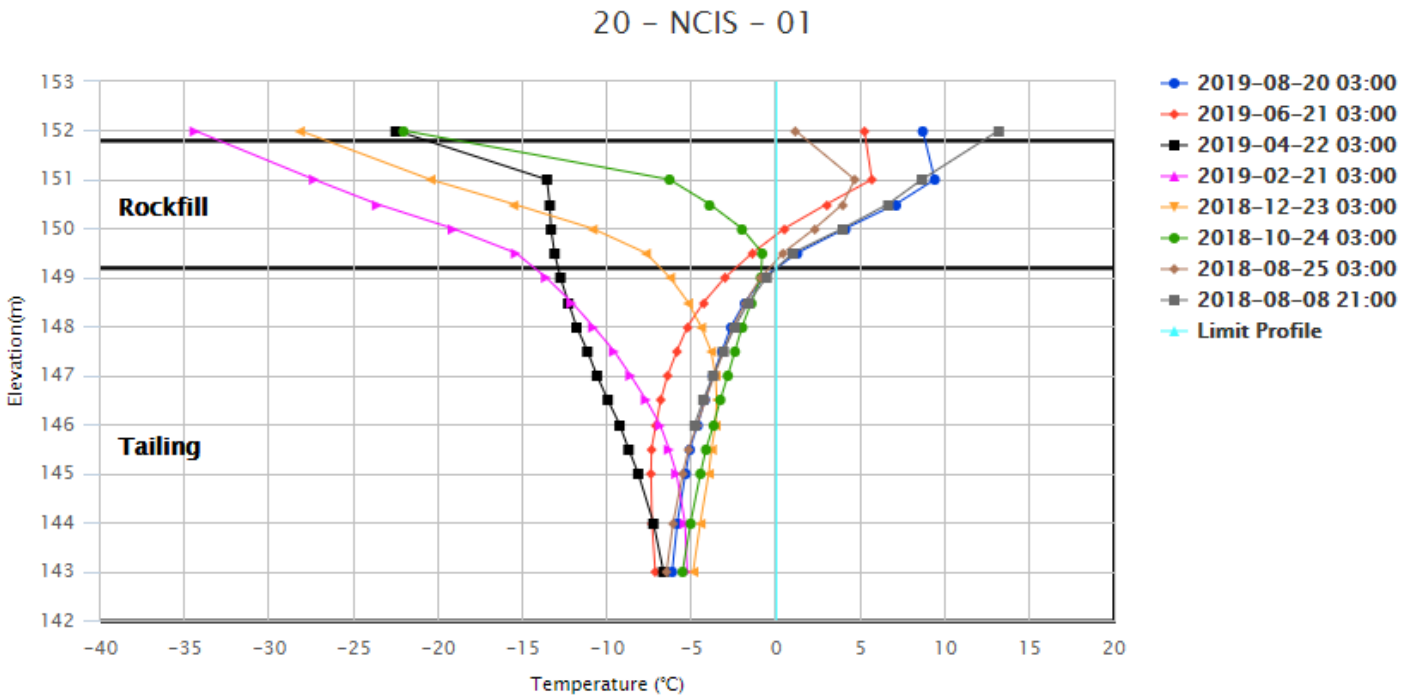
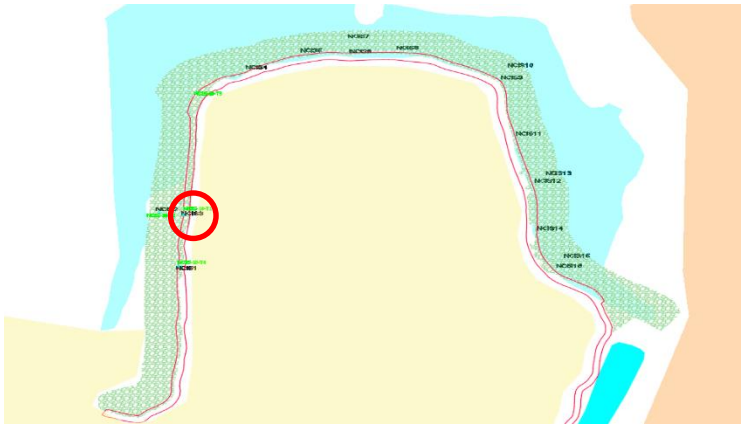
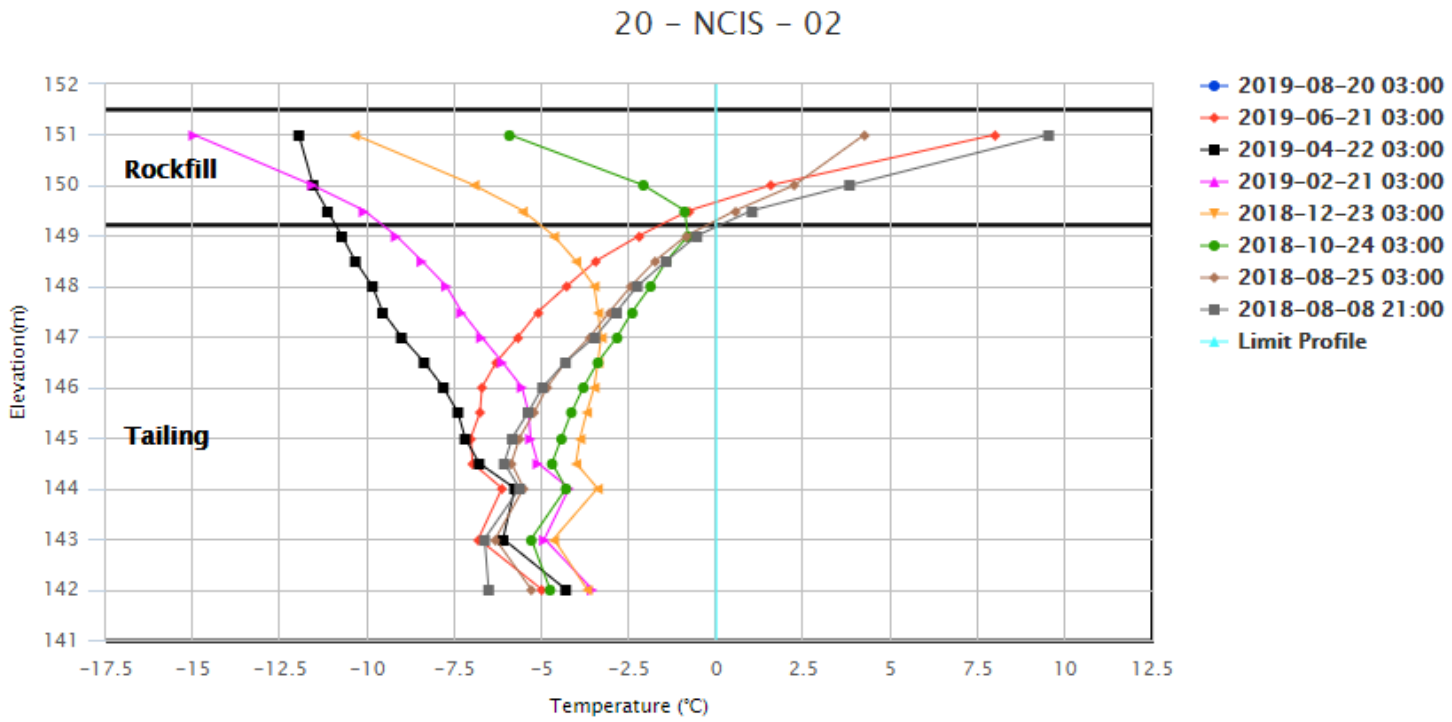
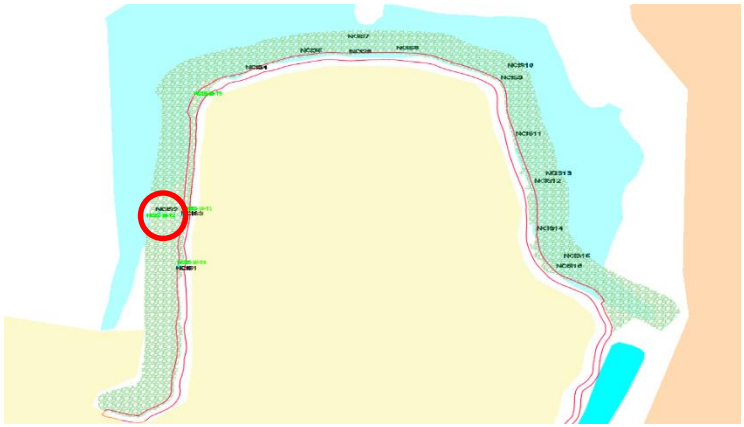
Thermistor NCIS-18-T1



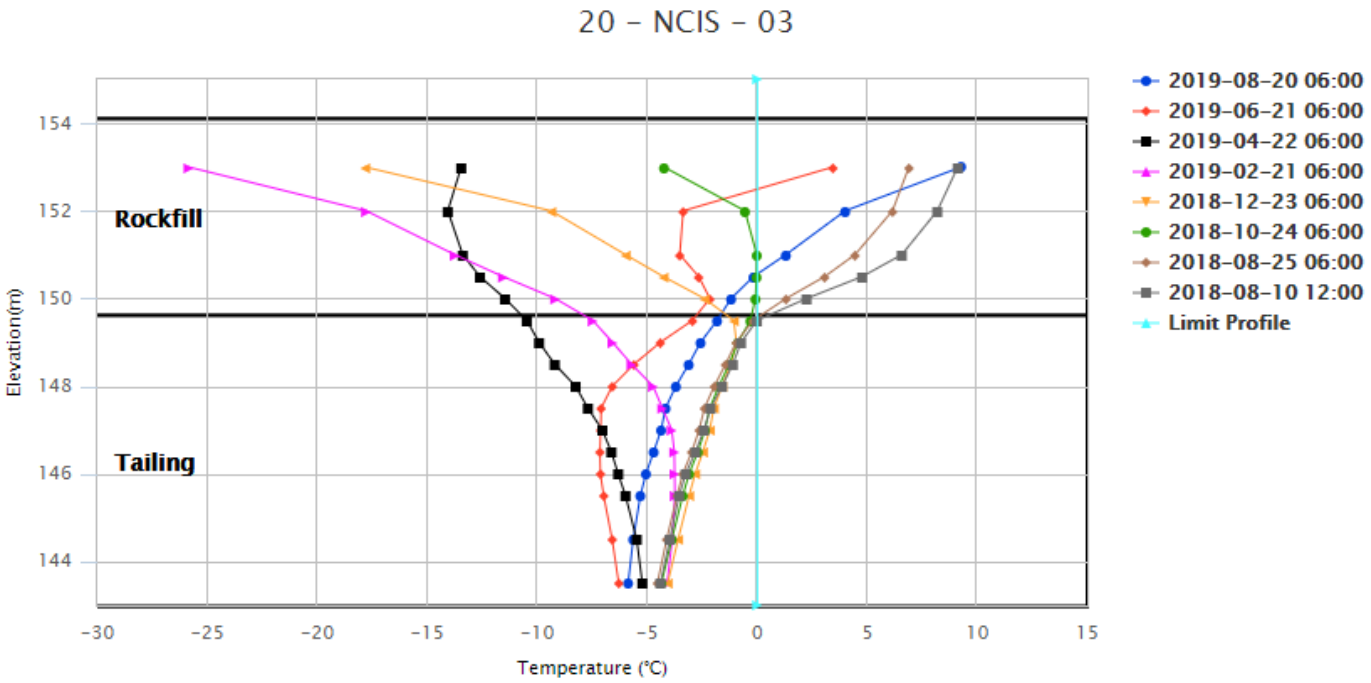


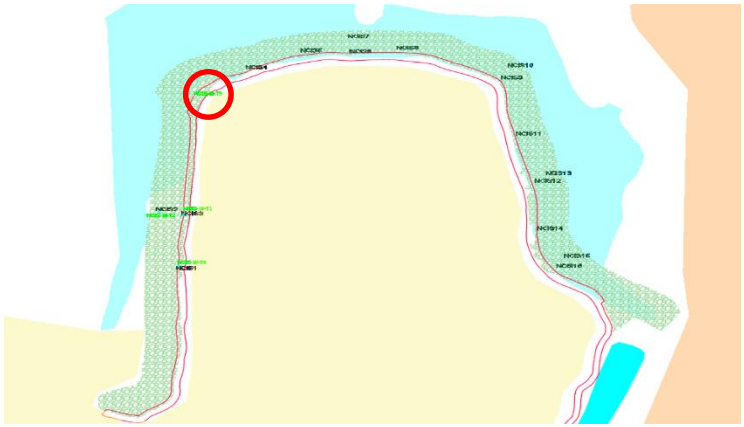
Thermistor NCIS-18-T2



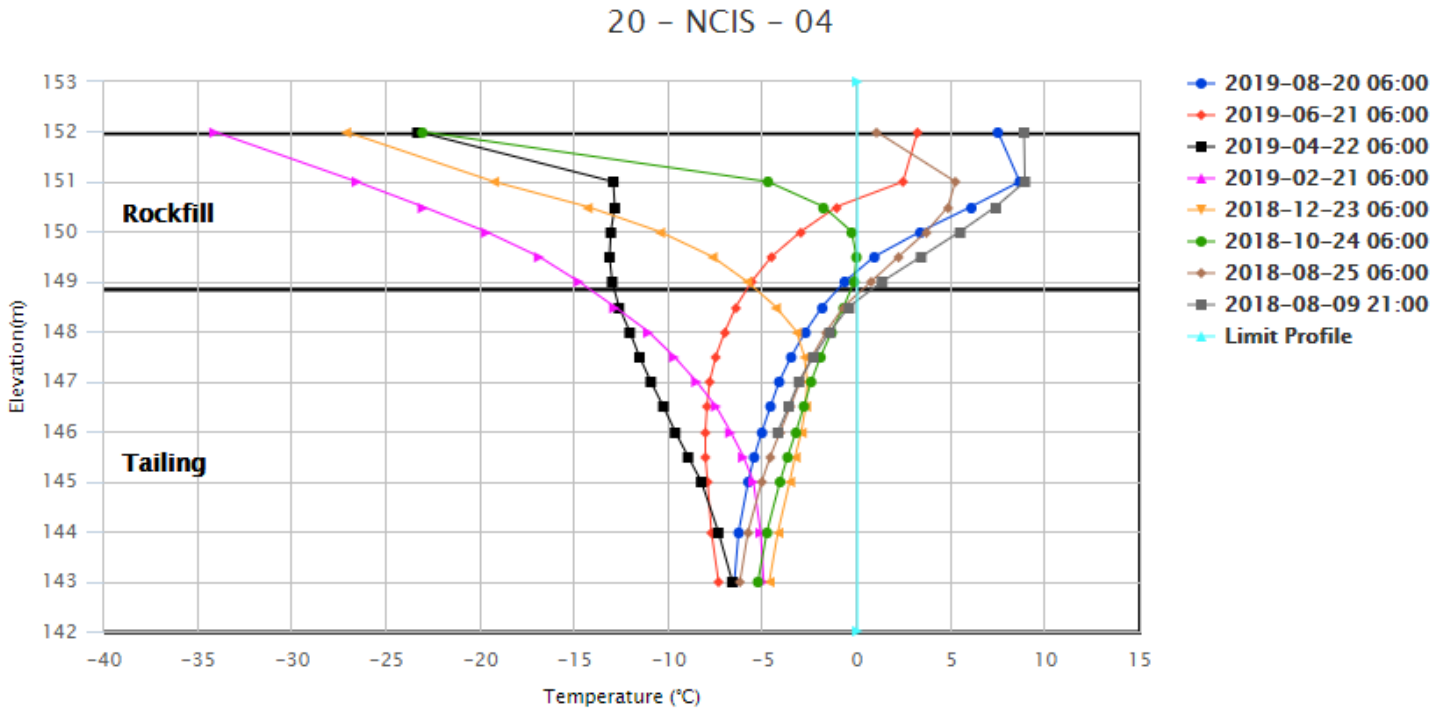


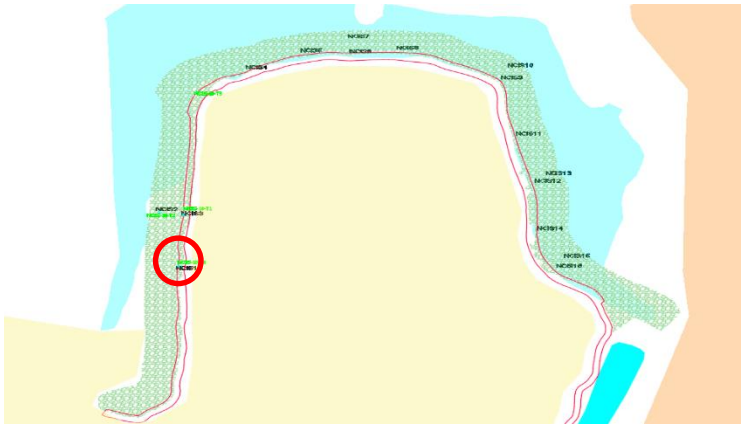
Thermistor NCIS-18-T3



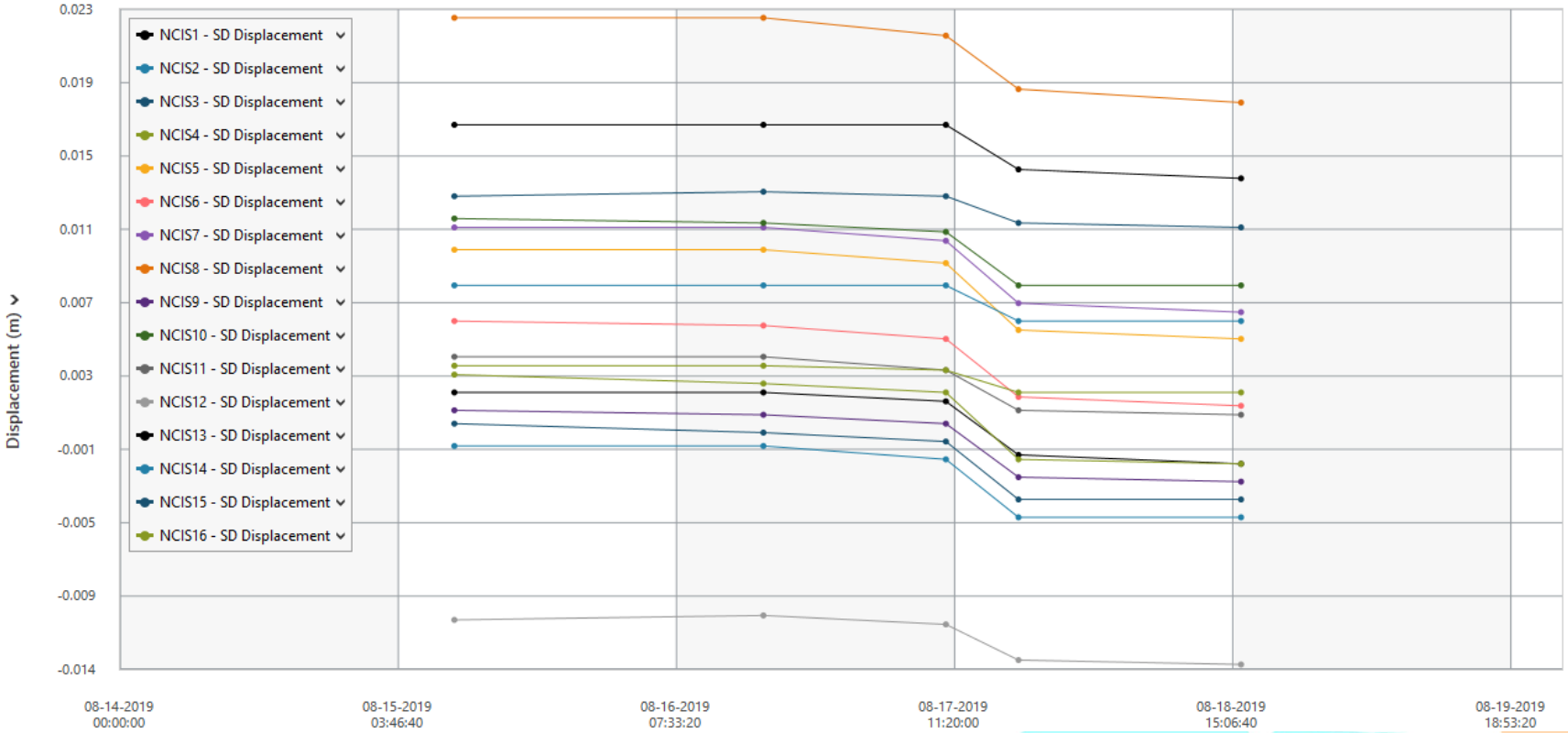


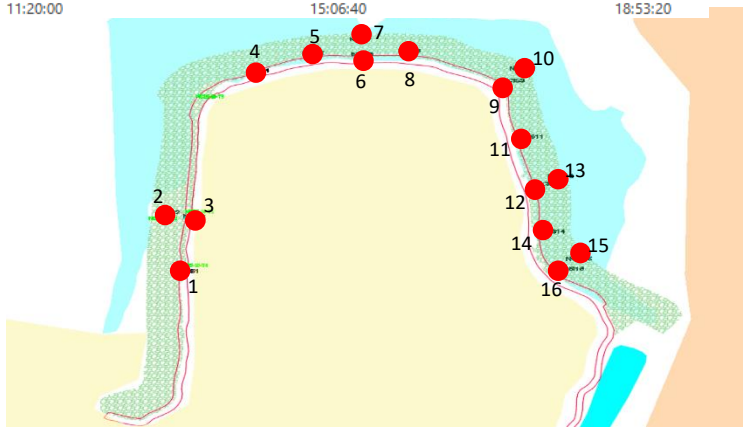
Thermistor NCIS-18-T4





Prisms NCIS-1 to 16





WEST

Vault Dike

EAST

TH5 - On slope

TH6

TH8

TH3

TH7

Upstream Water Level

TH3 - All beads stopped reading on Oct. 15/15

TH5 - Beads #1,& #2, are the surface

ELEVATION (m)

