SHEET 1 OF 1

LOCATION DRUMLIN AIRSTRIP 7,148,392.4N X 670,998.9E

BORING DATE 28 JUNE 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm DYNAMIC PENETRATION SOIL PROFILE HYDRAULIC CONDUCTIVITY, k, CM/SEC METHOD SAMPLES DEPTH SCALE METRES RESISTANCE, BLOWS/0.3m ADDITIONAL LAB. TESTING PLOT PIEZOMETER BLOWS/0.3M OR NUMBER TYPE ELEV. STANDPIPE BORING STRATA DESCRIPTION SHEAR STRENGTH WATER CONTENT, PERCENT 20 + nat.V.- + 0.- @ T 80 INSTALLATION DEPTH Cu, kPa rem. V.- @ U.- O (m) 40 60 Ground Surface 187.90 0 881-1814D SAND AND GRAVEL, fine to coarse subangular sand, fine 0.00 to coarse subangular gravel, light gray brown 1 AS PROJECT PERMAFROST @ 0.30m 0.30 to 0.96m - Nf 0.96 to 1.35m - Vs, 1-2mm thick, hard, clear, grey B-40 AUGERS MOBILE F 188.95 2 AS SAND TILL - fine to coarse subangular Sand, some fine to coarse subangular Gravel, some Silt, trace Clay, light reddish brown, permafrost ice below 1.35m badly disturbed to refusal at 1.83m PERMAFROST 0.95 CAREL 1.35 to 1.83m - badly disturb-ed by augers in cobbles and boulders 3 AS -Boulders @ 1.35m End of Borehole Auger refusal in cobbles and 188.07 1.83 2 boulders 3 5 16 6 PERCENT AXIAL STRAIN AT FAILURE

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M. CHECKED BUNC

LOCATION DRUMLIN AIRSTRIP 7,149,311.5N X 570,882.4E

BORING DATE 26 JUNE 1988

DATUM GEODETIC

SHEET 1 OF 1

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

SAMPLER HAMMER, 83.5kg, DROP, 760mm

4	METHOD	SOIL PROFILE			SA	MPL	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	1	HYDRAULIC CONDUCTIVITY.		
METRES	BORING MET	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH net.V	+ Q © Ø U Q	WATER CONTENT, PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		Ground Surface SILTY SAND TILL - fine to coarse subrounded sand, some fine subrounded gravel PERMAFROST @ 0.10m 0.10 to 0.20m - Vs, 3-8mm thick, hard, grey	8	193.20		AS						
1		0.20 to 0.45m - Nbe and Nbn 0.45 to 1.10m - 1ew inclusions 1.10 to 1.20m - Vs, 1-2mm thick, clear, grey, hard			2	AS CF	 REL					
		PERMAFROST 1.20 to 2.45m - ice, solid ice clear to grey, hard, with some till inclusions		192.00	3	Αŝη	RĒL					
S S S S S S S S S S S S S S S S S S S	MOBILE AUGERS					AS AS CFI						
		SILTY SAND TILL - fine sand with fine to coarse subrounded gravel, medium brown PERMAFROST - ice inclusions PERMAFROST		190.75 2.45 190.45 2.75								
3		2.75 to 3.40m - ice, solid ice hard, clear with a few till inclusions  @ 3.20 to 3.40m some coarse gravel in ice		189.80	8	AS	+					
		No sample recovery 3.40 to 3.95m		3.40								
4		End of Borehole Auger refusal in cobbles or boulders		189.25 3.95								
5								0 5 \$ PERCENT AXIAL STRAIN AY	PAILURE			
DEPT	H SC 25	ALE					ű	Golder Associa			OGGED	R.W.M.

# RECORD OF BOREHOLE BH88-2A5 SHEET 1 OF 1

LOCATION DRUMLIN AIRSTRIP 7,148,033.4N X 571,158.2E BORING DATE 28 JUNE 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

