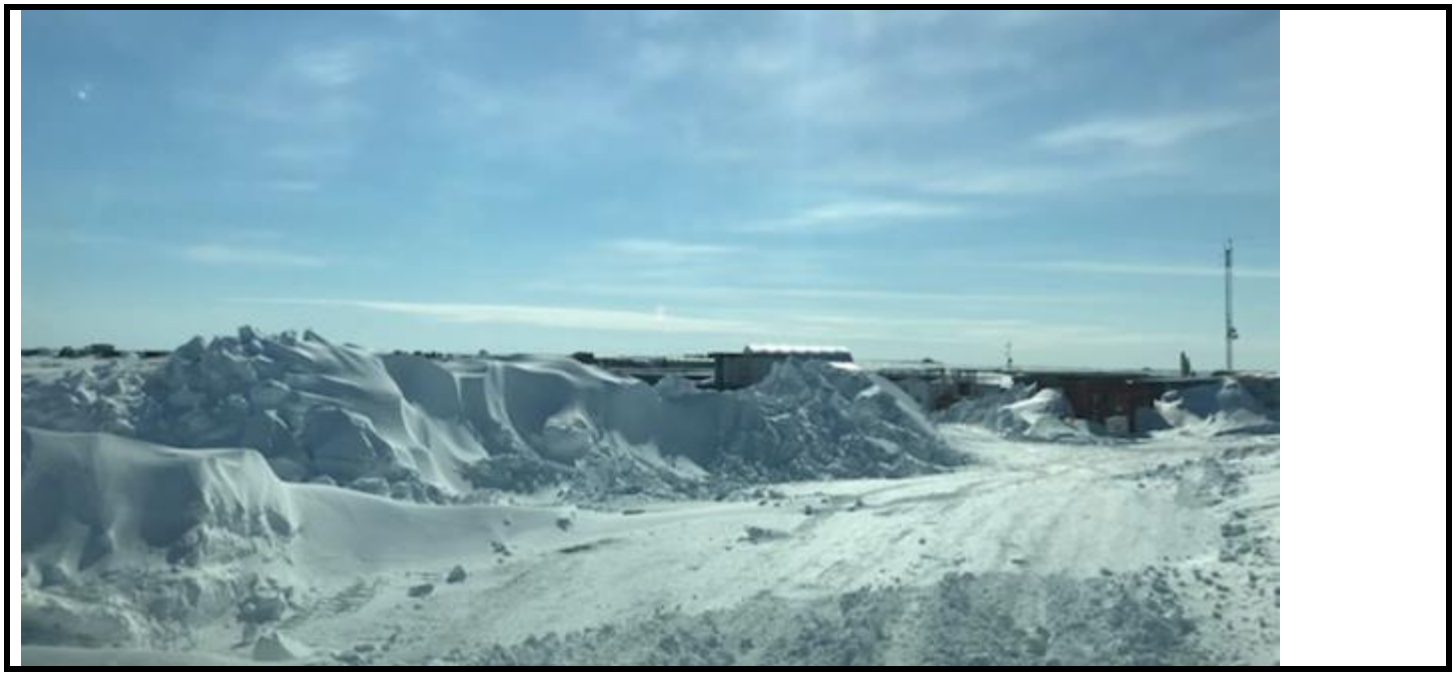
- To be inspected tomorrow (May 5th 2019)

Mitigation Measures:

Pictures No.:

Environmental Personnel: Matt Gillman

Signature : *Matt Gillman*



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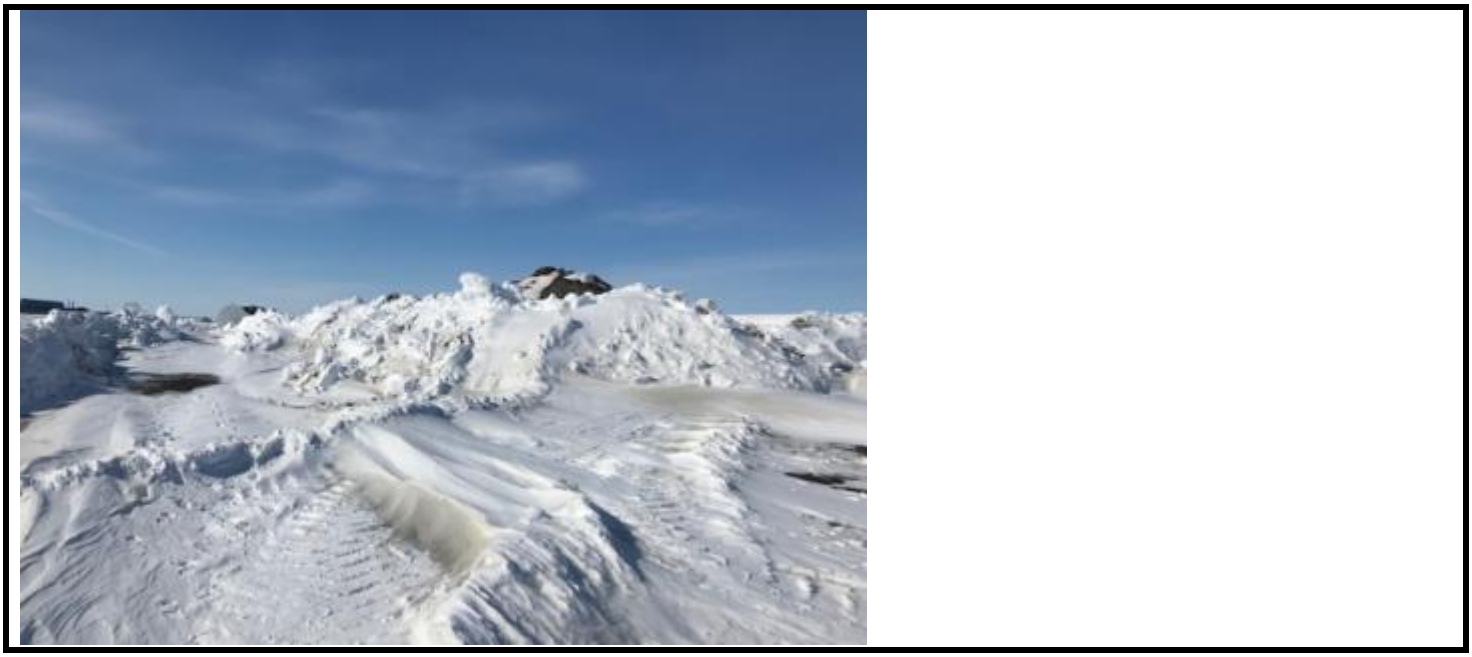

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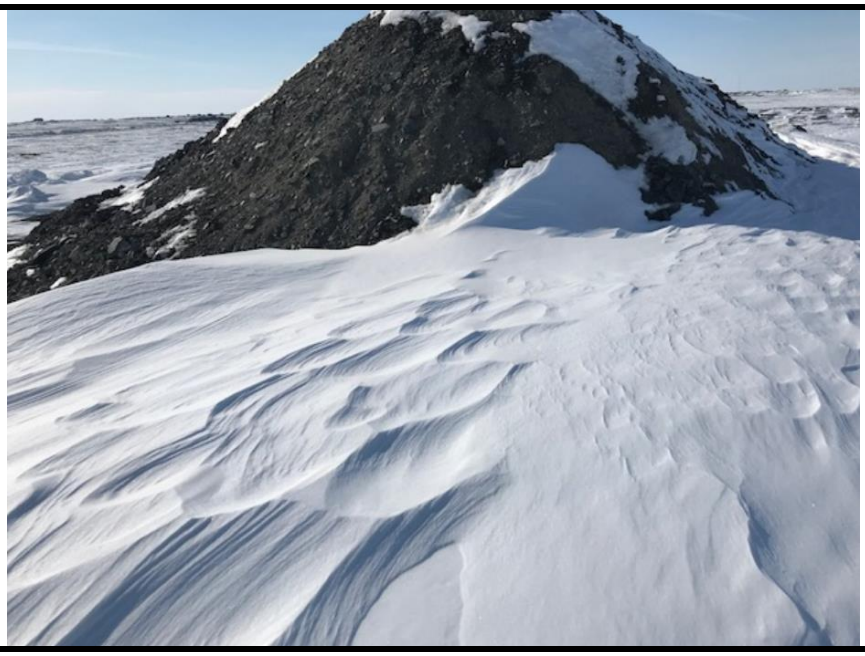