STATION (m)

TH3 (0+128.5)

ROCKFILL

TILL

BEDROCK

TEMPERATURE (°C)

TH5 (0+127)

ROCKFILL

BEDROCK

TEMPERATURE (°C)

TH6 (0+126.5)

ROCKFILL

BEDROCK

TEMPERATURE (°C)

TH7 (0+151.5)

ROCKFILL

BEDROCK

TEMPERATURE (°C)

TH8 (0+125.5)

ROCKFILL

TILL

BEDROCK

TEMPERATURE (°C)

LEGEND

- Dike Crest
- Lake Bed
- Bedrock
- T min
- T current
- T max
- Lake
- Till
- Bedrock
- Thermistor with Bead Locations

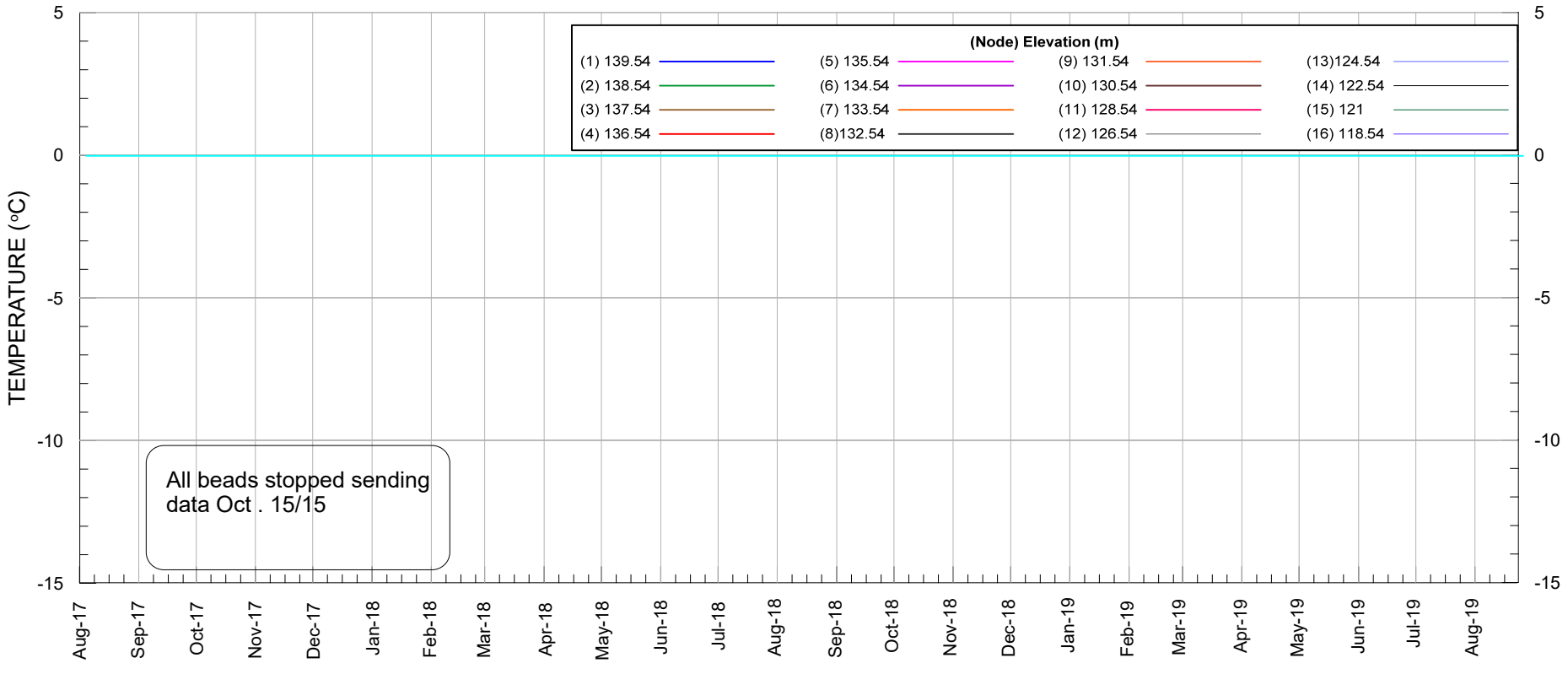
Current Temperature on August 21st, 2019

PROJECT	AGNICO EAGLE MINES LIMITED MEADOWBANK GOLD PROJECT NUNAVUT
TITLE	VAULT DIKE TEMPERATURE DATA (Aug 1/18 to Aug 21/19)

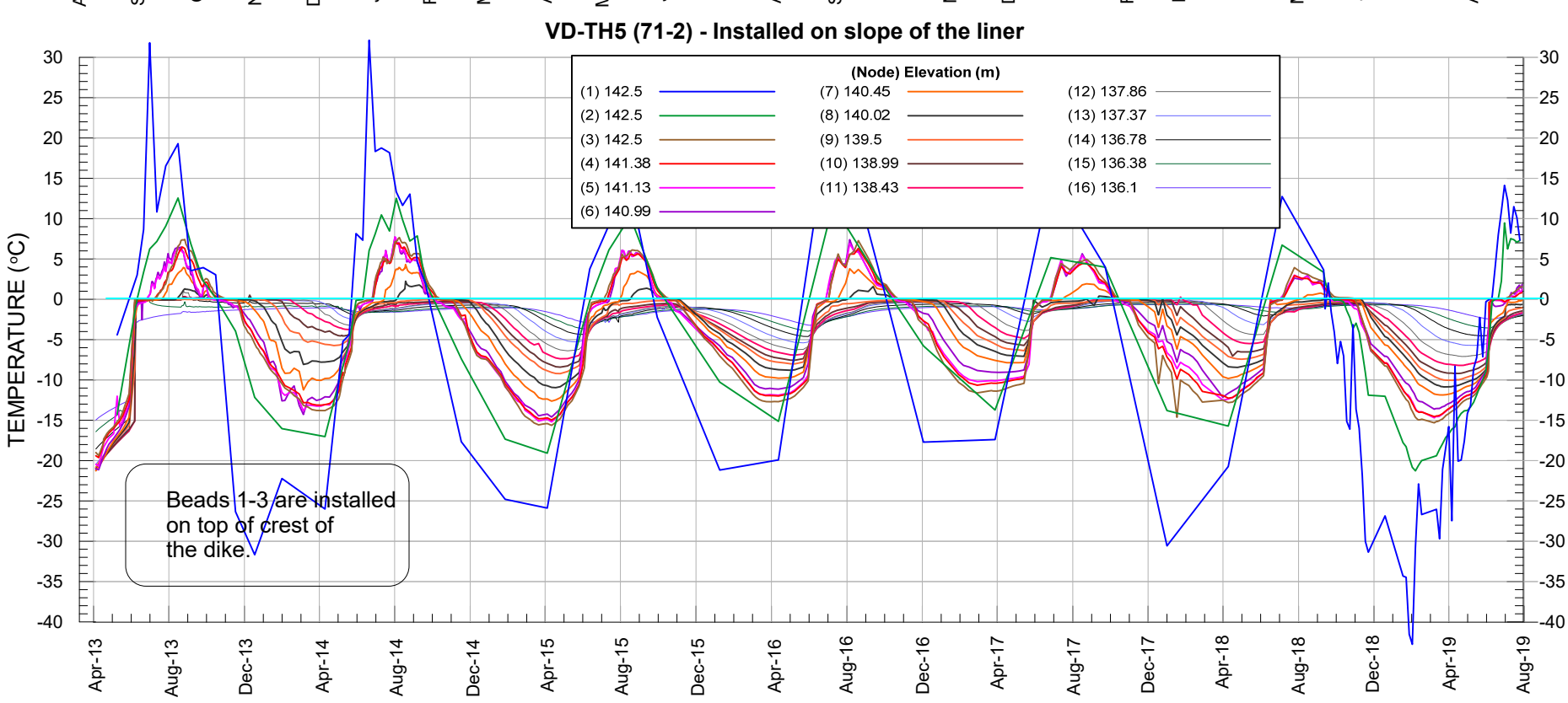
AGNICO EAGLE MEADOWBANK

PROJECT No.			PHASE No.	
DESIGN	TD	28AUG14	SCALE AS SHOWN	REV.
CADD	TD	28AUG14		
CHECK	PG	28AUG14	FIGURE 54	
REVIEW				

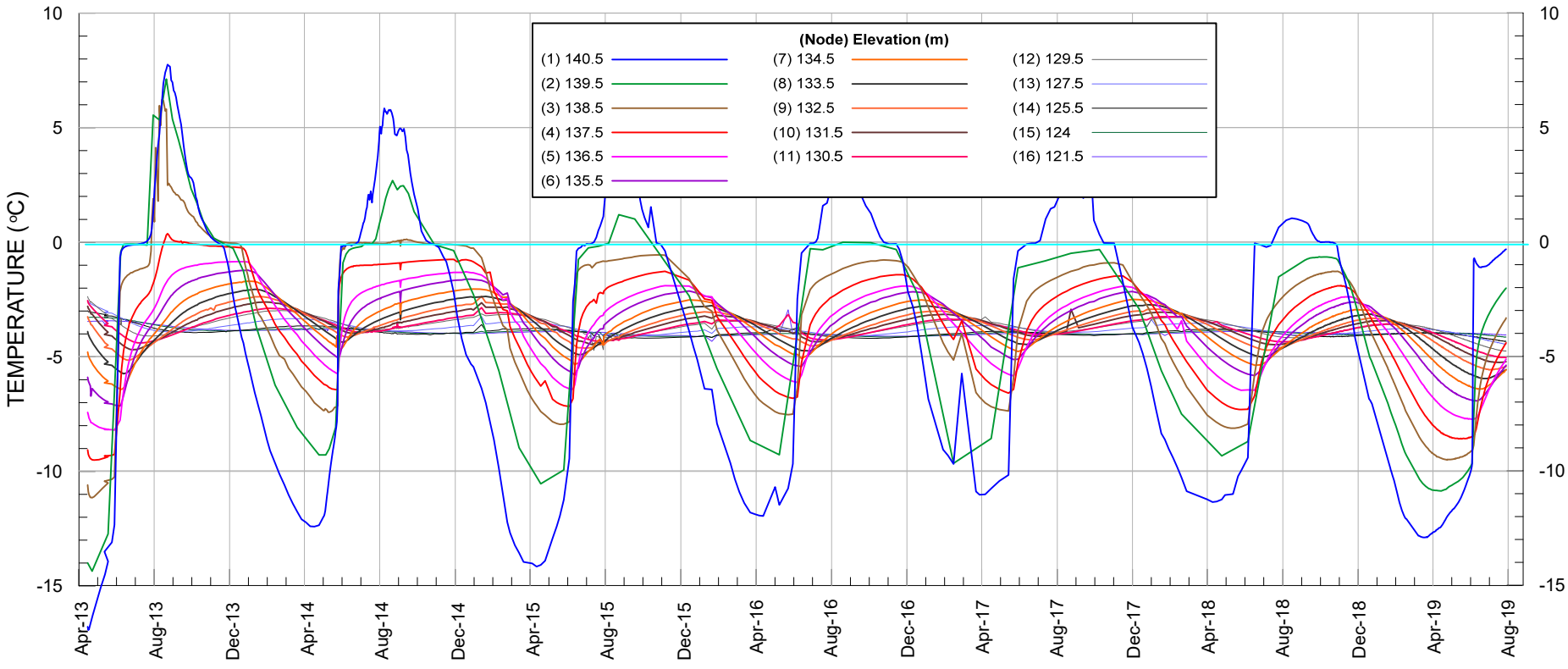
VD-TH3 (71-1)



VD-TH5 (71-2) - Installed on slope of the liner



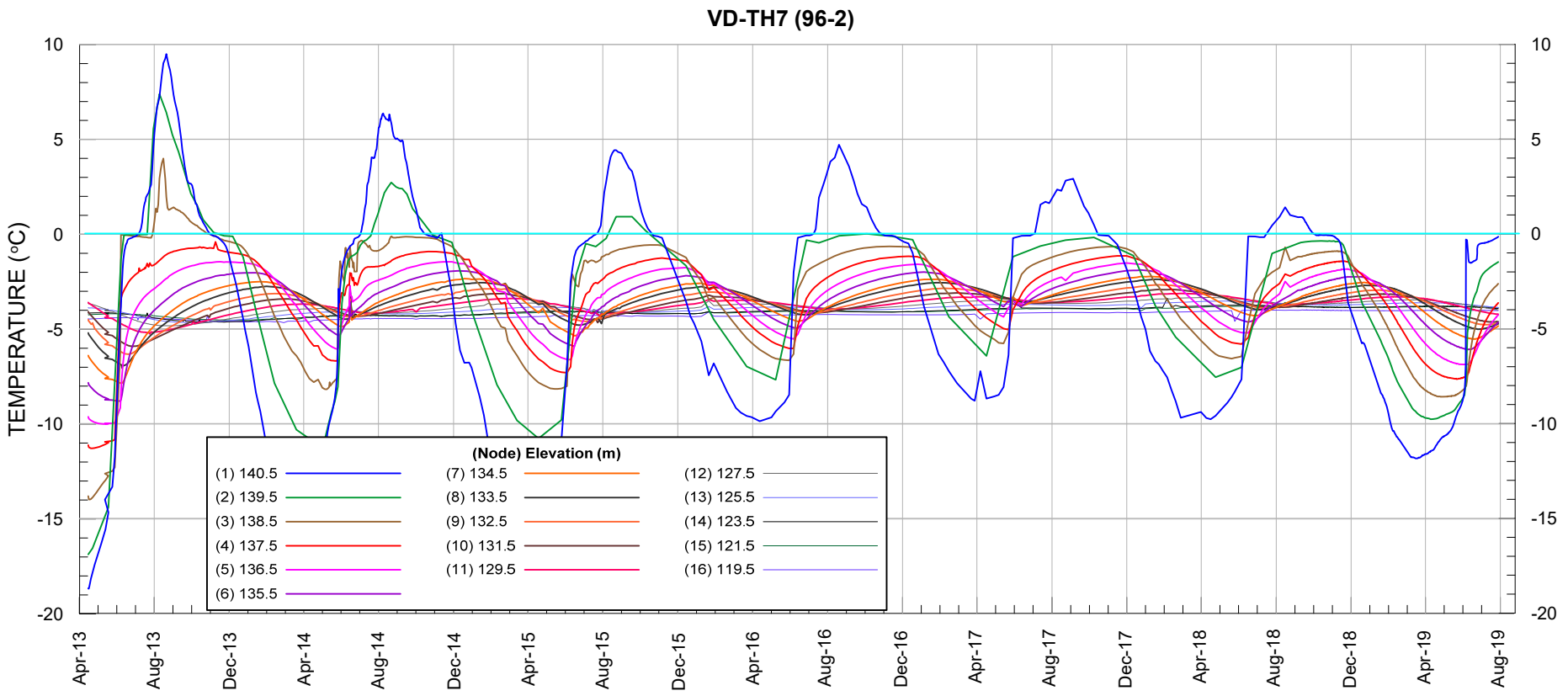
VD-TH6 (94-2)

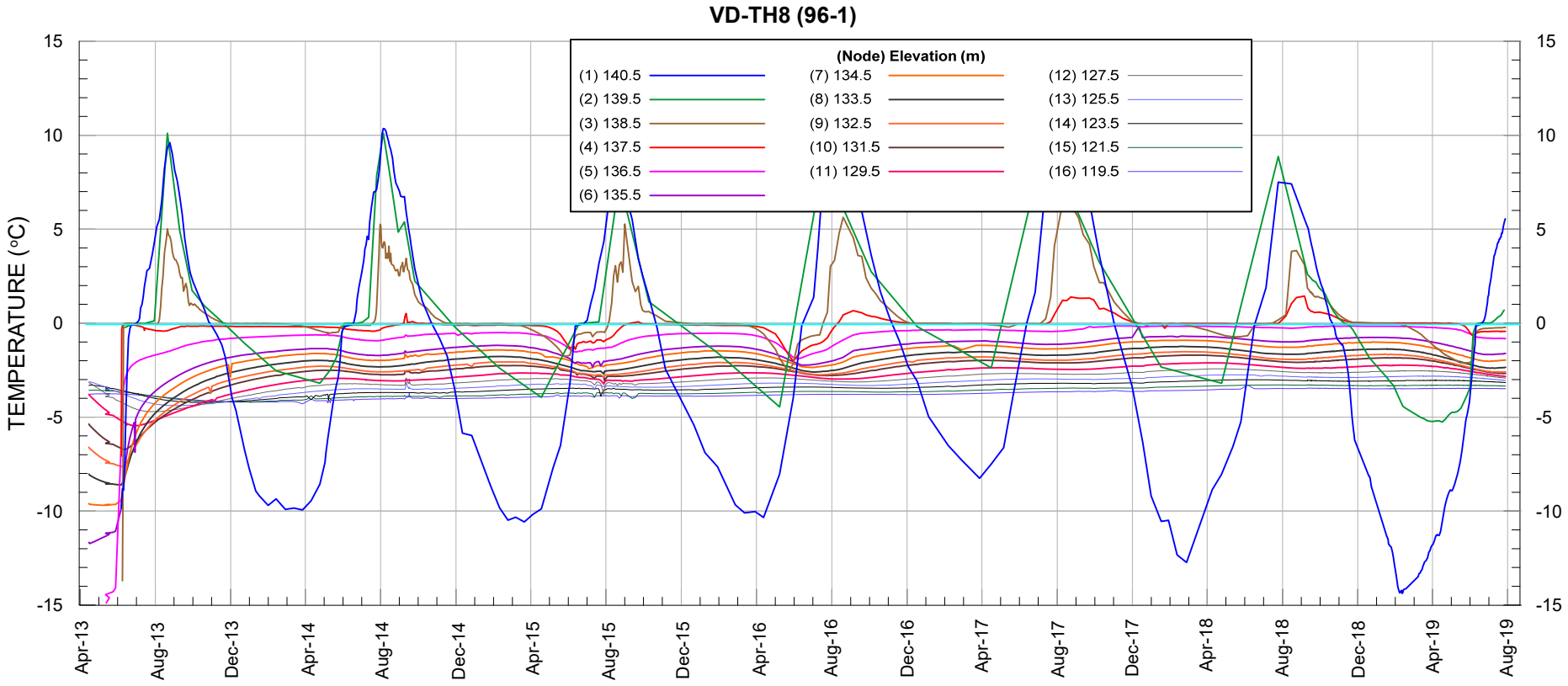


PROJECT	**AGNICO EAGLE MINES LIMITED** **MEADOWBANK GOLD PROJECT** **NUNAVUT**
TITLE	**VAULT DIKE** **NODAL THERMAL TIMELINES** **(Apr 1/13 to Aug 21/19)**

AGNICO EAGLE MEADOWBANK

PROJECT No.			PHASE No.	
DESIGN	TD	28AUG14	SCALE AS SHOWN	REV.
CADD	TD	28AUG14		
CHECK	PG	28AUG14	**FIGURE 55**	
REVIEW				





PROJECT	**AGNICO EAGLE MINES LIMITED** **MEADOWBANK GOLD PROJECT** **NUNAVUT**
TITLE	**VAULT DIKE** **NODAL THERMAL TIMELINES** **(Apr 1/13 to Aug 21/19)**

AGNICO EAGLE
MEADOWBANK

PROJECT No.			PHASE No.	
DESIGN	TD	28AUG14	SCALE AS SHOWN	REV.
CADD	TD	28AUG14		
CHECK	PG	28AUG14	**FIGURE 56**	
REVIEW				

APPENDIX D

All Weather Private Road

APPENDIX D1

AWPR Observations

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	GPS COORDINATES	PHOTO
0+430	PRC1	1x600 mm CSP	Culvert owned by the town and not AEM. Minor damage to outlet. Minor obstruction of the outlet. Still in good condition. No action required	15W356163 /7136092	
0+470	PRC2	2x600 mm CSP	Culvert owned by the town and not AEM. Good condition	15w 356196 /7136129	Outlet: 192
1+380	PRC3	1x600 mm CSP	Culvert owned by the town and not AEM. Good condition	15w 356448 /7136952	
2+550	R-00A	1x600 mm CSP	No sign of any flow. Inlet partially collapsed, outlet entirely collapsed with signs of obstruction from road material, one hole in the culvert was visible from the crest of the road in the past, but is now well recovered.	15w 355926 /7137789	
4+260	PC-14	2x600 mm CSP	These 2 culverts are too damaged to function any longer. If needed, new culvert should be installed further north.	15w 355150 /7139212	-
5+200	Quarry 1		Rocks walls are generally clean and stable.		193
~5+700	unnamed	1x600 mm CSP	The inlet is buried in gravel. The outlet is in good condition.	14w 644762 /7140728	
8+750	R02 Centre Bridge	30m Acrow Panel Bridge	In general good condition. The two corrugated steel bins at both abutments show deformation under the weight of the bridge.		194: north 195: south

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	GPS COORDINATES	PHOTO
8+830	PC-17A	2X1800 mm CSP	Sign of erosion beneath the inlet and flow of water occuring beneath the culvert. The 1800 CSP were installed too high. While conditions are not perfect, they have proven stable over the past years. No sign of degradation from last year on both the inlet and outlet sides. Flow was observed beneath the culvert in the past, but in 2019 the flow moved further south (5-10 m from culvert). To be on watch during next spring for evolution.	14w 643845 /7143422	Outlet : 196
8+850	PC-17	2x1200 mm CSP	In good condition	14w 643845 /7143422	-
9+952	PC-1	1x600 mm CSP	In good condition	14w 643800 /7144488	
10+580	R-03	1x600 mm CSP	In good condition	14w 643583 /7145080	
12+050	R-04	1x1200 mm CSP	In good condition	14w 643082 /7146461	Inlet (west) : 197 Outlet (east) : 198
12+745	PC-13	1x600 mm CSP	In good condition but inlet slightly bent.	14w 642850 /7147107	

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	GPS COORDINATES	PHOTO
13+250	Quarry 2		The wall is mostly clean. One steep area is unstable and would require cleaning if operations resume.		199
13+405	PC-2	1x600 mm CSP	In good condition	14w 642617 /7147733	
13+685	PC-3	1x600 mm CSP	In good condition	14w 642524 /7147992	
13+950	unnamed	1x600 mm CSP	In good condition	14w 642362 /7148374	
14+910	PC-4	1x600 mm CSP	In good condition	14w 642007 /7149100	
15+745	R-05A	1x1200 mm CSP	In good condition	14w 641539 /7149630	
17+600	R05 Center Bridge	30m Acrow Panel Bridge	In good condition. Minor damage to the bin wall of both abutments as a result of past snow removal activites. No reparation required yet.	14w 640343 /7151125	201: north 202: south
18+280	PC-5	1x600 mm CSP	In good condition	14w 640268 /7151768	
18+900	PC-6	1x600 mm CSP	In good condition	14w 640089 /7152535	

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	GPS COORDINATES	PHOTO
20+240	PC-7A	2x600 mm CSP	In general good condition. The outlet of the northern culvert is damaged.	14w 639438 /7153812	
20+250	PC-7	1x600 mm CSP	The outlet of the culvert is damaged and to be cleaned.	14w 639443 /7153804	
23+100	R06 Center Bridge	30 m Acrow Panel Bridge	In good condition		203: north 204: south
23+700	Quarry 3		A crusher is installed in this quarry. The west wall is in good and stable condition but would need additional cleaning locally.		205, 206
25+900	R-07	1x1200 mm CSP	In good condition	14w 636368 /7157921	
29+420	PC-8	1x600 mm CSP	In good condition	14w 634850 /7161315	
31+300	Quarry 4		Quarry flooded. In good condition.		207, 208
34+650	Quarry 5		Rock walls are in good and stable condition, except for a small portion on the east side.		209, 210
35+690	PC-9	1x600 mm CSP	In good condition.	14w 631460 /7164196	
36+470	Quarry 6		The remaining rock walls are clean and stable.		211, 212

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	GPS COORDINATES	PHOTO
36+865	PC-10	1x600 mm CSP	In good condition.	14w 630696 /7164989	
39+552	PC-11	1x600 mm CSP	In good condition. The inlet is too high and water is flowing underneath it.	14w 629977 /7167512	
39+800	Quarry 7		The quarry walls are in unstable condition. Scaling is recommended before resuming activities.		215
41+300	PC-12	1x600 mm CSP	In good condition, almost submerged.	14w 629714 /7169091	
42+950	Quarry 8		Walls are generally stabilized with rockfill berm but some others are in loose unstable condition.		216, 217
44+600	Quarry 9		Presence of unstable loose rocks and boulders along the steepest and highest wall section. Some walls are in unstable condition with loose rocks.		218, 219
48+500	R09 Center Bridge	12m Rapid Span Bridge	In good condition	14w 625545 /7173765	220, 221
48+900	Quarry 10		The steep west rock wall is unstable.		

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	GPS COORDINATES	PHOTO
53+500	Quarry 11		Rock walls are clean and stable.		222, 223
54+950	PC-16	1x600 mm CSP	Not observed in 2019	14w 626436 /7179742	
58+300	Quarry 12		In general good, stable condition.		224
62+060	R13 Center Bridge	12 m Rapid Span Bridge	In general good condition. The east side of the north abutment seemed inclined in the past but not anymore.	14w 626197 /7185563	225: north 226 : south
62+350	Quarry 13		Loose blocks were observed in some portions of the rock wall, but the quarry is in general good condition.		227, 228
65+700	Quarry 14		Quarry flooded. Loose blocks were observed in some portions of the rock wall, but in general good condition.		229, 230
67+600	Quarry 15		Steep rock wall in relatively stable condition		231
67+840	R-14	3x1200 mm CSP	Middle and northern culverts show small sign of erosion at the outlet and have been damaged (collapsed) inside, below the road, but it is anticipated that they will continue to perform well. All of them were installed too high but function well. No action required.	14w 626859 /7190950	

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	GPS COORDINATES	PHOTO
69+200	R15 Centre Bridge	30 m Acrow Panel Bridge	Bin wall of both abutments were observed to be damaged but they are still holding well. The bridge is dipping toward the west side on both north and south abutments. The foundation does not show signs of failure but is slowly settling. Its condition should be monitored.	14w 627469 /7192035	232 : north 233 : south
70+400	Quarry 16		Presence of unstable loose rocks and boulders but in general good condition.	14w 627216 /7193129	234
72+800	Quarry 17		Steep rock wall in stable conditions.	14w 626884 /7195600	
73+800	R16 Centre Bridge	12m Rapid Span Bridge	In good condition	14w 626701 /7196535	235 : north 236 : south
77+440	R-17	1x1200 mm CSP	In good condition	14w 626127 /7199708	
79+500	R18 Centre Bridge	12 m Rapid Span Bridge	In good condition	14w 627270 /7201462	237 : north 238 : south
80+200	Quarry 18		In general good condition, south wall is high (about 8 m) with some loose blocks.	14w 627370 /7202154	239
80+950	R-18A	3x1200 mm CSP	In good condition.	14w 627556 /7202800	240
82+500	R-18B	1X600 mm CSP	In good condition, installed above ground surface (water can flow below culvert).	14w 627034 /7203901	

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	GPS COORDINATES	PHOTO
83+150	R19 Centre	12m Rapid Span Bridge	Some damage to the steel containment plates and to one pile was observed, which may be associated with snow removal activity. The damage is minor and does not affect the geotechnical integrity of the bridge.	14w 627680 /7203918	241 : north 242 : south
84+300	Quarry 19		Rock walls are in good condition.		
85+490	R-20	1x1200 mm CSP	Outlet of the culvert is slighly twisted. The middle of the culvert is slightly collapsed. The inlet is installed above the ground surface and water is able to flow beneath the culvert. No follow-up required, in stable conditions.	14w 629596 /7204573	
87+300	R-21	2x1200 mm CSP	Both culverts are slightly collapsed in the middle. Should have been installed lower to avoid erosion issue. In stable condition.	14w 630593 /7206335	
89+550	Quarry 20		Quarry walls are in good condition	14w 631254 /7208023	243, 244
93+400	Quarry 21		Quarry walls are in good condition.	14w 630863 /7211784	
93+600	R-23	1x1200 mm CSP	Minor damage near the top, but still in good condition. The culvert is installed too high and as a result there is a low flow of water through the road rockfill. The situation has been under control over the past years.	14w 630975 /7211918	
98+100	R-24	2x1200 mm CSP	Both outlet are installed too high. The outlet of the southern culvert still shows small signs of erosion, but this has been under control over the past years. Both culvert show deformation in the upper part.	14w 633902 /7215232	

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	GPS COORDINATES	PHOTO
99+200	Quarry 22		In relative stable condition.	14w 633894 /7216183	
101+950	R-25	2x600 mm CSP	One culvert is angling up toward the downstream end and natural drainage by gravity does not occur. A second culvert alongside is well installed and should drain water for the remainder of the season. No sign of erosion observed during the inspection.	14w 635112 /7217370	
104+400	R-26	3x1200 mm CSP	In good condition	14w 636844 /7216000	
	Quarry 23		This is an active quarry used to store rock cores and other things. Because of the presence of loose rocks on top of steep wall, the workers who need access to the quarry should be aware of rockfall potential and stay at a minimum of 20 m away from the wall.		245, 246
	Culvert along Western Diversion Ditch	2x1200 mm CSP	Outlet in good condition and inlet slightly bent but still in good condition.		

APPENDIX D2

Culverts Photographic Log

Photograph D2-1: PRC2 km 0+470

Date: July 24, 2019 **Photo Number**: 192

Description: View of the culvert outlet. Good condition.

Photograph D2-2: PC-17A km 8+830

Date: August July 24, 2019 **Photo Number**: 196

Description: View of the culverts outlet. No sign of degradation since last year but the flow moved further south (5-10 m from culvert).

Photograph D2-3 R-04 km 12+050

Date: July 24, 2019 **Photo Number**: 197

Description: View of the culvert inlet. In good condition.

Photograph D2-4: R-04 km 12+050

Date: July 24, 2019 **Photo Number**: 198

Description: View of the culvert outlet. In good condition.

Photograph D2-5: R-18A km 80+950

Date: July 24, 2019 **Photo Number**: 240

Description: View of the culverts outlet. In good condition.

APPENDIX D3

Bridges Photographic Log

Photograph D3-1 Bridges 1 – R02 km 8+750

Date: July 24, 2019 **Photo Number**: 194

Description: Looking at the north abutment. The corrugated steel bin shows deformation under the weight of the bridge.

Photograph D3-2 Bridges 1 – R02 km 8+750

Date: July 24, 2019 **Photo Number**:195

Description: Looking at the south abutment. The corrugated steel bin shows deformation under the weight of the bridge.

Photograph D3-3 Bridges 2 – R05 km 17+600

Date: July 24, 2019 **Photo Number**: 201

Description: Looking at the north abutment.

Photograph D3-4 Bridges 2 – R05 km 17+600

Date: July 24, 2019 **Photo Number**: 202

Description: Looking at the south abutment. Minor damage to the bin wall.

Photograph D3-5 Bridges 3 – R06 km 23+100

Date: July 24, 2019 **Photo Number**: 203

Description: Looking at the north abutment.

Photograph D3-6 Bridges 3 – R06 km 23+100

Date: July 24, 2019 **Photo Number**: 204

Description: Looking at the south abutment.

Photograph D3-7 Bridges 4 – R13 km 62+060

Date: July 24, 2019 **Photo Number**: 225

Description: Looking at the north abutment.

Photograph D3-8 Bridges 4 – R13 km 62+060

Date: July 24, 2019 **Photo Number**: 226

Description: Looking at the south abutment.

Photograph D3-9 Bridges 5 – R15 km 69+200

Date: July 24, 2019 **Photo Number**: 232

Description: Looking at the north abutment. Damage to the bin wall likely caused during snow removal activities. Bridge is tipping toward the west side on the abutment.

Photograph D3-10 Bridges 5 – R15 km 69+200

Date: July 24, 2019 **Photo Number**: 233

Description: Looking at the south abutment. Damage to the bin wall likely caused during snow removal activities. Bridge is tipping toward the west side on the abutment.

Photograph D3-11 Bridges 6 – R16 km 73+800

Date: July 24, 2019 **Photo Number**: 235

Description: Looking at the north abutment. In good condition.

Photograph D3-12 Bridges 6 – R16 km 73+800

Date: July 24, 2019 **Photo Number**: 236

Description: Looking at the south abutment. In good condition.

Photograph D3-13 Bridges 7 – R18 km 79+500

Date: July 24, 2019 **Photo Number**: 237

Description: Looking at the north abutment. In good condition.

Photograph D3-14 Bridges 7 – R18 km 79+500

Date: July 24, 2019 **Photo Number**: 238

Description: Looking at the south abutment. In good condition.

Photograph D3-15 Bridges 8 – R19 km 83+150

Date: July 24, 2019 **Photo Number**: 241

Description: Looking at the north abutment. Minor damage to steel plate due to snow removal activity.

Photograph D3-16 Bridges 8 – R19 km 83+150

Date: July 24, 2019 **Photo Number**: 242

Description: Looking at the south abutment. Minor damage to steel plate due to snow removal activity.

APPENDIX E

Amaruq Road

APPENDIX E1

Amaruq Road Observations

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
0+449	#1	450 mm	Not observed, seems to be under Vault Pad.	-
0+675	#2	300 mm		-
1+133	#3	900 mm	In good condition.	-
1+137	#3-2	900 mm		
1+325	#4	800 mm	Not observed.	-
1+525	#5	600 mm	In good condition.	-
1+799	#6	600 mm	Not observed.	-
2+013	#7	900 mm	Inlet in good condition, outlet totally buried.	-
2+016	#7-2	900 mm		
2+125	#8	900 mm	In good condition.	-
2+127	#8-2	900 mm		
2+659	#9	600 mm	Inlet in good condition, outlet damaged and pinched.	-
3+400	Bridge 3.4		In good condition.	279: north 280: south
3+264	#10	600 mm	Inlet in good condition, outlet damaged and pinched.	-
3+850	#11	300 mm	In good condition.	-
4+183	#12	900 mm	In good condition.	-
4+181	#12-2	900 mm		
4+179	#12-3	900 mm		
4+184	#12-4	900 mm		
4+186	#12-5	900 mm		
4+615	#13	300 mm	Inlet in good condition, outlet not observed as it is buried.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
4+756	#14	600 mm	In good condition.	-
4+850	#15	900 mm	In good condition.	-
5+050	#16	300 mm	Not observed.	-
5+161	#17	800 mm	In good condition, outlet damaged.	-
5+330	#18	700 mm	In good condition.	-
5+574	#19	900 mm	In good condition.	-
5+931	#20	900 mm	In good condition.	-
5+929	#20-2	900 mm		
6+310	#21	300 mm	Not observed.	-
6+423	#22	600 mm	In good condition.	-
6+442	#23	600 mm	In good condition.	-
6+493	#24	600 mm	Not observed.	-
6+530	#25	600 mm	In good condition.	-
7+216	#26	800 mm	In good condition.	-
7+218	#26-2	800 mm		
7+275	#27	600 mm	In good condition.	-
7+300	#27-2	600 mm	Outlet is buried.	
7+325	#27-3	600 mm	In good condition.	-
7+349	#28	600 mm	In good condition.	-
7+375	#28-2	600 mm	In good condition.	-
7+779	#29	900 mm	Not observed.	-
7+781	#29-2	900 mm	Not observed.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
7+968	#30	900 mm	In good condition.	-
7+970	#30-2	900 mm		
8+005	#31	900 mm	In good condition.	-
8+383	#32	900 mm	In good condition.	-
8+405	#33	900 mm	In good condition.	-
8+426	#34	900 mm	In good condition.	-
8+428	#34-2	900 mm		
8+581	#35	700 mm	In good condition.	-
9+000	#36	700 mm	In good condition.	-
9+035	#37	900 mm	In good condition.	-
9+049	#38	900 mm	In good condition.	-
9+193	#39	900 mm	In good condition.	-
9+195	#39-2	900 mm		
9+291	#40	900 mm	In good condition.	-
9+388	#41	600 mm	In good condition.	-
9+416	#42	600 mm	In good condition.	-
9+460	#43	600 mm	In good condition.	-
9+490	#44	300 mm	Not observed.	-
9+710	#45	600 mm	Inlet is buried.	-
10+500	Quarry 10.5		Unstable wall, loose rocks. Workers should stay away from the wall.	-
10+700	Bridge 10.7	600 mm	In good condition.	277: north 278: south

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
11+020	#46	900 mm	In good condition.	-
11+101	#47	900 mm	2 of the 5 outlets are completely buried.	-
11+103	#47-2	900 mm		
11+105	#47-3	900 mm		
11+107	#47-4	900 mm		
11+203	#48	900 mm	The inlet is 3/4 buried.	-
11+411	#49	450 mm	Not observed.	-
11+748	#50	600 mm	In good condition.	-
11+905	#51	300 mm	Not observed.	-
12+195	#52	700 mm	In good condition.	-
12+240	#53	700 mm	In good condition, the outlet is half buried.	-
12+388	#54	600 mm	Inlet is buried.	-
12+440	#55	600 mm	Inlet is buried.	-
12+485	#56	600 mm	In good condition.	-
12+635	#57	450 mm	In good condition, the outlet is buried.	-
12+740	#58	900 mm	In good condition.	-
12+760	#59	900 mm	In good condition.	-
12+775	#60	900 mm	In good condition.	-
13+050	#61	600 mm	Inlet in good condition but outlet completely buried.	-
13+265	#62	600 mm	In good condition.	-
13+390	#63	300 mm	In good condition.	-
13+920	#64	600 mm	Inlet is buried.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
14+924	#65	800 mm	In good condition.	-
16+000	Bridge 16		In good condition.	275: north 276: south
16+324	#66	600 mm	The inlet is half buried.	-
16+689	#67	600 mm	Not observed.	-
16+750	#68	600 mm	In good condition.	-
17+000	Esker #1		Active (gravel and rock). Presence of loose rock on the steep wall, risk of sloughing.	-
17+250	#68-A	600 mm	In good condition.	-
17+500	#68-B	600 mm	Not observed.	-
17+784	#69	600 mm	Not observed.	-
17+837	#70	600 mm	In good condition.	-
18+580	#73	1200 mm	In good condition.	-
18+559	#74	900 mm	In good condition.	-
18+610	#74-2	900 mm		
18+861	#75	600 mm	In good condition.	-
18+916	#76	450 mm	In good condition.	-
18+998	#77	450 mm	In good condition.	-
19+092	#78	300 mm	In good condition.	-
19+092	#78-2	300 mm		
19+495	#79	700 mm	In good condition.	-
19+659	#80	450 mm	In good condition.	-
19+841	#81	600 mm	In good condition.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
20+000	Bridge 20		In good condition.	273: north 274: south
20+143	#82	300 mm	In good condition.	-
20+300	#83	600 mm	Inlet is bent, still working.	-
20+527	#84	700 mm	In good condition.	-
20+671	#85	600 mm	Inlet in good condition, outlet is buried.	-
20+740	#86	600 mm	In good condition but outlet buried.	-
20+810	#87	600 mm	In good condition.	-
20+881	#88	300 mm	In good condition, the outlet is almost completely blocked.	-
	Quarry 21 (Q141)		Not accessible by pick-up.	-
21+180	#89	450 mm	In good condition, the outlet is high above ground.	-
21+295	#90	800 mm	In good condition.	-
21+297	#90-2	800 mm		
21+770	#91	600 mm	In good condition.	-
22+040	#92	600 mm	In good condition.	-
22+100	#93	450 mm	Inlet in good condition, outlet totally buried.	-
22+147	#94	900 mm	In good condition.	-
22+149	#94-2	900 mm	In good condition.	-
22+150	#94-3	900 mm	In good condition.	-
22+161	#95	900 mm	In good condition.	-
22+162	#95-2	900 mm	In good condition.	-
22+353	#96	600 mm	In good condition.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
22+436	#97	600 mm	In good condition, the inlet is buried by rockfill.	-
22+482	#98	600 mm	In good condition.	-
22+830	#99	600 mm	In good condition.	-
22+936	#100	600 mm	In good condition.	-
23+025	#101	600 mm	Outlet in good condition, inlet totally buried.	-
23+265	#102	600 mm	In good condition.	-
23+562	#103	600 mm	In good condition.	-
23+595	#104	600 mm	In good condition.	-
23+900	Bridge 23.9		In good condition.	271: north 272: south
24+555	#105	600 mm	In good condition.	-
24+700	#106	600 mm	In good condition.	-
24+961	#107	900 mm	In good condition.	-
24+982	#107-2	900 mm		
24+984	#107-3	900 mm		
25+000	Esker #2		In general good condition, but the small walls are steep and in loose conditions. Risk of rockfalls near the walls.	-
25+551	#108	600 mm	In good condition.	-
25+905	#109	800 mm	In good condition.	-
26+100	Bridge 26.1		In good condition.	269: north 270: south
26+350	#110	450 mm	In good condition.	-
26+461	#111	300 mm	Outlet in good condition, the inlet is buried.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
26+630	#112	300 mm	In good condition but outlet totally buried.	-
26+736	#113	450 mm	In good condition.	-
26+810	#114	450 mm	In good condition.	-
26+865	#115	300 mm	In good condition.	-
26+940	#116	450 mm	In good condition.	-
27+173	#117	700 mm	In good condition.	-
27+433	#118	450 mm	In good condition but inlet is half blocked.	-
27+777	#119	300 mm	In good condition.	-
28+125	#120	300 mm	In good condition.	-
28+300	#121	900 mm	In good condition.	-
28+302	#121-2	900 mm		
28+304	#121-3	900 mm		
28+414	#122	900 mm	In good condition.	-
28+416	#122-2	900 mm		
28+418	#122-3	900 mm		
28+575	#123	800 mm	In good condition.	-
28+710	#124	300 mm	In good condition.	-
29+040	#125	800 mm	In good condition.	-
29+240	#126	800 mm	Installed oblique to the road, but in good condition.	-
30+409	#129	1200 mm	In good condition.	-
30+180	Quarry 30.5		The quarry was cleaned and is in good condition. Some walls still show some loose blocks.	
	30+540	600 mm	In good condition.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
30+812	#130	600 mm	In good condition.	-
31+041	#131	600 mm	In good condition.	-
31+540	#132	600 mm	In good condition.	-
32+141	#133	300 mm	Not observed.	-
32+300	Bridge 32.3		In good condition.	267: north 268: south
32+389	#134	300 mm	In good condition but inlet is totally buried.	-
32+567	#135	300 mm	In good condition.	-
32+905	#136	300 mm	Not observed.	-
32+940	#137	300 mm	Not observed.	-
33+000	#138	300 mm	In good condition but inlet is buried.	-
33+214	#139	900 mm	In good condition.	-
33+216	#139-2	900 mm		
33+218	#139-3	900 mm		
33+256	#140	900 mm	In good condition.	-
33+258	#140-2	900 mm		
33+260	#140-3	900 mm		
33+727	#141	900 mm	In good condition.	-
33+728	#141-2	900 mm		
33+730	#141-3	900 mm		
33+732	#141-4	900 mm		
33+734	#141-5	900 mm		
34+160	#142	450 mm	In good condition.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
34+291	#143	600 mm	In good condition.	-
34+319	#144	1000 mm	In good condition.	-
34+395	#145	300 mm	In good condition but inlet is buried by a large rock.	-
34+660	#146	1200 mm	In good condition.	-
34+855	#147	600 mm	In good condition but outlet is half buried.	-
35+173	#148	600 mm	In good condition.	-
35+000	Rock quarry 35 (Q150)		Active quarry. In general good condition but the western wall (4-5 m high) is in unstable condition.	-
35+670	#149	900 mm	In good condition.	-
36+171	#150	900 mm	In good condition.	-
36+173	#150-2	900 mm		
36+175	#150-3	900 mm		
36+177	#150-4	900 mm		
36+179	#150-5	900 mm		
36+562	#151	600 mm	In good condition but outlet is half buried.	-
36+933	#152	900 mm	In good condition.	-
37+027	#153	600 mm	In good condition.	-
37+028	#153-2	600 mm		-
37+030	#153-3	600 mm		-
37+032	#153-4	600 mm		-
37+033	#153-5	600 mm		-
37+261	#154	450 mm	In good condition.	-
37+470	#155	600 mm	In good condition.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
37+506	#156	450 mm	In good condition.	-
38+028	#157	600 mm	In good condition.	-
38+490	#158	900 mm	In good condition.	-
38+491	#158-2	900 mm		
38+493	#158-3	900 mm		
39+768	#159	700 mm	Not observed.	-
39+966	#160	600 mm	In good condition.	-
40+051	#161	600 mm	In good condition.	-
40+238	#162	600 mm	In good condition.	-
40+474	#163	300 mm	Outlet in good condition but inlet totally buried.	-
40+790	#164	300 mm	In good condition.	-
40+964	#165	600 mm	In good condition.	-
41+610	#166	900 mm	In good condition.	-
41+843	#167	900 mm	In good condition.	-
42+342	#168	600 mm	In good condition.	-
42+765	#169	300 mm	In good condition.	-
43+340	#170	800 mm	In good condition.	-
43+500	Bridge 43.5		In good condition.	265: north 266: south
43+568	#170-A	900 mm	In good condition.	-
43+577	#170-B	900 mm		
43+587	#170-C	900 mm		

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
43+815	#171	600 mm	In good condition.	-
44+431	#173	1000 mm	In good condition. The 2 southern culverts are installed below ground surface and water is flowing.	-
44+433	#173-2	1000 mm		
44+435	#173-3	1000 mm		
44+470	#174	600 mm	In good condition.	-
44+640	#175	450 mm	In good condition.	-
44+800	Bridge 44.8		A crack is present on the north-west concrete abutment.	263: north 264: south
45+055	#176	600 mm	Not observed.	-
45+065	#177	600 mm	In good condition.	-
45+170	#178	600 mm	In good condition.	-
45+485	#179	700 mm	In good condition.	-
45+803	#180	600 mm	In good condition.	-
45+935	#181	600 mm	In good condition.	-
46+000	Esker #3		Not active. Only the entrance was seen, as there is no further access. The steep slope observed in 2018 was modified and now meets a stable configuration.	-
46+126	#182	800 mm	In good condition.	-
46+185	#183	800 mm	In good condition.	-
46+187	#183-2	800 mm	In good condition.	-
46+230	#184	600 mm	In good condition.	-
46+404	#185	300 mm	In good condition.	-
46+541	#186	450 mm	In good condition.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
46+570	#187	600 mm	In good condition.	-
46+595	#188	600 mm	In good condition.	-
46+870	#189	700 mm	In good condition.	-
46+985	#190	900 mm	In good condition.	-
47+046	#191	300 mm	Not observed.	-
47+190	#192	600 mm	In good condition.	-
47+360	#193	600 mm	In good condition.	-
47+660	#194	600 mm	In good condition.	-
47+808	#195	700 mm	In good condition.	-
47+961	#196	300 mm	In good condition.	-
48+120	#197	600 mm	In good condition.	-
48+222	#198	450 mm	In good condition.	-
48+383	#199	900 mm	In good condition.	-
48+385	#199-2	900 mm		
48+387	#199-3	900 mm		
48+389	#199-4	900 mm		
48+457	#201	900 mm	Installed below the ground level.	-
48+800	#203	600 mm	In good condition.	-
48+840	#204	600 mm	In good condition.	-
49+108	#206	450 mm	In good condition.	-
49+310	#207	600 mm	In good condition.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
49+431	#208	900 mm	In good condition.	-
49+433	#209	900 mm	In good condition.	
49+435	#210	900 mm	In good condition.	
49+550	#211	450 mm	In good condition.	-
49+640	#212	600 mm	In good condition.	-
49+795	#213	300 mm	In good condition but outlet is half blocked.	-
49+915	#214	800 mm	In good condition.	-
50+135	#215	300 mm	In good condition.	-
50+510	#216	600 mm	Not observed.	-
50+600	Quarry Q165		In good condition.	-
50+790	#217	450 mm	In good condition.	-
51+233	#218	900 mm	In good condition.	-
51+235	#218-2	900 mm		
51+237	#218-3	900 mm		
51+239	#218-4	900 mm		
51+460	#219	300 mm	In good condition.	-
51+883	#221	900 mm	In good condition.	-
51+885	#221-2	900 mm		
51+887	#221-3	900 mm		
52+000	Rock quarry 52		Active. In good and clean condition. The northern wall may pose a rockfall hazard (loose blocks and cobbles) which workers need to be aware of.	-
52+315	#222	600 mm	In good condition.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
52+650	#223	600 mm	In good condition.	-
52+705	#224	600 mm	In good condition.	-
52+715	#225	450 mm	In good condition.	-
52+935	#226	700 mm	Not observed.	-
52+937	#226-2	450 mm		
52+970	#227	600 mm	In good condition.	-
52+995	#228	700 mm	In good condition.	-
53+245	#229	300 mm	In good condition.	-
53+363	#230	700 mm	In good condition.	-
53+659	#231	300 mm	Not observed.	-
53+928	#232	300 mm	In good condition.	-
54+240	#233	450 mm	In good condition.	-
54+385	#234	450 mm	Not observed.	-
54+500	#235	600 mm	In good condition.	-
54+625	#236	450 mm	In good condition.	-
54+655	#237	600 mm	In good condition.	-
54+850	#238	600 mm	In good condition.	-
55+060	#239	600 mm	In good condition.	-
55+164	#240	600 mm	In good condition.	-
55+235	#241	600 mm	Outlet in good condition but inlet buried.	-
55+329	#242	600 mm	In good condition.	-
55+593	#243	600 mm	In good condition but inlet is buried.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
55+625	#244	450 mm	In good condition.	-
55+735	#245	600 mm	Not observed.	-
56+005	#246	600 mm	In good condition.	-
56+065	#247	700 mm	In good condition.	-
65+220	#248	700 mm	In good condition.	-
56+435	#249	600 mm	In good condition.	-
56+610	#250	800 mm	In good condition.	-
56+745	#251	300 mm	In good condition.	-
56+900	#252	900 mm	In good condition.	-
56+965	#253	900 mm	In good condition.	-
56+967	#253-2	900 mm	In good condition.	-
56+969	#253-3	900 mm	In good condition.	-
57+125	#254	600 mm	In good condition.	-
57+195	#255	600 mm	In good condition.	-
57+350	#256	600 mm	In good condition.	-
57+525	#257	600 mm	Not observed.	-
57+875	#258	600 mm	Not observed.	-
57+985	#259	900 mm	In good condition.	-
58+185	#260	300 mm	In good condition.	-
58+350	#261	450 mm	In good condition.	-
58+410	#262	450 mm	In good condition.	-
58+885	#263	450 mm	Not observed.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
58+922	#264	600 mm	In good condition.	-
58+967	#265	450 mm	In good condition.	-
59+024	#266	300 mm	In good condition.	-
59+720	Esker #5		Active (gravel). In good condition.	-
59+720	#267	900 mm	In good condition.	-
59+774	#268	600 mm	In good condition.	-
59+860	#269	600 mm	In good condition.	-
60+000	#270	600 mm	In good condition.	-
60+050	#271	600 mm	In good condition.	
60+087	#272	600 mm	In good condition.	
60+649	#273	300 mm	In good condition.	-
60+815	#274	600 mm	In good condition.	-
61+022	#275	600 mm	In good condition.	-
61+170			Added pipe to drain area of accumulated water. This is a good practice.	262
61+282	#276	600 mm	In good condition.	-
61+622	#277	450 mm	In good condition.	-
61+870	#278	1200 mm	In good condition.	-
62+307	#279	300 mm	Not observed.	-
62+416	#280	900 mm	Not observed.	-

STATION	NAME	STRUCTURE DESCRIPTION	COMMENTS	Photo
62+350	#281	600 mm	Not observed.	-
62+500	Esker #6		In good condition.	-
	Esker #7		Not observed. Possible not yet developed.	-
62+965	#283	450 mm	Outlet in good condition but inlet is buried.	-
63+070	#284	900 mm	In good condition. To be extended.	-
63+072	#284-2	900 mm		
63+074	#284-3	900 mm		
63+429	#287	600 mm	Not observed.	-
63+530	#288	600 mm	In good condition.	-
63+733	#289	600 mm	In good condition.	-
63+900	Unnamed culverts		Set of 4 culverts, 2 are heated by hot water. All are installed below ground level for fish. Water is flowing in the 2 middle culverts.	-
63+975	#290	600 mm	Not observed.	-

APPENDIX E2

Culverts Photographic Log

Photograph E2-1: Unnamed pipe, km 61+170

Date: July 25, 2019 **Photo Number**: 262

Description: View of a pipe installed to drain the area of water accumulation. Considered a good practice.

APPENDIX E3

Bridges Photographic Log

Photograph E3-1 Bridges 1 – km 3+400

Date: July 25, 2019 **Photo Number**: 280

Description: Looking at the north abutment.

Photograph E3-2 Bridges 1 – km 3+400

Date: July 25, 2019 **Photo Number**: 279

Description: Looking at the south abutment.

Photograph E3-3 Bridges 2 – km 10+700

Date: July 25, 2019 **Photo Number**: 278

Description: Looking at the north abutment.

Photograph E3-4 Bridges 2 – km 10+700

Date: July 25, 2019 **Photo Number**: 277

Description: Looking at the south abutment.

Photograph E3-5 Bridges 3 – km 16+000

Date: July 25, 2019 **Photo Number**: 276

Description: Looking at the north abutment.

Photograph E3-6 Bridges 3 – km 16+000

Date: July 25, 2019 **Photo Number**: 275

Description: Looking at the south abutment.

Photograph E3-7 Bridges 4 – km 20+000

Date: July 25, 2019 **Photo Number**: 274

Description: Looking at the north abutment.

Photograph E3-8 Bridges 4 – km 20+000

Date: July 25, 2019 **Photo Number**: 273

Description: Looking at the south abutment.

Photograph E3-9 Bridges 5 – km 23+900

Date: July 25, 2019 **Photo Number**: 272

Description: Looking at the north abutment.

Photograph E3-10 Bridges 5 – km 23+900

Date: July 25, 2019 **Photo Number**: 271

Description: Looking at the south abutment.

Photograph E3-11 Bridges 6 – km 26+100

Date: July 25, 2019 **Photo Number**: 270

Description: Looking at the north.

Photograph E3-12 Bridges 6 – km 26+100

Date: July 25, 2019 **Photo Number**: 269

Description: Looking at the south abutment.

Photograph E3-13 Bridges 7 – km 32+300

Date: July 25, 2019 **Photo Number**: 268

Description: Looking at the north abutment.

Photograph E3-14 Bridges 7 – km 32+300

Date: July 25, 2019 **Photo Number**: 267

Description: Looking at the south abutment.

Photograph E3-15 Bridges 8 – km 43+500

Date: July 25, 2019 **Photo Number**: 266

Description: Looking at the north abutment.

Photograph E3-16 Bridges 8 – km 43+500

Date: July 25, 2019 **Photo Number**: 265

Description: Looking at the south abutment.

Photograph E3-17 Bridges 9 – km 44+800

Date: July 25, 2019 **Photo Number**: 264

Description: Looking at the north abutment. A crack is present in the concrete on the western side.

Photograph E3-18 Bridges 9 – km 44+800

Date: July 25, 2019 **Photo Number**: 263

Description: Looking at the south abutment.

APPENDIX F

Quarries

Photograph F-1: Quarry 1 – km 5+200

Date: July 24, 2019 **Photo Number**: 193

Description: Rocks walls are generally clean and stable.

Photograph F-2: Quarry 2 – km 13+250

Date: July 24, 2019 **Photo Number**: 199

Description: The wall is mostly clean. One steep area is unstable and would require cleaning if operations resume.

Photograph F-3: Quarry 3 – km 23+700

Date: July 24, 2019 **Photo Number**: 205

Description: View of west wall. In good and stable condition but would need additional cleaning locally.

Photograph F-4: Quarry 3 – km 23+700

Date: July 24, 2019 **Photo Number**: 206

Description: View of east wall. In good condition.

Photograph F-5: Quarry 4 – km 31+300

Date: July 24, 2019 **Photo Number**: 207

Description: Quarry flooded. In good condition.

Photograph F-6: Quarry 4 – km 31+300

Date: July 24, 2019 **Photo Number**: 208

Description: Quarry flooded. In good condition.

Photograph F-7: Quarry 5 – km 34+650

Date: July 24, 2019 **Photo Number**: 209

Description: View of north and east walls. Rock walls are in good and stable condition, except for a small portion on the east side.

Photograph F-8: Quarry 5 – km 34+650

Date: July 24, 2019 **Photo Number**: 210

Description: View of north and west walls. In good condition.

Photograph F-9: Quarry 6 – km 36+470

Date: July 24, 2019 **Photo Number**: 211

Description: View of south and west walls. In good condition.

Photograph F-10: Quarry 6 – km 36+470

Date: July 24, 2019 **Photo Number**: 212

Description: View of south and east walls. In good condition.

Photograph F-11: Quarry 7 – km 39+800

Date: July 24, 2019 **Photo Number**: 215

Description: The quarry walls are in unstable condition. Scaling is recommended before resuming activities..

Photograph F-12: Quarry 8 – km 42+950

Date: July 24, 2019 **Photo Number**: 216

Description: View of west wall.

Photograph F-13: Quarry 8 – km 42+950

Date: July 24, 2019 **Photo Number**: 217

Description: View of south wall. Presence of loose blocks.

Photograph F-14: Quarry 9 – km 44+600

Date: July 24, 2019 **Photo Number**: 218

Description: View of west and south walls. Presence of loose blocks at the base of the wall.

Photograph F-15: Quarry 9 – km 44+600

Date: July 24, 2019 **Photo Number**: 219

Description: View of north and east walls. View of a pile of loose material.

Photograph F-16: Quarry 11 – km 53+500

Date: July 24, 2019 **Photo Number**: 222

Description: View of north and east walls. In good condition.

Photograph F-17: Quarry 11 – km 53+500

Date: July 24, 2019 **Photo Number**: 223

Description: View of west and north walls. In good condition.

Photograph F-18: Quarry 12 – km 58+300

Date: July 24, 2019 **Photo Number**: 224

Description: In good condition.

Photograph F-19: Quarry 13 – km 62+350

Date: July 24, 2019 **Photo Number**: 227

Description: View of the south and east walls. In general good condition.

Photograph F-20: Quarry 13 – km 62+350

Date: July 24, 2019 **Photo Number**: 228

Description: View of the west and north walls. In general good condition.

Photograph F-21: Quarry 14 – km 65+700

Date: July 24, 2019 **Photo Number**: 229

Description: View of north and west walls. Quarry flooded.

Photograph F-22: Quarry 14 – km 65+700

Date: July 24, 2019 **Photo Number**: 230

Description: View of west and south walls. Quarry flooded.

Photograph F-23: Quarry 15 – km 67+600

Date: July 24, 2019 **Photo Number**: 231

Description: Steep rock wall in generally stable condition.

Photograph F-24: Quarry 16 – km 70+400

Date: July 24, 2019 **Photo Number**: 234

Description: View of the south and west walls. Presence of loose rocks on steep wall but in general good condition.

Photograph F-25: Quarry 18 – km 80+200

Date: July 24, 2019 **Photo Number**: 239

Description: View of the south wall. In general good condition, south wall is high (about 8 m) with some loose blocks

Photograph F-26: Quarry 20 – km 89+550

Date: July 24, 2019 **Photo Number**: 243

Description: In good condition.

Photograph F-27: Quarry 20 – km 89+550

Date: July 24, 2019 **Photo Number**: 244

Description: In good condition.

Photograph F-28: Quarry 23 (Airstrip Quarry)

Date: July 24, 2019 **Photo Number**: 245

Description: Loose rocks on top of steep wall (bermed). The quarry is used to store equipment.

Photograph F-29: Quarry 23 (Airstrip Quarry)

Date: July 24, 2019 **Photo Number**: 246

Description: Loose rocks on top of steep wall (bermed). The quarry is used to store equipment.

APPENDIX G

Bulk Fuel Facilities

APPENDIX G1

Baker Lake Tank Farm Photographic Log

Photograph G1-1 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 167

Description: From the south side of Tank 1, looking southeast at Tanks 1, 2, 3, and 4. Presence of water ponding.

Photograph G1-2 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 168

Description: Looking at the southwestern corner of Tank 1.

Photograph G1-3 Baker Lake Tank Farm

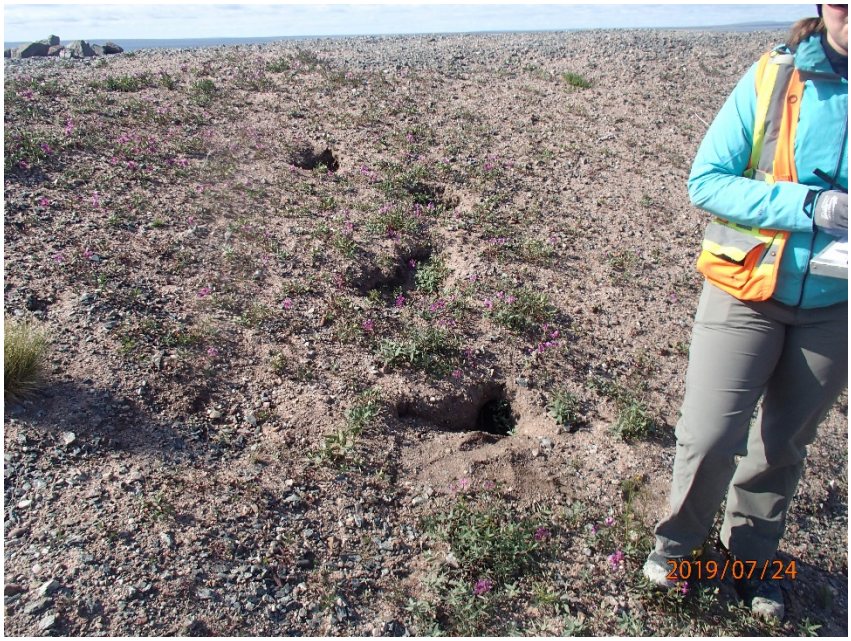
Date: July 24, 2019 **Photo Number**: 169

Description: Looking northwest toward the south side of Tank 1.

Photograph G1-4 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 170

Description: Looking northeast toward the south side of Tanks 2 and 3.



Photograph G15 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 171

Description: Looking southwest toward the south wall of the tank farm. Presence of animal burrows.

Photograph G1-6 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 173

Description: Looking southwest. The geomembrane between the south side of tank 2 and 3 is damaged.

Photograph G1-7 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 172

Description: From the southwestern corner of Tank 3 looking southeast. View of exposed LLDPE and water ponding.

Photograph G1-8 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 174

Description: From the south portion of the site looking northwest at the south side of Tank 3 and 4.

Photograph G1-9 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 175

Description: From the south portion of the site looking northeast.

Photograph G1-10 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 176

Description: From the northeastern corner of Tank 4 looking southwest toward Tank 4.

Photograph G1-11 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 177

Description: From the northern side of Tank 4, looking northwest toward Tanks 4, 3, 2, and 1. Presence of exposed liner.

Photograph G1-12 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 179

Description: From the northeastern corner of Tank 2 looking northwest towards the northeastern side of Tanks 1 and 2.

Photograph G1-13 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 178

Description: From the northwestern corner of Tank 3 looking southeast towards the northeastern side of Tanks 3 and 4.

Photograph G1-14 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 180

Description: Looking northwest at the southern and western sides of Tank 5.

Photograph G1-15 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 181

Description: Looking north between Tanks 5 and 6. Presence of water ponding.

Photograph G1-16 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 182

Description: Looking northeast at the southern side of Tank 6. Presence of water ponding.

Photograph G1-17 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 183

Description: Looking southeast at the northeastern side of Tank 6. Presence of water ponding.

Photograph G1-18 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 184

Description: Looking south between Tanks 5 and 6.

Photograph G1-19 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 185

Description: Looking west at the northeastern side of Tank 5.

Photograph G1-20 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 187

Description: From the northeastern corner of the Jet A fuel tanks looking south. Presence of exposed geomembrane.

Photograph G1-21 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 186

Description: From the northeastern corner of the Jet A fuel tanks looking west. Presence of exposed geomembrane.

Photograph G1-22 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 188

Description: From the northern side the Jet A fuel tanks looking southwest. Presence of a hole in the geomembrane.

Photograph G1-23 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 189

Description: From the southwestern corner of the Jet A fuel tanks looking east. Presence of exposed geomembrane and water ponding.

Photograph G1-24 Baker Lake Tank Farm

Date: July 24, 2019 **Photo Number**: 190

Description: From the southwestern corner of the Jet A fuel tanks looking north. Presence of exposed geomembrane and water ponding.

APPENDIX G2

Meadowbank Tank Farm Photographic Log

Photograph G2-1 Meadowbank Tank Farm

Date: July 22, 2019 **Photo Number**: 2

Description: From the western corner, looking east at the tank.

Photograph G2-2 Meadowbank Tank Farm

Date: July 22, 2019 **Photo Number**: 1

Description: From the western corner, looking northeast at the tank.

Photograph G2-3 Meadowbank Tank Farm

Date: July 22, 2019 **Photo Number**: 7

Description: From the eastern side, looking northwest.

Photograph G2-4 Meadowbank Tank Farm

Date: July 22, 2019 **Photo Number**: 6

Description: From the eastern side looking southwest. Presence of water ponding. A pump is installed.

Photograph G2-5 Meadowbank Tank Farm

Date: July 22, 2019 **Photo Number**: 4

Description: Looking northeast from the southern corner. Accumulation of water in the eastern corner.

Photograph G2-6 Meadowbank Tank Farm

Date: July 22, 2019 **Photo Number**: 3

Description: Looking northwest from the southern corner.

Photograph G2-7 Meadowbank Tank Farm

Date: July 22, 2019 **Photo Number**: 5

Description: Looking northwest from the southern corner.

APPENDIX G3

Amaruq Tank Farm Photographic Log

Photograph G3-1 Amaruq Tank Farm

Date: July 25, 2019 **Photo Number**: 255

Description: From the northeast side of the Tanks looking west toward the Amaruq Tank Farm.

Photograph G3-2 Amaruq Tank Farm

Date: July 25, 2019 **Photo Number**: 254

Description: From the southeast side of the Tanks looking west toward the Amaruq Tank Farm.

Photograph G3-3 Amaruq Tank Farm

Date: July 25, 2019 **Photo Number**: 256

Description: From the northwest side of the Tanks looking southeast toward the Amaruq Tank Farm.

Photograph G3-4 Amaruq Tank Farm

Date: July 25, 2019 **Photo Number**: 257

Description: From the fuelling pad, looking West at the new Tank Farm.

Photograph G3-5 Amaruq Tank Farm

Date: July 25, 2019 **Photo Number**: 258

Description: From the fuelling pad, looking North at the new Tank Farm.

Photograph G3-6 Amaruq Tank Farm

Date: July 25, 2019 **Photo Number**: 259

Description: From the northeast corner of the Tank, looking South at the new Tank Farm and the fuelling pad.

Photograph G3-7 Amaruq Tank Farm

Date: July 25, 2019 **Photo Number**: 260

Description: From the northeast corner of the Tank, looking West.

Photograph G3-8 Amaruq Tank Farm

Date: July 25, 2019 **Photo Number**: 261

Description: From the northwest corner of the Tank, looking South.

APPENDIX H

Other Facilities

APPENDIX H1

Vault Culverts Photographic Log

Photograph H1-1 Vault Road Culverts

Date: July 23, 2019 **Photo Number**: 78

Description: Looking at the outlet of the three culverts located on Vault Road at 640964E/7217466N. All of them are deformed in the middle.

Photograph H1-2 Vault Road Culverts

Date: July 23, 2019 **Photo Number**: 79

Description: From the inlet side of the three culverts located on Vault Road at 640964E/7217466N. The culverts are slightly deformed on top in the middle.

APPENDIX H2

Diversion Ditch Photographic Log

Photograph H2-1 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 83

Description: Looking east toward the culverts beneath the road.

Photograph H2-2 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 84

Description: Looking west toward the western diversion ditch.

Photograph H2-3 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 88

Description: From the eastern diversion ditch looking south toward Lake NP2.

Photograph H2-4 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 89

Description: From the eastern diversion ditch looking northwest.

Photograph H2-5 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 90

Description: From the eastern diversion ditch, looking east.

Photograph H2-6 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 91

Description: From the eastern diversion ditch, looking northwest.

Photograph H2-7 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 92

Description: From the northern diversion ditch looking southeast.

Photograph H2-8 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 93

Description: From the northern diversion ditch looking west.

Photograph H2-9 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 94

From the northern diversion ditch looking east.

Photograph H2-10 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 95

From the northern diversion ditch looking west.

Photograph H2-11 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 96

Description: From the northern diversion ditch looking east.

Photograph H2-12 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 97

Description: From the northern diversion ditch looking west.

Photograph H2-13 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 98

Description: From 637281E/7216790N, looking north. View of the western diversion ditch.

Photograph H2-14 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 99

Description: From 637281E/7216790N, looking south at the western diversion ditch.

Photograph H2-15 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 101

Description: From 637251E/7216171N, looking north at the western diversion ditch.

Photograph H2-16 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 100

Description: From 637251E/7216171N, looking west at the western diversion ditch and its retention basin.

Photograph H2-17 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 102

Description: From 637074E/7216157N, looking east at the western diversion ditch.

Photograph H2-18 Diversion Ditch and its Sediment and Erosion Protection Structure

Date: July 23, 2019 **Photo Number**: 103

Description: From 637074E/7216157N, looking west at the western diversion ditch.

APPENDIX H3

RSF Till Plug Photographic Log

Photograph H3-1 RSF Till Plug

Date: July 23, 2019 **Photo Number**: 85

Description: From the south side of NP2 Lake (north of the diversion ditch) looking west at the RSF till plug.

Photograph H3-2 RSF Till Plug

Date: July 23, 2019 **Photo Number**: 86

Description: From the south side of NP2 Lake (south of the diversion ditch) looking west at the RSF till plug.

Photograph H3-3 RSF Till Plug

Date: July 23, 2019 **Photo Number**: 87

Description: From the south side of NP2 Lake (south of the diversion ditch) looking southeast at the RSF till plug.

APPENDIX H4

Landfill Photographic Log

Photograph H4-1 Landfill

Date: July 23, 2019 **Photo Number**: 80

Description: From the new landfill location within the Rock Storage Facility, looking southeast.

APPENDIX H5

Landfarm Photographic Log

Photograph H5-1 Contaminated Soil Storage and Bioremedial Landfarm Facility

Date: July 23, 2019 **Photo Number**: 81

Description: From the northeast extremity of the South Cell, looking southeast at the Contaminated Soil Storage and Bioremedial Landfarm Facility. Signs of superficial slope failure are disappearing.

Photograph H5-2 Contaminated Soil Storage and Bioremedial Landfarm Facility

Date: July 23, 2019 **Photo Number**: 82

Description: From the northeast extremity of the South Cell, looking northeast at the Contaminated Soil Storage and Bioremedial Landfarm Facility. Signs of superficial slope failure are disappearing.

APPENDIX H6

Crusher Retaining Wall Photographic Log

Photograph H6-1 Crusher Retaining Wall

Date: July 25, 2019 **Photo Number**: 281

Description: From the access road, looking southeast at the retaining wall.

Photograph H6-2 Crusher Retaining Wall

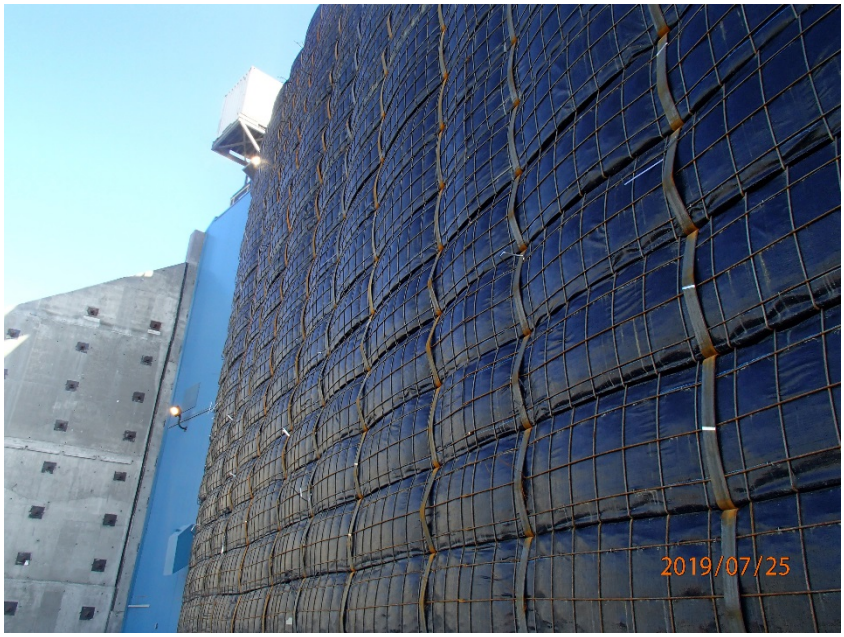
Date: July 25, 2019 **Photo Number**: 282

Description: From the base of the retaining wall, looking south.

Photograph H6-3 Crusher Retaining Wall

Date: July 25, 2019 **Photo Number**: 283

Description: From the base of the retaining wall, looking southwest.



Photograph H6-4 Crusher Retaining Wall

Date: July 25, 2019 **Photo Number**: 284

Description: From the base of the retaining wall, looking southeast.

Photograph H6-5 Crusher Retaining Wall

Date: July 25, 2019 **Photo Number**: 285

Description: From the base of the retaining wall, looking west.

APPENDIX I

Dikes Details and Instrumentation

1.0 DEWATERING DIKES

1.1 East Dike

East Dike was constructed in the summer of 2008; grouting of the foundation and bedrock occurred in 2008 and during the first quarter of 2009.

Instrumentation has been installed within East Dike and includes piezometers, thermistors, inclinometers, and flow meters. Survey monuments were removed from East Dike in the past as they have never been used. The inclinometer at Sta. 60+195 was destroyed in the past and has not been replaced. Replacement of this instrument is not considered necessary; however, monitoring of East Dike should continue and, if anomalous conditions are observed, then replacing this inclinometer should be re-evaluated.

Instrumentation within East Dike was installed in the spring of 2009 to monitor the dike's performance following construction and during dewatering, operation, and into closure. Additional instrumentation was added in 2009 and 2010 to increase coverage across the dike. Since June 2012, all piezometers and thermistors on East Dike have been connected to an automatic data collection and transmission system (VDV database). The following subsections present a summary of the data collected between September 2017 and August 2018.

