

Attachment A Geotechnical Borehole Logs

RECORD OF DRILLHOLE BH88-1P1

SHEET 1 OF 4

LOCATION PLANTSITE No. 1 7,149,378.5N x 584,288.8E

DRILLING DATE 1-5,9,10 JUL 88

DATUM GEODETTIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG ROTARY/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH



PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN				F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED				SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR				FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION Thermistor Installation																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
								RECOVERY				R.O.D. %	FRACT. INDEX PER 0.3m	DISCONTINUITY DATA				HYDRAULIC CONDUCTIVITY L/m/sec																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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0		Ground Surface		243.60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

0.89 to 4.76m
BC 70+
planes
0 to 1:
R,UE
Fe

BP,R,Fe
J,R,PL,HEAVY Fe

DEPTH SCALE

1: 25

Goldor Associates

LOGGED R.W.M.

DATE

CHECKED

RECORD OF DRILLHOLE BH88-1P1

SHEET 2 OF 4

LOCATION PLANTSITE No. 1

DRILLING DATE 1-5,9,10 JUL 88

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG ROTARY/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH



PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE				F-FAULT				SM-SMOOTH				FL-FLEXURED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE		J-JOINT		R-ROUGH		UE-UNEVEN											
								SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY											
								VN-VEIN		S-SLICKENSIDED		PL-PLANAR		C-CURVED											
								RECOVERY		R.Q.D.		FRACT. INDEX PER 0.3M		DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY K, cm/sec									
								TOTAL CORE %	SOLID CORE %	%	%	%	%	TYPE AND SURFACE DESCRIPTION											
5		continued from page 1		238.50																#9 * 5.0m					
				6.00	19																				
					20																				
					21																				
					22																				
					23																				
					24																				
					25																				
					26																				
					27																				
7					28															#10 * 7.0m					
					29																				
					30																				
					31																				
					32																				
					33																				
					34																				
					35																				
					36																				
					37																				
10		continued on next page		233.50																#11 * 10.0m					
				10.00																					

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH

PROJECT 881-1814D

CHECKED

RECORD OF DRILLHOLE BH88-1P1

SHEET 4 OF 4



LOCATION PLANTSITE No. 1

DRILLING DATE 1-6,9,10 JUL 88

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG ROTARY/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH

PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R -ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W -WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C -CURVED		
RECOVERY		R.O.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L/m/sec							
TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION	DP w/1 CORE AXES								
15		continued from page 3		228.50									
				16.00									
				228.34	43								
		End of Drillhole		16.18									
16		Note - no groundice recovered in core - thawed during coring											
17													
18													
19													
20													

DEPTH SCALE

1 : 26

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

RECORD OF DRILLHOLE BH88-1P2

SHEET 2 OF 3



LOCATION PLANTSITE No. 1

DRILLING DATE 17 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K _{eff} (cm/sec)	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
5		continued from page 1		237.10											
				5.00											
					4	.266	POOR%					BP, R, PC, TR CLAY			
												BP, R, 2-3mm CLAY			
												BP, R, PL, FRESH			
6					5	.163	POOR%					BP, R, TR, Fe			
												BP, R, UE, 3mm CLAY			
												BP, R, FRESH			
												BP, R, PL			
					6	.122	POOR%					BP			
												BP			
7												BP, R, FRESH			
												BP, R, FRESH			
												J, R, UE			
					7	.304	POOR%					BP, R, PL			
												J, R, UE			
												BP, R			
8												BP, R, Fe, CLAY FILLED			
												BP, R, Fe, CLAY FILLED			
												BP, R, UE			
												BP, R, UE			
					8	.116	POOR%					BP, R, UE			
												BP, R, UE			
												BP, R, UE, Fe			
												J, R, UE			
												BP, R, PL			
					9	.086	POOR%					BP, R, PL			
												BP, R, PL, TR CLAY			
10		continued on next page		232.10											
				10.00											

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

SHEET 3 OF 3

LOCATION PLANTSITE No. 1

DRILLING DATE 17 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

[illegible]

DEPTH SCALE

1 : 25

LOGGED R.W.M.

DATE _____

CHECKED

Golder Associates

DATUM GEODETIC

DRILLING CONTRACTOR BRADLEY BROS. LTD.

THAWED

FROZEN

RECORD OF DRILLHOLE BH88-1P3

SHEET 2 OF 3

LOCATION PLANTSITE No. 1

DRILLING DATE 17 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD



PROJECT 881-1418D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE				F-FAULT				SM-SMOOTH				FL-FLEXURED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE				J-JOINT				R-ROUGH				UE-UNEVEN					
								SH-SHEAR				P-POLISHED				ST-STEPPED				W-WAVY					
								VN-VEIN				S-SLICKENSIDED				PL-PLANAR				C-CURVED					
								RECOVERY		R.Q.D. %		FRACT. INDEX PER CUM		DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION		HYDRAULIC CONDUCTIVITY K ₁ cm/sec									
								TOTAL CORE %	SOLID CORE %																
								10 20 30 40 50	10 20 30 40 50																
5		continued from page 1		236.30																					
				5.00																					
					4		0%																		
6																									
7					6		0%																		

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED

RECORD OF DRILLHOLE BH88-1P4

SHEET 1 OF 3



LOCATION PLANTSITE No. 1 7,148,235.8N X 684,824.2E

DRILLING DATE 19 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD

PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/HR)	FLUSH	RECOVERY TOTAL CORE %	SOLID CORE %	R.O.D. %	FRACT. INDEX PER O.A.M.	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K _{20/20}	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
0		Ground Surface		242.10											
		Glacial Till		0.00											
1															
		Bedrock Surface		240.88											
		Sandstone conglomerate, light tan with altern- ating hematitic patches, fine to medium grained sandy matrix siliciously cemented, bedding 5 to 10 deg.		1.22	1	.086	0%					1.22-1.82 HIGHLY FR, 20+ BP, 20-30 deg., Fe, MW-SW			
		casing set at 1.21m										1.82-2.11 LOST CORE			
2		NQ wireline with water flush			2	.17	0%					2.11-3.55 BC, 30+ BP, HIGHLY FR BP, 10-20 deg., Fe, SW			
3															
				238.44								3.50-3.78 BC BP, Fe, SOME W TR CLAY			
		Est'd bottom of shattered rock		3.88								BP, R, UE, SLIGHT- LY WEATHERED BP, R, UE			
4					3	.128	0%					J, 2-3mm CLAY, R J, R, UE, TR Fe J, R, UE, TR Fe			
				237.10	4	.152	0%					BP, R, UE			
5		continued on next page		5.00											

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

RECORD OF DRILLHOLE BH88-1P4

SHEET 3 OF 3



LOCATION PLANTSITE No. 1

DRILLING DATE 19 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (mm/min)	FLUSH % RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	HYDRAULIC CONDUCTIVITY L/m/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
10		continued from page 2		232.10										
				10.00										
					7									
				231.74										
		End of Drillhole		10.38										
11		Note - no ground ice recovered in core - thawed during coring												
12														
13														
14														
15														

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

SHEET 1 OF 4

DATUM PROJECT

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm

[illegible]

CHECKED

SHEET 2 OF 4

LOCATION PLANTSITE No. 1 7,149,285.9N X 554,259.4E

DRILLING DATE 18 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

[illegible]

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE _____

CHECKED

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-1814D

CHECKED

SHEET 4 OF 4

DRILLING DATE 18 JULY 1988

DATUM GEODETIC

AZIMUTH

DRILL RIG DIAMOND/BOYLES 26

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-1814D

1 : 26

Golder Associates

LOGGED R.W.M.

DATE _____

CHECKED

RECORD OF BOREHOLE BH88-1P6

SHEET 1 OF 4



LOCATION PLANTSITE No. 1 7,149,213.5N X 584,397.2E

BORING DATE 10 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa nat.V.- + Q.- ● rem.V.- ⊗ U.- ○	WATER CONTENT, PERCENT Wp W U				
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	242.90									
		SILTY SAND TILL, sandy, fine to coarse subrounded sand with some coarse to fine subrounded some clay moist, medium reddish brown	0.00	1	AS -					O	M, H	Sol. Sulphate ≤0.10%
1		PERMAFROST @ 0.78m - Nbe @ 1.00m gravel percentage decreasing @ 1.50m cobbles encountered		2	AS -							
2			240.78									
		End of Borehole Auger refusal in boulders or cobbles	2.14									
3												
4												
5												

0
10 PERCENT AXIAL STRAIN AT FAILURE

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED

RECORD OF DRILLHOLE BH88-1P6

SHEET 2 OF 4



LOCATION PLANTSITE No. 1 7,149,213.5N X 584,397.2E

DRILLING DATE 18 JULY 1988

DATUM GEODETTIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE				F-FAULT				SM-SMOOTH				FL-FLEXURED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE				J-JOINT				R-ROUGH				UE-UNEVEN					
								SH-SHEAR				P-POLISHED				ST-STEPPED				W-WAVY					
								VN-VEIN				S-SLICKENSIDED				PL-PLANAR				C-CURVED					
								RECOVERY		R.O.D.		FRACT. INDEX PER QJM	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L/CM/SEC										
								TOTAL CORE %	SOLID CORE %	%	TYPE AND SURFACE DESCRIPTION														
0		Ground Surface		242.80																					
		OVERBURDEN - See Borehole Log for Description		0.00																					
1																									
2		2.14 to 4.11m poor return, washwater indicates medium reddish brown glacial till, occasional cobbles																							
3																									
4		Bedrock Surface		238.79																					
		Sandstone conglomerate, light tan with alternating hematitic patches, fine to medium grained sandy matrix siliculously cemented, bedding 0 to 15 deg.		4.11																					
		Est'd bottom of shattered rock		238.48																					
				4.42																					
		Casing set to 4.27m																							
5		continued on next page		237.90																					
				5.00																					

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

RECORD OF DRILLHOLE BH88-1P6

SHEET 4 OF 4



LOCATION PLANTSITE No. 1

DRILLING DATE 18 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV.	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN % COLOR	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
				DEPTH (M)				CL-CLEAVAGE		J-JOINT		R-ROUGH		UE-UNEVEN			
								SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY			
								VN-VEIN		S-SLICKENSIDED		PL-PLANAR		C-CURVED			
RECOVERY		R.O.D.		FRACT. INDEX PER C.M.	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY %, cm/sec										
TOTAL CORE %	SOLID CORE %	%	TYPE AND SURFACE DESCRIPTION		DIP W.I.I CORE AXIS												
10		continued from page 2		232.90													
				10.00													
					5	.084	80%										
													</				

RECORD OF BOREHOLE BH88-1P7

SHEET 1 OF 4



LOCATION PLANTSITE No. 1 7,149,354.3N X 584,442.8E

BORING DATE 10 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

PROJECT 881-18140

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m			HYDRAULIC CONDUCTIVITY, k, CM/SEC			ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa nat.V.- + O.- ● rem.V.- ⊗ U.- ○			WATER CONTENT, PERCENT Wp W Wl 20 40 60 80						
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		242.80													
		TOPSOIL (tundra), light brown silty, organics		0.00 242.85													
		SILTY SAND TILL - fine to coarse subrounded sand, some Clay, low plastic, trace fine to coarse Gravel, subrounded, medium reddish brown (SM), cobbles @ 0.7m		0.15	1	AS	-										
						2	AS	-									
						3	AS	-									
		PERMAFROST @ 0.41m Nbn			4	AS	-										
1				241.74											M, H		
		End of Borehole Auger refusal in boulders or cobbles		1.08													
2																	
3																	
4																	
5																	

0
15 10 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED

RECORD OF DRILLHOLE BH88-1P7

SHEET 2 OF 4



LOCATION PLANTSITE No. 1

DRILLING DATE 19 JULY 1988

DATUM GEODETTIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (mm/min)	FLUSH % RETURN	COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
									RECOVERY	R.Q.D.	FRACT.	DISCONTINUITY DATA	HYDRAULIC	
									TOTAL CORE %	SOLID CORE %	%	INDEX PER CM	TYPE AND SURFACE DESCRIPTION	CONDUCTIVITY μmhos/cm
0		Ground Surface		242.80										
		OVERBURDEN - See Borehole Log for Description		0.00										
1		1.06 to 1.78m medium reddish brown glacial till assumed based on muddy return water, and cobbles and gravel in core												
2		Bedrock Surface		241.02										
		Sandstone conglomerate, light tan with alternat- ing hematitic patches, fine to medium grained sandy matrix siliciously cemented, bedding 0-6 deg.		1.78										
		Set casing @ 1.83m												
		NQ wireline with water flush												
3														
		Est'd bottom of shattered rock		239.07										
				3.73										
4														
5		continued on next page		237.80										
				6.00										

1.83 - 3.35m
BC, 22SP, R, UE
20-30

22FR, R, UE, 20-30

BP, R, IRR
BP, R, IRR, SW, TR
Fe

BP, R, IRR, CLAY
INFILLING

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

PROJECT 881-1814D

RECORD OF DRILLHOLE BH88-1P7

SHEET 3 OF 4



LOCATION PLANTSITE No. 1

DRILLING DATE 19 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	% RETURN FLUSH COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
		continued from page 1		237.80 5.00									
					3	.117	20%						5.00-5.55-10BP 6cm SPACING. 30-40, R, IRR, SW J, R, IRR, HEALED
													BP, R, IRR
													BP, R, IRR, FRESH
													BP, IRR, TR CLAY
													BP, R, IRR
													BP, R, IRR, FRESH
													BP, PL, TR Fe
													BP, R, PL, Fe, TR
													CLAY
													BP, R, IRR, FRESH
													BP, R, IRR
					4	.127	20%						BP, R, FRESH
													BP, R, FRESH
													BP, R, SW
													J, R, TR CLAY, TR
													Fe
													BP, R, IRR
					5	.1	20%						BP, R, SW
													BC, SW, R, IRR
													8, 21-8.4cm, 7BP
													26, R, IRR, SW
													BP, R, IRR, TR Fe
					6	.136	20%						BP, R, IRR, TR FW
					7	.142	20%						BP, R, IRR
													BP, R, IRR
													BP, R, IRR, TR Fe
													BP, R, IRR, SW
		continued on next page		232.80 10.00									

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

RECORD OF BOREHOLE BH88-1P8

SHEET 1 OF 1

LOCATION PLANTSITE No. 1 7,149,492.8N X 684,630.6E

BORING DATE 10 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH		WATER CONTENT, PERCENT			
							Cu, kPa	nat.V.- + Q.- ● rem.V.- ● U.- ○	Wp	W		
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	244.60									
		TOPSOIL, light to medium grey, organic sand and gravel, silt moist	0.00									
			0.10									
		SILTY SANDY TILL - fine to coarse subrounded Sand, some Clay, non-plastic, some fine and coarse subrounded Gravel, moist, light reddish brown (SM) PERMAFROST - no permafrost observed		1	AS	-						
1				2	AS	-						
		Ø 1.48m, abundant cobbles	243.05	3	AS	-						
				4	AS	-						
		End of Borehole Auger refusal in boulders or cobbles	1.55									
2												
3												
4												
5												

Bulk Sample
AS 0.10 to
1.60m
M, H
PR
OC.

0
16-10 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED

RECORD OF BOREHOLE BH88-1P9

SHEET 1 OF 1



LOCATION PLANTSITE No. 1 7,149,289.9N X 584,088.1E

BORING DATE 11 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa nat.V.- + Q.- ● rem.V.- ⊗ U.- ○	WATER CONTENT, PERCENT Wp — W — W _L 20 40 60 80				
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	241.50									
		CLAYEY SILT, wet, dark grey, organics	0.00 241.35									
		Clayey, Silty, SAND TILL - Organic, fine to coarse subrounded sand, trace fine and coarse gravel, subrounded, medium grey brown (OH)	0.15	1	AS -							
				2	AS -	CPREL						
					3	AS -	CPREL					
				4	AS -							
1		glacial till @ 0.42 to 0.76m as above but medium reddish brown, organic	240.25 1.25							10102 M, H		
		@ 0.76m, cobbles encountered										
		0.76 to 1.25m, TILL, dark grey silty and sandy, fine gravel										
2		End of Borehole Auger refusal in boulders or cobbles										
3		PERMAFROST @ 0.15m 0.15m to 0.30m Nbe 0.30m to 0.42m Vs, 2 to 3mm white hard 0.42m to 0.60m Vs, 1 to 2mm, 5mm at 0.60m clear, hard 0.60m to 0.76m Vs, 2 to 3mm clear, hard, and Vx 0.76m to 1.25m Nbe										
4												
6												

10102 M, H

0
15-10 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED

RECORD OF DRILLHOLE BH88-1P10

SHEET 1 OF 2



LOCATION PLANTSITE No. 1 7,148,323.3N X 664,501.4E

DRILLING DATE 30 JUNE 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN						
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY						
VN-VEIN		S-SLICKENSIDED		PL-PLANAR		C-CURVED											
RECOVERY		R.O.D. %	FRACT. INDEX PER CUM	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L/m/sec											
TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION													
0		Ground Surface		227.00													
		SAND TILL - some silt, trace clay, some fine and coarse gravel, medium reddish brown PERMAFROST @ 0.20m		0.00													
1																	
		2.00 to 2.32m - Increased gravel content, fine and coarse, subrounded															
2																	
		Bedrock Surface		224.88													
		Ortho quartzite fine grained, hard whitish tan alternating patchy hematitic coloration in rock foriation @ 20-25 deg.		2.32	1	.032	0-20%										
		Casing set to 1.43m 2.32 to 4.60m broken core with core loss															
3																	
		NQ wireline with water flush			2	.048	0%										
4																	
					3	.08	25%										
		Est'd bottom of shattered rock		222.60													
				4.60	4	.124	25%										
5		continued on next page		222.00													
				5.00													

- J, HEALED HEM. R
- FO, R, UE, FRESH
- J, HEALED, UE
- J, R, TR HEM
- J, R, PL CRTZ

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M

DATE

CHECKED

RECORD OF DRILLHOLE BH88-1P10

SHEET 2 OF 2



LOCATION PLANTSITE No. 1

DRILLING DATE 30 JUNE 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (mm/min)	FLUSH % RETURN % COLOR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R -ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W -WAVY C -CURVED	HYDRAULIC CONDUCTIVITY L ₁ cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
5		continued from page 1		222.00	4	.12	25%							
				5.00										
6					6	.04	60%							
				221.10										
6		End of Drillhole		5.90										
7														
8														
9														
10														

Note - no ground ice recovered
in core - thawed during coring

- 5.15 TO 5.73M
7FO, R, PL
- R, UE ORTZ
- J, R, UE, ORTZ
- J, HEALED
- FO, R, PL, Fe
STAIN, TR CLAY

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

SHEET 1 OF 2

LOCATION PLANTSITE No. 1 7,148,896.4N X 584,631.5E

DRILLING DATE 16 JULY 1988

DATUM GEODETIC

INCLINATION VERITCAL AZIMUTH

DRILL RIG DIAMOND/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH

[illegible]

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE _____

CHECKED

RECORD OF DRILLHOLE BH88-1P11

SHEET 2 OF 2



LOCATION PLANTSITE No. 1

DRILLING DATE 15 JULY 1988

DATUM GEODETIC

INCLINATION AZIMUTH

DRILL RIG DIAMOND/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (U/MIN)	FLUSH	% RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN				F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED				SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR				FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
									RECOVERY		R.Q.D. %	FRACT. INDEX PER O.A.M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L/m/sec											
									TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION													
5		continued from page 1		226.90																						
				5.00																						
		Est'd bottom of shattered rock		226.81	2	.033	60+																			
		NQ wireline with water flush		5.29	3	.02	60+																			
					4	.05	50																			
					5	.02	60+																			
6					6	.04	60+																			
					7	.01	60+																			
					8	.01	60+																			
7				224.84	9	.01	60+																			
		End of Drillhole		7.06																						
		Note - no ground ice recovered in core - thawed during coring																								
8																										
9																										
10																										

RECORD OF DRILLHOLE BH88-1P12

SHEET 1 OF 3



LOCATION PLANTSITE No. 1 7,148,958.7N X 684,717.9E

DRILLING DATE 31 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (N/MIN)	FLUSH	% RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN				F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED				SM-SMOOTH R -ROUGH ST-STEPPED PL-PLANAR				FL-FLEXURED UE-UNEVEN W -WAVY C -CURVED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
									RECOVERY		R.O.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L/m/sec	TYPE AND SURFACE DESCRIPTION										
									TOTAL CORE %	SOLID CORE %			DP W/L CORE AVE													
0		Ground Surface		238.80																						
		GRAVELLY SAND TILL - medium reddish brown, fine to coarse subrounded Gravel, some Silt, occasional Cobbles		0.00																						
1																										
2																										
3																										
		Bedrock Surface		235.10																						
		Set casing to 3.60m		3.60																						
		Sandstone pebble conglomerate, light tan with patchy hematitic sections alternating throughout the core, fine to medium subangul- ar to subrounded ortho quartz gravel siliciously cemented in a fine to coarse subangular to subrounded sandy matrix, bedding @ 5-10 deg.																								
4																										
		NQ wireline with water flush																								
5		continued on next page		233.60																						
				5.00																						

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.B.

DATE

CHECKED

RECORD OF DRILLHOLE BH88-1P12

SHEET 3 OF 3



LOCATION: PLANTSITE No. 1

DRILLING DATE: 31 JULY 1988

DATUM: GEODETIC

INCLINATION

AZIMUTH

DRILL RIG: DIAMOND/BOYLES 25

DRILLING CONTRACTOR: BRADLEY BROS. LTD.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN				F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED				SM-SMOOTH R -ROUGH ST-STEPPED PL-PLANAR				FL-FLEXURED UE-UNEVEN W -WAVY C -CURVED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								RECOVERY		R.O.D. %	FRACT. INDEX PER CUM	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L / CM/SEC											
								TOTAL CORE %	SOLID CORE %			DP W/L CORE AXIS	TYPE AND SURFACE DESCRIPTION												
10		continued from page 2		228.80																					
				10.00																					
				228.11	4	.105	70%																		
		End of Drillhole		10.49																					
11		Note - no ground ice recovered in core - thawed during coring																							
12																									
13																									
14																									
15																									

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED

RECORD OF DRILLHOLE BH88-2P1

SHEET 1 OF 3

LOCATION PLANTSITE No. 2 7,148,771.3N X 585,793.1E

DRILLING DATE 25 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH & RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN				F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED				SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR				FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
								RECOVERY		R.O.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA				HYDRAULIC CONDUCTIVITY k, cm/sec																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
								TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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0		Ground Surface		227.50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Burn

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

RECORD OF DRILLHOLE BH88-2P1

SHEET 3 OF 3

LOCATION PLANTSITE No. 2

DRILLING DATE 25 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-16140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
								RECOVERY	R.O.D.	DISCONTINUITY DATA	HYDRAULIC		
								TOTAL CORE %	SOLID CORE %	%	INDEX PER 100M CORE ANAL	TYPE AND SURFACE DESCRIPTION	CONDUCTIVITY % cm/sec
10		continued from page 2		217.50 10.00	7	.089	70-80%					J,R,UE,Fe	
												J,R,Fe	
												FO,SW	
												FO,R,Fe	
												J,R,UE,Fe,SER	
												FO,R,UE,Fe	
												FO,R,FRESH	
11					8	.091	70-80%					11.14-11.27m,BC	
												J,R,UE,Fe	
												BC, & FO, Fe, R	
												2FO,R,Fe	
												2J,R,UE,SER,Fe	
												FO,R,UE,Fe	
12												FO,R,Fe	
					9	.038	70-80%					J,R,TR Fe	
		End of Drillhole		215.15 12.35									
13		Note - no ground ice recovered in core - thawed during coring											
14													
15													

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED BLM

RECORD OF BOREHOLE BH88-2P2

SHEET 1 of 5

LOCATION PLANTSITE No. 2 7,148,846.8N X 565,891.6E

BORING DATE 15 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, K, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH		WATER CONTENT, PERCENT			
							Cu, kPa	nat.V.- + Q.- ● rem.V.- ● U.- ○	Wp			W
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	228.40									
		TOPSOIL - dark brown organic Silt	0.00									
		SILTY SANDY TILL - fine to coarse subrounded Sand, some Clay, low plastic, some fine and coarse subrounded Gravel, medium reddish brown, moist @ 0.62 to 0.90m, increased gravel content PERMAFROST - 0.75 to 0.90m, Vr to Vc, 1 to 2mm, white to clear, soft 0.90 to 1.20 Nbn Below 0.90m - till change to fine to medium subrounded Sand, silty, trace fine, coarse Gravel and occasional cobbles	0.10	1	AS	-						
				2	AS	-						
1				3	AS	-						
		End of Borehole Auger refusal in boulders or cobbles	227.20									
			1.20									
2												
3												
4												
5												

0
15 6 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

RECORD OF DRILLHOLE BH88-2P2

SHEET 2 OF 5



LOCATION PLANTSITE No. 2 7,148,845.8N X 585,891.8E

DRILLING DATE 28 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-18142

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY		R.O.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY K, cm/sec							
TOTAL CORE %	SOLID CORE %			DP W/L CORE AREA	TYPE AND SURFACE DESCRIPTION								
0		Ground Surface		228.40									Thermistors
		SILTY SAND TILL - See Borehole Log for Description		0.00									
1													#1 * 0.50m
													#2 * 1.00m
													#3 * 1.50m
2		Bedrock Surface		226.50									#4 * 2.00m
		Orthoquartzite, greyish white, massive, hard, hematitic, foliation 5-10 deg., very sericitic below 12m		1.90									#5 * 2.50m
		Casing set at 2.43m			1	.069	70%				J, R, UE 4FO, R, FRESH 2.33-2.64m		#6 * 3.00m
											J, R, UE		#7 * 3.50m
3		NQ wireline with water flush											#8 * 4.00m
											J, R, UE, Fe, PYRIT J, R, UE		#9 * 4.50m
											FO, R, Fe, UE J, SM, Fe		#10 * 5.00m
											J, R, Fe J, R, FE		
4					2	.076	70%				FO, R, UE, Fe J, R, UE, HEAVY Fe J, SM, TR Fe		
		Est'd bottom of shattered rock		223.83							J, R, Fe FO, R, Fe		
				4.67							J, R, U, HEALED 4FO, R, FRESH 4.77-4.87m, BC		
					3	.07	70%						
5		continued on next page		223.40							J, R		#10 * 5.00m
				5.00									

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Blom

DATUM GEODETIC

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

DATUM GEODETIC

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Burn*

RECORD OF DRILLHOLE BH88-2P3

SHEET 2 OF 6

LOCATION PLANTSITE No. 2

DRILLING DATE 27 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH	RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY k, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
5		continued from page 1		223.80												
				5.00												
					6	.098							FO, R, SER			
													FO, R, IRR, SER			
													J, R, UE, SER, Fe			
													J, R, UE, Fe, SERSW			
													J, SER, SW			
					6	.038							6.10-6.40m, BC			
													8FO, Fe, SER, SW			
													J, R, SER			
													J, Fe, SER, SW			
													2J, HEALED, R, IRR			
													FO, SER, MW			
													J, SER ALTER'N			
													J, R, UE			
					7	.106							J, R, Fe, TR SER			
													2FO, R, SER			
													FO, SER			
													FO, R, SER			
													FO, SER			
													FO, R, SER			
													J, R, SER, SW			
													3FO, SER			
													7.97-8.16m			
					8								8.21-8.42m			
													2FO, FRESH			
													J, R, UE			
													9.04-9.24m			
													3J, 2HEALED, 1OPE			
													J, R, UE, SER, Fe			
					9	.136							J, R, UE			
													FO, PL, FRESH			
													J, R, UE			
													FO, PL, FRESH			
10		continued on next page		218.80									9.98-10.16m			
				10.00									2J, HEALED, R, UE			

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED *Bloom*

RECORD OF DRILLHOLE BH88-2P3

SHEET 3 OF 5

LOCATION PLANTSITE No. 2

DRILLING DATE 27 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-1814D

PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH & RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION		
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN				
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY				
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED				
								RECOVERY		R.O.D.		DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L/S/CM	
								TOTAL CORE %	RECOVERED CORE %	FRAC. INDEX PER 0.3M	DEPT. CORE AUB	TYPE AND SURFACE DESCRIPTION			
								80 60 40 20	80 60 40 20	80 60 40 20	80 60 40 20				
10		continued from page 2		218.80											
				10.00											
					9	.136									
													10.29-10.44m 2FO, UE, FRESH J, HEALED, PL		
					10	.166									
													10.76-11.28m 6BP, PL, FRESH J, R, UE		
					11	.076									
													BP, PL, FRESH, Fe		
					12	.089	76%								
													J, R, UE FO, R, UE, CLAY, SW FO, R J, HEALED, UE 2FO, CLAY, SER 13.16-13.36m, VUGGY, FINE QTZ XB, CLAY INFILL FO, R, SW, SER FO, R, FRESH J, UE, R, TR Fe		
					13	.118	76%								
													14.02-14.14m, BC 8FO 3FO, R, UE, FRESH J, R, PL FO, MY, CLAY J, R, UE 8FO, R, UE 14.60-14.96m		
14															
16		continued on next page		213.80											
				15.00											

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Bwm

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-2P4

SHEET 1 OF 8



LOCATION PLANTSITE No. 2 7,148,962.4N X 665,820.7E

BORING DATE 18 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	WATER CONTENT, PERCENT		
		Ground Surface	231.10							
	MOBILE B-40 MOBILE AUGERS	TOPSOIL - dark brown organic silty SAND	0.00							
			230.80	1	AS	-				
		SILTY SAND TILL - fine to medium Sand, trace fine Gravel, medium reddish brown, damp to moist 0.50 to 1.85m, SILTY SAND TILL fine to medium Sand, some Clay, low plastic, some fine and coarse subrounded Gravel (SM) PERMAFROST - 0.30 to 0.50m - Vc 0.50 to 1.85m - Nbn 1.85 to 1.85m - Vs and Vc Cobbles at 1.20m Cobbles at 1.85m	0.30							
			229.26	2	AS	-				
									</	

M, H, V
b = 1953kg/cum
d = 1297kg/cum
Gs = 2.69

0
10 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED

CHECKED *Bdm*

RECORD OF DRILLHOLE BH88-2P4

SHEET 2 OF 6

LOCATION PLANTSITE No. 2 7,148,962.4N X 666,820.7E

DRILLING DATE 25 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH	% RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
									CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
									SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
									VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY		R.O.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L CM/SEC								
TOTAL CORE %	SOLID CORE %			DP WZL CORE AXIS	TYPE AND SURFACE DESCRIPTION									
0		Ground Surface		231.10										
		TOPSOIL		0.00										
				230.80										
		SILTY SAND TILL - See Borehole Log for Description 0.00 to 1.85m		0.30										
1														
2		From 1.85 to 5.64m gravelly sand till (inferred from water return and core)												
3														
4														
5		continued on next page		226.10										
				5.00										

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED B. Brown

DATUM GEODETIC

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

RECORD OF DRILLHOLE BH88-2P4

SHEET 5 OF 6

LOCATION PLANTSITE No. 2

DRILLING DATE 25 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	SH-SHEAR	J-JOINT	P-POLISHED	R-ROUGH	ST-STEPPED	UE-UNEVEN	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY %, cm/sec			
								RECOVERY	R.Q.D.	FRACT.	INDEX	DP W.I.L.	TYPE AND SURFACE	CONDUCTIVITY	INDEX		
								TOTAL CORE %	SOLID CORE %	%	PER CUM	DP W.I.L. CORE AXIS	DESCRIPTION	CONDUCTIVITY	INDEX		
15		continued from page 3		218.10 15.00	8	.091	50-60%							15.44-15.54m LOST CORE			
													15.58-15.81m LOST CORE				
16					9	.082	80-70%							16.58-16.62m LOST CORE			
17					10	.153	80-70%										
18					11	.067	50-60%							18.14-18.21m LOST CORE			
19					12	.106	50-80%										
20		continued on next page		211.10 20.00	13	.11	50-80%							19.15-19.30m LOST CORE			
					14	.142	50-80%										

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED *Burn*

RECORD OF DRILLHOLE BH88-2P4

SHEET 8 OF 8

LOCATION PLANTSITE No. 2

DRILLING DATE 25 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-1814D

PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH & RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY		R.O.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L cm/sec							
TOTAL CORE %	SOLID CORE %			DP m/L CORE AXIS	TYPE AND SURFACE DESCRIPTION								
20		Continued from page 4		211.10 20.00	14	.142	60-80%						
21					15	.174	60-70%						
22		End of Drillhole		209.48 21.64									
23		Note - no ground ice recovered in core - thawed during coring											
24													
25													

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED *Burn*

RECORD OF DRILLHOLE BH88-2P5

SHEET 1 OF 4

LOCATION PLANTSITE No. 2 7,149,077.8N X 565,916.2E

DRILLING DATE 28 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 831-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH & RETURN COLOUR	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN						
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY						
RECOVERY		R.O.D. %		FRACT. INDEX PER 0.3M		DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY k, cm/sec		TYPE AND SURFACE DESCRIPTION							
TOTAL CORE %	SOLID CORE %																
80	80	80	80	80	80	80	80	80	80	80	80	80	80	80			
60	60	60	60	60	60	60	60	60	60	60	60	60	60	60			
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40			
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
0																	

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED *Burn*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

LOGGED R.W.M.
DATE 16 Aug 89
CHECKED B.W.M.

RECORD OF DRILLHOLE BH88-2P5

SHEET 4 OF 4

LOCATION PLANTSITE No. 2

DRILLING DATE 28 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-1814D

DRILLING CONTRACTOR BRADLEY BROS. LTD.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY		R.O.D. %	FRACT. INDEX PER QJM	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L/cm/sec							
TOTAL CORE IS	SOLID CORE IS			DP WALL CORE AXIS	TYPE AND SURFACE DESCRIPTION								
15		continued from page 3		217.10									
				16.00									
					11	.066	80%						
				216.68									
		End of Drillhole		16.64									
16		Note - no ground ice recovered in core - thawed during coring											
17													
18													
19													
20													

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Broom

RECORD OF DRILLHOLE BH88-1T1

SHEET 1 OF 3

LOCATION TAILINGS DAM 7,149,016.9N X 582,729.0E

DRILLING DATE 22 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY								R.Q.D. %	FRACT. INDEX PER 0.3m	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L/cross	
TOTAL CORE %										DP WALL CORE AXIS	TYPE AND SURFACE DESCRIPTION		
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00	00	00	00										

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Bwm

RECORD OF DRILLHOLE BH88-1T1

SHEET 2 OF 3



LOCATION TAILINGS DAM - RIDGE LAKE

DRILLING DATE 22 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R -ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W -WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C -CURVED		
RECOVERY								R.Q.D.	FRACT.	DISCONTINUITY DATA		HYDRAULIC	
TOTAL CORE %		SOLID CORE %		%	INDEX PER 0.3m	DP W/L CORE AVE		TYPE AND SURFACE DESCRIPTION		CONDUCTIVITY L/mv/m			
5		continued from page 1		229.50									
				6.00									
					4	.095	0%						
6													

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Bwm

SHEET 1 OF 3

LOCATION TAILINGS DAM 7,148,985.7N X 582,744.8E

DRILLING DATE 21 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

[illegible]

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED *Bum*

SHEET 2 OF 3

LOCATION TAILINGS DAM - RIDGE LAKE

DRILLING DATE 21 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

[illegible]

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED *Bum*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

RECORD OF DRILLHOLE BH88-1T3

SHEET 1 OF 5



LOCATION TAILINGS DAM 7,148,910.4N X 582,768.2E

DRILLING DATE 20 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-1314D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH	% RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
									CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
									SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
									VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
				RECOVERY		R.Q.D.	FRACT.	DISCONTINUITY DATA		HYDRAULIC				
				TOTAL CORE %	SOLID CORE %	%	INDEX PER 0.3M	DP W/L CORE AXIS	TYPE AND SURFACE DESCRIPTION		CONDUCTIVITY K, cm/sec			
				0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0						
0		Ground Surface		232.00										Thermistor
		GRAVELLY SAND TILL		0.00										
1														#1 0.50m
														#2 1.00m
2														
3														#3 2.50m
4		Bedrock Surface		228.65										
		Sandstone conglomerate, fine to coarse subang- ular sand, fine to medium sub- angular gravel, ortho quartz- ite, hard siliciously cemented bedding @ 5-10 deg. alternat- ing light to tan patchy hemat- itic staining throughout		3.35										
					1		25%							3.65-4.27m BC, CORE LOSS, Fe SW
														20BP, Fe, SW
		NQ wireline core with water flush			2	.117								J, Fe, R, PL J, R, TR Fe 2J, R, UE, Fe
6		continued on next page		227.00										
				6.00										

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED B.W.M.

DATUM GEODETIC

DRILLING CONTRACTOR BRADLEY BROS. LTD.

LOGGED R.W.M.
DATE 16 Aug 89
CHECKED BWM

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-1T4

SHEET 1 OF 4

LOCATION TAILINGS DAM 7148,880.4N X 582,786.8E

BORING DATE 14 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 780mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm



PROJECT 881-18140

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + Q.- @ rem.V.- @ U.- O	WATER CONTENT, PERCENT wp w w _L 20 40 60 80				
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	231.80								Frost Depth Indicator		
		TOPSOIL - dark black organic Silt, wet	0.00 231.86										
		SANDY SILT TILL - fine to coarse subrounded Sand, some subrounded Gravel, some Clay, low plastic, medium reddish brown, moist	0.16	1	AS	-							
1		SILTY SAND TILL - some Clay, low plastic, fine to coarse Sand, fine and coarse sub- rounded gravel, reddish brown, damp to moist (SM).		2	AS	-							
		Cobbles and boulders at 1.25m											
2		PERMAFROST - no permafrost observed to 2.3m		3	AS	-					M.H		
			229.60									31 AUG 2.13m 09 AUG 2.21m	
		End of Borehole Auger refusal in boulders or cobbles	2.30										
3													
4													
5													

THAWED

FROZEN

3.00m

THAWED

FROZEN

3.00m

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

LOGGED R.W.M.

CHECKED *Blum*

Golder Associates

RECORD OF DRILLHOLE BH88-1T4

SHEET 2 OF 4

LOCATION TAILINGS DAM - RIDGE LAKE

DRILLING DATE 18 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG ROTARY/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH



PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE				F-FAULT				SM-SMOOTH				FL-FLEXURED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE				J-JOINT				R-ROUGH				UE-UNEVEN					
								SH-SHEAR				P-POLISHED				ST-STEPPED				W-WAVY					
								VN-VEIN				S-SLICKENSIDED				PL-PLANAR				C-CURVED					
								RECOVERY		R.O.D.	FRACT.	DISCONTINUITY DATA				HYDRAULIC									
								TOTAL CORE %	SOLID CORE %	%	INDEX PER 0.3M	DP W.J.L. CORE AXIS	TYPE AND SURFACE DESCRIPTION				CONDUCTIVITY L. cm/sec								
0		Ground Surface		231.80																					
		GLACIAL TILL - See Borehole Log for Description		0.00																					
1																									
2																									
3		Casing set @ 2.72m Bedrock Surface		229.03																					
		Sandstone conglomerate, light tan brown with alternating hematitic patches, very fine to coarse subangular sand siliciously cemented in a fine sand matrix, bedding @ 5-15 deg.		2.77	1	.065	0%																		
4					2	.067	0%																		
5		Est'd bottom of shattered rock		226.80	3	.123	0%																		
		Continued on next page		226.80																					
				5.00																					

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED B.W.M.

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH

CHECKED *Bum*

RECORD OF DRILLHOLE BH88-1T4

SHEET 4 OF 4

LOCATION TAILINGS DAM - RIDGE LAKE

DRILLING DATE 18 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG ROTARY/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH



PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY		R.O.D.	FRACT.	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L cm/sec							
TOTAL CORE %	SOLID CORE %	%	INDEX PER 0.3M	DP W/L CORE AXIS	TYPE AND SURFACE DESCRIPTION								
10		continued from page 2		221.80									
				10.00									
				221.42									
		End of Drillhole		10.38									
11		Note - no ground ice recovered in core - thawed during coring											
12													
13													
14													
15													

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Blom

RECORD OF BOREHOLE BH88-1T5

SHEET 1

LOCATION TAILINGS DAM 7,148,793.9N X 562,863.1E

BORING DATE 14 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 780mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 780mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + Q.- ● rem.V.- ⊗ U.- ○			WATER CONTENT, PERCENT Wp W Ws
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		233.80								
		TOPSOIL - dark brown organic Silt, moist		233.70								
		SILTY SAND TILL - fine to coarse Sand, some fine and coarse subrounded Gravel, some Clay, low plastic, dark brown to medium reddish brown (SM-SC) 0.52 to 1.25m occasional cobbles		0.10	1	AS	-					
1		PERMAFROST @ 0.50m Nbn with trace Vc and Vs			2	AS	-				M, H	
				232.55								
		End of Borehole Auger refusal in boulders or cobbles		1.25								
2												
3												
4												
5												

0
16 ± 6 PERCENT AXIAL STRAIN AT FAILURE

0
15 6 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *13/10/88*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Burn*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

RECORD OF DRILLHOLE BH88-1T5

SHEET 4 OF 5



LOCATION TAILINGS DAM - RIDGE LAKE

DRILLING DATE 20 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-18140

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY		R.O.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L. cm/sec							
TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION									
10		Continued from page 2		223.80									
				10.00									
					6	.081							

DEPTH SCALE

1 : 25

Goldcorp Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Bloom

RECORD OF DRILLHOLE BH88-1T5

LOCATION TAILINGS DAM - RIDGE LAKE

DRILLING DATE 20 JULY 1988

SHEET 6 OF 6

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DATUM GEODETIC

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY								R.Q.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L cm/sec	
TOTAL CORE %								SOLID CORE %	DP W/L	TYPE AND SURFACE DESCRIPTION			
15		continued from page 3		218.80				0000	0000	0000	0000		
				15.00				0000	0000	0000	0000		
				218.51	10	.074		0000	0000	0000	0000		
		End of Drillhole		15.29				0000	0000	0000	0000		
		Note - no ground ice recovered in core - thawed during coring						0000	0000	0000	0000		
16								0000	0000	0000	0000		
17								0000	0000	0000	0000		
18								0000	0000	0000	0000		
19								0000	0000	0000	0000		
20								0000	0000	0000	0000		

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Bwm

RECORD OF DRILLHOLE BH88-1T6

SHEET 1 OF 4



LOCATION TAILINGS DAM 7,148,929.2N X 584,140.5E

DRILLING DATE 16 JULY 1988

DATUM GEODETTIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-1814D

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY		R.O.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY % cm/sec							
TOTAL CORE %	SOLID CORE %			DIP W.J.L. CORE AXIS	TYPE AND SURFACE DESCRIPTION								
100	100	100	100	100									
100	100	100	100	100									
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100	100	100	100	100									
100	10												

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Bwm

RECORD OF DRILLHOLE BH88-1T6

SHEET 2 OF 4

LOCATION TAILINGS DAM - RIDGE LAKE

DRILLING DATE 18 JULY 1988

DATUM GEODETIC

INCLINATION AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE		J-JOINT		R-ROUGH		UE-UNEVEN			
								SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY			
								VN-VEIN		S-SLICKENSIDED		PL-PLANAR		C-CURVED			
RECOVERY		R.O.D. %	FRACT. INDEX PER 0.1M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L/m/sec											
TOTAL CORE %	SOLID CORE %			DP W/L CORE AXIS	TYPE AND SURFACE DESCRIPTION												
6		continued from page 1		228.90													
6				5.00													
7																	
8		Bedrock Surface		225.90													
8		Sandstone conglomerate. light tan to light brownish red hematitic patches Matrix is fine to medium siliciously cemented sandstone trace to some subrounded gravel, bedding @ 5-10 deg.		8.00													
9		Casing set to 8.35m			1	.276											
9		NQ wireline with water flush															
10		continued on next page		223.90													
10				10.00													

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED BLM

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Bum*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-1814D

CHECKED *Bim*

RECORD OF BOREHOLE BH88-1T7

SHEET 1 OF 1

LOCATION TAILINGS DAM 7,148,289.2N X 562,869.2E

BORING DATE 14 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH				WATER CONTENT, PERCENT	
								Cu, kPa	nat.V.- + Q.- @ rem.V.- @ U.- @			Wp	W
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		241.30							Frost Depth Indicator		
		TOPSOIL - dark brown to black organic silt		0.00 241.15									
		SILTY SAND TILL - fine to coarse subrounded Sand, fine to coarse Gravel, some Clay, low plastic, medium reddish brown, moist		0.15	1	-							
		Increased gravel content from 0.62 to 1.25m			2	-					M, H		
1		PERMAFROST - 1.00m to 3.20m Nbn			3	-							
		1.25m abundant cobbles and boulders											
		1.25 to 3.20m - SILTY SAND TILL - fine to coarse subrounded Sand, some fine and coarse subrounded Gravel, trace clay, low plastic medium reddish brown, wet									09 AUG 88 1.47m		
2					4	-					M, H		
3				238.10									
				3.20									
		End of Borehole Auger refusal in boulders or cobbles											
4													
5													

0
15 6 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Blum*

DRILLING CONTRACTOR BRADLEY BROS. LTD.

CHECKED *Erin*

RECORD OF DRILLHOLE BH88-2T1

SHEET 2 OF 6

LOCATION TAILINGS DAM - CIRQUE LAKE

DRILLING DATE 24 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN NO.	PENETRATION RATE (M/MIN)	FLUSH & RETURN COLLOID	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	HYDRAULIC CONDUCTIVITY L/CM/SEC	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
		continued from page 1		205.90										
				5.00										
		NQ wireline with water flush			1	.125	50-60%							
					2	.124	50-60%							
					3	.242	50-60%							
					4	.102	50-60%							
					5	.079	50-60%							
					6	.064	50-60%							
					7									
					8									
					9									
					10									
		continued on next page		200.90										
				10.00										

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.V.M.

DATE 16 Aug 89

CHECKED BLM

SHEET 3 OF 6

LOCATION TAILINGS DAM - CIRQUE LAKE

DRILLING DATE 24 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

[illegible]

DEPTH SCALE

1 : 26

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED *Bum*

DRILLING CONTRACTOR - BRADLEY BROS. LTD.

CHECKED *Bum*

RECORD OF DRILLHOLE BH88-2T2

SHEET 1 OF 4



LOCATION TAILINGS DAM - CIRQUE LAKE

DRILLING DATE 22 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE	F-FAULT	SM-SMOOTH	FL-FLEXURED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE	J-JOINT	R-ROUGH	UE-UNEVEN		
								SH-SHEAR	P-POLISHED	ST-STEPPED	W-WAVY		
								VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED		
RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA		HYDRAULIC CONDUCTIVITY L cm/sec							
TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION									
0		Ground Surface	213.40										
		SILTY SAND TILL - medium reddish brown, fine to coarse Sand, some fine and coarse gravel, abundant cobbles at surface	0.00										
1													
2		Bedrock Surface	211.42										
		Ortho quartzite, light grey with dark brown hematitic patches alternating throughout foliation 10-20 deg very fine grained to crypto- crystalline, hard	1.98		1	.154	0%						J,R,PL,HEM 1.98-2.75m,BC WITH ABT 10cm CORE LOSS,HIGH FR,SW,HIGHLY FO HEM,SER
		Set casing @ 2.43m											
3		Est'd bottom of shattered rock	210.38		2	.12	0%						2.75-3.35m,BC WITH 0.04m CORE LOSS
			3.04										
4					3	.153	50%						3FO,R,SER,TR Fe FO,R,UE,TR Fe J,R,Fe FO,R,FRESH 2J,HEALED,PL 3.81-4.01m,BC FO,SER,Fe,R J,R,UE,Fe 4.34-4.49m,BC FO,SER,SW J,SM,Fe J,SM,TR Fe J,SM,FRESH J,R,TR Fe
5		continued on next page	208.40		4	.076	90%						
			5.00										

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED B.W.M.

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-1814D

CHECKED *Bum*

RECORD OF DRILLHOLE BH88-2T2

SHEET 4 OF 4

LOCATION TAILINGS DAM - CIRQUE LAKE

DRILLING DATE 22 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH	RECOVERY TOTAL CORE % SOLID CORE %	R.O.D. %	FRACT. INDEX PER OUM	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY L/m/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
15		continued from page 3		198.40										
				15.00							J.R,UE,SR FO,R,TR SR			
					13	.123					J,FRESH,SM FO,R,UE,SW J,R,UE,TR Fe			
				197.88							FO,FRESH			
		End of Drillhole		15.54										
16		Note - no ground ice recovered in core - thawed during coring												
17														
18														
19														
20														

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

DATE 16 Aug 89

CHECKED Bwm

RECORD OF DRILLHOLE BH88-1L1

SHEET 1 OF 3

LOCATION LIVING QUARTERS 7,160,047.9N X 588,873.0E

DRILLING DATE 30 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 88-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
0		Ground Surface		214.10									Thermistor
		SILTY SAND TILL - medium reddish brown, silty, fine to coarse Sand, some Gravel, (inferred from water return and core)		0.00									
1													#1 0.50m
													#2 1.00m
													#3 1.50m
		Bedrock Surface		212.42									
2		Massive orthoquartzite, weakly foliated, weak to patchy hematization, very fine grained alternating rusty brown hematite and cloudy white orthoquartzite matrix Casing set to 1.82m		1.88	1	.17	80%						#4 2.00m
		NO wireline coring with water flush											#5 2.50m
3					2		80%						#6 3.00m
													#7 3.50m
4					3		80%						#8 4.00m
					4	.045	80%						
5		continued on next page		209.10									#9 5.00m
				5.00									

DEPTH SCALE

LOGGED R.W.M.

DATE

RECORD OF DRILLHOLE BH88-1L1

SHEET 2 OF 3

LOCATION LIVING QUARTERS

DRILLING DATE 30 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 88T-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN NO.	PENETRATION RATE (M/MIN)	FLUSH RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY L/m ² /sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
6		continued from page 1 Est'd bottom of shattered rock		208.10 8.83											
					4	.045						FO, R, HEM J, R, PL, HEM J, R, HEM FO, HEM, R FO, R, HEM J, R, UE, TR HEM J, R, UE, HEM FO, R, FRESH J, R, FRESH, HEM 8.83-8.85m 14FO, R, HEM, Fe			#9 5.00m
					5	.06	25%					J, HEM, R FO, R, HEM J, R, UE 2FO, R, HEM J, HEALED 2FO, HEM, TR Fe, R J, R, HEM J, R, UE, Fe STAIN J, R, UE, Fe STAIN FO, PL, SER J, R, UE FO, R, Fe STAIN 2FO, UE, Fe, SER 7.84-7.89m J, R, PL 6FO, R, HEM, SER, F 7.80-8.47m 17FO, R, HEM, Fe			
					6	.088	70%					J, R, UE, HEM J, Fe, R 3J, R, UE, HEM 3J, R, UE, HEM 8.80-9.12m, SC 3J, R, HEM, Fe 8.80-9.12m			#10 8.00m
					7	.061	70%					J, R, Fe J, R, PL, TR Fe 6FO, HEM, R, Fe 9.34-9.6m J, FO, HEM, R, Fe 5FO, HEM, R, Fe 2J, R, STEPPED, HEM 2J, R, PL, Fe, HEM J, HEALED, UE			
10		continued on next page		204.10 10.00	8	.091	20%					FO, R, PL			

DEPTH SCALE

1:25

LOGGED R.W.M.

DATE

DATUM GEODETIC

DRILLING CONTRACTOR BRADLEY BROS. LTD

ALFABET

RECORD OF DRILLHOLE BH88-1L2

SHEET 1 OF 2

LOCATION LIVING QUARTERS 7,148,953.4N X 688,533.0E

DRILLING DATE 30 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.



PROJECT 881-18140

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (MIN)	FLUSH % RETURN	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY K, cm/sec	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
0		Ground Surface		214.90											Frost Depth Indicator
		SILTY SAND TILL - with some gravel, cobbles and boulders, (inferred from water return and core)		0.00											
		Bedrock Surface		214.45											
		Orthoquartzite, light whitish gray very hemat- itic very fine grained to crystalline weakly foliated 0-5 deg., hard, competent		0.46											
1		Casing set to 0.60m			1	.099	60%								
		NO wireline coring with water flush													
2					2	.067	60%								
3															
4		Est'd bottom of shattered rock		210.84											
				3.96	3	.069	15-50%								
5		continued on next page		209.90	4	.036	60%								
				5.00											

T H A W E D

31 JULY 1988 3.10m

DEPTH SCALE

1: 25

LOGGED R.W.M.

DATE

Golder Associates

RECORD OF DRILLHOLE BH88-1L2

SHEET 2 OF 2



LOCATION LIVING QUARTERS

DRILLING DATE 30 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG DIAMOND/BOYLES 25

DRILLING CONTRACTOR BRADLEY BROS. LTD.

PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN	F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED	SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR	FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION								
														RECOVERY	R.Q.D. %	FRACT. INDEX PER 0.3m CORE AFB	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY L/m/sec			
																			TOTAL CORE %	SOLID CORE %	DP m/z L CORE AFB
6		continued from page 1		209.90																	
				6.00																	
					4	.036	60%														

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

RECORD OF BOREHOLE BH88-1L3

SHEET 1 OF 3

LOCATION LIVING QUARTERS 7,160,117.8N X 688,541.0E

BORING DATE 11 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.6kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH				WATER CONTENT, PERCENT	
								Cu, kPa	nat.V.- + Q.- ● rem.V.- ● U.- ○				
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		217.50									
		TOPSOIL - light brown organic silty Sand		217.40									
		SANDY SILT TILL - fine to coarse subangular Sand, trace Clay, non-plastic, some fine and coarse subangular Gravel, light grey (SM)		0.10	1	AS	-						
1					2	AS	-						
		sandy silty till, reddish brown		216.45									
				1.06									
				216.30									
		End of Borehole Auger refusal on cobbles and boulders		1.20									
2		PERMAFROST @ 0.40m 0.40 to 0.60m - Vs, 1-2mm, hard 0.60 to 1.00m - Vs, 4mm 1.00 to 1.06m - Ice, clear, hard, with very thin soil inclusions 1.06 to 1.20m - Vs, 10-16mm, clear, hard											
3													
4													
5													

M, H

M, H_b = 1489kg/cum
d = 915kg/cum

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
19

DEPTH SCALE

1: 25

LOGGED R.B.

CHECKED

Goldier Associates

RECORD OF DRILLHOLE BH88-1L3

SHEET 2 OF 3

LOCATION LIVING QUARTERS 7,150,117.8N X 588,541.0E

DRILLING DATE 11 JULY 1988

DATUM GEODETIC

INCLINATION VERTICAL AZIMUTH

DRILL RIG ROTARY/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS AND RESEARCH



PROJECT 881-1814D

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN No.	PENETRATION RATE (M/MIN)	FLUSH % RETURN COLOUR	FR-FRACTURE				F-FAULT				SM-SMOOTH				FL-FLEXURED				DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
								CL-CLEAVAGE				J-JOINT				R-ROUGH				UE-UNEVEN					
								SH-SHEAR				P-POLISHED				ST-STEPPED				W-WAVY					
								VN-VEIN				S-SLICKENSIDED				PL-PLANAR				C-CURVED					
								RECOVERY		R.Q.D. %	FRACT. INDEX PER CUM	DISCONTINUITY DATA				HYDRAULIC CONDUCTIVITY L. cm/cm									
								TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION													
								0000	0000	0000	0000														
PROJECT 881-1814D																									
0		Ground Surface		218.50																					
		TOPSOIL		218.40																					
		SANDY SILT TILL - See Borehole Log for Description 0.00 to 1.20m		0.10																					
1																									
2		2.25 to 4.79m - SILTY SAND TILL - some fine, coarse subangular Gravel, some Cobbles, medium reddish brown, (inferred from water return and core)																							
3																									
4																									
		Bedrock Surface																							
		Moderately weathered Orthoquartzite grading to a sericitic schist, heavily foliate @ 20 deg., Fe stained throughout, hematitic, moderately weak to moderately strong		213.71																					
		NQ wireline coring with water flush		4.79																					
5		continued on next page		213.60																					
				5.00																					

4.79-5.00m, BC
LOST CORE,
SCHISTOSITY 40,
SW-MW, Fe, CLAY

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

RECORD OF DRILLHOLE BH88-1L3

SHEET 3 OF 3

LOCATION LIVING QUARTERS

DRILLING DATE 10 JULY 1988

DATUM GEODETIC

INCLINATION

AZIMUTH

DRILL RIG ROTARY/MOBILE B-40

DRILLING CONTRACTOR MOBILE AUGERS AND RESEARCH



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (M)	RUN NO.	PENETRATION RATE (M/MIN)	FLUSH	RECOVERY TOTAL CORE %	RECOVERY SOLID CORE %	R.Q.D. %	FRACT. INDEX PER 0.3M	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	HYDRAULIC CONDUCTIVITY L/S/M	DIAMETRAL POINT LOAD INDEX (MPa)	NOTES WATER LEVELS INSTRUMENTATION
6		continued from page 2		213.50	1										
				5.00	2	.042	60%								
					3	.107	60%								
					4	.066	60%								
7		Drillhole did not extend to ent'd bottom of shattered rock		211.38											
		End of Drillhole		7.12											
8		Note - no ground ice recovered in core - thawed during coring													
9															
10															

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

DATE

CHECKED

RECORD OF BOREHOLE BH88-1PH1

SHEET 1 OF 2

LOCATION PUMPHOUSE SITE No. 1 7,162,368.4N X 571,810.3E

BORING DATE 18 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



PROJECT 882-2406B

MOBILE B-40
MOBILE AUGERS

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa			WATER CONTENT, PERCENT
				DEPTH (m)							
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	170.10								
		TOPSOIL - dark brown organics	0.00								
			169.90								
		SAND AND GRAVEL - coarse sub- rounded sand, fine and coarse subrounded Gravel, clean	0.20	1	AS	-					
		PERMAFROST @ 0.40m Vx to Vc									
		● 0.50 to 1.20m Silt content Increases PERMAFROST Nbe		2	AS	-					
1				168.90							
		SAND TILL - medium to coarse subangular Sand, fine sub- angular Gravel, some Silt, very wet	1.20								
		PERMAFROST 1.20 TO 2.46m Nbe									
					3	AS	-				
2		Cobbles @ 2.00m									
3		3.10 to 5.00m - SILTY SAND TILL, medium to coarse subangular Sand, fine subangular Gravel, medium reddish brown, very wet									
		PERMAFROST 2.46 to 4.86m Nbe									
				4	AS	-					
4											
		GRAVELLY SAND TILL - trace Silt, trace Clay, non-plastic (SP-SM)									
		PERMAFROST 4.86 to 5.00m Nbe		5	AS	-					
5		continued on next page	165.10			CFREL					
			5.00								

M.H

M.H

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M.H</

M, H Ga = 2.67
V b = 2176kg/cm
V d = 1835kg/cm

15-10 PERCENT AXIAL STRAIN AT FAILURE

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.B.

CHECKED

RECORD OF BOREHOLE BH88-1PH1

SHEET 2 OF 2

LOCATION PUMPHOUSE SITE No. 1

BORING DATE 18 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa nat.V.- + Q.- ● rem.V.- ● U.- ○	WATER CONTENT, PERCENT wp — w — ws			
5	MOBILE B-H MOBILE AUGER	continued from page 1 GRAVELLY SAND TILL (cont'd)	165.10 5.00 164.80								
		End of Borehole Auger refusal @ 5.30m on cobbles or boulders	5.30								
6											
7											
8											
9											
10											

0
10 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.B.

CHECKED

RECORD OF BOREHOLE BH88-2PH1

SHEET 1

LOCATION PUMPHOUSE SITE No.2 7,152,510.0N X 571,659.6E

BORING DATE 22 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 53.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	WATER CONTENT, PERCENT			
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		169.70								
		TOPSOIL - highly organic dark brown		0.00 169.88								
		GRAVEL - coarse subrounded to subangular gravel, some coarse sand, medium brown, moist		0.12	1	AS	-					
		SILTY SAND - fine to coarse Sand, some fine and coarse Gravel, trace Clay, non-plastic, medium brown (SM)		0.60								
		Cobbles @ 1.20m		169.20								
1		PERMAFROST @ 0.60m 0.60 to 0.80m Nbn 0.80 to 1.20m Vs, 1-5mm		168.50								
		silty sand, fine sand, medium reddish brown		1.20								
2		1.95 to 2.45m Cobbles and Boulders										
		End of Borehole Auger refusal on cobbles or boulders		167.25 2.46								
3												
4												
5												

0

10-6 PERCENT AXIAL STRAIN AT FAILURE

M, H

M, H
y_b = 1629kg/cum
y_d = 1137kg/cum

0
16 ± 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

LOGGED R.B.

Golden Associates

RECORD OF BOREHOLE BH88-1MHR1

SHEET 1 OF 1

LOCATION MINE HAUL ROAD 7,147,471.7N X 585,348.2E

BORING DATE 12 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 780mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa			WATER CONTENT, PERCENT Wp W Wn 20 40 60 80
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		203.20							
		TOPSOIL - black, organic Silt moist		203.10							
		SILTY SAND TILL - fine to coarse subrounded Sand, some fine and coarse subrounded Gravel, some Clay, low plastic, medium reddish brown moist (SM-SC)		0.10	1	AS	-				
1		PERMAFROST not observed @ 0.92m abundant cobbles @ 0.52 to 0.97m till, mottled medium reddish brown to dark brown @ 0.92 to 1.52m occasional cobbles			2	AS	-				
					3	AS	-				
		End of Borehole Auger refusal on boulders or cobbles		201.68							
2				1.52							
3											
4											
5											

0
15 ● 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED *Blum*

RECORD OF BOREHOLE BH88-1MHR2

SHEET 1 OF 1



LOCATION MINE HAUL ROAD 7,147,653.9N X 565,208.8E

BORING DATE 12 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 780mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm

PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE				
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	208.30						
		SILTY SAND - fine Sand, trace Clay, light brown, wet	0.00						
1		SANDY TILL - fine to coarse subrounded sand, fine to coarse subrounded gravel	207.85	1	AS	-			
		PERMAFROST @ 0.70m 0.70 to 1.45m - Nbe (Est'd)	0.45						
				2	AS	-			
			208.85						
2		End of Borehole Auger refusal in boulders or cobbles	1.45						
3									
4									
5									

0
15 6 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *B.W.M.*

RECORD OF BOREHOLE BH88-1MHR3

SHEET 1 OF 1

LOCATION MINE HAUL ROAD 7,147,879.5N X 586,178.0E

BORING DATE 11 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 780mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m			HYDRAULIC CONDUCTIVITY, k, CM/SEC			ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + O.- ● rem.V.- ⊕ U.- ○	WATER CONTENT, PERCENT				
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		209.70										
		TOPSOIL - dark grey, black organics, wet		209.60										
		GRAVELLY SAND TILL - fine to coarse subangular Sand, fine and coarse subangular Gravel, some Silt, trace Clay, low plastic, moist (SM-SC)		0.10	1	AS -								
		@0.60 to 1.35m increasing Sand content												
1		PERMAFROST @ 1.00m 1.00 to 1.35m - Nbn 1.46 to 1.95m - permafrost melted by augers			2	AS -								
		@ 1.46m abundant cobbles			3	AS - CREL								
					4	AS -								
2		End of Borehole Auger refusal in cobbles or boulders		207.75										
				1.95										
3														
4														
5														

M, H $\gamma_{bf} = 1324 \text{ kg/cum}$
 $\gamma_d = 1074 \text{ kg/cum}$

0
15 6 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-1MHR4

SHEET 1 OF 1

LOCATION MINE HAUL ROAD 7,148,212.5N X 684,986.1E

BORING DATE 11 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 780mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 780mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa			WATER CONTENT, PERCENT
			ELEV. DEPTH (m)							
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	214.70							
		TOPSOIL - dark grey to black organic silt	214.60							
		SILTY SAND TILL - fine to coarse subrounded sand, trace fine to coarse subrounded gravel, medium reddish brown, damp to 0.70m	0.10							
1		PERMAFROST @ 0.70m (Est'd) 0.70 to 1.52m - Nbn		1	AS	-				
			213.18							
2		End of Borehole Auger refusal in boulders or cobbles	1.52							
3										
4										
5										

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-1MHR5

SHEET 1 OF 1

LOCATION MINE HAUL ROAD 7,148,415.2N X 684,828.4E

BORING DATE 11 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 780mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + Q.- ● rem.V.- ⊕ U.- ○	WATER CONTENT, PERCENT W _p — W — W _L 20 40 60 80		
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	222.00								
		TOPSOIL - dark brown organic Silt	221.90								
		SAND TILL - fine to coarse subrounded Sand, some fine and coarse Gravel, subrounded, some Silt, some Clay, medium reddish brown, moist (SM-SC)	0.10	1	AS	-					
1		PERMAFROST @ 0.60m 0.60 to 0.90m - Nbn 0.90 to 1.35m - Nbe (Est'd) 1.35 to 2.60m - Nbn and Nbe									
		abundant cobbles @ 1.35m		2	AS	-			○	M, H	
		1.35 to 2.60m GRAVELLY SAND TILL, fine to medium subround- ed sand, fine, trace coarse subrounded gravel, some Silt									
2				3	AS	-					
			219.40								
3		End of Borehole Auger refusal in boulders or cobbles	2.60								
4											
5											

0
16 ● 8 PERCENT AXIAL STRAIN AT FAILURE

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED *Blum*

RECORD OF BOREHOLE BH88-1MHR6

SHEET 1 OF 1



LOCATION MINE HAUL ROAD 7,148,877.6N X 564,480.7E

BORING DATE 11 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

PROJECT 881-18140

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH		WATER CONTENT, PERCENT			
								Cu, kPa	nat.V.- + O.- ● rem.V.- ⊕ U.- ○	Wp			W
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		239.40									
		TOPSOIL - reddish brown organic till		239.30									
		SILTY SAND TILL - fine to coarse subrounded Sand, some fine and coarse subrounded Gravel, trace Clay, moist, lower moisture content 0.48 to 1.25m		0.10	1	AS	-						
1		PERMAFROST @ 0.70m 0.70 to 2.80m - Nbn			2	AS	-						
		1.25 to 2.80m increased gravel content											
2		GRAVELLY SAND TILL - fine to coarse Sand, fine and coarse Gravel, some Silt, some Clay, low plastic (SM-SC)			3	AS	-						
3		End of Borehole Auger refusal in boulders or cobbles		238.60									
4				2.80									
5													

0
16 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *R.W.M.*

SHEET 1 OF 1

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

[illegible]

LOGGED R.B.

Golder Associates

CHECKED *Bum*

RECORD OF BOREHOLE BH88-4A2

SHEET 1 OF 1



LOCATION POINTER LAKE AIRSTRIP 7,141,864.1N X 686,648.3E

BORING DATE 24 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	WATER CONTENT, PERCENT			
0		Ground Surface	157.00								
		TOPSOIL - highly organic, black	158.90								
		SILTY SAND TILL - fine Sand, trace medium to coarse sub- angular to subrounded Gravel trace subangular to subrounded Cobble, medium reddish brown	0.10	1	AS	-					
		from 0.88 to 1.08m sand grades from fine to medium, some coarse subrounded gravel moist		2	AS	-					
1		from 1.08 to 1.50m medium sand some coarse subrounded gravel, trace cobbles		3	AS	-					
		PERMAFROST @ 1.19m Est'd 1.19 to 1.50m - Vs, 1-2mm thick 2.08 to 2.11m - ice, clear, hard 2.11 to 2.50m - Vc and Vs, 1-11mm thick		4	AS	-					
2	MOBILE B-40 MOBILE AUGERS										
		Cobbles @ 3.00m									
		No samples recovered from auger below 2.50m									
			153.10								
4		End of Borehole Auger refusal on cobbles or boulders	3.90								
6											

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0 10 15 PERCENT AXIAL STRAIN AT FAILURE

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.B.

CHECKED *BAM*

RECORD OF BOREHOLE BH88-4A3

SHEET 1 OF 1

LOCATION POINTER LAKE AIRSTRIP 7,142,097.3NX565,245.7E

BORING DATE 24 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + Q.- ● rem.V.- ⊕ U.- ○	WATER CONTENT, PERCENT Wp W U		
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	164.80								
		TOPSOIL- highly organic, black	164.80								
		SILTY SAND TILL - fine to coarse Sand, some fine Gravel, some Clay, low plastic, medium reddish brown, moist (SM-SC)	0.10	1	AS	-					M, H
			154.00								
		SANDY SILT TILL - fine sand, trace medium subrounded gravel, trace coarse sand, medium reddish brown	0.60	2	AS	-					
1		⊙ 1.08m fine sand trace coarse sand, trace coarse subrounded to subangular gravel		3	AS	-					
			153.05								
		SANDY SILT TILL - fine to coarse Sand, some Clay, low plastic, trace fine Gravel, subangular, some Cobbles, medium reddish brown	1.55	4	AS	-					
2		PERMAFROST - 1.55 to 1.95m - Vs, 1-12mm thick 1.95 to 2.14m - Vs, 3-6mm thick 2.14 to 2.35m - ice, clear, hard, thin soil layers 2.51m - Vs, 1-12mm thick ⊙ 2.51m medium sand, trace coarse gravel, medium reddish brown		5	AS	-					M, H
						CPREL					
				6	AS	-					
					CPREL						
			151.00								
		SANDY SILT TILL - fine sand, saturated	3.60	7	AS	-					
4		PERMAFROST - 3.60 to 4.90m (Est'd) - Vc									
			149.70								
5		End of Borehole Auger refusal on cobbles or boulders	4.90								
						0 15 ± 5 PERCENT AXIAL STRAIN AT FAILURE					

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

LOGGED R.B.

RECORD OF BOREHOLE BH88-4A4

SHEET 1 OF 1

LOCATION: POINTER LAKE AIRSTRIP 7,142,591.8NX565,092.5E

BORING DATE: 23 JULY 1988

DATUM: GEODETIC

SAMPLER: HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST: HAMMER, 83.5kg, DROP, 760mm



PR: 881-

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa nat.V. - + Q. - ● rem.V. - ⊕ U. - ○	WATER CONTENT, PERCENT Wp W W			
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	152.90								
		TOPSOIL - black organic silt	152.78								
		SILTY SAND TILL - fine sand, trace clay, trace coarse sub- rounded gravel, medium brown	0.12	1	AS	-					
			152.10								
1		CLAYEY SILT TILL - clay silt has low plasticity some fine sand, trace coarse sand, moist	0.80	2	AS	-					
		151.83									
		SILTY SAND TILL - fine to medium sand, trace clay, some cobble, trace coarse gravel, trace coarse sand, moist, medium brown Cobbles @ 1.37 to 1.50m	1.07	3	AS	-					
		151.12									
2		End of Borehole Auger refusal on cobbles or boulders	1.78								
3		Note - No permafrost observed in borehole									
4											
5											

0
15-10 PERCENT AXIAL STRAIN AT FAILURE

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.B.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-4A5

SHEET 1 OF 1

LOCATION POINTER LAKE AIRSTRIP 7,143,391.8NX684,764.5E

BORING DATE 23 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 780mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm



DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	SHEAR STRENGTH Cu, kPa	nat.V.- + Q.- rem.V.- ⊕ U.- ⊙	WATER CONTENT, PERCENT	Wp W L		
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	161.20								Frost Depth Indicator
		TOPSOIL - dark brown to black	0.00 161.08	1	AS -						
		GRAVELLY SAND TILL - fine and coarse subrounded Gravel, fine to coarse Sand, some Silt, some Clay, low plastic, dark reddish brown, moist	0.14								
				2	AS -						
			160.37								
1		SILTY SAND TILL - fine sand, some clay, trace subangular to subrounded coarse gravel, some subangular to subrounded cobble	0.83	2	AS -						
		PERMAFROST @ 0.83m 0.83 to 1.20m - Nf to Nbn									
			149.34								
2		SAND TILL - fine sand, some silt, medium brown	1.88	4	AS -						
		Cobbles @ 2.00m									
		PERMAFROST 1.88 to 2.30m, Nf and some Vs, 1-20mm thick		3	AS -						
			148.70								
		End of Borehole Auger refusal on cobbles or boulders	2.50								
3											
4											
5											

0
15 6 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.B.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-4A6

SHEET 1 OF 1

LOCATION POINTER LAKE AIRSTRIP 7,143,498.6NX584,947.9E

BORING DATE 22 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



PI 881

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH					WATER CONTENT, PERCENT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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0
15-10 PERCENT AXIAL STRAIN AT FAILURE
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DEPTH SCALE

1: 25

Golder Associates

LOGGED R.B.

CHECKED *Blum*

RECORD OF BOREHOLE BH88-1A1

SHEET 1 OF 1



LOCATION SKINNY LAKE AIRSTRIP
7,153,970.1N X 670,737.5E
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 25 JUNE 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE					
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	179.80							
		SAND AND GRAVEL - fine to coarse subangular Sand, fine and coarse subangular Gravel, trace Silt and Clay, non-plastic, high cobble content, medium brown, damp (GP)	0.00	1	AS					
1		@ 1.22m becoming wet		2	AS					
		@ 1.80m Cobbles encountered	177.93							
2		End of Borehole Auger refusal in boulders or cobbles	1.67							
3		Note - no permafrost encountered								
4										
5										

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-1A2

SHEET 1 OF 1



LOCATION SKINNY LAKE AIRSTRIP
7,154,382.6N X 670,332.4E
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 25 JUNE 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

PROJECT 881-1814F

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa nat.V.- + Q.- ● rem.V.- ⊕ U.- ○	WATER CONTENT, PERCENT Wp — W — Wm 20 40 60 80				
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	180.40								
		GRAVELLY SAND - medium to coarse subangular sand with fine and coarse subangular gravel, moist, clean, occasional cobbles, light to medium brown, trace silt	0.00	1 AS -							
1											
2		End of Borehole Auger refusal in boulders or cobbles	179.00								
		Note - no permafrost encountered	1.40								
3											
4											
5											

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-1A3

SHEET 1 OF 1

LOCATION S.L. AIRSTRIP 7,154,729.9N X 570,061.3E

BORING DATE 02 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + Q.- ● rem.V.- ⊕ U.- ○	WATER CONTENT, PERCENT Wp W Wl 20 40 60 80		
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		179.70								
		SAND AND GRAVEL- fine to coarse, subrounded sand, fine and coarse Gravel, some cobbles, damp, dark brown		0.00								
				179.24								
		SAND - medium to coarse subrounded with some fine subrounded gravel, light brown		0.48	1	AS	-					
1		PERMAFROST @ 0.60m 0.60 to 1.50m - Nbn 1.50 to 1.80m - Nbe										
		@ 1.50m occasional cobbles, from 1.50 to 2.16m gravel content increasing, fine to medium subrounded with some cobble, medium brown										
2				177.65								
		End of Borehole Auger refusal in boulders or cobbles		2.15								
3												
4												
5												

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-1A4

SHEET 1 OF 1

LOCATION SKINNY LAKE AIRSTRIP
7,166,289.7N X 689,730.2E
SAMPLER HAMMER, 83.6kg, DROP, 780mm

BORING DATE 02 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.6kg, DROP, 780mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE				DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, CM/SEC				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH				WATER CONTENT, PERCENT					
							Cu, kPa	nat.V.- rem.V.-	+ Q.- ⊕ U.-	● ○	Wp	W	W _L			
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	179.10													
		SAND AND GRAVEL- fine to coarse subrounded sand with fine to coarse subrounded gravel, damp	0.00													
1		from 0.80 to 2.10m abundant cobbles and boulders encountered		1	AS	-										
		PERMAFROST @ 0.40m 0.48 to 2.24m - Nbn														
2																
			178.88													
		SILTY SAND - fine to coarse subrounded sand, silty, medium brown	2.24	2	AS	-										
3																
					3	AS	-									
4			175.13													

0
15 6 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

LOGGED R.W.M.

CHECKED *BWM*

Golder Associates

RECORD OF BOREHOLE BH88-1A5

SHEET 1 OF 1

LOCATION SKINNY LAKE AIRSTRIP
7,153,832.2N X 670,418.3E
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 06 JULY 1988

DATUM: GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm



PROJECT 881-1B140

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.3m		WATER CONTENT, PERCENT			
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	185.80	1	AS -					Frost Depth Indicator
		SILTY SAND - fine to medium sand with a trace of fine gravel, damp	0.00							
			185.10							
1		SILTY SAND TILL - silty fine to medium subrounded sand with a trace of fine and coarse subrounded gravel, medium reddish brown PERMAFROST @ 0.80m - Nbn	0.70	2	AS -					
				3	AS -					
2		Boulders @ 1.30m								
		@ 1.45 to 1.85m SANDY TILL, fine to medium sand with fine and coarse subrounded gravel, and Cobbles, medium reddish brown		4	AS -					
		from 1.85 to 3.00m till is a light brown, silty fine to coarse sand and gravel								
		PERMAFROST 1.85 to 3.00m - Est'd Nbe		5	AS -					
3										
			182.80							
4		End of Borehole Auger refusal in boulders or cobbles	3.20							
5										

0
15-10 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED *Blum*

THAWED
FROZEN

Thaw Depth
09 AUG 1988 1.33m
31 AUG 1988 1.48m

3.00m

RECORD OF BOREHOLE BH88-1A6

SHEET 1 OF 1

LOCATION SKINNY LAKE AIRSTRIP
7,153,988.4N X 570,634.5E
SAMPLER HAMMER, 63.5kg, DROP, 760mm

BORING DATE 08 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.3M		SHEAR STRENGTH Cu, kPa	WATER CONTENT, PERCENT		
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	180.40							
1		SAND AND GRAVEL - fine to coarse subangular sand, fine and coarse gravel, damp, medium reddish brown	0.00							
		@ 0.50 to 0.80m cobbles and boulders								
		@ 0.80 to 1.75m sandy gravel, fine to coarse subangular sand and gravel, abundant cobbles		1 AS -						
2		End of Borehole Auger refusal in boulder	178.65							
		Note - Ground ice melted by auger drilling action in coarse material	1.75							
3										
4										
5										

0
15-5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED *BWM*

RECORD OF BOREHOLE BH88-1A7

SHEET 1 OF 1



LOCATION SKINNY LAKE AIRSTRIP
7,154,131.1N X 570,671.6E
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 06 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + Q.- ● rem.V.- ⊕ U.- ○	WATER CONTENT, PERCENT wp — w — wh 20 40 60 80		
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	178.20								
		GRAVEL AND COBBLES - fine and coarse subrounded gravel and cobbles, abundant boulders @ surface, trace fine to coarse sand @ 0.15m, saturated @ 0.15m	0.00 178.00	1	AS -						
		SAND- fine to coarse subrounded with a trace of fine subrounded gravel, saturated, trace silt, light to medium brown	0.20	2	AS - CREL						
1		PERMAFROST @ 1.20m (Est'd)									
2		2.28 to 2.50m Sand in this interval was not frozen									
3		3.06m Cobbles and Boulders encountered									
		End of Borehole Auger refusal in boulders	174.69 3.51								
4		No sample recovery from augers below 0.61m - sluffed off augers into saturated sand and gravel above 0.61m									
5											

0
10 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-1A8

SHEET 1 OF 1



LOCATION SKINNY LAKE AIRSTRIP
7,154,171.4N X 670,459.4E
SAMPLER HAMMER, 63.5kg, DROP, 760mm

BORING DATE 08 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

PROJECT 881-1B14D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH		WATER CONTENT, PERCENT			
								Cu, kPa	nat.V.- + Q.- ● rem.V.- ⊕ U.- ○	Wp			W
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		178.40								0.16m <u>W</u> Water Table in open hole	
		SAND AND GRAVEL- fine to coarse subrounded sand and gravel, some silt, medium brown		0.00									
		below 0.80m sand and gravel is subangular											
1		PERMAFROST @ 1.00m Nbe 1.34 to 1.50m - Vs, 1-2mm thick, hard, grey, clear			1	AS	-						
				177.01	2	AS	-						
		GRAVELLY SAND- medium to coarse subangular sand with fine and coarse subangular gravel, occasional cobbles		1.39	3	AS	-						
2				176.40									
		End of Borehole Auger refusal in boulders and cobbles		2.00									
3													
4													
5													

0

15

6 PERCENT AXIAL STRAIN AT FAILURE

0.15m ∇
Water Table
in open hole

0
15 $\rightarrow$ 6 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-1A9

SHEET 1 OF 1

LOCATION SKINNY LAKE AIRSTRIP
7,154,343.8N X 670,433.9E
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 07 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa			nat.V.- + O.- ● rem.V.- ⊕ U.- ○	WATER CONTENT, PERCENT Wp W Wl 20 40 60 80
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		177.50							Water Table 0.00m Open Hole	
		SAND AND GRAVEL- silty fine to coarse subrounded sand with fine subrounded gravel, occasional cobbles saturated at surface, medium brown		0.00								
		Boulders @ 0.58m										
1		PERMAFROST @ 1.50m (Est'd)										
		no sample return to 3.70m										
2												
		@ 2.60m less cobbles										
3												
		@ 3.30m very cobbly										
4			@ 3.70m SANDY GRAVEL - silty, fine to coarse subangular sand abundant, cobbles and boulders saturated, medium brown									
					1	AS -						
				172.90								
		End of Borehole Auger refusal in boulders and cobbles		4.80								
5												

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

LOGGED R.W.M.

CHECKED *Bum*

Golder Associates

RECORD OF BOREHOLE BH88-1A10

SHEET 1 OF 2

LOCATION SKINNY LAKE AIRSTRIP
7,154,494.2N X 670,227.8E
SAMPLER HAMMER, 83.6kg, DROP, 780mm

BORING DATE 07 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.6kg, DROP, 780mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + O.- ● rem.V.- ⊗ U.- ○	WATER CONTENT, PERCENT Wp W W			
										20 40 60 80		
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	180.50									Thermistor
		SANDY GRAVEL, fine to coarse subrounded sand and gravel, silty moist, abundant cobbles, medium brown	0.00									
1		PERMAFROST @ 1.10m (Est'd)	179.30									#1 * 0.50m
												#2 * 1.00m
		SANDY GRAVEL - fine to coarse subangular Sand, fine and coarse subangular Gravel, trace Silt and Clay, non- plastic, some Cobbles (GP-GM)	1.20									#3 * 1.50m
2												#4 * 2.00m
		PERMAFROST completely thawed by auger drilling action			1	AS	-					#5 * 2.50m
												#6 * 3.00m
3												#7 * 3.50m
												#8 * 4.00m
4				2	AS	-						
			176.10								#9 * 4.50m	
		SAND- fine to medium subangul- ar sand, trace fine gravel, very silty with depth	4.40									
				3	AS	-						
5		continued on next page	175.50								#10 * 5.00m	
			5.00									

0
15-5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

LOGGED R.W.M.

CHECKED *BUM*

Golder Associates

RECORD OF BOREHOLE BH88-1A10

SHEET 2 OF 2



LOCATION SKINNY LAKE AIRSTRIP

BORING DATE 07 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH		WATER CONTENT, PERCENT			
								Cu, kPa	nat.V.- + Q.- ● rem.V.- ⊕ U.- ○	WP			W
5	MOBILE B-40 MOBILE AUGERS	continued from page 1		176.60								#10 * 5.00m	
		abundant cobbles encountered @ 5.40m		6.00								#11 * 5.50m	
						3	AS	-					
6		SANDY TILL - fine to medium sand subangular, with a trace fine gravel, subangular, medium reddish brown		174.65								#12 * 6.00m	
				5.95									
				174.10									
		End of Borehole Auger refusal in boulders or cobbles		6.40									
7													
8													
9													
10													

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED *BWM*

RECORD OF BOREHOLE BH88-1A11

SHEET 1 OF 1



LOCATION SKINNY LAKE AIRSTRIP
7,154,868.3N X 570,192.8E
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 07 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH		WATER CONTENT, PERCENT			
							Cu, kPa	nat.V.- + Q.- ● rem.V.- ⊕ U.- ○	Wp			W
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	175.10									
		SAND AND GRAVEL- fine to coarse subangular sand with fine subangular gravel, trace medium gravel, clean, light to medium brown	0.00	1	AS	-						
				2	AS	-						
1			174.00									
		SAND- fine to coarse subangular sand, trace fine subangular gravel, clean, light brown,	1.10	3	AS	-						
				4	AS	-						
2		PERMAFROST @ 1.10m - Nbn, changing to Nbe toward 2.43m @ 2.43m - Nbn		5	AS	-						
				6	AS	-						
		SAND - silty, fine, medium brown		7	AS	-						
				8	AS	-						
3		172.00										
	SILT - trace fine sand, light brown	3.10	9	AS	-							
			10	AS	-							
4		171.15										
	End of Borehole Auger refusal in boulders or cobbles	3.95										
5												
						0 15 30 6 PERCENT AXIAL STRAIN AT FAILURE						

0
15-5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

LOGGED R.W.M.

CHECKED *Bum*

Golder Associates

RECORD OF BOREHOLE BH88-1A12

SHEET 1 OF 1



LOCATION SKINNY LAKE AIRSTRIP
7,164,874.9N X 570,028.9E
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 07 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa		WATER CONTENT, PERCENT			
	MOBILE B-40 MOBILE AUGERS	Ground Surface	178.90									
0		SAND AND GRAVEL- fine to coarse subangular sand with fine and coarse subangular gravel trace silt, medium brown	0.00									
		PERMAFROST @ 0.70m Nbe		1	AS	-						
1				2	AS	-						
		SAND TILL - fine to coarse subangular sand with fine to coarse subangular gravel, silty light brownish red	175.50									
		PERMAFROST Nbn, some Vs, 10mm thick, hard clear	1.40	3	AS	-						
2		Cobbles @ 2.30m		4	AS	-						
		End of Borehole Auger refusal in cobbles and boulders	174.45									
3			2.45									
4												
5												

0
15 6 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Baum*

RECORD OF BOREHOLE BH88-1A13

SHEET 1 OF 2

LOCATION SKINNY LAKE AIRSTRIP
7,155,128.4N X 589,983.8E
SAMPLER HAMMER, 63.5kg, DROP, 760mm

BORING DATE 08 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER		TYPE	BLOWS/0.3M	WATER CONTENT, PERCENT					
									SHEAR STRENGTH Cu, kPa				WATER CONTENT, PERCENT	
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		179.10										
		GRAVELLY SAND- medium to coarse subangular sand with fine to coarse subangular gravel, damp, loose		0.00										
					1	AS	-							
					2	AS	-							
		PERMAFROST @ 0.75m Nf changing to Nbn with depth			3	AS	-							
1														
		Cobbles @ 1.10 to 1.25m												
		@ 0.51 to 1.53m GRAVELLY SAND fine to coarse subangular sand with fine to coarse subangular gravel, trace silt, PERMAFROST Nf to Nbn			4	AS	-							
					177.57									
2		SAND- fine to coarse subangular sand, silty, trace fine subangular gravel, light reddish brown @ 1.67 to 1.98m abundant cobbles		1.53										
					5	AS	-							
3		from 2.90 to 3.97m SILTY SAND fine sand, some Silt, trace Clay, light reddish brown												
		PERMAFROST melted by auger drilling action			6	AS	-							
4				175.13										
		SILT - trace fine sand, light reddish brown		3.97										
		PERMAFROST melted by auger drilling action												
					7	AS	-							
5		@ 4.87m abundant cobbles												
		continued on next page		174.10										
				5.00										

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *BW*

RECORD OF BOREHOLE BH88-1A13

SHEET 2 OF 2



LOCATION SKINNY LAKE AIRSTRIP

BORING DATE 08 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD MOBILE 8-40 MOBILE AUGERS	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa nat.V.- + O.- ● rem.V.- ⊗ U.- ○	WATER CONTENT, PERCENT Wp W W				
6		continued from page 1	174.10	7	AS	-						
			5.00									
			173.90									
		End of Borehole Auger refusal in boulders or cobbles	5.20									
8												
7												
8												
9												
10												

0
16 5 PERCENT AXIAL STRAIN AT FAILURE
10

DEPTH SCALE

1 : 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

RECORD OF BOREHOLE BH88-1A14

SHEET 1 OF 1

LOCATION SKINNY LAKE AIRSTRIP
7,155,183.5N X 589,697.3E
SAMPLER HAMMER, 63.5kg, DROP, 780mm

BORING DATE 08 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 63.5kg, DROP, 780mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, CM/SEC				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH				WATER CONTENT, PERCENT					
								Cu, kPa				nat.V.- + Q.- ● rem.V.- ⊕ U.- ○				wp w wl 20 40 60 80	
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		179.80													
		SAND AND GRAVEL - fine to coarse subangular Sand, fine and coarse subangular Gravel, trace Silt and Clay, non-plastic, few cobbles, dark brown, damp (GP-GM)		0.00													
1		@ 1.10m abundant cobbles encountered		178.60													
		SANDY TILL- silty fine to coarse subrounded sand and gravel abundant cobbles, damp, medium reddish brown		1.20													
		PERMAFROST melted from auger drilling action															
2		@ 2.00 to 2.60m abundant cobbles and boulders			2	AS	-										
3						3	AS	-									
4		End of Borehole Auger refusal in boulders and cobbles		176.15 3.65													
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PERCENT AXIAL STRAIN AT FAILURE

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15 5 PERCENT AXIAL STRAIN AT FAILURE
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DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Bum*

THAWED

FROZEN

RECORD OF BOREHOLE BH88-1A15

SHEET 1 OF 1



LOCATION SKINNY LAKE AIRSTRIP
7,155,382.7N X 669,427.8E
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 08 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

PROJECT 881-18140

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC		PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE				
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	181.40						
		SAND AND GRAVEL-fine to coarse subangular sand with fine to coarse subangular gravel, damp, medium reddish brown	0.00 181.20 0.20						
		SAND - fine subangular, damp, medium brown		1	AS -				
		PERMAFROST @ 0.75m 0.75 to 2.00m - Nbn							
1				2	AS - CPREL				
				3	AS -				
				4	AS - CPREL				
				5	AS -				
2			179.40	6	AS -				
		PERMAFROST 2.00 to 3.20m - ice, clear, hard	2.00	7	AS - CPREL				
				8	AS - CPREL				
3				9	AS - CPREL				
		@ 3.20m cobble encountered	178.20 3.20						
		PERMAFROST 3.20 to 3.70m - ice and Vs, 3-8mm thick, clear, hard, with till inclusions		10	AS - CPREL				
			177.70	11	AS -				
4		End of Borehole Auger refusal in boulders or cobbles	3.70						

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
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DEPTH SCALE

1: 25

LOGGED R.W.M.

CHECKED *Bum*

Golder Associates

RECORD OF BOREHOLE BH88-1A16

SHEET 1 OF 1



LOCATION SKINNY LAKE AIRSTRIP
7,155,493.6N X 589,590.6E
SAMPLER HAMMER, 83.5kg, DROP, 780mm

BORING DATE 09 JULY 1988

DATUM GEODETIC

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm

PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH		WATER CONTENT, PERCENT			
							Cu, kPa	nat.V.- + Q.- ● rem.V.- ⊕ U.- ○	Wp			W
								20	40	60	80	
0	MOBILE B-40 MOBILE AUGERS	Ground Surface	177.40									
		TOPOSIL - black organics rootlets, wet	177.30									
		SAND - medium subangular with trace of fine subangular gravel, light brown, moist	0.10	1	AS -							
			178.80									
		SAND AND GRAVEL - fine to medium sand, fine subangular gravel, light brown	0.60									
		PERMAFROST @ 0.60m 0.60 to 1.00m - Nbn	178.40	2	AS -							
1		SAND - fine to medium sub- angular, light brown from 1.20 to 1.80m, trace fine gravel	1.00		CRREL							
		PERMAFROST 1.00 to 1.10m - Vs, 1-2mm thick clear, hard 1.10 to 1.20m - Vr, clear hard 1.20 to 1.35m - Vs, 1-2mm thick 1.35 to 1.60m - Vx and Vr, 3mm thick, clear, hard 1.60 to 2.17m - Vs, 1-3mm thick, clear hard		3	AS -							
					CRREL							
			175.23	4	AS -							
			2.17		CRREL							
		PERMAFROST 2.17 to 2.30m - ice with fine sand inclusions through vertical axis of sample										
		174.65	5	AS -								
		2.75		CRREL								
3	SILTY SAND TILL - fine to coarse subrounded sand with gravel, light reddish brown											
	PERMAFROST ice inclusions throughout, clear to cloudy, hard		6	AS -								
			7	AS -								
				CRREL								
		173.60										
4		End of Borehole Auger refusal in boulders and cobbles	3.80									
5												
							0 15 5 PERCENT AXIAL STRAIN AT FAILURE					

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
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DEPTH SCALE

1: 25

LOGGED R.W.M.

CHECKED *Bum*

Golder Associates

RECORD OF BOREHOLE BH88-2A1

SHEET 1 OF 2

LOCATION DRUMLIN AIRSTRIP 7,148,928.4N X 671,850.5E

BORING DATE 27 JUNE 1988

DATUM GEODETTIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm



PROJECT 881-18140

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, K, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH		WATER CONTENT, PERCENT			
							Cu, kPa	nat.V. - + Q. - ● rem.V. - ● U. - ○	W _p			W _L
0		Ground Surface	179.60									
		SAND AND GRAVEL- fine to coarse subangular sand and gravel, wet	0.00									
			179.30									
		SILTY SAND TILL - fine to coarse subrounded sand, some fine and coarse gravel, some cobbles, medium reddish brown	0.30									
				1	AS - CFREL							
1		PERMAFROST @ 0.15m 0.15 to 1.95m - Vs, 2-4mm thick, clear, hard, ice up to 40mm thick 1.70 to 1.95m, clear, hard 1.95 to 2.45m - Vr, clear, hard @ 2.45m - Vx, 2-3mm thick, grey, hard, cloudy, with some Vr		2	AS - CFREL							
2				3	AS -							
	MOBILE B-40 MOBILE AUGERS			4	AS -							
3												
		3.85 to 4.42m SILTY SAND TILL gravel, increasing fine to coarse subangular Gravel, lower water content, medium reddish brown		5	AS - CFREL							
4		PERMAFROST 3.85 to 4.42m - Nbn										
		@ 4.42 to 5.15m cobbles encountered										
		PERMAFROST 4.42 to 5.15m - Vx, 2-4mm thick, clear, hard		6	AS -							
5		continued on next page	174.80									
			5.00									

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15 5 PERCENT AXIAL STRAIN AT FAILURE
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DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *Borm*

RECORD OF BOREHOLE BH88-2A1

SHEET 2 OF 2

LOCATION DRUMLIN AIRSTRIP

BORING DATE 27 JUNE 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm



PROJECT 881-18140

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + Q.- ● rem.V.- ● U.- ○			WATER CONTENT, PERCENT wp w w _L 20 40 60 80
5	MOBILE B-40 MOBILE AUGERS	continued from page 1		174.80	6	AS	-					
			5.00									
			174.15	7	AS	-						
		SILTY SAND TILL - higher Silt content, fine to coarse subangular Gravel, damp.	5.45									
6		PERMAFROST Nf, poorly bonded, friable		173.40								
		End of Borehole Auger refusal in boulders or cobbles		6.20								
7												
8												
9												
10												

0
15 5 PERCENT AXIAL STRAIN AT FAILURE
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DEPTH SCALE

1 : 26

Golder Associates

LOGGED R.W.M.

CHECKED *Born*

RECORD OF BOREHOLE BH88-2A2

SHEET 1 OF 1

LOCATION DRUMLIN AIRSTRIP 7,147,888.5N X 571,219.1E

BORING DATE 27 JUNE 1988

DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm



PROJECT 881-1814D

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, CM/SEC		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V.- + Q.- ● rem.V.- ● U.- ○	WATER CONTENT, PERCENT Wp — W — Wl 20 40 60 80		
				DEPTH (m)								
0	MOBILE B-40 MOBILE AUGERS	Ground Surface		184.00								
		SILTY SAND TILL - fine to coarse subrounded sand and gravel, occasional cobbles moist		0.00								
		PERMAFROST @ 0.25m Nf and Nbn			1 AS - CORE							
1				182.78								
		End of Borehole Auger refusal in cobbles and boulders		1.22								
2												
3												
4												
5												

0
10 6 PERCENT AXIAL STRAIN AT FAILURE
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DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M.

CHECKED *BWm*