TE		METHOD	SOIL PROFILE			SA	MPL	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY. T	1 g	Table And Service
DEPTH SCALE	METRES	BORING METI	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH nat.V + Q @ rem.V @ U O	WATER CONTENT, PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
-	-	an .	Ground Surface	ST	186.70		_	· m		20 40 60 80		
	0		SAND TILL - fine to coarse subrounded Sand, some fine and coarse subrounded Gravel, some Silt, trace Clay, low plastic, light reddish brown (SM)	0.00	0.00		AS	-				
			PERMAFROST @ 0.30m 0.30 to 1.82m - Nf			2	AS	ž		0	м,н	
	1		1.82 to 2.75m - Vr, 1-3mm thick, clear, hard 2.75 to 4.28m - ice, 50-75mm thick, clear, hard, many inclusions of till and gravel 4.28 to 4.88m - Nbn									
			SAND TILL - fine to coarse subrounded sand with some coarse gravel, medium reddish brown									
	2	B-40 UGERS				3	AS			0		
		MOBILE B-40 MOBILE AUGERS										
	3		SAND TILL - as above but with fine to coarse subrounded gravel and occasional cobbles			4	AS	,		0		
						6	AS	-				
	4											
			4.26 to 4.88m SILTY SAND TILL fine to medium sand, trace fine to coarse subrounded gravel, lower water content									
	-		End of Borehole	1	181.82 4.88							
	5		Auger refusal in boulders or cobbles						O 18-0-6 PERCENT AXIAL STRAIN AT FAILURE			

Golder Associates

LOGGED R.W.M. CHECKED BUND

SHEET 1 OF 1

LOCATION DRUMLIN AIRSTRIP 7,148,872.7N X 570,828.4E BORING DATE 29 JUNE 1988

DATUM GEODETIC



SAMPLER HAMMER, 63.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

E	METHOD	SOIL PROFILE	_		SA	MPL	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	7	HYDRAULIC CONDUCTIVITY. k, CM/SEC	T	
METRES	BORING MET	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH nat.y	+ 0 @	WATER CONTENT, PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		Ground Surface	ST	190.30			m	1-1-1-	-	20 40 60 80	-	
Q.	1	SANDY GRAVEL - fine to coarse subangular sand fine to coarse gravel	İ	0.00	•							
		PERMAFROST @ 0.25m 0.25 to 0.62m - Nbn										
		01170 0110 7111		189.68								
		SILTY SAND TILL - fine to coarse subangular Sand, some fine to coarse subangular Gravel, light reddish brown		0.62								
1					1	A.S.	REL					
		PERMAFROST 0.82 to 1.22m - Nbn 1.22 to 2.13m - Vc to Vx, 1-2mm thick, no distinct orientation									-	
	B-40 AUGERS	2.13 to 3.80m - permafrost melted by auger drilling			2	AS	4					
2	MOBILE B-40 MOBILE AUGERS				3	AS	~					
		2.13 to 3.60m cobbles and boulders encountered in till										
3												
	1	End of Borehole Auger refusal in boulders and cobbles		186.70 3.60								
4												
5								•				
					_		-	16-6 PERCENT AXIAL STRAIN AT	FAILURE		لمبا	-

1: 25

Golder Associates

CHECKED Blows

SHEET 1 OF 1

LOCATION DRUMLIN AIRSTRIP 7,149,202.3N X 570,920.7E

BORING DATE 17 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 760mm PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm DYNAMIC PENETRATION METHOD SOIL PROFILE SAMPLES HYDRAULIC CONDUCTIVITY, DEPTH SCALE RESISTANCE, BLOWS/0.3m ADDITIONAL LAB. TESTING k, CM/SEC PIEZOMETER BLOWS/0.3M OR STANDPIPE NUMBER ELEV. BORING DESCRIPTION SHEAR STRENGTH WATER CONTENT, PERCENT Eh Wp nat.V.- + Q.- ⊚ rem.V.- ⊕ U.- O INSTALLATION DEPTH Cu, kPa (m) 40 80 80 Frost Deoth 192.40 Ground Surface Indicator 881-1814D TOPSOIL - dark brown, organic 0.00 Silty Sand 192.25 SILTY SAND TILL - fine to 0.15 Coarse Sand, some Cobbles light brown 1 AS PERMAFROST @ 0.60m Nbn 0.90 to 1.20m - Vs 2 AS - 1 Thaw Depth 31 AUG 1988 09 AUG 1988 1.20 to 1.83m increasing Silt content in Till 1.14m 1.21m 3 AS FROZEN 2 AS Cobbles 0 2.45m 2.75 to 3.20m increasing Silt content 3 Cobbles @ 3.00m 5 AS 3.03m 189.20 End of Borehole Auger refusal in cobbles or boulders 5 16-6 PERCENT AXIAL STRAIN AT FAILURE

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.B. CHECKED BLUME

SHEET 1 OF 1

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

LOCATION DRUMLIN AIRSTRIP 7,148,623.9N X 670,911.2E

1: 25

SAMPLER HAMMER, 63.5kg, DROP, 760mm

BORING DATE 17 JULY 1988

DATUM GEODETIC

CHECKED BLOTE

SOIL PROFILE DYNAMIC PENETRATION HYDRAULIC CONDUCTIVITY, SAMPLES METHOD DEPTH SCALE METRES ADDITIONAL LAB. TESTING RESISTANCE, BLOWS/0.3m k. CM/SEC PIEZOMETER PLOT BLOWS/0.3M NUMBER SHEAR STRENGTH nat.V.- + Q.-TYPE ELEV. STANDPIPE BORING WATER CONTENT, PERCENT DESCRIPTION 1 80 DEPTH (m) INSTALLATION rem. V.- @ U.- O 20 40 60 Frost Depth Indicator Ground Surface
TOPSOIL - organic, fine to
medium Sand, some Cobbies, 189.80 0 881-1314D 0.00 dark brown THAWED 1 AS PROJECT 189.20 SILTY SAND TILL - fine to 0.40 medium Sand Thaw Depth 31 AUG 1988 0.75m 2 ASPREL 0 PERMAFROST @ 1.00m (Est'd)
1.00 to 1.45m - Vs, 1-2mm
thick, clear, hard
1.5 to 1.80m - Vf to Vc
2.10 to 2.40m - Vr.Vc and Vs
2.40 to 2.50m - Vs, 1-2mm 09 AUG 1988 1.00m-MOBILE B-40 FROZEN AS 2.50 to 2.70m - Nbn 0.50 to 1.20m - some coarse sand in till MOBILE AS = 0 1.50m Cobbles CHREL 2 6 AS 0 2.40 to 2.60m occasional cobbles 2.74m 188.60 3 End of Borehole 3.00 Auger refusal in cobbles and boulders 5 6-6- 6 PERCENT AXIAL STRAIN AT FAILURE DEPTH SCALE LOGGED R.B.

Golder Associates

SHEET 1 OF 1

LOCATION DRUMLIN AIRSTRIP 7,148,181.3N X 570,849.1E

BORING DATE 17 JULY 1988

DATUM GEODETIC

SAMPLER HAMMER, 83.5kg, DROP, 780mm

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

BORING METHOD	DESCRIPTION	PLOT									
ш	1,3,4,4,0,4,0,4,0,4,0,4,0,4,0,4,0,4,0,4,0	STRATA P	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M		+ O @ - @ U O	WATER CONTENT, PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
_	Ground Surface TOPSOIL - dark brown organic		182.70	1							
	7 SIII	-	182.60	4							
	SILTY SAND TILL - fine sand, damp, medium brown		0.1		AS	-					
	PERMAFROST @ 0.60m 0.60 to 1.00m - Nbn 1.14 to 1.36m - Nbn 1.36 to 1.50m - Vs, 2mm thick 1.50 to 4.25m - Nbe (Est'd)			2	AS	•					
	Cobbles @ 1.00m			_	AS		(1.00 to 1.50m)				
П							CRREL				
П				6	AS AS	=	(1.00 to 1.50m) (1.23 to 1.40m)				
	some gravel and cobbles @ 1.50 to 2.80m										
ERS											
BILE AUG											
MC				4	AS						
				7	AS	-					
					AC						
	End of Borehole Auger refusal on cobbles and boulders		4.25								
1							0				
	MOBILE AUGERS	SILTY SAND TILL - fine sand, damp, medium brown  PERMAFROST @ 0.80m 0.80 to 1.00m - Nbn 1.14 to 1.38m - Nbn 1.36 to 1.50m - Vs. 2mm thick 1.50 to 4.25m - Nbe (Est'd)  Cobbles @ 1.00m  some gravel and cobbles @ 1.50 to 2.80m	SILTY SAND TILL - fine sand, damp, madium brown  PERMAFROST @ 0.80m 0.80 to 1.00m - Nbn 1.34 to 1.36m - Nbn 1.38 to 1.50m - Vs, 2mm thick 1.50 to 4.25m - Nbe (Est'd)  Cobbles @ 1.00m  some gravel and cobbles @ 1.50 to 2.80m	SILTY SAND TILL - fine sand. damp, medium brown  PERMAFROST @ 0.80m 0.80 to 1.00m - Nbn 1.14 to 1.38m - Nbn 1.36 to 1.50m - Vs. 2mm thick 1.50 to 4.26m - Nbe (Est'd)  Cobbles @ 1.00m  some gravel and cobbles @ 1.50 to 2.80m  178.45  End of Borehole Auger refusal on cobbles and boulders  178.45	SILTY SAND TILL - fine sand, damp, medium brown  PERMAFROST © 0.80m 0.80 to 1.00m - Nbn 1.14 to 1.38m - Nbn 1.38 to 1.50m - Vs., 2mm thick 1.60 to 4.25m - Nbe (Est'd)  Cobbles © 1.00m  Some gravel and cobbles © 1.50 to 2.80m  End of Borehole Auger refusal on cobbles and boulders  8 178.46 4.25	SILTY SAND TILL - fine sand.  damp, medium brown  1 AS  PERMAFROST @ 0.80m 0.80 to 1.00m - Nbn 1.14 to 1.36m - Nbn 1.38 to 1.50m - Vs, 2mm thick 1.50 to 4.25m - Nbe (Est'd)  Cobbles @ 1.00m  3 AS  5 AS  some gravel and cobbles @ 1.50 to 2.80m  7 AS  End of Borehole Auger refusal on cobbles and boulders  8 AS	SILTY SAND TILL - fine sand, damp, medium brown  1 AS -  PERMARROST @ 0.60m	SILTY SAND TILL - fine sand, damp, medium brown  PERMAFROST @ 0.80m	SILTY SAND TILL - fine sand.   O.10   damp. modium brown   O.60 to 1.00m - Nbn   O.60 to 1.00m - Nbn   O.11 to 1.50m - Nbn   O.11 to 1.50m - Nbn   O.11 to 1.50m - Nbn   O.12 to 1.50m - Nbn   O.60 to 4.28m - Nbe (Est'd)   O.60 to 4.28m - Nbe (Es	Sitty SAND TILL fine aand,	Signature   Sign