Instrumentation within East Dike was installed in the spring of 2009 to monitor the dike's performance following construction and during dewatering, operation, and into closure. Additional instrumentation was added in 2009 and 2010 to increase coverage across the dike. Since June 2012, all piezometers and thermistors on East Dike have been connected to an automatic data collection and transmission system (VDV database). Two inclinometers are installed on East Dike at Sta. 60+495 and 60+705. An inclinometer was installed at Sta. 60+195, but was destroyed in July 2010 and has not been replaced.

Table 1 and Table 2 below detail instrumentation on East Dike.

Table 1: List of Piezometers and Thermistors on East Dike (source: AEM)

Station	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×) /Frozen (F)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
60+092	TH92	TH	✓	Automatic (DL8-SH1)	-	-	16	136/119
60+150	Pz150C	PZ	×(F)	Automatic (DL8-SH1)	127.35	Interface	-	-
60+185	TH185	TH	✓	Automatic (DL8-SH1)	-	-	16	136/119
60+190	Pz190P1A	PZ	✓	Automatic (DL8-SH1)	116.7	Bedrock	-	-
60+190	Pz190P1B	PZ	✓	Automatic (DL8-SH1)	121.7	Bedrock	-	-
60+190	Pz190P1C	PZ	✓	Automatic (DL8-SH1)	126.7	Interface	-	-
60+190	Pz190P2A	PZ	✓	Automatic (DL8-SH1)	116.34	Bedrock	-	-
60+190	Pz190P2B	PZ	✓	Automatic (DL8-SH1)	121.34	Bedrock	-	-
60+190	Pz190P2C	PZ	×(F)	Automatic (DL8-SH1)	126.34	Bedrock		
60+190	Pz190P3A	PZ	✓	Automatic (DL8-SH1)	116.63	Bedrock	-	-
60+190	Pz190P3B	PZ	✓	Automatic (DL8-SH1)	121.63	Bedrock	-	-
60+200	Pz200C	PZ	✓	Automatic (DL8-SH1)	127.71	Interface	-	-
60+240	Pz240C	PZ	✓	Automatic (DL8-SH1)	128.71	Interface	-	-
60+400	Pz400C	PZ	✓	Automatic (DL8-SH2)	126.76	Interface	-	-
60+420	Pz420C	PZ	✓	Automatic (DL8-SH2)	125.32	Interface	-	-
60+440	Pz440C	PZ	✓	Automatic (DL8-SH2)	124.66	Interface	-	-
60+450	Pz450C	PZ	✓	Automatic (DL8-SH2)	127	Interface	-	-
60+460	Pz460C	PZ	✓	Automatic (DL8-SH2)	125.15	Interface	-	-
60+470	Pz470C	PZ	×(F)	Automatic (DL8-SH2)	124.76	Interface	-	-

Station	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
60+472	Pz472C	PZ	✓	Automatic (DL8-SH2)	126.87	Interface+1M	-	-
60+480	Pz480C	PZ	✓	Automatic (DL8-SH2)	125.44	Interface	-	-
60+485	TH485	TH	✓	Automatic (DL8-SH2)	-	-	16	136/119
60+490	Pz490P1A	PZ	✓	Automatic (DL8-SH2)	114.12	Bedrock	-	-
60+490	Pz490P1B	PZ	✓	Automatic (DL8-SH2)	119.12	Bedrock	-	-
60+490	Pz490P1C	PZ	✓	Automatic (DL8-SH2)	125.81	Interface	-	-
60+490	Pz490P2A	PZ	✓	Automatic (DL8-SH2)	115.07	Bedrock	-	-
60+490	Pz490P2B	PZ	✓	Automatic (DL8-SH2)	120.07	Bedrock	-	-
60+490	Pz490P2C	PZ	✓	Automatic (DL8-SH2)	126.76	Interface	-	-
60+490	Pz490P3A	PZ	✓	Automatic (DL8-SH2)	114.62	Bedrock	-	-
60+490	Pz490P3B	PZ	✓	Automatic (DL8-SH2)	119.62	Bedrock	-	-
60+500	Pz500C	PZ	✓	Automatic (DL8-SH2)	125.78	Interface	-	-
60+510	Pz510C	PZ	✓	Automatic (DL8-SH2)	126.06	Interface	-	-
60+550	Pz550C	PZ	×(F)	Automatic (DL8-SH2)	129.85	Interface	-	-
60+600	Pz600C	PZ	×(F)	Automatic (DL8-SH3)	128.6	Interface	-	-
60+650	Pz650C	PZ	×(F)	Automatic (DL8-SH3)	128.48	Interface	-	-
60+695	TH695	TH	✓	Automatic (DL8-SH3)	-	-	16	136/119

Station	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
60+700	Pz700P2A	PZ	✓	Automatic (DL8-SH3)	118.08	Bedrock	-	-
60+700	Pz700P2B	PZ	✓	Automatic (DL8-SH3)	123.08	Bedrock	-	-
60+700	Pz700P2C	PZ	×(F)	Automatic (DL8-SH3)	129.77	Interface	-	-
60+700	Pz700P3A	PZ	✓	Automatic (DL8-SH3)	117.93	Bedrock	-	-
60+700	Pz700P3B	PZ	✓	Automatic (DL8-SH3)	122.93	Bedrock	-	-
60+750	Pz750C	PZ	×(F)	Automatic (DL8-SH3)	128.16	Interface	-	-
60+842	TH842	TH	✓	Automatic (DL8-SH3)	-	-	16	136/119

Table 2: Inclinometers on East Dike (source: AEM)

Location	Instrument ID	Operational (✓)/Not operational (×)	Manual/Automatic	Elevation interval in meters (top/bottom)
60+195	ED-IN-195	×(Damaged)	-	-
60+495	ED-IN-495	✓	Manual	136.6/124.1
60+705	ED-IN-705	✓	Manual	137.1/126.1

1.2 South Camp Dike

South Camp Dike was constructed between April and June of 2009. Additional thermal capping material and rockfill for the haul road was added to the dike in the winter of 2009-2010.

Table 3 below details instrumentation on South Camp Dike.

Table 3: List of Thermistors on South Camp Dike (source: AEM)

Hole	ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
38-3	SC-09-A	TH	✓	Manual	-	-	16	133.03/110.03
38-5	SC-10	TH	✓	Manual	-	-	16	132.40/109.40

1.3 Bay-Goose Dike

Construction of Bay-Goose Dike started in the summer of 2009. The earthworks component for the northern portion of the dike was mostly completed by early October 2009 and by October 2010 for the southern portion.

Grouting of the foundation and bedrock occurred between March 2010 and July 2011. Jet grouting occurred in selected portions of the dike between October 2010 and May 2011. The first phase of dewatering Bay-Goose Basin was completed by mid-November 2011 and the second phase was completed in August 2012.

Instruments were installed on Bay-Goose Dike in the summer of 2011 to monitor the dike's performance following construction, during dewatering and operation, and into closure. Survey monuments were removed from Bay-Goose Dike as they have never been used. Additional boreholes have been drilled in the North Channel sector in 2017 to install TDR reflectometers and inclinometers in order to monitor the dike's reaction to nearby blasting in Pit E5.

Table 4, Table 5 and Table 6 below detail instrumentation on Bay-Goose Dike.

Table 4: List of Piezometers and Thermistors on Bay-Goose Dike (source: AEM)

Station #	Instrument ID ID	Type PZ/TH	Status Operational (✓)/Not operational (×)/Frozen (F)	Readings Manual/ Automatic	For PZ		For TH	
					Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in m (top/bottom)
30+134	T1	TH	✓	Automatic (DL1)	-	-	16	135/115
30+158	Pz01P1A	PZ	×(F)	-	-	-	-	-
30+158	Pz01P1B	PZ	×(F)	-	-	-	-	-
30+158	Pz01P1C	PZ	×(F)	-	-	-	-	-
30+158	Pz01P2A	PZ	✓	Automatic (DL1)	117.05	10m below bedrock	-	-
30+158	Pz01P2B	PZ	✓	Automatic (DL1)	122.05	5m below bedrock	-	-
30+158	Pz01P2C	PZ	×(F)	Automatic (DL1)	128.05	1m above bedrock	-	-
30+158	Pz01P3A	PZ	×	Automatic (DL1)	117.13	10m below bedrock	-	-
30+158	Pz01P3B	PZ	×	Automatic (DL1)	122.13	5m below bedrock	-	-
30+167	Pz06P2	PZ	×(F)	Automatic (DL1)	127.57	1m above bedrock	-	-
30+185	T2	TH	✓	Automatic (DL1)	-	-	16	135/115
30+249.5	Pz07P2	PZ	×(F)	Automatic (DL1)	129.85	1m above bedrock	-	-
30+260	T3	TH	✓	Automatic (DL1)	-	-	16	130/125.5
30+272	T4	TH	✓	Automatic (DL1)	-	-	16	130/125.5
30+276.5	Pz02P1A	PZ	×(F)	Automatic (DL1)	119.25	10m below bedrock	-	-
30+276.5	Pz02P1B	PZ	×(F)	Automatic (DL1)	124.25	5m below bedrock	-	-
30+276.5	Pz02P1C	PZ	×(F)	Automatic (DL1)	130.25	1m above bedrock	-	-
30+276.5	Pz02P2A	PZ	✓	Automatic (DL1)	119.1	10m below bedrock	-	-
30+276.5	Pz02P2B	PZ	✓	Automatic (DL1)	124.1	5m below bedrock	-	-
30+276.5	Pz02P2C	PZ	×	Automatic (DL1)	130.1	1m above bedrock	-	-
30+276.5	Pz02P3A	PZ	✓	Automatic (DL1)	119.7	10m below bedrock	-	-

Station	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)/ Frozen (F)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
30+276.5	Pz02P3-B	PZ	✓	Automatic (DL1)	124.7	5m below bedrock	-	-
30+288.5	T5	TH	✓	Automatic (DL1)	-	-	16	130/125.5
30+306.5	Pz08P2	PZ	×(F)	Automatic (DL1)	129.65	1m above bedrock	-	-
30+330.5	T6	TH	✓	Automatic (DL1)	-	-	16	135/115
30+378.5	Pz03P1A	PZ	✓	Automatic (DL2)	113.12	10m below bedrock	-	-
30+378.5	Pz03P1B	PZ	✓	Automatic (DL2)	118.12	5m below bedrock	-	-
30+378.5	Pz03P1C	PZ	✓	Automatic (DL2)	124.12	1m above bedrock	-	-
30+378.5	Pz03P2A	PZ	✓	Automatic (DL2)	113.1	10m below bedrock	-	-
30+378.5	Pz03P2B	PZ	✓	Automatic (DL2)	118.1	5m below bedrock	-	-
30+378.5	Pz03P2C	PZ	✓	Automatic (DL2)	124.1	1m above bedrock	-	-
30+378.5	Pz03P3A	PZ	✓	Automatic (DL2)	113.58	10m below bedrock	-	-
30+378.5	Pz03P3B	PZ	✓	Automatic (DL2)	118.58	5m below bedrock	-	-
30+386	T7	TH	✓	Automatic (DL2)	-	-	16	135/115
30+417.5	T8	TH	✓	Automatic (DL2)	-	-	16	135/115
30+440	Pz09P2	PZ	✓	Automatic (DL2)	126.73	1m above bedrock	-	-
30+453.5	Pz04P1A	PZ	×(F)	Automatic (DL2)	116.61	10m below bedrock	-	-
30+453.5	Pz04P1B	PZ	×(F)	Automatic (DL2)	118.61	5m below bedrock	-	-
30+453.5	Pz04P1C	PZ	×(F)	Automatic (DL2)	124.61	1m above bedrock	-	-
30+453.5	Pz04P2A	PZ	✓	Automatic (DL2)	115.13	10m below bedrock	-	-
30+453.5	Pz04P2B	PZ	✓	Automatic (DL2)	120.13	5m below bedrock	-	-
30+453.5	Pz04P2C	PZ	✓	Automatic (DL2)	126.13	1m above bedrock	-	-
30+453.5	Pz04P3A	PZ	✓	Automatic (DL2)	115.25	10m below bedrock	-	-
30+453.5	Pz04P3B	PZ	✓	Automatic (DL2)	120.25	5m below bedrock	-	-

Station #	Instrument ID ID	Type PZ/TH	Status Operational (✓)/Not operational (×)/ Frozen (F)	Readings Manual/ Automatic	For PZ		For TH	
					Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
30+489.5	T9	TH	✓	Automatic (DL2)	-	-	16	135/115
30+516.5	Pz010P2	PZ	×(F)	Automatic (DL2)	130.26	1m above bedrock	-	-
30+553.25	T10	TH	✓	Automatic (DL2)	-	-	16	135/115
30+621.5	T11	TH	✓	Automatic (DL3)	-	-	16	135/115
30+645.5	Pz05P1A	PZ	×(F)	Automatic (DL3)	118	10m below bedrock	-	-
30+645.5	Pz05P1B	PZ	×(F)	Automatic (DL3)	123	5m below bedrock	-	-
30+645.5	Pz05P1C	PZ	×(F)	Automatic (DL3)	129	1m above bedrock	-	-
30+645.5	Pz05P2A	PZ	✓	Automatic (DL3)	117.85	10m below bedrock	-	-
30+645.5	Pz05P2B	PZ	✓	Automatic (DL3)	122.85	5m below bedrock	-	-
30+645.5	Pz05P2C	PZ	×(F)	Automatic (DL3)	128.85	1m above bedrock	-	-
30+645.5	Pz05P3A	PZ	✓	Automatic (DL3)	115.15	10m below bedrock	-	-
30+645.5	Pz05P3B	PZ	✓	Automatic (DL3)	122.6	5m below bedrock	-	-
30+650	TH12	TH	✓	Automatic (DL3)	-	-	16	135/115
30+684.5	Pz11P2	PZ	×(F)	Automatic (DL3)	130.65	1m above bedrock	-	-
30+713	TH13	TH	✓	Automatic (DL3)	-	-	16	135/115
30+770	Pz12P2	PZ	×(F)	Automatic (DL3)	132.16	1m above bedrock	-	-
30+804.5	Pz13P2	PZ	×(F)	Automatic (DL3)	132.05	1m above bedrock	-	-
30+827	TH14	TH	✓	Automatic (DL3)	-	-	16	135/115
31+052	Pz14P2	PZ	×(F)	Automatic (DL4)	131.06	1m above bedrock	-	-
31+080	TH15	TH	✓	Automatic (DL4)	-	-	16	135/115
31+134.5	TH16	TH	✓	Automatic (DL4)	-	-	16	135.08/115.08

Station #	Instrument ID ID	Type PZ/TH	Status Operational (✓)/Not operational (×)/ Frozen (F)	Readings Manual/ Automatic	For PZ		For TH	
					Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
31+165	Pz23P1A	PZ	✓	Automatic (DL4)	118.49	10m below bedrock	-	-
31+165	Pz23P1B	PZ	×(F)	Automatic (DL4)	123.49	5m below bedrock	-	-
31+165	Pz23P1C	PZ	×(F)	Automatic (DL4)	127.49	1m above bedrock	-	-
31+165	Pz23P2A	PZ	✓	Automatic (DL4)	116.91	10m below bedrock	-	-
31+165	Pz23P2B	PZ	✓	Automatic (DL4)	121.91	5m below bedrock	-	-
31+165	Pz23P2C	PZ	✓	Automatic (DL4)	127.91	1m above bedrock	-	-
31+165	Pz23P3A	PZ	✓	Automatic (DL4)	116.96	10m below bedrock	-	-
31+165	Pz23P3B	PZ	✓	Automatic (DL4)	121.96	5m below bedrock	-	-
31+170	TH17	TH	✓	Automatic (DL4)	-	-	16	135/115
31+220	Pz15P2	PZ	×(F)	Automatic (DL4)	130.73	1m above bedrock	-	-
31+352	TH18	TH	✓	Automatic (DL4)	-	-	16	135/115
31+565	Pz16P2	PZ	×(F)	Automatic (DL5)	131.28	1m above bedrock	-	-
31+595	TH19	TH	✓	Automatic (DL5)	-	-	16	135/108
31+600	Pz24P1A1	PZ	✓	Automatic (DL5)	111.3	11m below bedrock	-	-
31+600	Pz24P1A2	PZ	✓	Automatic (DL5)	116.3	4m below bedrock	-	-
31+600	Pz24P1B1	PZ	✓	Automatic (DL5)	121.8	1m above bedrock	-	-
31+600	Pz24P1B2	PZ	✓	Automatic (DL5)	124.3	4m above bedrock	-	-
31+600	Pz24P2A1	PZ	✓	Automatic (DL5)	110.15	10m below bedrock	-	-
31+600	Pz24P2A2	PZ	✓	Automatic (DL5)	116.15	4m below bedrock	-	-
31+600	Pz24P2B1	PZ	✓	Automatic (DL5)	120.65	10m above bedrock	-	-
31+600	Pz24P2B2	PZ	✓	Automatic (DL5)	123.15	3m above bedrock	-	-

Station #	Instrument ID ID	Type PZ/TH	Status Operational (✓)/Not operational (×)/ Frozen (F)	Readings Manual/ Automatic	For PZ		For TH	
					Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
31+600	Pz24P2C	PZ	✓	Automatic (DL5)	124.65	4m above bedrock	-	-
31+600	Pz24P3A1	PZ	✓	Automatic (DL5)	110.64	10m below bedrock	-	-
31+600	Pz24P3A2	PZ	✓	Automatic (DL5)	115.64	5m below bedrock	-	-
31+600	Pz24P3B1	PZ	✓	Automatic (DL5)	121.16	11m above bedrock	-	-
31+600	Pz24P3B2	PZ	✓	Automatic (DL5)	123.00	13m above bedrock	-	-
31+605	TH20	TH	✓	Automatic (DL5)	-	-	16	135/115
31+615	Pz17P2	PZ	×(F)	Automatic (DL5)	129.4	1m above bedrock	-	-
31+700	Pz18P2	PZ	×(F)	Automatic (DL5)	130.53	1m above bedrock	-	-
31+752.5	TH21	TH	✓	Automatic (DL6)	-	-	16	135/115
31+815	Pz25P1A1	PZ	✓	Automatic (DL6)	117.02	7m below bedrock	-	-
31+815	Pz25P1A2	PZ	✓	Automatic (DL6)	122.02	2m below bedrock	-	-
31+815	Pz25P1B1	PZ	×(F)	Automatic (DL6)	127.52	3m above bedrock	-	-
31+815	Pz25P1B2	PZ	×(F)	Automatic (DL6)	129.52	5m above bedrock	-	-
31+815	Pz25P2A1	PZ	✓	Automatic (DL6)	113.82	11m below bedrock	-	-
31+815	Pz25P2A2	PZ	✓	Automatic (DL6)	118.82	6m below bedrock	-	-
31+815	Pz25P2B1	PZ	✓	Automatic (DL6)	124.32	bedrock	-	-
31+815	Pz25P2B2	PZ	✓	Automatic (DL6)	126.32	2m above bedrock	-	-
31+815	Pz25P2C	PZ	✓	Automatic (DL6)	127.32	3m above bedrock	-	-
31+815	Pz25P3A1	PZ	✓	Automatic (DL6)	115.1	9m below bedrock	-	-
31+815	Pz25P3A2	PZ	✓	Automatic (DL6)	120.1	4m below bedrock	-	-
31+815	Pz25P3B1	PZ	✓	Automatic (DL6)	123.1	12m below bedrock	-	-
31+815	Pz25P3B2	PZ	✓	Automatic (DL6)	125.1	1m above bedrock	-	-

Station	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)/ Frozen (F)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
31+820	TH22	TH	✓	Automatic (DL6)	-	-	16	135/115
31+842	Pz22P2	PZ	✓	Automatic (DL6)	116.8	2m above bedrock	-	-
31+850	TH23	TH	✓	Automatic (DL6)	-	-	16	135/108
31+880	TH24	TH	✓	Automatic (DL6)	-	-	16	135/108
31+885	Pz26P1A1	PZ	✓	Automatic (DL6)	104.44	10m below bedrock	-	-
31+885	Pz26P1A2	PZ	✓	Automatic (DL6)	109.44	5m below bedrock	-	-
31+885	Pz26P1B1	PZ	✓	Automatic (DL6)	114.94	bedrock	-	-
31+885	Pz26P1B2	PZ	✓	Automatic (DL6)	117.94	3m above bedrock	-	-
31+885	Pz26P2A1	PZ	✓	Automatic (DL6)	106.77	8m below bedrock	-	-
31+885	Pz26P2A2	PZ	✓	Automatic (DL6)	111.77	3m below bedrock	-	-
31+885	Pz26P2B1	PZ	✓	Automatic (DL6)	117.27	2m above bedrock	-	-
31+885	Pz26P2B2	PZ	✓	Automatic (DL6)	120.27	5m above bedrock	-	-
31+885	Pz26P2C	PZ	✓	Automatic (DL6)	123.27	8m above bedrock	-	-
31+885	Pz26P3A1	PZ	✓	Automatic (DL6)	104.74	10m below bedrock	-	-
31+885	Pz26P3A2	PZ	✓	Automatic (DL6)	109.69	5m below bedrock	-	-
31+885	Pz26P3B1	PZ	✓	Automatic (DL6)	117.46	2m above bedrock	-	-
31+885	Pz26P3B2	PZ	✓	Automatic (DL6)	120.46	5m above bedrock	-	-
31+928	Pz19P2	PZ	✓	Automatic (DL7)	123.22	1m above bedrock	-	-
31+960	TH25	TH	✓	Automatic (DL7)	-	-	16	135/115
31+990	Pz20P2	PZ	✓	Automatic (DL7)	122.44	1m above bedrock	-	-
31+995	TH26	TH	✓	Automatic (DL7)	-	-	16	135/115

Station	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)/ Frozen (F)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
32+000	Pz27P1A1	PZ	✓	Automatic (DL7)	113.25	8m below bedrock	-	-
32+000	Pz27P1A2	PZ	✓	Automatic (DL7)	118.25	3m below bedrock	-	-
32+000	Pz27P1B1	PZ	✓	Automatic (DL7)	123.75	2m above bedrock	-	-
32+000	Pz27P1B2	PZ	✓	Automatic (DL7)	125.75	4m above bedrock	-	-
32+000	Pz27P2A1	PZ	✓	Automatic (DL7)	112.61	9m below bedrock	-	-
32+002	Pz27P2A2	PZ	✓	Automatic (DL7)	117.61	4m below bedrock	-	-
32+000	Pz27P2B1	PZ	✓	Automatic (DL7)	123.11	2m above bedrock	-	-
32+000	Pz27P2B2	PZ	✓	Automatic (DL7)	125.11	4m above bedrock	-	-
32+000	Pz27P2C	PZ	✓	Automatic (DL7)	126.61	5m above bedrock	-	-
32+000	Pz27P3A1	PZ	✓	Automatic (DL7)	111.72	10m below bedrock	-	-
32+000	Pz27P3A2	PZ	✓	Automatic (DL7)	116.72	5m below bedrock	-	-
32+000	Pz27P3B1	PZ	✓	Automatic (DL7)	122.22	1m above bedrock	-	-
32+000	Pz27P3B2	PZ	×(F)	Automatic (DL7)	123.22	2m above bedrock	-	-
32+020	Pz21P2	PZ	✓	Automatic (DL7)	121.13	1m above bedrock	-	-
32+030	TH27	TH	✓	Automatic (DL7)	-	-	16	135/108
32+060	TH28	TH	✓	Automatic (DL7)	-	-	16	135/108
32+065	Pz28P1A1	PZ	✓	Automatic (DL7)	102.99	12m below bedrock	-	-
32+065	Pz28P1B1	PZ	✓	Automatic (DL7)	107.99	7m below bedrock	-	-
32+065	Pz28P1B2	PZ	✓	Automatic (DL7)	112.99	2m below bedrock	-	-
32+065	Pz28P1B3	PZ	✓	Automatic (DL7)	115.99	1m above bedrock	-	-
32+065	Pz28P2A1	PZ	✓	Automatic (DL7)	105.02	10m below bedrock	-	-

Station	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)/ Frozen (F)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
32+065	Pz28P2B1	PZ	✓	Automatic (DL7)	110.02	5m below bedrock	-	-
32+065	Pz28P2B2	PZ	✓	Automatic (DL7)	115.02	bedrock	-	-
32+065	Pz28P2B3	PZ	✓	Automatic (DL7)	118.02	3m above bedrock	-	-
32+065	Pz28P2C	PZ	✓	Automatic (DL7)	124.02	9m above bedrock	-	-
32+065	Pz28P3A1	PZ	✓	Automatic (DL7)	105.91	10m below bedrock	-	-
32+065	Pz28P3B1	PZ	✓	Automatic (DL7)	110.91	5m below bedrock	-	-
32+065	Pz28P3B2	PZ	✓	Automatic (DL7)	115.91	1m above bedrock	-	-
32+065	Pz28P3B3	PZ	✓	Automatic (DL7)	118.91	4m above bedrock	-	-
32+100	TH29	TH	✓	Automatic (DL7)	-	-	16	135/115
32+105	Pz29P1A1	PZ	✓	Automatic (DL7)	115.32	10m below bedrock	-	-
32+105	Pz29P1B1	PZ	✓	Automatic (DL7)	120.32	5m below bedrock	-	-
32+105	Pz29P1B2	PZ	×(F)	Automatic (DL7)	125.32	bedrock	-	-
32+105	Pz29P1B3	PZ	×(F)	Automatic (DL7)	127.32	2m above bedrock	-	-
32+105	Pz29P2A1	PZ	✓	Automatic (DL7)	114.99	10m below bedrock	-	-
32+105	Pz29P2B1	PZ	✓	Automatic (DL7)	119.99	5m below bedrock	-	-
32+105	Pz29P2B2	PZ	✓	Automatic (DL7)	124.99	bedrock	-	-
32+105	Pz29P2B3	PZ	×(F)	Automatic (DL7)	126.99	2m above bedrock	-	-
32+105	Pz29P2C	PZ	×(F)	Automatic (DL7)	129.99	5m above bedrock	-	-
32+105	Pz29P3A1	PZ	✓	Automatic (DL7)	115.91	9m below bedrock	-	-
32+105	Pz29P3B1	PZ	✓	Automatic (DL7)	120.91	4m below bedrock	-	-
32+105	Pz29P3B2	PZ	✓	Automatic (DL7)	125.91	1m above bedrock	-	-
32+105	Pz29P3B3	PZ	×(F)	Automatic (DL7)	127.91	3m above bedrock	-	-
32+140	TH30	TH	✓	Automatic (DL7)	-	-	16	135/115

Table 5: List of Inclinometers on Bay-Goose Dike (source: AEM)

Location	Instrument ID	Operational (✓)/Not operational (×)	Manual/Automatic	Elevation interval in meters (top/bottom)
30+282	BG-IN-30+282	✓	Manual	139.3/124.8
30+390	BG-IN-30+390	✓	Manual	140.0/119.0
30+640	BG-IN-30+640	✓	Manual	138.8/124.3
31+180	BG-IN-31+180	✓	Manual	139.0/124.5
31+590	BG-IN-31+590	✓	Manual	139.5/115.0
31+815	BG-IN-31+815	✓	Manual	139.2/119.7
31+885	BG-IN-31+885	✓	Manual	138.8/113.3
32+065	BG-IN-32+065	✓	Manual	139.1/116.6

Table 6: List of TDR Reflectometers on Bay-Goose Dike (source: AEM)

Location of hole	DL #	Instrument ID	Inclination (°)	Length (m)	Casing elevation (m)	Crimps
31+255	9	TDR-11	60	70	134.4	Every 25 m
31+153	9	TDR-12	60	180	133.5	Every 25 m
31+058	9	TDR-15	60	180	134.3	Every 25 m
31+035	9	TDR-17	60	206.35	134.9	Every 25 m
30+937	9	TDR-18	60	180	135.6	Every 25 m
30+960	9	TDR-20	60	200	136.5	Every 25 m

1.4 Vault Dike

The construction of Vault Dike was done in the winter of 2013 to keep its foundation frozen.

Five thermistor strings were originally installed on Vault Dike following its construction in the winter of 2013 and four are still operational. TH3 is installed in the deepest channel downstream, TH5 is installed under the liner, TH6 is installed upstream of the liner, TH7 is installed east of the deepest channel, and TH8 is installed upstream in the deepest channel outside of the key trench. One thermistor (TH-3, on the side of Vault Lake) had been damaged by sloughing in previous year and stopped working in October 2015.

Table 7 below details instrumentation on Vault Dike.

Table 7: List of Thermistors on Vault Dike (source: AEM)

Hole	ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
71-2	VD-TH5	TH	✓	Manual	-	-	16	142.50/136.10
94-2	VD-TH6	TH	✓	Manual	-	-	16	140.50/121.50
96-1	VD-TH8	TH	✓	Manual	-	-	16	140.50/119.50
96-2	VD-TH7	TH	✓	Manual	-	-	16	140.50/119.50

2.0 TAILINGS STORAGE FACILITY

The TSF was commissioned in conjunction with the mill start-up in February 2010, with tailings being deposited within the North Cell of the facility. The North Cell and structures Saddle Dam 1, Saddle Dam 2 and Stormwater Dike were constructed to El. 150 m in two stages from 2009 to 2011.

The construction of the South Cell started in 2012 with Central Dike, thereby closing the eastern portion of the South Cell. The beginning of the tailings deposition in the South Cell started at the end of 2014. From 2012 to 2018, Central Dike was raised to El. 145 m in six stages. To increase the capacity of the South Cell, additional peripheral structures (Saddle Dam 3, Saddle Dam 4 and Saddle Dam 5) were constructed to El. 145 m in three stages from 2015 to 2018. The South Cell is designed to be able to be raised to El. 150 m. The construction of subsequent portions of the South Cell could occur in the future in the unlikely case of additional capacity being required.

2.1 North Cell Internal Structure – North Cell

The North Cell Internal Structure was built in 2018 to El. 152 m from Sta. 1+100 m to 1+660 m and from 2+750 m to 3+200 m, and to El. 154 m from Sta. 1+660 m to 2+750. This stage is an intermediate phase and the structure could be raised and lengthened to provide additional capacity if required. The tailings deposition from the North Cell Internal Structure started in August 2018.

Tailings deposition was transferred from the North Cell to the South Cell at the end of 2014. Tailings deposition occurred during the summer of 2015 within the North Cell and resumed in the South Cell in October 2015. Progressive closure of the North Cell started in the winter of 2015 with the construction of a non-acid generating rockfill capping over the tailings and continued in the winter of 2016.

A rockfill berm was constructed in 2016 at the toe of Stormwater Dike in the South Cell (from Sta. 10+300 to Sta. 10+750) to mitigate the crest and downstream slope movement observed in this sector at the end of August 2016. Following an investigation and instrumentation program, the movements observed are inferred to be caused by the soft sediment foundation thawing and settling due to the South Cell water pond reaching the dike foundation during the summer. Water ponding against Stormwater Dike is part of the tailings deposition plan and is acceptable, as Stormwater Dike is not a peripheral structure. Having direct ponding water within Stormwater Dike foundation is geotechnically acceptable. For South Cell closure and environmental aspects, given that it is inferred that the Stormwater Dike foundation presents some open windows of exposed fractured bedrock that may contribute to feeding the seepage at Central Dike, it is recommended that a beach be put in place along Stormwater Dike downstream slope to seal the foundation before the end of the deposition activities.

Four vertical thermistor strings were installed on the crest of the North Cell Internal Structure in August 2018 (NCIS-01, NCIS-02, NCIS-03 and NCIS-04). NCIS-01, NCIS-02 and NCIS-04 are installed on the upstream side of the dike whereas NCIS-02 is installed on the downstream side.

Table 8 below details instrumentation on the North Cell Internal Structure.

Table 8: List of Instruments on the North Cell Internal Structure (source: AEM)

Hole #	Instrument ID ID	Type PZ/TH	Status Operational (✓)/Not operational (×)	Readings Manual/ Automatic	For PZ Elevation (m)	For PZ Stratigraphic unit	For TH Number of operational beads	For TH Elevation interval in meters (top/bottom)
NCIS-T1	NCIS-18-01	Thermistor	✓	Automatic (DL55)	-	-	16	140/110
NCIS-T2	NCIS-18-02	Thermistor	✓	Automatic (DL55)	-	-	16	134/119
NCIS-T3	NCIS-18-03	Thermistor	✓	Automatic (DL56)	-	-	16	149/132.84
NCIS-T4	NCIS-18-04	Thermistor	✓	Automatic (DL57)	-	-	15/16	148/118
NCIS-T4	NCIS-18-04	Thermistor	✓	Automatic (DL55)	-	-	15/16	148/118
PSM	NCIS1 TO NCIS16	PRSME	✓	Manual	-	-	-	-

2.2 Saddle Dam 1 – North Cell

Stage 1 of Saddle Dam 1 was constructed in the fall of 2009 to a height of 10 m (crest elevation of 141 m) and a length of 250 m. Stage 2 was constructed in 2010 to an overall height of 20 m (final crest elevation of 150 m) and length of about 400 m.

Three thermistors (T1, T2, T3) are installed to monitor the thermal condition within the structure and its foundation; they were installed in 2009 and early 2010 as part of Stage 1. The fourth thermistor string (T4) was installed in 2009 and extended in 2010 along the upstream face of the dam to monitor the thermal condition of the tailings. The SD1-T1 thermistor string is installed in the centre of the upstream face of the dike immediately beneath the geomembrane liner to monitor temperatures within the deposited tailings. A thin layer of protective granular material exists above the geomembrane liner at this location. The SD1-T2 thermistor string is installed vertically through the upstream Stage 1 crest in the centre of the dike at El. 140 m. The SD1-T3 thermistor string is installed vertically through the upstream Stage 2 crest in the centre of the dike at El. 150 m. The SD1-T4 thermistor string is installed vertically through the upstream toe of the dike near the centre of the dike.

Table 9 below details instrumentation on Saddle Dam 1.

Table 9: List of Thermistors on Saddle Dam 1 (source: AEM)

Hole #	Instrument ID ID	Type PZ/TH	Status Operational (✓)/Not operational (×)	Readings Manual/ Automatic	For PZ Elevation (m)	For PZ Stratigraphic unit	For TH Number of operational beads	For TH Elevation interval in meters (top/bottom)
SD1-T2	SD1-02	Thermistor	✓	Automatic (DL14)	-	-	16	140/110
SD1-T4	SD1-04	Thermistor	✓	Automatic (DL14)	-	-	16	134/119
SD1-T1	SD1-01	Thermistor	✓	Automatic (DL14)	-	-	16	149/132.84
SD1-T3	SD1-03	Thermistor	✓	Automatic (DL14)	-	-	15/16	148/118

2.3 Saddle Dam 2 – North Cell

Saddle Dam 2 was constructed in one stage in 2011 to a crest elevation of 150 m. Saddle Dam 2 has a maximum height of about 10 m and a crest length of 460 m.

Table 10 below details instrumentation on Saddle Dam 2.

Table 10: List of Thermistors on Saddle Dam 2 (source: AEM)

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
SD2-T1	SD2-01	Thermistor	✓	Automatic (DL15)	-	-	16	148.05/145.31
SD2-T2	SD2-02	Thermistor	✓	Automatic (DL15)	-	-	16	148/118
SD2-T3	SD2-03	Thermistor	✓	Automatic (DL15)	-	-	16	144/129
SD2-T4	SD2-04	Thermistor	✓	Automatic (DL15)	-	-	16	148/123

2.4 RF1/RF2 – North Cell

Four thermistors were installed in 2012 to monitor the temperature of RF1 and RF2 (which delineates the northeastern side of the TSF North Cell).

Table 11 below details instrumentation on RF1 and RF2.

Table 11: List of Thermistors on RF1 and RF2 (source: AEM)

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
121-1	121-RF1-1	Thermistor	✓	Manual	-	-	16/16	136/90
73-6	73-6-RF1-2	Thermistor	✓	Manual	-	-	14/16	149.5/133
RF1-3	RF1-3	Thermistor	✓	Manual	-	-	11/11	148/144
122-1	122-1RF2	Thermistor	✓	Manual	-	-	14/16	137/90

2.5 North Cell Tailings

Five thermistors are installed in the tailings of the North Cell of the TSF (SWD-1, SD2-1, 90-1, NC-TH-1 and NC-TH-2). These thermistors were installed from 2012 to 2016. Thermistor 90-1 was installed in 2012 in the tailings of the North Cell near Saddle Dam 1. Thermistor NC-T1 and NC-T2 were installed in April 2016 in the tailings of the North Cell in the location of the former reclaim pond. Nine additional thermistors were installed in February 2017 in the tailings of the North Cell (SWD-01, NC17-01, NC-17-02, NC-17-03, NC-17-04, NC-17-05, NC-17-06, NC-17-07, NC-17-08).

Table 12 below details instrumentation in the North Cell tailings.

Table 12: List of Thermistors in the North Cell tailings (source: AEM)

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
NC-T1	NC-T1	Thermistor	✓	Manual	-	-	16	146.6/86.6
NC-17-01	NC-17-01	Thermistor	✓	Automatic (DL20)	-	-	16	148/112
NC-17-02	NC-17-02	Thermistor	✓	Automatic (DL21)	-	-	16	147.6/102
NC-17-03	NC-17-03	Thermistor	✓	Automatic (DL22)	-	-	16	147.6/102.6
NC-17-04	NC-17-04	Thermistor	✓	Automatic (DL23)	-	-	16	148.5/122
NC-17-05	NC-17-05	Thermistor	✓	Automatic (DL24)	-	-	16	146.6/112.6
NC-17-06	NC-17-06	Thermistor	✓	Automatic (DL25)	-	-	16	148/112
NC-17-07	NC-17-07	Thermistor	✓	Automatic (DL26)	-	-	16	148/112
NC-17-08	NC-17-08	Thermistor	✓	Automatic (DL27)	-	-	16	146/99

2.6 Stormwater Dike – Divider Dike

Stormwater Dike was progressively constructed. Stage 1 was constructed in 2009 to a height of 10 m (crest elevation of 140 m) and a length of 860 m. Stage 2 was primarily constructed in 2010 to an overall height of 18 m (crest elevation of 148 m) and length of about 1,060 m. A horizontal bench is present along the upstream face of the structure due to the connection of the 2009 and 2010 portions of the structure. The junction between the bituminous liner of Stormwater Dike and the LLDPE liner of Saddle Dam 2 was completed in 2011. The crest of Stormwater Dike was raised to 150 m in 2013.

The majority of the dike is seated on dense till from the former lakebed within the talik while the abutments are generally founded on bedrock. The foundation preparation of Stage 2 was completed in winter conditions. It was generally done above water except in an area where water ponding was present (between Sta.10+500 and 10+750 approximately). This pond was located where the topography suggests that the soft lakebed sediment thickness may be greater than at other locations along the dike. Due to the presence of water, the ice crust was cracked with the excavator and only minimal foundation preparation was possible. As a result, most of the lakebed sediment probably remained in place in this area.

A single deep thermistor (T147-1) and a piezometer string (VWP 13265) were installed at the downstream toe of Stormwater Dike (within the South Cell). These instruments were broken in September 2016 during the construction of the buttress at the toe of Stormwater Dike within the South Cell. Three new thermistors (TH-SWD-01, TH-SWD-02, TH-SWD-03) and piezometers (PZ-SWD-02-A, PZ-SWD-03-A, PZ-SWD-03-B) were installed since then. SWD-01 is installed on the upstream side of Stormwater Dike within the North Cell tailings. SWD-02 is installed on the downstream side of Stormwater Dike (approx. Sta. 10+650 m) within the stabilization buttress. SWD-03 is installed on the downstream side of Stormwater Dike (approx. Sta. 10+690 m) within the stabilization buttress.

PZ-SWD-02-A and TH-SWD-02 are now broken, while the other piezometers are frozen but still transmit data.

In 25 August 2016 two wireline extensometers, four crack monitoring stations and three prisms were installed on the crest of Stormwater Dike in the area showing movements (between Sta. 10+500 and 10+750 approximately). Following the MDRB recommendations, AEM installed additional instruments in 2017 to monitor the response of Stormwater Dike during tailings deposition in the South Cell. In 2018, an additional prism and 3 crackmeters were added, leading to a total of 3 piezometers, 3 thermistors, 4 extensometers, 3 crackmeters and 20 prisms installed on Stormwater Dike.

Table 13 below details instrumentation on Stormwater Dike.

Table 13: List of Instruments on Stormwater Dike (source: AEM)

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
SWD-01	SWD-01	Thermistor	✓	Automatic (DL19)	62	Bedrock	16	148/118
SWD-02	PZ-SWD-02-A	Piezo	✓	Automatic (DL19)				
	TH-SWD-02	Thermistor	✓	Automatic (DL19)			6	127/117
SWD-03	PZ-SWD-03A	Piezo	×	Automatic (DL19)	110	Bedrock		
	PZ-SWD-03B	Piezo	×	Automatic (DL19)	122			
	TH-SWD-03	Thermistor	✓	Automatic (DL19)			14	125/111
CRK	#1	Crakcmeter	✓	Automatic				
	#2	Crackmeter	✓	Automatic				
	#3	Crackmeter	✓	Automatic				
EXT	#2	Extensometer	Removed	Manual				
	#3	Extensometer	Removed	Manual				
	#4	Extensometer	✓	Manual				
	#5	Extensometer	Removed	Manual				
PSM	000 to 119	Prisms	✓	Manual				

2.7 Saddle Dam 3, Saddle Dam 4 and Saddle Dam 5 – South Cell

Stage 1 of Saddle Dam 3 and 4 was constructed in 2015. Stage 1 of Saddle Dam 5 was constructed in 2016. During Stage 1, Saddle Dam 3 and 4 were constructed to El. 140 m and Saddle Dam 5 to El. 137 m. Stage 2 of Saddle Dam 3, 4 and 5 was constructed to El. 143 m in 2016. Stage 3 of Saddle Dam 4 and 5 was constructed to El. 145 m in 2017. Stage 3 of Saddle Dam 3 was constructed partially to El. 145 m in 2017, with the installation the geomembrane and the construction of the liner erosion protection cover completed in 2018. These structures are designed to be able to be raised to El. 150 m and the final crest elevation of these structures is subject to review by AEM. At the end of Stage 3, the decision was made by AEM to close the abutments of these structures, as no further raise was planned at the moment. If these structures are to be raised higher, it will be necessary to re-open the abutments. The completed crest length is approximately 245 m for Saddle Dam 3, 365 m for Saddle Dam 4, and 255 m for Saddle Dam 5.

Five thermistors are installed at Saddle Dam 3. Three of these thermistors are located along the axis of the faulted zone that was encountered during the construction of Saddle Dam 3 (around Sta. 20+650). Along this axis, two thermistors are installed on the crest (SD3-T3 around the centerline and SD3-T2 on the upstream edge), and the other (SD3-T4) is installed on the upstream toe liner tie-in. Another thermistor is installed at Sta. 20+720 within the upstream toe liner tie-in (SD3-T5). One thermistor (SD3-T6) was installed in 2018 on the crest towards the junction with Saddle Dam 2.

Table 14 below details instrumentation on Saddle Dam 3.

Table 14: List of Thermistors on Saddle Dam 3 (source: AEM)

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
SD3-T2	SD3-02	Thermistor	✓	Automatic (DL16)	-	-	16	139.1/123.1
SD3-T3	SD3-03	Thermistor	✓	Automatic (DL16)	-	-	15	138.6/121.6
SD3-T4	SD3-04	Thermistor	× (since June 2019)	Automatic (DL16)	-	-	0/15	137.3/122.3
SD3-T5	SD3-05	Thermistor	✓	Automatic (DL16)	-	-	16	138.4/122.4
SD3-T6	SD3-06	Thermistor	✓	Automatic (DL16)	-	-	16	143.9/113.9

Four thermistors are installed at Saddle Dam 4 near Sta. 40+300. One thermistor (SD4-T2) is installed on the upstream edge crest while another (SD4-T4) is installed in the upstream toe line tie-in, and another one (SD4-T1) is in the centre of the upstream face of the dike immediately on top of the geomembrane liner to monitor the thermal regime of the tailings in contact with the structure. One thermistor (SD4-T3) was installed on the middle of the crest in January 2018.

Table 15 below details instrumentation on Saddle Dam 4.

Table 15: List of Thermistors on Saddle Dam 4 (source: AEM)

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
SD4-T2	SD4-02	Thermistor	✓	Automatic (DL17)	-	-	16	139/129
SD3-T3	SD3-03	Thermistor	✓	Automatic (DL17)	-	-	16	144/129
SD4-T4	SD4-04	Thermistor	✓	Automatic (DL17)	-	-	5/14	137.3/127.8
SD4-T1	SD4-01	Thermistor	× (since August 2018)	Automatic (DL17)	-	-	16	143.4/139.6

Three thermistors were installed at Saddle Dam 5 in 2018 near Sta. 40+680. One thermistor (SD5-T2) is installed on the downstream edge crest, one (SD5-T4) around the middle of the crest, and another (SD5-T3) is installed in the toe liner tie-in.

Table 16 below details instrumentation on Saddle Dam 5.

Table 16: List of Thermistors on Saddle Dam 5 (source: AEM)

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
SD5-02	SD4-02	Thermistor	✓	Automatic (DL58)	-	-	16(cap)	144/129
SD5-03	SD3-03	Thermistor	✓	Automatic (DL58)	-	-	16	141/126
SD5-04	SD4-04	Thermistor	✓	Automatic (DL58)	-	-	16(cap)	144/129

2.8 Central Dike – South Cell

Construction of Central Dike started in 2012 (stage 1) at the El. 110 m with a key trench located underneath the centreline. In 2013 (Stage 2), the footprint of Central Dike was widened for a crest elevation of 150 m, the structure was raised to El. 115 m and the key trench was relocated at the upstream toe. In 2014 (Stage 3), the key trench was relocated at the upstream toe and constructed to El. 132 m. Central Dike was raised to El. 137 in 2015 (Stage 4), to El. 143 m in 2016 (Stage 5), and to El. 145 m in two steps in 2017 and 2018 (Stage 6). Central

Dike is designed to be able to be raised to El. 150 m and the final crest elevation is subject to review by AEM. The completed crest length is approximately 900 m at El. 145 m.

Desktop studies were undertaken by Golder in 2015 to estimate the seepage flows and pore water pressures, verify the dike stability, and attempt to predict the eventual flow volume that would report to the downstream toe for higher pond elevation. The seepage pathway used in the Golder 2015 model was through a layer of fine material in the till layer of the foundation as it was deemed the most critical scenario for the structure stability. The main recommendation from this desktop study was to maintain beaches adjacent to Central Dike and to maintain a 'back pressure' on the downstream side of Central Dike in order to reduce the hydraulic gradient by holding the downstream pond at El. 115 m. Willowstick was also hired to carry out electromagnetic surveys to detect seepage paths. The geophysical campaign led to additional recommendations and identified possible seepage path locations. Following the geophysical campaign, an investigation was conducted by SNC-Lavalin (SNC) and AEM in December 2015 at station CD-595, and between CD-810 and CD-850. Highly altered and fractured bedrock was encountered, and high hydraulic conductivity was measured from Packer testing. Instrumentation of the four boreholes with piezometers and thermistors was done at the same time. A study has been completed in 2017 by Golder to update the seepage modelling with a seepage flow through the bedrock, and allowed for updating of the Emergency Preparedness Plan as well as the Operation, Maintenance, and Surveillance Manual. The summer 2017 investigation and instrumentation campaign shows that the seepage pathway was most probably mainly controlled by the bedrock.

Instruments were installed on Central Dike to monitor the dike's performance during its construction, operation, and closure. Nine boreholes were drilled on three rows corresponding to the central key trench (545-P1, 580-P1, 650-P1 and 750-P1), the final downstream toe (545-P2 and 650-P2) and the Portage Pit limit (465-P3, 650-P3, 875-P3 and WR-P3). Four additional boreholes were drilled and instrumented in 2016 during the seepage field investigation in the key trench alignment (595-P1, 810-P1, 825-P1 and 850-P1). Two thermistor strings were also installed on the upstream face to monitor the temperature within the tailings of the South Cell.

Seven additional boreholes were drilled and instrumented in 2017 (700-P1, 745-P3, 800-P2, 800-P3, 875-P2, 975-P3 and 1050-P3). The instrumentation on Central Dike consists in 2018 in a total of 69 piezometers and 20 thermistor strings installed in 20 boreholes.

Table 15 below details instrumentation on Central Dike.

Table 17: List of Piezometers and Thermistors on Central Dike (source: AEM)

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
465-P3	465-P3-A	Piezo	Frozen	Automatic	65	Bedrock	-	-
	465-P3-B	Piezo	Frozen	Automatic	85	Bedrock	-	-
	465-TH-P3	Thermistor	✓	Automatic	-	-	10/13	105/69
545-P1	545-P1-A	Piezo	✓	Automatic	65	Bedrock	-	-
	545-P1-B	Piezo	× (since Nov. 2018)	Automatic	76	Bedrock	-	-
	545-P1-C	Piezo	✓	Automatic	80	Dense Till	-	-
	545-P1-D	Piezo	× (since Dec. 2018)	Automatic	88	Dense Till	-	-
	545-TH-P1	Thermistor	✓	Automatic	-	-	13	111/63
545-P2	545-P2-A	Piezo	× (since Jan 2, 2019)	Automatic	65	Bedrock	-	-
	545-P2-B	Piezo	× (since Jan 2, 2019)	Automatic	85	Bedrock	-	-
	545-P2-C	Piezo	× (since Jan 21, 2019)	Automatic	100	Bedrock	-	-
	545-P2-D	Piezo	× (since Mar 28, 2019)	Automatic	104	Rock fill/Till	-	-
	545-TH-P2	Thermistor	✓	Automatic	-	-	13	105/51
580-P1	580-P1-A	Piezo	× (since July 2016)	-	-	-	-	-
	580-P1-B	Piezo	× (since July 2016)	-	-	-	-	-
	580-P1-C	Piezo	× (since July 2016)	-	-	-	-	-
	580-P1-D	Piezo	× (since July 2016)	-	-	-	-	-
	580-P1-E	Piezo	× (since July 2016)	-	-	-	-	-
	580-TH-P1	Thermistor	× (since July 2016)	-	-	-	-	-
595-P1	595-P1-A	Piezo	✓	Automatic	69.25	Bedrock	-	-
	595-P1-B	Piezo	✓	Automatic	85.2	Bedrock (Casing)	-	-
	595-P1-C	Piezo	✓	Automatic	92.2	Bedrock (Casing)	-	-
	595-P1-D	Piezo	× (June 2017)	Automatic	96.2	Dense Till (Casing)	-	-
	595-P1-E	Piezo	× (June 2017)	Automatic	105.2	Rock fill (Casing)	-	-
	595-TH	Thermistor	✓	Automatic	-	-	16	114.60/69.60
650-P1	650-P1-A	Piezo	× (since February 2016)	-	-	-	-	-
	650-P1-B	Piezo	× (since September 2016)	-	-	-	-	-
	650-P1-C	Piezo	× (since September 2016)	-	-	-	-	-
	650-P1-D	Piezo	× (since September 2016)	-	-	-	-	-
	650-TH-P1	Thermistor	× (since August 2016)	-	-	-	-	-

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
650-P2	650-P2-A	Piezo	✓	Automatic	65	Bedrock	-	-
	650-P2-B	Piezo	✓	Automatic	85	Bedrock	-	-
	650-P2-C	Piezo	✓	Automatic	99.5	Bedrock	-	-
	650-P2-D	Piezo	✓	Automatic	103.5	Rock fill/Till	-	-
	650-TH-P2	Thermistor	✓	Automatic	-	-	13	105/51
650-P3	650-P3-A	Piezo	Frozen	Automatic	65	Bedrock	-	-
	650-P3-B	Piezo	Frozen	Automatic	85	Bedrock	-	-
	650-TH-P3	Thermistor	✓	Automatic	-	-	13	105/51
750-P1	750-P1-A	Piezo	✓	Automatic	65	Bedrock	-	-
	750-P1-B	Piezo	✓	Automatic	76	Bedrock	-	-
	750-P1-C	Piezo	✓	Automatic	80	Dense Till	-	-
	750-P1-D	Piezo	✓	Automatic	88	Dense Till	-	-
	750-P1-E	Piezo	✓	Automatic	100	Rock fill	-	-
	750-TH-P1	Thermistor	✓	Automatic	-	-	13	111/63
810-P1	810-P1-A	Piezo	× (since Dec. 2017)	Automatic	67.7	Bedrock	-	-
	810-P1-B	Piezo	× (since January 2017)	-	-	-	-	-
	810-P1-C	Piezo	× (since Sept 2018)	Automatic	86.9	Dense Till	-	-
	810-P1-D	Piezo	× Elev. Working only	Automatic	93.9	Dense Till	-	-
	810-TH	Thermistor	× (since February 2018)	Automatic	-	-	0/16	134.84/114.84
825-P1	825-P1-A	Piezo	✓	Automatic	74.15	Bedrock	-	-
	825-P1-B	Piezo	✓	Automatic	93.5	Bedrock	-	-
	825-P1-E	Piezo	✓	Automatic	101	Till (Casing)	-	-
	825-TH	Thermistor	✓	Automatic	-	-	14/16	131.25/71.25
850-P1	850-P1-A	Piezo	✓	Automatic	72	Bedrock	-	-
	850-P1-B	Piezo	✓	Automatic	93.7	Bedrock	-	-
	850-P1-E	Piezo	✓	Automatic	106	Rock fill	-	-
	850-TH	Thermistor	✓	Automatic	-	-	13/16	133.02/73.02
875-P3	875-P3-A	Piezo	✓	Automatic	65	Bedrock	-	-
	875-P3-B	Piezo	✓	Automatic	85	Bedrock	-	-
	875-TH-P3	Thermistor	✓	Automatic	-	-	11/13	105/51
875-P2	875-P2-A	Piezo	✓	Automatic	65.08	Bedrock	-	-
	875-P2-B	Piezo	✓	Automatic	85.08	Bedrock	-	-
	875-P2-C	Piezo	Frozen	Automatic	105.38	Bedrock	-	-
	875-P2-D	Piezo	Frozen	Automatic	107.58	Till	-	-
	TH-875-P2	Thermistor	✓	Automatic	-	-	15/16	120.08/63.08
800-P2	800-P2-A	Piezo	✓	Automatic	70.07	Bedrock	-	-
	800-P2-B	Piezo	✓	Automatic	85.07	Bedrock	-	-
	800-P2-C	Piezo	✓	Automatic	95.07	Bedrock	-	-
	800-P2-D	Piezo	✓	Automatic	105.07	Rock fill/Till	-	-
	TH-800-P2	Thermistor	✓	Automatic	-	-	16	120.07/70.07

Hole	Instrument ID	Type	Status	Readings	For PZ		For TH	
#	ID	PZ/TH	Operational (✓)/Not operational (×)	Manual/ Automatic	Elevation (m)	Stratigraphic unit	Number of operational beads	Elevation interval in meters (top/bottom)
700-P1	700-P1-A	Piezo	✓	Automatic	63.43	Bedrock	-	-
	700-P1-B	Piezo	✓	Automatic	86.93	Bedrock	-	-
	700-P1-C	Piezo	✓	Automatic	97.43	Bedrock	-	-
	700-P1-D	Piezo	✓	Automatic	101.43	Void before bedrock	-	-
	TH-700-P1	Thermistor	✓	Automatic	-	-	16	118.43/63.43
580-P1 (R)	580-P1-R-A (R)	Piezo	✓	Automatic	69.55	Sand	-	-
	580-P1-R-B (R)	Piezo	✓	Automatic	75.55	Bedrock	-	-
	580-P1-R-C (R)	Piezo	✓	Automatic	79.05	Bedrock	-	-
	TH-580-P1 (R)	Thermistor	✓	Automatic	-	-	16	120.55/65.55
1050-P3	1050-P3-A	Piezo	Frozen	Automatic	66.37	Bedrock	-	-
	1050-P3-B	Piezo	Frozen	Automatic	86.37	Bedrock	-	-
	TH-1050-P3	Thermistor	✓	Automatic	-	-	16	134.77/65.77
975-P3	975-P3-A	Piezo	✓	Automatic	64.53	Bedrock	-	-
	975-P3-B	Piezo	✓	Automatic	84.53	Bedrock	-	-
	TH-975-P3	Thermistor	✓	Automatic	-	-	16	131.12/64.12
800-P3	800-P3-A	Piezo	✓	Automatic	62.95	Bedrock	-	-
	800-P3-B	Piezo	✓	Automatic	82.95	Bedrock	-	-
	800-P3-C	Piezo	✓	Automatic	96.45	Till	-	-
	TH-800-P3	Thermistor	✓	Automatic	-	-	16	118.95/62.95
745-P3 (WR-P3)	TH-745-P3	Thermistor	✓	Automatic	-	-	8/16	125.08/102.08
CD_US-0+650	CD-US-1	Thermistor	✓	Automatic	-	-	16	126.40/111.056
	CD-US-2	Thermistor	✓	Automatic	-	-	16	143/127
SD5	TH-02	Thermistor	✓	Automatic	-	-	12/16	144/129
	TH-03	Thermistor	✓	Automatic	-	-	16	141/126
	TH-04	Thermistor	✓	Automatic	-	-	9/16	144/129

Table 18: List of Piezometers Recording Suction on Central Dike

Name of Piezometer	Installation Unit	Observation
545-P1-A	Bedrock	Suction.
580-P1R-B	Bedrock	Suction.
750-P1-(A,B,C)	Bedrock, till	Suction.
545-P2 B	Bedrock	Suction.
545-P2-C	Bedrock	Suction.
545-P2-D	Till	Suction.
650-P2-D	Till	Suction. Frozen.
650-P3-B	Bedrock	Suction. Frozen.

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