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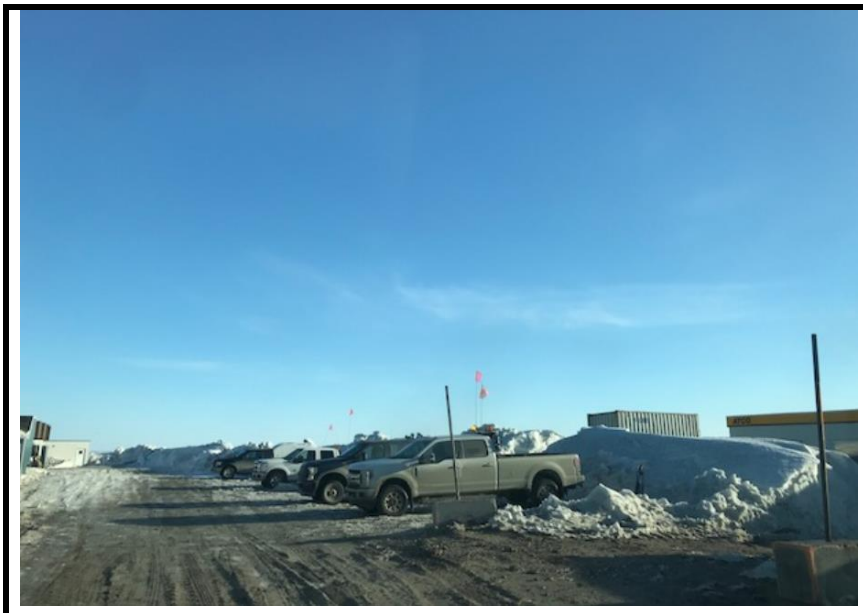

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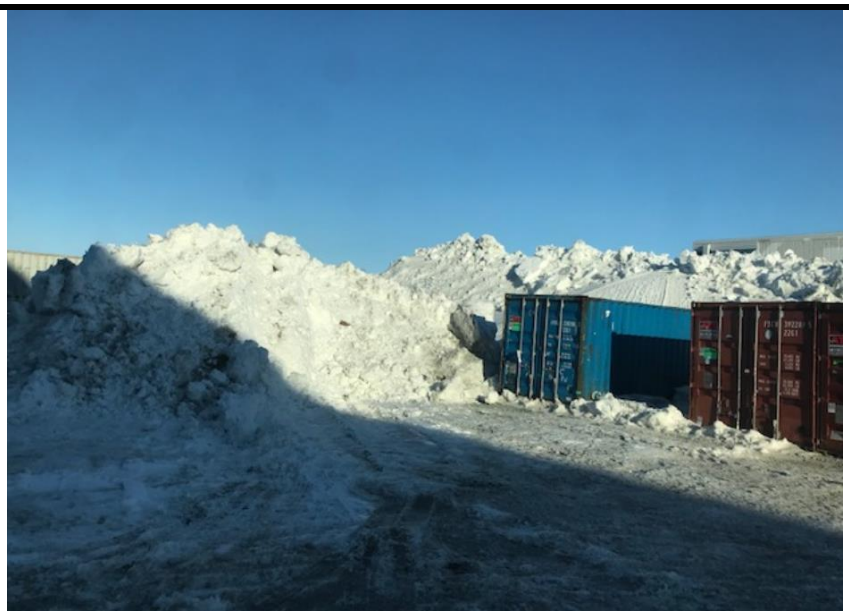

Picture 5:

Picture 6: