

Logged by: M. Markle (NML)

BGC

Final Depth: 14.5 m

DRILL HOLE # BGC03-37

Page 1 of 1

Date Drilled: Sept. 26, 2003

Contractor & Rig: Mine's Diamond Drill

Drill Method: BQ Chilled Brine Coring

Hammer Type: N/A

Location: Surface Cell

Elevation: 388.8 m

Co-ord: 17620.4N, 13771.8E (Mine Grid)

Logged by: M. Markle (NML)

Project No. 0255-008-03

Reviewed by: J. Cassie

Notes: Thermister Installed, Tag # Test Cover

Depth (m)	SOIL DESCRIPTION	Core Run	Recovery	Moisture Content % Wp -----X----- Wl 10 20 30 40	Installation / Backfill		Depth (m)
0	Ground Surface	388.8					0
	SHALE (FILL)	0.0					
	Surface Cell Test Cover						
1							1
2							2
3		386.1					3
	TAILINGS	2.7					
	Frozen						
4							4
5							5
6							6
7		381.5					7
	End of Borehole	7.3					
8							8
9							9
10							10



BGC ENGINEERING INC.

AN APPLIED EARTH SCIENCES COMPANY

Calgary, AB

Phone (403) 250-5185

CLIENT: Nanisivik Mine, a Division of CanZinco Ltd.

PROJECT: Geotechnical Investigation

Final Depth: 7.3 m

DRILL HOLE # BGC03-38

Page 1 of 2

Date Drilled: Sept. 27, 2003

Contractor & Rig: Mine's Diamond Drill

Drill Method: BQ Chilled Brine Coring

Hammer Type: N/A

Location: Surface Cell

Elevation: 387.7 m

Co-ord: 13497.2N, 17141.2E (Mine Grid)

Logged by: M. Markle

Project No. 0255-008-03

Reviewed by: J. Cassie

Notes: Thermocouple Installed

Depth (m)	SOIL DESCRIPTION	Core Run	Recovery	Moisture Content % Wp -----X----- Wl 10 20 30 40	Installation / Backfill		Depth (m)
0	Ground Surface	387.7					0
	TAILINGS	0.0					
	Frozen						
1						Stick-up 0.36 m	1
2						T/C node @ 1.0 m	2
3						Backfilled with slough	3
4						T/C node @ 4.0 m	4
	ICE AND FROZEN TAILINGS	383.4					
		4.3					
5							5
6							6
7						T/C node @ 6.5 m	7
8							8
9							9
10						T/C node @ 10.0 m	10



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Calgary, AB

Phone (403) 250-5185

CLIENT: Nanisivik Mine, a Division CanZinco Ltd.

PROJECT: Geotechnical Investigation

Final Depth: 15.1 m

DRILL HOLE # BGC03-38

Date Drilled: Sept. 27, 2003

Contractor & Rig: Mine's Diamond Drill

Drill Method: BQ Chilled Brine Coring

Hammer Type: N/A

Location: Surface Cell

Elevation: 387.7 m

Co-ord: 13497.2N, 17141.2E (Mine Grid)

Logged by: M. Markle

Project No. 0255-008-03

Reviewed by: J. Cassie

Notes: Thermocouple Installed

Depth (m)	SOIL DESCRIPTION	Core Run	Recovery	Moisture Content %				Installation / Backfill		Depth (m)
				Wp	-----X-----	WI				
				10	20	30	40			
11	TAILINGS Frozen	377.3 10.4								11
12										12
13										13
14	TILL	374.0 13.7								14
15	BEDROCK	372.8 15.1								15
16	End of Borehole									16
17										17
18										18
19										19
20										20

T/C node @ 12.5 m

T/C node @ 15.0 m


BGC ENGINEERING INC.
 AN APPLIED EARTH SCIENCES COMPANY

Calgary, AB

Phone (403) 250-5185

CLIENT: Nanisivik Mine, a Division CanZinco Ltd.

PROJECT: Geotechnical Investigation

Final Depth: 15.1 m

DRILL HOLE # BGC03-39

Page 1 of 2

Date Drilled: Sept. 27, 2003

Contractor & Rig: Mine's Diamond Drill

Drill Method: BQ Chilled Brine Coring

Hammer Type: N/A

Location: Surface Cell

Elevation: 386.5 m

Co-ord: 13837.9N, 17462.1E (Mine Grid)

Logged by: M. Markle (NML)

Project No. 0255-008-03

Reviewed by: J. Cassie

Notes: Thermocouple Installed

Depth (m)	SOIL DESCRIPTION		Core Run	Recovery	Moisture Content % Wp -----X----- WI 10 20 30 40	Installation / Backfill		Depth (m)
0	Ground Surface	386.5						0
	SHALE (FILL)	0.0						
1	TAILINGS	385.6					Stick-up 0.6 m	1
	Frozen	0.9					T/C node @ 1.4 m	
2							Backfilled with slough	2
3								3
4							T/C node @ 3.4 m	4
5								5
6							T/C node @ 5.4 m	6
7	ICE	379.5						7
		7.0						
8							T/C node @ 7.9 m	8
9	TAILINGS	378.0						9
	Frozen	8.5						
10								10



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Calgary, AB

Phone (403) 250-5185

CLIENT: Nanisivik Mine, a Division of CanZinco Ltd.

PROJECT: Geotechnical Investigation

Final Depth: 10.5 m

Logged by: M. Markle (NML)

Depth (m)	SOIL DESCRIPTION	Core Run	Recovery	Moisture Content %		Installation / Backfill		Depth (m)
				Wp -----X----- Wl				
				10	20	30	40	
10.6	TILL							
10.6	375.9							
10.6	End of Borehole							
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								



BGC ENGINEERING INC.
AN APPLIED EARTH SCIENCES COMPANY

Phone (403) 250-5185

Final Depth: 10.5 m

Terratech

TEST HOLE RECORD

FIGURE NO. A-1

PROJECT: PROPOSED WEST TWIN LAKE TAILINGS DYKE NO. 1359-0 HOLE NO. TD-1
LOCATION: NANISIVIK N.W.T. 13640.7N 17545.3E SHEET 1 OF 2
ELEVATION DATUM: NANISIVIK REFERENCE DATUM CASING SIZE: BW (16.76) DATE: 89-06-11, 12

SAMPLE TYPES
SS SPLIT SPOON 51 mm OD
TW THIN-WALL SAMPLER
PC FIXED PISTON SAMPLER
DC DIAMOND CORE
WS WASH SAMPLE
AS AUGER SAMPLE
NS MILCON SAMPLER 50 mm
GW WATER SAMPLE

GROUND WATER
WATER LEVEL

SAMPLE CONDITIONS
GOOD DISTURBED LOST

TESTS
N SPT TEST VALUE (blows/0.3 m)
E PERMEABILITY (cm/s)
V IN SITU VANE (kPa)
VL VANE ON REMOLDED SOIL (kPa)
VCL LABORATORY VANE (kPa)
FC FALL CONE ON INTACT SOIL (kPa)
FRC FALL CONE ON REMOLDED SOIL (kPa)
P PRESSIOMETER TEST

TESTS
GSA GRAIN-SIZE ANALYSIS
Y TOTAL UNIT WEIGHT (kN/m³)
U UNCONFINED COMPRESSION (kPa)
Q UNDRAINED TRIAXIAL (kPa)
(%) STRAIN AT FAILURE
C CONSOLIDATION
RQD ROCK QUALITY DESIGNATION

PROFILE			GROUND WATER	SAMPLES			THERMOCOUPLE	TESTS	WATER CONTENT (%)			
ELEV (m)	DESCRIPTION	STRAT		COND	NO & TYPE	REC (%)			Wp	Wp	WL	WL
371.4	GROUND SURFACE								70	40	60	80
370.8	Fill - sand and gravel size shale fragments.											
1	Frozen tailings. A 30 mm ice lens was noted at a depth of 1.82 m. The presence or absence ice at depth could not be determined due to poor sample recovery.				10C	70	T-0	-5.2°C, 89-06-17 Defective 89-10-27 N/A 40-10-31 N/A 90-11-29 etc				
2					20C	0						
3					3SS	0		-3.7°C, 89-06-17 -0.8°C, 89-10-27 Defective 89-11-01 0.0°C 40-10-31 -0.6°C 90-11-29 -2.6°C 41-01-05 -6.9°C 41-01-31 -3.6°C 41-03-01 -7.1°C 41-03-28 -3.8°C, 89-06-17 Defective 89-10-27 N/A 40-10-31 N/A 10-11-29 etc	N=80 FOR 0.05m			
4	T-9 40-04-05 -7.7 90-06-01 -5.5				4DC	0	I-9		N=125 FOR 0.05m			
5					5SS	0						
6					6SS	0	I-8		N=195 FOR 0.06m			
7					7SS	0	I-7	-2.9°C, 89-06-17 -0.7°C, 89-10-27 -0.7°C, 89-11-01 -0.3°C 40-10-31 0.5°C 40-11-29 -4.5°C 41-01-05 -2.5°C 41-01-31 4.2°C 41-02-01 -2.8°C 41-04-06 -3.0°C 41-04-27 -1.9°C, 89-06-17 Defective 89-10-27 N/A 40-10-31 N/A 40-11-21 N/A 41-01-05 etc	N=150 FOR 0.07m			
8	T-7 40-04-25 -5.6 90-06-09 -4.5				8SS	0			N=75 FOR 0.05m			
9					9SS	0			N=75 FOR 0.05m			
10					10DC	10	T-6					
11					11SS	35		-0.8°C, 89-06-17 -0.3°C, 89-10-27 -0.4°C, 89-11-01 -0.1°C 40-10-31 0.1°C 40-11-21 -0.3°C 41-01-05 1.6°C 41-01-31 2.8°C 41-03-01 -0.3°C 41-03-28 +1.7°C 41-04-27	GSA N=67 * GSA			
12	359.4				12DC	45						
13	Very dense reddish coloured silt, sand, gravel and a few cobbles.				13SS	0	T-5	-0.6°C, 89-06-17 +0.1°C, 89-10-27 -0.1°C, 89-11-01 -0.1°C 40-10-31 0.5°C 40-11-29 -0.3°C 41-01-05 1.5°C 41-01-31 2.6°C 41-03-01 0.4°C 41-03-28 3.9°C 41-04-27	N=95 * FOR 0.15m			
14					14DC	40						
15					15SS	0	T-4		N=170 * FOR 0.12m			
16					16DC	50						

Note: N values in the tailings are not representative of the compactness due to frozen ground conditions.

* High "N" values may in part be due to large size particles.

[illegible]

Terratech

TEST HOLE RECORD

FIGURE NO. A-4

PROJECT: PROPOSED WEST TWIN LAKE TAILINGS DYKE NO. 1359-0
 LOCATION: NANISIVIK N.W.T. 13734.7N 17290.5E
 ELEVATION DATUM: NANISIVIK REFERENCE DATUM CASING SIZE: BW (7.66 m)

HOLE NO. TD-2
 SHEET 1 OF 2
 DATE: 89-06-15

SAMPLE TYPES

SS SPLIT SPOON 31 mm O.D.
 TW THIN-WALL SAMPLER
 PS FIXED PISTON SAMPLER
 DC DIAMOND CORE
 WS WASH SAMPLE
 AS AUGER SAMPLE
 NS NISCOM SAMPLER, 50 mm
 GW WATER SAMPLE

GROUND WATER

WATER LEVEL

SAMPLE CONDITIONS

GOOD DISTURBED LOST

TESTS

SPT TEST VALUE (blows/30 cm)
 PERMEABILITY (cm/s)
 IN-SITU VANE (kPa)
 VANE ON REMOLDED SOIL (kPa)
 LABORATORY VANE (kPa)
 FALL CONE ON INTACT SOIL (kPa)
 FALL CONE ON REMOLDED SOIL (kPa)
 PRESSIOMETER TEST

TESTS

GSA GRAIN-SIZE ANALYSIS
 T TOTAL UNIT WEIGHT (kN/m³)
 U UNCONFINED COMPRESSION (kPa)
 G UNDRAINED TRIAXIAL (kPa)
 E STRAIN AT FAILURE
 C CONSOLIDATION
 RQS ROCK QUALITY DESIGNATION
 DR RELATIVE DENSITY

PROFILE			SAMPLES			THERMOCOUPLE	TESTS	WATER CONTENT (%)			
DEPTH (m)	ELEV (m)	DESCRIPTION	STRAT	COND	NO & TYPE	MC (%)		Wp	PL	LL	LR
0	371.2	GROUND SURFACE									
1	370.2	Fill - sand and gravel size shale fragments.									
2		Tailings fill - interpreted as being frozen to a depth of 12 m at the time of drilling and unfrozen below this depth.			1 DC	40					
3		Very loose at lower contact.			2 DC	40					
4		The sample of frozen tailings core from 9.33 to 11.62 m was well bonded but without any evidence of ice visible to the naked eye.			3 DC	0	-3.5°C, 89-06-17 -0.4°C, 89-10-27 -0.4°C, 89-11-01 -0.3°C, 90-10-31 -0.9°C, 90-11-29				
5		T-7 90-04-25 -9.6°C 90-06-09 -6.1°C									
6					4 DC	0					
7											
8											
9					5 DC	40	-2.1°C, 89-06-17 -0.4°C, 89-10-27 -0.4°C, 89-11-01 -0.1°C, 90-10-31 -1.0°C, 90-11-29				
10											
11					6 DC	85					
12											
13											
14					7 DC	0					
15											
16					8 SS	100	-0.2°C, 89-06-17 Defective, 89-10-27 N/A, 90-10-31				

NOTE:

Only thermocouples T-6 and T-7 were functional as of 89-11-01

GSA
 Dr 4.53

N < 1
 GSA
 Dr 4.34

Terratech

TEST HOLE RECORD

FIGURE NO. A-7

PROJECT PROPOSED WEST TWIN LAKE TAILINGS DYKE

NO 1359-0

HOLE NO. TD-3

LOCATION NANISIVIK N.W.T. 13394 TN 18087.9F

SHEET 1 OF 1

ELEVATION DATUM NANISIVIK REFERENCE DATUM

CASING SIZE BW

DATE 89-06-09, 10

SAMPLE TYPES

SS SPLIT SPOON, 31 mm O.D.
 TW THIN WALL SAMPLER
 PS FIXED PISTON SAMPLER
 DC DIAMOND CORE
 WS WASH SAMPLE
 AS AUGER SAMPLE
 NS NILON SAMPLER, 25 mm
 GW WATER SAMPLE

GROUND WATER

WATER LEVEL

SAMPLE CONDITIONS

GOOD DISTURBED LOST

TESTS

N SPT TEST VALUE (blows/30 cm)
 K PERMEABILITY (cm/s)
 V IN-SITU VANE (kPa)
 V_u VANE ON REMOLDED SOIL (kPa)
 V_L LABORATORY VANE (kPa)
 F FALL CONE ON INTACT SOIL (kPa)
 F_R FALL CONE ON REMOLDED SOIL (kPa)
 P PRESSIOMETER TEST

TESTS

SSA GRAIN-SIZE ANALYSIS
 T TOTAL UNIT WEIGHT (kN/m³)
 U UNCONFINED COMPRESSION (kPa)
 O UNDRAINED TRIAXIAL (kPa)
 (% STRAIN AT FAILURE)
 C CONSOLIDATION
 ADO ROCK QUALITY DESIGNATION

PROFILE			GROUND WATER	SAMPLES			THERMOCOUPLE	TESTS	WATER CONTENT (%)				
DEPTH (m)	ELEV (m)	DESCRIPTION		COND	NO & TYPE	REC (%)			W	WP	PL	WL	
0	372.1	GROUND SURFACE								20	40	60	80
1		Reddish coloured gravel and sand, a few cobbles. Frozen and well bonded except for the top half metre. Ice present as crystals and particle coatings as well as ice lenses as follows;											
2		2.76 to 2.80 m - ice			1 DC	95	T-2	-5.6°C, 89-06-17 -4.3°C, 89-10-27 -7.8°C 90-10-31 -8.3°C 90-11-29 -26.8°C 91-01-31 -23.7°C 91-03-01 -23.4°C 91-03-25 -20.4°C 91-04-27 -3.0°C 91-06-17	GS	-1.5°C 91-07-23 +4.9°C 91-08-27 -2.8°C 91-10-17 -12.8°C 91-11-27			
3		4.62 to 4.74 m - ice			2 DC	100							
4		5.08 to 5.21 m - ice, trace of sand			3 DC	100							
5					4 DC	30							
6	366.89				5 DC	100	T-1	-13.2°C, 89-06-17 -7.7°C, 89-10-27 -4.2°C 90-10-31 -2.2°C 90-11-21 -17°C 91-01-31 -13.6°C 91-02-01 -12.5°C 91-03-25 -21.7°C 91-04-27 -11.9°C 91-06-17	GS	-0.8°C 91-07-23 -5.8°C 91-08-27 -4.8°C 91-10-17 -6.2°C 91-11-27			
7	366.13	Sand, some silt. Frozen and well bonded.			6 DC	100							
8		End of borehole at 5.97 m											
9													
10													
11													
12													
13													
14													
15													
16													

between East & West Twin Lakes

- between
 East & West Twin
 Lake.

Terratech

TEST HOLE RECORD

FIGURE NO.

PROJECT Nanisivik - Permafrost Apperadation

NO. 1434-0

HOLE NO. Twin Lakes 90-1

LOCATION West Twin Lake, Nanisivik, N.W.T.

SHEET 1 OF 1

ELEVATION DATUM

CASING SIZE BW

DATE 90-09-16, 17

SAMPLE TYPES

SS SPLIT SPOON, 51 mm O.D.
TW THIN-WALL SAMPLER
PS FIXED PISTON SAMPLER
DC DIAMOND CORE
WS WASH SAMPLE
AS AUGER SAMPLE
NS NICKON SAMPLER, 50 mm
GW WATER SAMPLE

GROUND WATER

WATER LEVEL

SAMPLE CONDITIONS

GOOD DISTURBED LOST

TESTS

W SPT TEST VALUE (blows/30 cm)
K PERMEABILITY (cm/s)
V IN-SITU VANE (kPa)
VR VANE ON REMOLDED SOIL (kPa)
VL LABORATORY VANE (kPa)
T FALL CONE ON INTACT SOIL (kPa)
TR FALL CONE ON REMOLDED SOIL (kPa)
P PRESSIOMETER TEST

TESTS

GSA GRAIN-SIZE ANALYSIS
T TOTAL UNIT WEIGHT (kN/m³)
U UNCONFINED COMPRESSION (kPa)
O UNDRAINED TRIAXIAL (kPa)
IN STRAIN AT FAILURE
C CONSOLIDATION
RQD ROCK QUALITY DESIGNATION

PROFILE		GROUND WATER	SAMPLES		THERMOCOUPLE T	TESTS	W WATER CONTENT (%) WP PLASTIC LIMIT WL LIQUID LIMIT
DEPTH (m)	ELEV (m)		DESCRIPTION	STRAT			
0							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							

NOTE: Contact between shale and tailings is not well established nor is the top of the frozen ground.

- under water

- causeway by old shack

PROJECT: Nanisivik - Permafrost Accretion

FIGURE NO.

LOCATION: West Twin Lake, Nanisivik, N.W.T.

NO 1434-0

HOLE NO. Twin Lakes 90-02

ELEVATION DATUM

CASING SIZE BW

SHEET 1 OF 2

DATE 90-09-17, 18

SAMPLE TYPES

SS SPLIT SPOON 21 mm Ø
TW THIN WALL SAMPLER
PS FIXED PISTON SAMPLER
DC DIAMOND CORE
WS WASH SAMPLE
AS AUGER SAMPLE
NS NUCON SAMPLER 50 mm
GW WATER SAMPLE

GROUND WATER

WATER LEVEL

SAMPLE CONDITIONS

GOOD DISTURBED LOST

GOOD DISTURBED LOST

TESTS

SPT TEST VALUE (BLOWN/0.3 m)
PERMEABILITY (cm/s)
IN-SITU VANE (kPa)
VANE ON REMOLDED SOIL (kPa)
LABORATORY VANE (kPa)
FALL CONE ON INTACT SOIL (kPa)
FALL CONE ON REMOLDED SOIL (kPa)
PRESSIOMETER TEST

TESTS

GSA GRAIN-SIZE ANALYSIS
T TOTAL UNIT WEIGHT (kN/m³)
U UNCONFIRMED COMPRESSION (kPa)
D UNGRAINED TRIAXIAL (kPa)
T STRAIN AT FAILURE
C CONSOLIDATION
ROD ROCK QUALITY DESIGNATION

PROFILE		SAMPLER		THERMOCOUPLE T		TESTS	
DEPTH (m)	ELEV (m)	DESCRIPTION	STATUS	NO. & TYPE	REC. NO.	WATER CONTENT (%)	PLASTIC LIMIT
0		GROUND SURFACE					
0.5		Shale backfill.					
1.0		Tailings. Definitely frozen below a depth of 1.5 m and perhaps even higher. Well bonded but with no ice lensing.		10C 50	T-8	90-09-22; -4.1°C 90-09-26; -3.0°C 10-11-30 -11.6°C 11-01-05 -2.1°C 11-01-31 -2.6°C 11-03-01 -2.0°C 11-03-28 -2.0°C 11-04-27 -1.1°C	91-06-14 -4.5°C 91-07-03 -3.5°C 91-08-07 -4.3°C 91-08-17 -2.7°C 91-10-17 -2.7°C 91-11-27 -1.1°C
2.0				20C 0	T-7	90-09-22; -0.6°C 90-09-26; -0.7°C 10-11-30 0.1°C 11-01-05 -7.3°C 91-01-31 -7.1°C 11-03-01 -9.3°C 91-03-28 -11.5°C 91-04-27 -10.0°C	91-06-14 -1.3°C 91-07-03 -1.4°C 91-08-07 -1.7°C 91-10-17 -0.9°C 91-11-27 -0.7°C
3.0				30C 100			
4.0				40C 100			
5.0				50C 100	T-6	90-09-22; -0.7°C 90-09-26; -0.7°C 10-11-30 1.3°C 11-01-05 -1.8°C 11-01-31 -3.5°C 11-03-01 -4.3°C 11-03-28 -6.1°C 11-04-27 -5.5°C	91-06-14 -1.3°C 91-07-03 -1.4°C 91-08-07 -1.7°C 91-10-17 -0.9°C 91-11-27 -0.7°C
6.0				60C 100			
7.0				70C 0	T-5	90-09-22; -0.3°C 90-09-26; -0.3°C 10-11-30 0.8°C 11-01-05 -0.1°C 11-01-31 3.4°C 11-03-01 2.0°C 11-03-28 -1.8°C 11-04-27 0.0°C	91-06-14 -1.2°C 91-07-03 -0.4°C 91-08-07 -0.3°C 91-10-17 -0.4°C 91-11-27 -0.5°C
8.0				80C 50			
9.0				90C 0			
10.0				100C 0	T-4	90-09-22; +0.3°C 90-09-26; +0.2°C 10-11-30 0.1°C 11-01-05 0.1°C 11-01-31 2.2°C 11-03-01 5.3°C 11-03-28 0.5°C 11-04-27 12.0°C	91-06-14 +0.3°C 91-07-03 +1.4°C 91-08-07 +0.3°C 91-10-17 +0.4°C 91-11-27 +0.5°C
11.0				110C 80			
12.0		Unfrozen tailings. Loose to compact.		120C 0	T-3	90-09-22; +0.6°C 90-09-26; +0.5°C 10-11-30 0.7°C 11-01-05 0.2°C	91-06-14 +2.1°C 91-07-03 +1.1°C
13.0				130C 0			
14.0							
15.0							
16.0							

*91-08-07 - water in thermocouple hole

-East West Causeway.

NOTE: Contact between shale and tailings is not well established nor is the top of the frozen ground.

Split spoon samples 11 SS and 12 SS were taken in the casing.

91-01-30 1.2°C 91-01-31 7.2°C 91-10-17 +0.3°C

Terratech

TEST HOLE RECORD

PROJECT Nanisivik - Permafrost Abgradation

NO 1434-0

FIGURE NO. _____
HOLE NO. Twin Lakes 40-03
SHEET 2 OF 2

PROFILE			GROUND WATER	SAMPLES		THERMOCOUPLE T	TESTS	WATER CONTENT (%)	
DEPTH (m)	DESCRIPTION	STAT		COND	REC (%)			Wp	WL
16	Unforzen tailings.		13DC	0					
17			14SS	100					
18	Unfrozen reddish silt. Some clay at the surface but only a trace at depth, and with a few gravel sizes at depth.		15DC	40					
19									
20			16DC	5					
21									
22			17SS	80					
23	End of borehole at 22.09 m								
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									

COND NO & DATE REC (%)

13DC 0

14SS 100

15DC 40

16DC 5

17SS 80

T-2

90-09-22 = +0.7°C

90-09-26 = +0.6°C

90-11-30 = -3.3°C

91-01-03 = -10.3°C

11-01-31 = -10.7°C

11-03-31 = -11.1°C

91-03-26 = 1.6°C

91-04-27 = 1.7°C

T-1

90-09-22 = +0.7°C

90-09-26 = +0.6°C

90-11-30 = -3.3°C

91-01-03 = -10.3°C

11-01-31 = -10.7°C

11-03-31 = -11.1°C

91-03-26 = 1.6°C

91-04-27 = 0.7°C

WATER CONTENT (%)

Wp PLASTIC LIMIT

WL LIQUID LIMIT

91-06-14 +33°C

91-07-03 +2.8°C

91-08-07 +3.9°C

91-10-17 +0.3°C

91-11-27 +1.6°C

91-06-14 +2.4°C

91-07-03 +1.4°C

91-08-07 +1.8°C

91-10-17 +0.1°C

91-11-27 -0.1°C

Terratech

TEST HOLE RECORD

FIGURE NO. A-1

PROJECT: Containment Dyke - Nanisivik

NO. 1434-0

HOLE NO. NM

LOCATION: Chainage 0+75, 2.0 m from upstream slope crest

SHEET 1 OF 1

ELEVATION DATUM: Geodetic

CASING SIZE: R

DATE: 92-06-10

SAMPLE TYPES

SS SPLIT SPOON, 51 mm OD
TW THIN-WALL SAMPLER
PS PISTON SAMPLER
DC DIAMOND CORE, 51 mm
WS WASH SAMPLE
AS AUGER SAMPLE
NS NUCLEON SAMPLER, 52 mm
GW WATER SAMPLE

GROUND WATER

WATER LEVEL

SAMPLE CONDITIONS

GOOD DISTURBED LOST

GOOD DISTURBED LOST

TESTS

N S.P.T. TEST VALUE (100mm/30 sec)
K PERMEABILITY (cm/sec)
V IN-SITU VANE (kPa)
V_h VANE ON REMOLDED SOIL (kPa)
V_l LABORATORY VANE (kPa)
T FALL CONE ON INTACT SOIL (kPa)
T_R FALL CONE ON REMOLDED SOIL (kPa)
P PRESSIOMETER TEST

TESTS

GSA GRAIN-SIZE ANALYSIS
γ TOTAL UNIT WEIGHT (kN/m³)
U UNCONFINED COMPRESSION (kPa)
U_u UNDRAINED TRIAXIAL (kPa)
C STRAIN AT FAILURE
C CONSOLIDATION
RQD ROCK QUALITY DESIGNATION

PROFILE			SAMPLES			THERMOCOUPLE T	TESTS	WATER CONTENT (%)			
DEPTH (m)	ELEV (m)	DESCRIPTION	STATUS	COND	NO & TYPE	REC. (%)		W _p	W _L	W _p	W _L
0	376.0	GROUND SURFACE									
1		Sand and gravel shale fill. Frozen except for the top few centimetres.			10C 44						
2					20C 60						
3					30C 100						
4					40C 84						
5					50C 100		T-4 90-06-20 : -4.7°C				
6	373.4				60C 22						
7		Tailings. Frozen and well bonded. (1991 deposition)			70C 79						
8					80C 83		T-3 90-06-20 : -6.9°C				
9					90C 63						
10					100C 100						
11	370.2										
12	369.9	Frozen in-situ sand and gravel					T-2 90-06-20 : -8.1°C				
13		Bedrock. Frozen.			110C 100						
14											
15	368.7						T-1 90-06-20 : -8.5°C				
16	7.25	End of borehole									
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											
46											
47											
48											
49											
50											
51											
52											
53											
54											
55											
56											
57											
58											
59											
60											
61											
62											
63											
64											
65											
66											
67											
68											
69											
70											
71											
72											
73											
74											
75											
76											
77											
78											
79											
80											
81											
82											
83											
84											
85											
86											
87											
88											
89											
90											
91											
92											
93											
94											
95											
96											
97											
98											
99											
100											

NOTE:

Thermocouple strings installed in a sealed 25 mm dia. PVC pipe filled with vegetable oil.

NOLE NO. _____ NOL T2

SHEET 1 OF 2

SHEET 1 OF 1

DATE 92-06-13

TESTS

M SPT TEST VALUE (1000 LBS) AND
 K PERMEABILITY (CM/SEC)
 V IN-SITU VANE (KPA)
 V_R VANE ON REMOLDED SOIL (KPA)
 V_L LABORATORY VANE (KPA)
 F FALL CONE ON INTACT SOIL (KPA)
 FR FALL CONE ON REMOLDED SOIL (KPA)
 P PRESSIOMETER TEST

TESTS

CSA	GRAIN SIZE ANALYSIS
Y	TOTAL UNIT WEIGHT (lb./m ³)
U	UNCONFINED COMPRESSION (lbf)
Q	UNDRAINED TRIAXIAL (lbf)
mi	STRAIN AT FAILURE
CO	CONSOLIDATION
RO	ROCK QUALITY DESIGNATION

SAMPLES

CARD	NO. A TYPE	RIC (%)
	10C	18
	20C	39
	30C	26
	40C	100
	50C	80
	60C	100
	70C	80
	80C	31
	90C	17
	100C	55
	110C	93
	120C	100

- THERMOCOUPLE T

TESTS

W	WATER CONTENT (%)
WP	PLASTIC LIMIT
WL	LIQUID LIMIT

A horizontal beam is supported by a central circular support. Two weights, each labeled 70 lb, are suspended from the ends of the beam. The distance from each weight to the central support is labeled 40.

PROJECT West Twin Lake Test CellsNO. 1434-0HOLE NO. 4NO. T-4TC4LOCATION Approximate centre of test cell No. 5ELEVATION DATUM Geodetic

CASING SIZE

SHEET 1 OF 1DATE 92-06-13

SAMPLE TYPES

SS SPLIT SPOON, 51 mm Ø Ø
 TW THIN-WALL SAMPLER, 51 mm Ø Ø
 PS FIXED PISTON SAMPLER, 51 mm Ø Ø
 DC DIAMOND CORE, 51 mm Ø Ø
 WS WASH SAMPLE
 AS AUGER SAMPLE
 NS HILCON SAMPLER, 51 mm Ø Ø
 GW WATER SAMPLE

GROUND WATER

SAMPLE CONDITIONS

GOOD DISTURBED LOST

GOOD DISTURBED LOST
 [X] [X] [X]

TESTS

N SPT TEST VALUE (100mm Ø) IN
 E PERMEABILITY (cm/s)
 V IN SITU VANE (kPa)
 V_u VANE ON REMOLDED SOIL (kPa)
 V_L LABORATORY VANE (kPa)
 F FALL CONE ON INTACT SOIL (kPa)
 F_R FALL CONE ON REMOLDED SOIL (kPa)
 P PRESSIOMETER TEST

TESTS

GSA GRAIN-SIZE ANALYSIS
 T TOTAL UNIT WEIGHT (kN/m³)
 U UNCOMPACTED COMPRESSIBILITY
 U_u UNCOMPACTED TRIAXIAL (kPa)
 C CONSOLIDATION
 RQD ROCK QUALITY DESIGNATION

PROFILE		DESCRIPTION	START	SAMPLER		THERMOCOUPLE T	TESTS	WATER CONTENT BY PLASTIC LIMIT IN LIQUID LIMIT
DEPTH m	ELEV m			COND	NO A TYPE			
0	372.5	GROUND SURFACE						
		0.3 m Twin Lakes sand and gravel over shale sand and gravel.						
	371.8							
	371.5	Airport road sand.						
		Sand and gravel shale.						
2	370.4							
		Tailings. Frozen and well bonded. No ice lenses.						
3								
4								
5								
6								
7								
8								
9	363.7							
		In-situ reddish clay, Some sand and gravel, changing to silty sand at depth. Probably not frozen.						
10								
11								
12								
13	359.4 359.2							
		Probably bedrock.						
		End of borehole						
14								
15								
16								