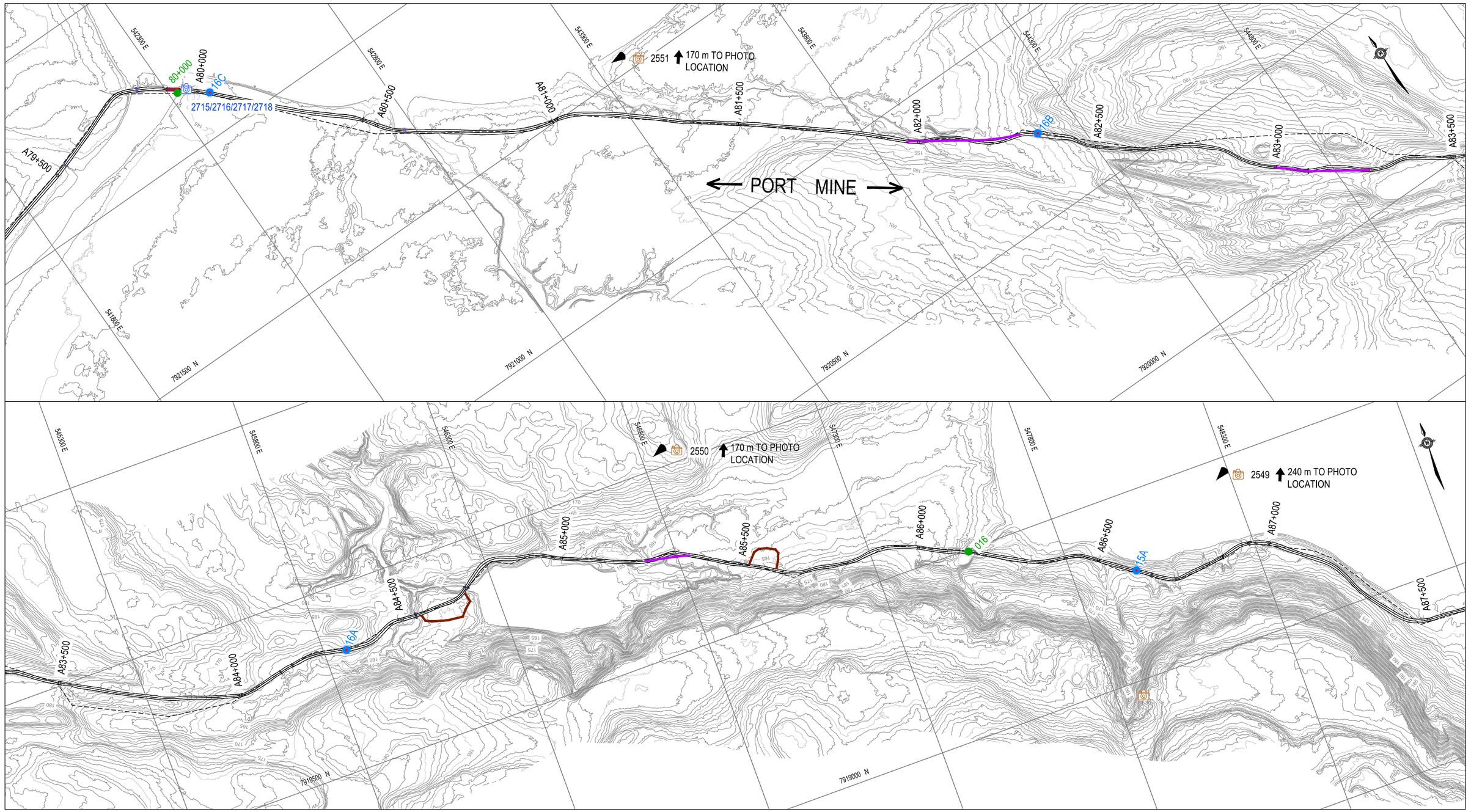

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- 2591 - 2019 AERIAL PHOTOGRAPH LOCATION WITH DIRECTION OF VIEW AND REPORT PHOTO NUMBER(S)
- 100 m - DIRECTION AND DISTANCE TO AERIAL PHOTOGRAPH LOCATION WHEN TAKEN OFF THE FIGURE WINDOW
- 2775 - 2019 GROUND PHOTOGRAPH LOCATION WITH REPORT PHOTO NUMBER(S)
- - 2009 WAYPOINT / BORROW LOCATION
- - NEW OR BORROW SOURCE NOT REPORTED ON, IN 2009
- - APPROXIMATE EXTENT OF BORROW AND LAYDOWN LOCATIONS
- - APPROXIMATE ROAD REALIGNMENT
- - - - - - - HISTORIC ORIGINAL ALIGNMENTS NOT USED

NOTES

BASED ON DRAWING DATA PROVIDED BY KNIGHT PIESOLD CONSULTING

BASE DATA: 1:10 000

ISSUED FOR USE

0 500m

Scale: 1:10,000 @ 11"x17"

CLIENT

Baffinland Iron Mines Corporation

TETRA TECH

Mary River Tote Road Quarry Reclamation
Mary River, Baffin Island

PLAN PHOTO LOCATIONS
SHEET 11 OF 13

PROJECT NO.	DWN	CKD	REV
ENG.EARC03171-01	BR/EP	KJ	0

OFFICE: EDM

DATE: December 2019

Figure 11

Q:\Edmonton\Engineering\E141\Projects\E141\03210-01 Tote Road Evaluation\E141\03210-01_Figure 1 thru 13_OCT2019new_IFU.dwg [FIGURE 11] December 17, 2019 - 2:04:54 pm (BY: PALCZEWSKI, ERNEST)

PORT MINE

LEGEND:

- 2591 - 2019 AERIAL PHOTOGRAPH LOCATION WITH DIRECTION OF VIEW AND REPORT PHOTO NUMBER(S)
- 100 m - DIRECTION AND DISTANCE TO AERIAL PHOTOGRAPH LOCATION WHEN TAKEN OFF THE FIGURE WINDOW
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Baffinland Iron Mines Corporation

Mary River Tote Road Quarry Reclamation
Mary River, Baffin Island

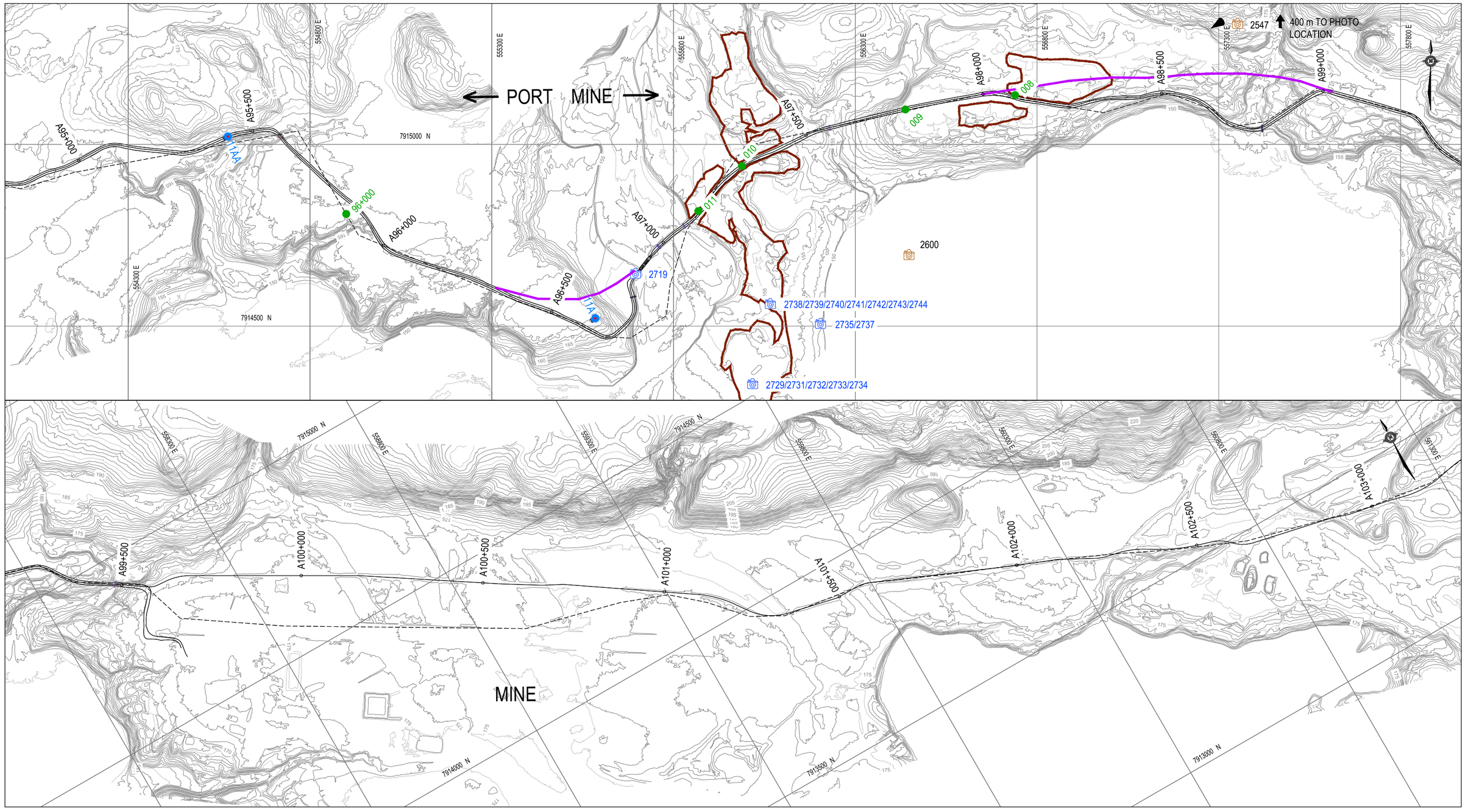
PLAN PHOTO LOCATIONS
SHEET 12 OF 13

TETRA TECH

PROJECT NO.	DWN	CKD	REV
ENG.EARC03171-01	BR/EP	KJ	0

OFFICE	DATE
EDM	December 2019

Figure 12



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- 100 m - DIRECTION AND DISTANCE TO AERIAL PHOTOGRAPH LOCATION WHEN TAKEN OFF THE FIGURE WINDOW
- 2775 - 2019 GROUND PHOTOGRAPH LOCATION WITH REPORT PHOTO NUMBER(S)
- - 2009 WAYPOINT / BORROW LOCATION
- - NEW OR BORROW SOURCE NOT REPORTED ON, IN 2009
- - APPROXIMATE EXTENT OF BORROW AND LAYDOWN LOCATIONS
- - APPROXIMATE ROAD REALIGNMENT
- - - - - - HISTORIC ORIGINAL ALIGNMENTS NOT USED

NOTES
BASED ON DRAWING DATA PROVIDED BY KNIGHT PIESOLD CONSULTING

BASE DATA: 1:10 000

ISSUED FOR USE

0 500m

Scale: 1:10,000 @ 11"x17"

CLIENT

Baffinland Iron Mines Corporation

TETRA TECH

Mary River Tote Road Quarry Reclamation
Mary River, Baffin Island

PLAN PHOTO LOCATIONS SHEET 13 OF 13

PROJECT NO.	DWN	CKD	REV
ENG.EARC03171-01	BR/EP	KJ	0
OFFICE: EDM	DATE: December 2019		

Figure 13

PHOTOGRAPHS

Photo 1 (2014 Photo 1612)	Priority C Pit at KM 6.6 (Figure 1) Lies on Gravel Terrace with Well-established Ice Wedge Polygons
Photo 2 (2014 Photo 1585)	Pit at KM 20.7 (Figure 2), Linear Sinkholes from Ice Wedge Melt Out
Photo 3 (2014 Photo 1697)	Pit at KM 20.7 (Figure 3), Threatening Stability of the Road Embankment
Photo 4 (2014 Photo 1645)	Pit at KM 71.6 (Figure 10), Typical Settlement from Thaw of Segregated Ice
Photo 5 (DWH 2009 Photo 593)	Pit at KM 61.7 (Figure 8), Taken in 2009 (Comparison)
Photo 5A (2593)	Pit at KM 61.7 (Figure 8), Taken in 2014, Extensive Settlement in Southern Portion
Photo 6 (2014 Photo 1576)	Pit at KM 32.4 (Figures 4 and 5), Typical Priority C Pit in Thaw Stable Soils
Photo 7 (2531)	Pit at KM 72.3 with Water on Both Side of the New Road Alignment and Extensive Thaw of Massive and Wedge Ice
Photo 8 (2578)	Pit at KM 7.2, Extensive Thaw Ponds on the West Side of the Road
Photo 9 (2536)	Pit at KM 7.9 Showing Extensive Settlement and Ponding
Photo 10 (2540)	Pit at KM 19.8 (Figure 4), Pit is Deepening due to Continued Thaw of Ice-rich Ground
Photo 11 (2571)	Pit at KM 19.8 (Figure 3), Ponded Water Resulting from Thaw of Ice-rich Material and Over-steepened Side Slopes where Water is Ponding
Photo 12 (2544)	Pit at KM 20.7 (Figure 3), Continued Melt Out of Wedge Ice since 2009
Photo 13 (2571)	Pit at KM 20.7 (Figure 3)
Photo 14 (2693)	Pit at KM 21.9 (Figure 3), Continued Thaw of Ice-rich Material
Photo 15 (2693)	Pit at KM 29.1 (Figure 4), Continued Thaw of Ice-rich Material
Photo 16 (2695)	Pit at KM 29.1 (Figure 4), Continued Thaw of Ice-rich Material
Photo 17 (2670)	Pit at KM 56.8 (Figure 8), Berms Along this Side of the New Road Effectively Push Water Away from the Embankment
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Photo 20 (2558)	Pits at KM 63 to 63.8 (Figure 9), Continued Thaw of Ice-rich Material
Photo 21 (2657)	Pit at KM 63.8 (Figure 9), Continued Thaw of Ice-rich Material
Photo 22 (2662)	Pits at KM 63 to 64 (Figure 9), Continued Thaw of Ice-rich Material
Photo 23 (2014 Photo)	Pit at KM 72.4 (Figure 10), Extensive Thaw Settlement of Very Ice-rich Soils
Photo 24 (2555)	Pit at KM 72.4 (Figure 10), Thaw Settlement is Ongoing (Comparison)
Photo 25 (2555)	Pit at KM 72.4 (Figure 10), Right Side of Borrow Pit with Very Deep Ponding Due to Thaw
Photo 26 (2597)	Pit at KM 89.8 (Figure 12), Borrow Pit on the Right Side with Very Deep Ponding due to Thaw

Photo 27 (2656)	Pit at KM 89.8 (Figure 12), Right Side of Borrow Pit with Very Deep Ponding Due to Thaw
Photo 28 (2678)	KM 17 Bridge, West Abutment
Photo 29 (2683)	KM 17 Bridge, East Abutment
Photo 30 (2683)	KM 63 Bridge, North Abutment
Photo 31 (2708)	KM 64 Bridge, South Abutment
Photo 32 (2712)	KM 64 Bridge, South Abutment
Photo 33 (2715)	KM 80 Bridge, South Abutment
Photo 34 (2718)	KM 80 Bridge, Road Surfacing Gravel that has Fallen Through the Centreline Joint in the Bridge Deck
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Photo 48 (2650)	Erosion Channels Downslope of the Main Mine Haul Road from the Open Pit
Photo 49 (2652)	Close up of Some of the Erosion Channels Downslope of the Main Mine Haul Road from the Open Pit
Photo 50 (2643)	Additional Erosion Channels Downslope of the Main Mine Haul Road from the Open Pit

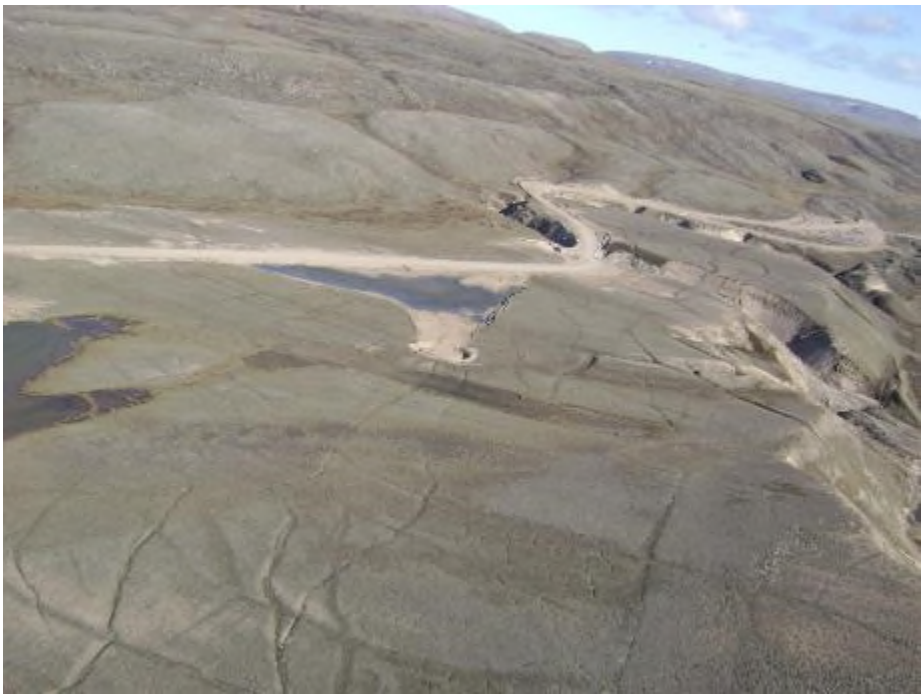

Photo 1 (2014 Photo 1612):
Priority C pit at KM 6.6 (Figure 1) lies on a gravel terrace with well-established ice wedge polygons, Removal of material from the active layer in the pit has initiated thaw and ponding but it has not changed since 2009 and remarkably is not currently impacting the embankment.

Photo 2 (2014 Photo 1585):
Pit at KM 20.7 (Figure 2), linear sinkholes from ice wedge melt out, see also Photo 3.

Photo 3 (2014 Photo 1697):
Pit at KM 20.7 (Figure 3) is threatening the stability of the road embankment as thermal erosion from water is occurring through the ice wedges exposed in the adjacent pit.

Photo 4 (2014 Photo 1645):
Pit at KM 71.6 (Figure 10), typical settlement from thaw of segregated ice common in finer-grained lacustrine soils.

Photo 5 (DWH 2009 Photo 593):
Pit at KM 61.7 (Figure 8) in 2009, compare to Photo 5A.

Photo 5A (2593):
Pit at KM 61.7 (Figure 8), in 2019, note extensive settlement in southern portion (right side) of the developed pit indicative of the presence of massive ice in portions of this deposit. Note road realignment to improve grade.

Photo 6 (2014 Photo 1576):
Pit at KM 32.4 (Figures 4 and 5), typical Priority C pit in thaw stable soils that only requires regrading.

Photo 7 (2531):
Pit at KM 7.2 with water on both sides of the new road alignment and extensive thaw of massive and wedge ice.

Photo 8 (2578):
Pit at KM 7.2 – Note extensive thaw ponds on the west (right) side of the road. The road has been significantly realigned since 2014 and thaw has progressed dramatically since then. Road is likely founded on permafrost that contains massive ice thereby raising concern that thaw due to the ponded water could lead to failure.

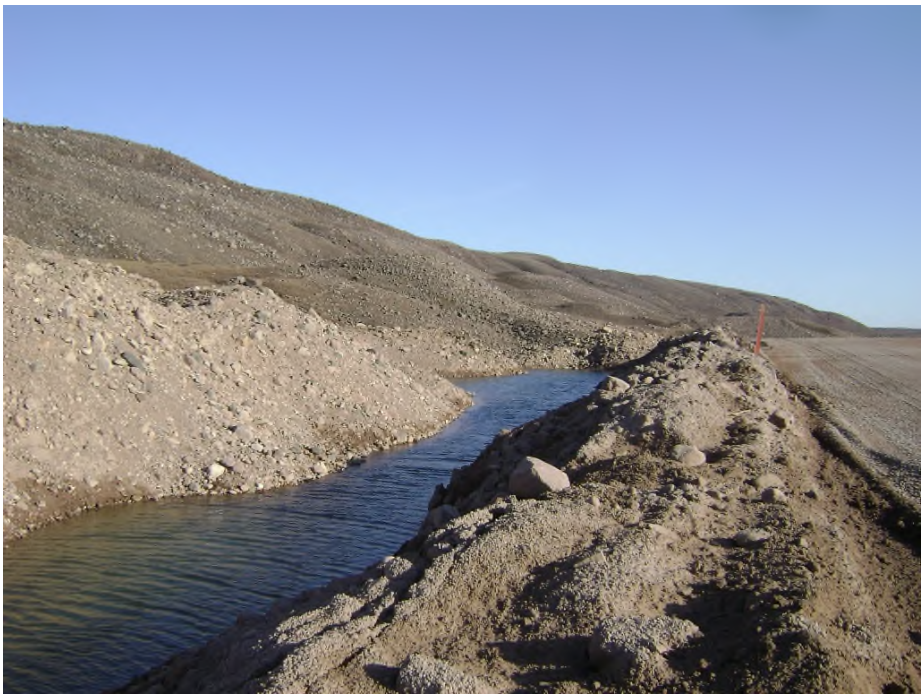

Photo 9 (2536):
Pit at KM 7.9 showing extensive settlement and ponding that is leading to embankment instability.

Photo 10 (2540):
Pit at KM 19.8 (Figure 4), pit is deepening due to continued thaw of ice-rich ground. Side slopes are very steep and there is considerable cracking on the shoulder and side slopes indicating that thaw is progressing under the road embankment. See Photo 11 for an aerial view of this pit.

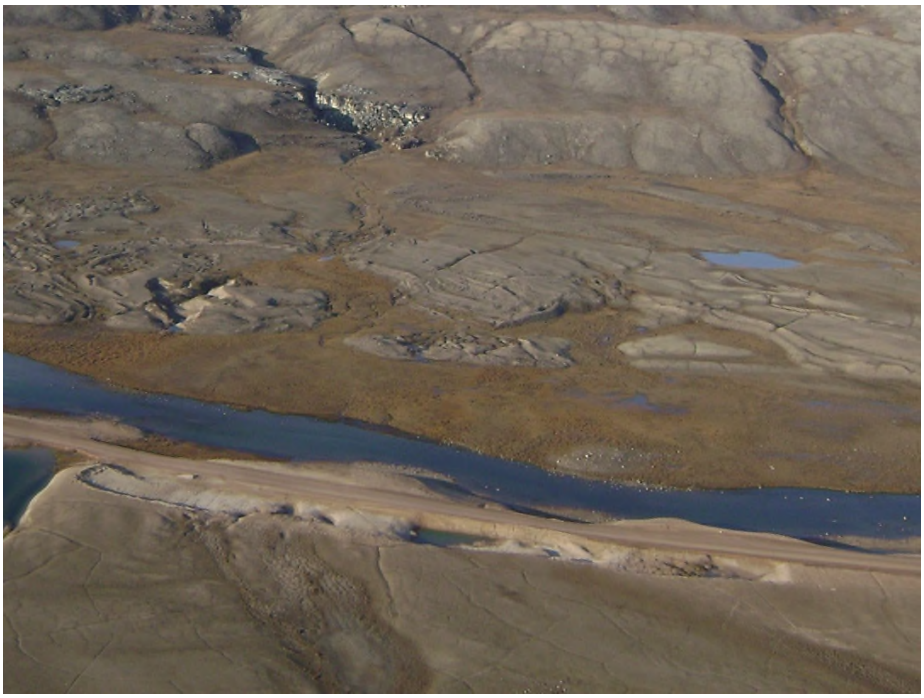

Photo 11 (2571):
Pit at KM 19.8 (Figure 3), note ponded water resulting from thaw of ice-rich material and over-steepened side slopes where water is ponding.

Photo 12 (2544):
Pit at KM 20.7 (Figure 3), continued melt out of wedge ice since 2009, embankment side slope is at angle of repose and there is substantial cracking on the side slope. There is evidence that the wedge ice that extends under the road is thawing because there are dips on the road surface. See also Photo 3 for comparison to 2014 condition.

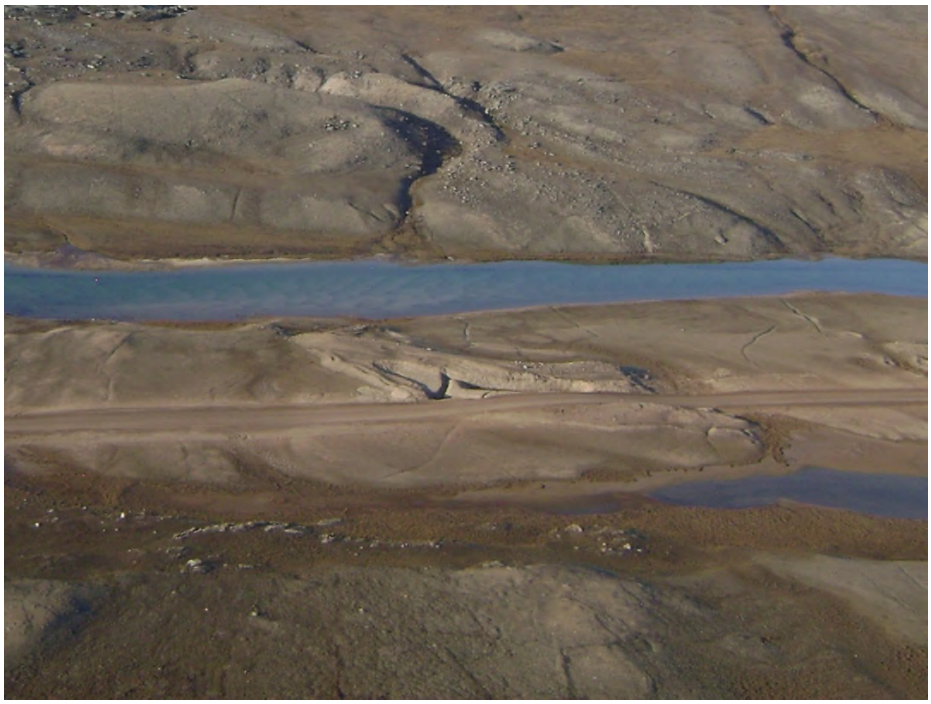

Photo 13 (2571):
Pit at KM 20.7 (Figure 3), see Photo 13 for closeup of this pit.

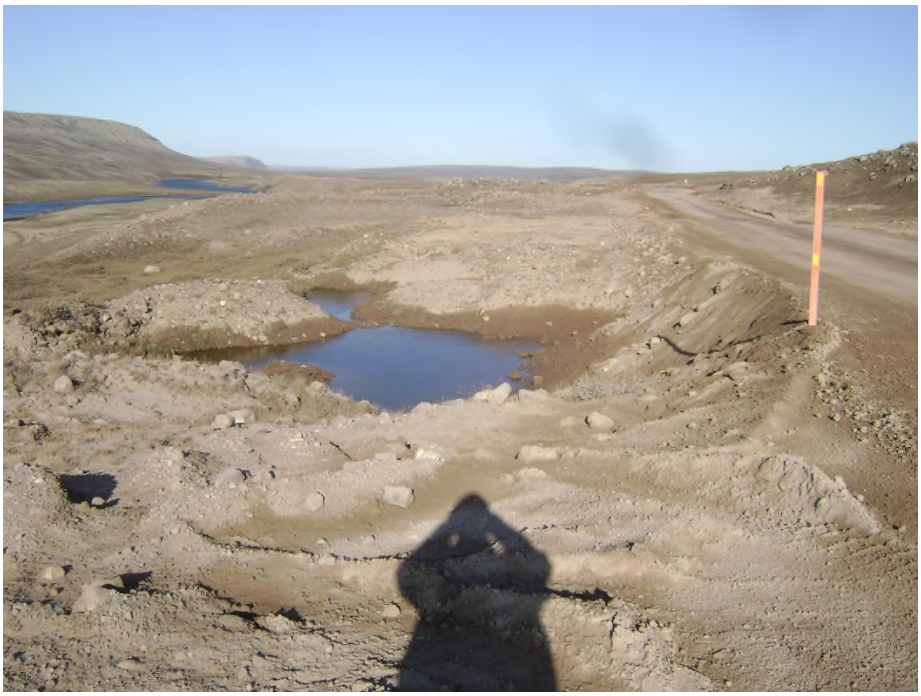

Photo 14 (2693):
Pit at KM 21.9 (Figure 3), continued thaw of ice-rich material exacerbated by the ponding leading to steep side slope and instability of the embankment.

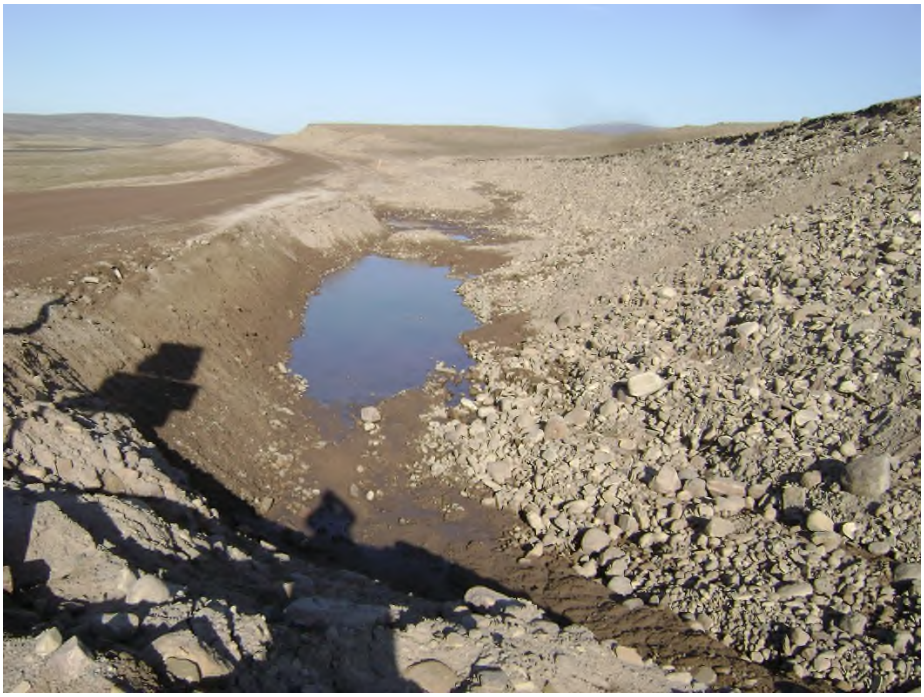

Photo 15 (2693):
Pit at KM 29.1 (Figure 4), continued thaw of ice-rich material exacerbated by the ponding leading to steep side slope and instability of the embankment. See also Photo 16. The central portion of this pit had been backfilled since 2014 dramatically improving embankment stability.

Photo 16 (2695):
Pit at KM 29.1 (Figure 4), continued thaw of ice-rich material exacerbated by the ponding leading to steep side slope and instability of the embankment. The central portion of this pit had been backfilled (bottom of the photo) since 2014 dramatically improving embankment stability.

Photo 17 (2670):
Pit at KM 56.8 (Figure 8), berms along this (right) side of the new road effectively push water away from the embankment providing thermal protection to the embankment foundation soils and enhancing stability.

Photo 18 (2693):
Pit at KM 56.8 (Figure 8), the left side of the new road has steeper side slopes particularly where it narrows at the culvert inlet (close to the KM marker). This increases the potential for instability. The water needs to be pushed back from the toe of the slope by constructing berms on this side of the road (see Photo 17).

Photo 19 (2592):
Pit at KM 56.8 (Figure 8), drainage at this location is clearly shown in this photo. The culvert under the old road (near the hairpin corner) is currently being relied upon to keep water levels low around the new road.