



## **Appendix C**

### **Climate Data**

**Climate Normals for Kugluktuk**  
 Information provided by <http://www.climate.weatheroffice.ec.gc.ca/Kugluktuk> Nunavut

Days with Maximum Temperature: Days with Maximum Temperature:													
<= 0 °C	31	28.3	31	28.4	18.7	1.1	0	0	2.5	23.1	29.6	30.9	C
> 0 °C	0.05	0	0	1.6	12.3	28.9	31	31	27.5	7.9	0.45	0.08	C
> 10 °C	0	0	0	0.04	0.91	12	25.6	20.8	5.4	0.1	0	0.08	C
> 20 °C	0	0	0	0	0	2.5	6	3.9	0.22	0	0	0.08	C
> 30 °C	0	0	0	0	0	0.09	0.26	0	0	0	0	0	C
> 35 °C	0	0	0	0	0	0	0	0	0	0	0	0	C
Days with Minimum Temperature: Days with Minimum Temperature:													
> 0 °C	0	0	0	0	0.95	17.9	31	27.7	14	0.71	0	0	C
<= 2 °C	31	28.3	31	30	30.8	20.7	2.7	7.6	22.7	30.9	30	31	C
<= 0 °C	31	28.3	31	30	30.1	12.1	0	3.3	16	30.3	30	31	C
< -2 °C	31	28.3	31	29.8	27.1	5.1	0	0.59	8.6	27.7	30	31	C
< -10 °C	30.9	28.2	30.9	28	12.8	0.09	0	0	0.39	14.6	28.6	30.9	C
< -20 °C	28.7	26.7	28.5	18.4	2	0	0	0	0	3.1	20	27.9	C
< -30 °C	20.1	18	16.5	4.7	0.05	0	0	0	0	0.29	6.6	16.2	C
Days with Rainfall: Days with Rainfall:													
>= 0.2 mm	0	0	0	0.35	2.1	6.4	10.2	12.5	10.4	1.9	0.05	0	C
>= 5 mm	0	0	0	0.04	0.27	0.65	2.6	2.4	1.9	0.27	0	0	C
>= 10 mm	0	0	0	0	0.18	0.13	0.78	0.73	0.65	0.09	0	0	C
>= 25 mm	0	0	0	0	0	0.04	0.04	0.23	0.04	0	0	0	C
Days With Snowfall: Days With Snowfall:													
>= 0.2 cm	9.4	9.8	10.7	9.4	6.5	1.6	0.09	0.27	3.9	13.9	11.7	10.1	C
>= 5 cm	0.52	0.65	0.35	0.87	0.86	0.17	0	0.05	0.52	2.1	0.91	0.63	C
>= 10 cm	0.13	0.04	0	0.17	0.27	0.04	0	0	0.09	0.55	0.18	0.25	C
>= 25 cm	0.04	0	0	0	0	0	0	0	0	0	0	0.04	C



## **Appendix D**

### **Testpit Logs**

## Test Pit Logs

### TP-1

0 – 0.1 m	Organic layer – black, damp with fine roots
0.1 – 0.8 m	Sand – well sorted, damp to wet., medium grained. Water seepage at 0.5 m below surface.

### TP-2

0 – 0.2 m	Organic layer – black, damp with fine roots
0.2 – 0.9 m	Sand – well sorted, medium grained, loose, damp. Clumps of black organics scattered in the sand making up approximately 10 percent
0.9 m	Permafrost

### TP-3

0 – 0.2 m	Organic layer – black, damp with fine roots
0.2 – 0.8 m	Sand – slightly silty, light brown, well sorted, medium grained, loose, small patches of dark organics within sand, damp to wet. Water seepage into test pit at 0.4 m below surface.

### TP-4

0 – 0.1 m	Organic layer – black, damp with fine roots
0.1 – 0.9 m	Sand – light brown, medium grained, well sorted, damp to wet. Occasional small clump of organics.

Sample collected from 0.5 m for geotechnical analysis

### TP-5

0 – 0.1 m	Organic layer – black, damp with fine roots
0.1 – 0.8 m	Sand – brown, medium grained, well-sorted, damp, water seepage at approximately 0.7 m. Patches of black damp organics as 0.1 to 0.2 m sized clumps within the sand. Sample collected from 0.5 m for geotechnical analysis
0.8 m	Permafrost.

### TP-6

0 – 0.1 m	Organic layer – black, damp with fine roots
0.1 – 0.8 m	Sand – light brown, damp, well sorted, medium grained. Water seepage at 0.7 m
0.8 m	Permafrost.

#### **TP-7**

- 0 – 0.1 m      organic layer – black, damp with fine roots
- 0.1 – 0.8 m      Sand – light brown, medium, grained, damp, loose, sides caving. Water seeping in at 0.7 m below surface.

Sample collected from 0.5 m for geotechnical analysis.

#### **TP-MSW-1**

- 0 – 0.2 m      Organic layer – black, damp, turf roots
- 0.2 – 0.8 m      Sand – well sorted, medium grained, loose, damp to wet. Water infill test pit to 0.2 m below surface. No evidence of landfill impacts
- 0.8 m          Permafrost.

Collected soil sample for geotechnical analysis at 0.5m. Collected groundwater water sample (MSW-1) for laboratory analysis.

#### **TP-MSW-2**

- 0 – 0.1 m      Organic layer – black, damp with turf roots
- 0.1 – 0.9 m      Sand – well sorted, medium grained, loose, damp. Water seepage fills test pit to 0.4 m. No evidence of any landfill related impact
- 0.9 m          Permafrost.

Soil sample collected for geotechnical analysis at 0.5 m. Groundwater sample (MSW-2) collected for laboratory analysis.

#### **TP-8**

- 0 – 0.1 m      Organic layer – black, damp
- 0.1 – 0.8 m      Sand – medium grained well sorted, loose, damp to wet
- 0.8 m          Permafrost.

#### **TP-CON-1**

- 0 – 0.1 m      Organic layer – disrupted by pervious surface disturbance
- 0.1 – 0.9 m      Sand with gravel – fine to coarse grained sand with scattered fine to coarse gravel and occasional cobble. Poorly sorted mixture of glacial deposition of a variety of rock types. Damp, loose, well drained to 0.5 m below surface. Water seepage at 0.5 m below surface

Dug next to contaminated soil stockpile. No evidence of staining or odours or impacts from the stockpiles.

- 0.9 m          Permafrost.

# KUGLUKTUK SEWAGE LAGOON

## SOIL LOG OF TEST PITS AT LAGOON FOOTPRINT

TEST PIT #	DEPTH, (m)	SOIL DESCRIPTION
TP 601	0.00 – 0.10	PEAT / MUSKEG: Brown, moist
	0.10 – 1.00	SAND: Dark brown, moist, coarse to fine-grained, numerous sub-angular cobbles.
	1.00 – 1.80	SAND: Dark brown, moist, compact to dense, some silt, gravel sizes to 75mm, numerous sub-angular cobbles.
	1.80 – 2.60	SAND: as above but wet, more silt, dense, with cobbles to 250mm size - permafrost at 1.8m  Discontinued @ 1.80 m
TP 602	0.00 - 0.10	PEAT / MUSKEG: Brown, moist
-35m north of north edge of road	0.10 – 0.80	SAND: Dark brown, moist, coarse to fine-grained, some silt, compact with gravel & cobbles.
		Discontinued @ 1.8m on possible bedrock
TP 603	0.00 – 0.30	PEAT / MUSKEG: Brown, moist
	0.30 – 1.50	SAND: Dark brown, moist, compact, coarse to fine-grained, some silt, some gravel sizes, cobbles to 250 mm throughout. Boulders at 1.5 m  Discontinued @ 1.5 m

# KUGLUKTUK SEWAGE LAGOON

## SOIL LOG OF TEST PITS AT LAGOON FOOTPRINT

TEST PIT #	DEPTH, (m)	SOIL DESCRIPTION
TP 604	0.00 – 0.25	PEAT / MUSKEG: Brown, moist
	0.25 – 1.80	GRAVEL: Dark brown, moist, sandy, numerous cobbles, some boulders, compact to dense, (pit stays open, suitable as embankment material) - water seepage at 1.80 m
		Discontinued @ 1.80 m
TP 605	0.00 – 0.15	PEAT / MUSKEG: Brown, moist
	@ 0.15	BEDROCK: Fractured layers, peeled with great effort by backhoe  Discontinued @ 0.15 m
TP 606	same as TP 605	
TP 607	same as TP 605	
TP 608 to 612	0.00 - 0.15	PEAT / MUSKEG: Brown, moist
	0.15 - 1.00	SAND: Typical to sand encountered in previous test pits 601 – 603, wet (surface moisture)  Discontinued @ 1.0 m
TP 613	0.00 – 0.15	PEAT / MUSKEG: Brown, moist
	0.15 – 0.75	SAND: Typical to sand encountered - permafrost @ 0.75 m.  Discontinued @ 0.75 m.

**KUGLUKTUK SEWAGE LAGOON  
SOIL LOG  
OF  
TEST PITS  
AT  
LAGOON FOOTPRINT**

<b>BORE HOLE #</b>	<b>DEPTH TO BEDROCK (m)</b>
BH 614 (at TP 602)	1.75 - (drilled to 2.0m)
BH 615 (east of TP 605)	1.65 – (drilled to 1.8m)
BH 616 (NE of TP 606, east of TP 607)	0.75 – (drilled to 1.2m)

**SOURCE:** Beach Ridge (running east/west) North of Lagoon Footprint

<b>TEST PIT #</b>	<b>DEPTH, (m)</b>	<b>SOIL DESCRIPTION</b>
TP 617 (east end)	0.00 – 0.10	PEAT / MUSKEG: Brown, moist
	0.10 – 0.90	SAND: Dark brown, moist, fine-grained, clean, loose to compact. - permafrost at 0.9m
		Discontinued @ 0.9 m
TP 618 (west of TP 617)	0.00 – 0.23	PEAT / MUSKEG: Brown, moist
	0.23 – 1.00	SAND: Dark brown, moist, medium to fine-grained, clean, loose to compact. - permafrost at 1.0 m
		Discontinued @ 1.0 m
TP 619 (west of TP 618)	same as TP 618	



**KUGLUKTUK SEWAGE LAGOON  
SOIL LOG  
OF  
TEST PITS  
AT  
LAGOON FOOTPRINT**

**SOURCE:** Beach Ridge (running east/west) North of Lagoon Footprint

TEST PIT #	DEPTH, (m)	SOIL DESCRIPTION
TP 620 (NW of TP 619, along creek edge)	0.00 – 0.23	PEAT / MUSKEG: Brown, moist
	0.23 – 0.75	SAND: Dark brown moist, medium to fine-grained, clean, loose to compact - changes to grey/brown at 0.75 m - water seepage at 0.75 m  Discontinued @ 0.75 m

**SOIL LOG  
OF  
TEST PITS  
AT  
PROPOSED BORROW SOURCES**

**SOURCE:** Northeast of Heart Lake at Face of Rock Ridge, North Side of Road

TEST PIT #	DEPTH, (m)	SOIL DESCRIPTION
TP 621	0.00 – 0.23	PEAT/ MUSKEG: Brown, moist
	0.23 – 0.75	CLAY: Dark brown, moist, firm, medium to high plastic. - permafrost at 0.75 m
		Discontinued at 0.75 m
TP 622	0.00 – 0.23	PEAT/ MUSKEG: Brown. Moist
	0.23 – 0.75	CLAY: Dark brown, moist, stiff, high plastic. - permafrost at 0.75 m
		Discontinued at 0.75 m

**SOURCE:** Plateau East of Hearth Lake, approx. 2.9 km east of Lagoon site

TEST PIT #	DEPTH, (m)	SOIL DESCRIPTION
TP 623	0.00 – 0.23	PEAT / MUSKEG: Brown, moist
	0.23 – 0.90	SAND: Dark brown, moist to wet, uniform, fine-grained, trace silt - permafrost at 0.90 m - sample #623R1 @ 0.23 – 0.90 m
		Discontinued @ 0.90 m
TP 624 (east of TP 623)	0.00 – 0.15	PEAT / MUSKEG: Brown. moist
	0.15 – 0.75	SAND: Dark brown, moist to wet, uniform, fine-grained, clean - permafrost at 0.75 m - sample #624R1 @ 0.15 – 0.75 m Discontinued @ 0.75 m

## KUGLUKTUK SEWAGE LAGOON

### SOIL LOG OF TEST PITS AT PROPOSED BORROW SOURCES

**SOURCE:** West of Road at End of Runway.

TEST PIT #	DEPTH, (m)	SOIL DESCRIPTION
TP 625 (exist. borrow off road's edge)	0.00 – 2.40	SAND: Dark brown, moist, fine-grained, uniform, clean - sample #625R1
	2.40 – 3.60	CLAY: Dark brown, wet, stiff, high plastic - sample #625R2 @ 2.4 – 3.6 m
		Discontinued @ 3.6 m

**SOURCE:** West of Road at End of Runway. (cont'd)

TEST PIT #	DEPTH, (m)	SOIL DESCRIPTION
TP 626 (west of TP 625)	0.00 – 0.15	PEAT / MUSKEG: Brown, moist
	0.15 – 0.75	SAND: Dark brown, moist, fine-grained, uniform, clean, - permafrost @ 0.75 m - sample #626R1 @ 0.15 – 0.75 m
		Discontinued @ 0.75 m

**SOURCE:** Existing borrow pit along SE side of runway

TEST PIT #	DEPTH, (m)	SOIL DESCRIPTION
TP 627 (exist. bank of pit)  (exist. pit floor)	0.00 – 2.00	SAND: Dark brown, damp, medium to fine-grained, clean.
	2.00 – 3.00	SAND: Dark grey, moist to wet, coarse to fine-grained, clean - water seepage @ 3.0 m - TP sloughing at 1.0m below pit floor - sample \$627R1 @ 2.0 – 3.0 m Discontinued @ 3.0 m