Golder Associates

CHECKED Blom

BH88-3A3

SHEET 1 OF 1

DATUM GEODETIC

LOCATION JAEGER LAKE AIRSTRIP 7,145,825N X 569,025E SAMPLER HAMMER, 63.5kg, DROP, 780mm

ESTIMATED UTM CO-ORDINATES AND ELEVATIONS BORING DATE 22 JULY 1988

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

BORING METHOD	DESCRIPTION	PLOT		~		3M						ZE	PIEZOMETER
		STRATA	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH	nat.v	+ Q @ @ U Q	WATER CONT	ENT, PERCENT	ADDITIONAL LAB, TESTING	OR STANDPIPE INSTALLATION
	Ground Surface		154.00					1					
	TOPSOIL - highly organic, dark brown	9	0.00									1 1	
	SAND - fine to medium, trace coarse, trace fine subrounded to subangular gravel, light brown		0.15		AS	-			Œ				
	trace coarse subangular gravel wet, medium brown			2	AS								
AUGERS	PERMAFROST @ 0.84m 0.84 to 0.95m - Nbn 0.95 to 1.34m - Nf 1.34 to 1.64m - Nbn							-					
MOBILE	thick			3	AS								
	1.44 to 1.86m Fine to medium Sand, some Silt												
Ц	End of Borehole		_										
	Auger refusal on cobbles or boulders												
			1			-	•						
MOBILE B-40	MOBILE AUGERS	gravel, light brown  @ 0.50m medium to coarse sand trace coarse subangular gravel wet, medium brown  PERMAFROST @ 0.84m 0.84 to 0.95m - Nbn 0.95 to 1.34m - Nf 1.34 to 1.85m - Ns 1.64 to 1.85m - Vs, 3-8mm thick  1.44 to 1.85m Fine to medium Sand, some Silt  End of Borehole Auger refusal on cobbles or	gravel, light brown  @ 0.50m medium to coarse sand, trace coarse subangular gravel wet, medium brown  PERMAPROST @ 0.84m 0.84 to 0.95m - Nbn 0.95 to 1.34m - Nf 1.34 to 1.54m - Nbn 1.64 to 1.65m - Vs, 3-8mm thick  1.44 to 1.65m Fine to medium Sand, some \$iit	Subrounded to subangular gravel, light brown  @ 0.50m medium to coarse sand, trace coarse subangular gravel wet, medium brown  PERMAFROST @ 0.84m 0.84 to 0.95m - Nbn 0.95 to 1.34m - Nf 1.34 to 1.64m - Nbn 1.64 to 1.86m - Vs, 3-8mm thick  1.44 to 1.86m Fine to medium Sand, some Silt  End of Borehole Auger refusal on cobbles or	Subrounded to subangular gravel, light brown  © 0.50m medium to coarse sand, trace coarse subangular gravel wet, medium brown  2  PERMAPROST © 0.84m 0.84 to 0.95m - Nbn 0.95 to 1.34m - Nf 1.34 to 1.54m - Nbn 1.54 to 1.55m - Vs. 3-8mm thick  3  1.44 to 1.85m Fine to medium Sand, some Silt  End of Borehole Auger refusal on cobbles or	gravel, light brown  @ 0.50m medium to coarse sand, trace coarse subangular gravel wet, medium brown  2 AS  PERMAFROST @ 0.84m 0.84 to 0.95m - Nbn 0.95 to 1.34m - Nf 1.34 to 1.54m - Nbn 1.54 to 1.65m - Vs, 3-8mm thick  3 AS	aubrounded to subangular gravel gravel, light brown  © 0.50m medium to coarae sand, trace coarse subangular gravel wet, medium brown  2 AS -  PERMAFROST © 0.84m 0.96 to 1.34m - Nf 1.34 to 1.54m - Nbn 1.54 to 1.55m - Vs, 3-5mm thick  3 AS -  1.44 to 1.85m Fine to medium Sand, some Silt  End of Borehole Auger refusal on cobbles or boulders  151.75	subrounded to subangular gravel e 0.50m medium to coarse sand, trace coarse subangular gravel wet, medium from 0.84 to 0.86m - Nbn 0.84 to 1.84m - Nt 1.34 to 1.86m - Nbn 1.54 to 1.86m - Vs, 3-8mm thick  1.44 to 1.85m Fine to medium  1.44 to 1.85m Fine to medium  Sand, some Silt  1.51.76  End of Borehole Auger refusal on cobbles or boulders	aubrounded to subangular gravel  0.50m medium to coarse gand, trace coarse subangular gravel wet, medium brown  2.0.84 to 0.96m - Nbn 0.95 to 1.34m - Nf 1.34 to 1.54m - Nbn 1.54 to 1.86m - Vs. 3-8mn thick  3.4S -  1.44 to 1.86m Fine to medium Sand, some Silt  1.44 to 1.86m Fine to medium Sand, some Silt  1.51.76  Auger refusal on cobbles or 2.25	aubrounded to subangular gravel wet, madium brown  PERMAPROST © 0.84m 0.84 to 0.95m - Nbn 0.95 to 1.34m - Nf 1.34 to 1.54m - Nbn 1.54 to 1.55m - Vs. 3-6mm thick  3 AS -	autrounded to authorium gravel gravel, light brown  e 0.50m medium to coarse and trace coarse authorium at the coarse authoriu	autoronded to autoangular gravel program of trade coarse sand trade coarse subanquiar gravel part of trade coarse part of trad	autounded to automotion to coarse sand, trade coarse subangular gravel west, mad tum brown  9.0.56m medium to coarse sand, trade coarse subangular gravel west, mad tum brown  8.0.54 to 0.05m - Neo  9.0.54 to 0.05m - Neo  1.54 to 1.55m - Ys, 3-6mm  1.54 to 1.55m - Ys, 3-6mm  1.44 to 1.85m Fine to madium  Sand, some Sitt  151.76  Auger refusel on cobbles or boulders  150.76  Auger refusel on cobbles or boulders

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.B.

CHECKED BUNK

BH88-1B1

SHEET 1 OF 1

DATUM GEODETIC

LOCATION SKINNY LAKE BORROW 7,152,423.5N X 571,699.1E (UPPER TERRACE) SAMPLER HAMMER, 63.5kg, DROP, 760mm

BORING DATE 26 JUNE 1988

PENETRATION TEST HAMMER, 63.6kg, DROP, 760mm

<u> </u>	HOD		SOIL PROFILE	L.		\$A	MPLI		DYNAMIC RESISTAL	PENET	RATIC DWS/C	O.3m	۲,	HYDRAI		ONDUCT A/SEC	IVITY,	T	₽ ING	PIEZOMETER
METRES	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR S Cu, kPa		na	ıt.V + m.V ⊕			<del></del>	NTENT,	I	ENT	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
0	_	$\Box$	Ground Surface		180.00														П	
	01	ERS	SAND AND GRAVEL-fine to coarse subrounded sand and gravel, with occasional cobbles to 100mm dia. wet @ 0.35m cobble and boulder concentration increasing with depth		0.00															
1	MOBILE B-40	MOBILE AUG	PERMAFROST @ 0.35m (Est'd) 0.35 to 0.80m - Nbe (Est'd)			1	AS	-												
			Est of Positivity		178.50	_														
			End of Borehole Auger refusal in boulders or cobbles		1.50															
2			PERMAFROST thawed by auger drilling action																	
3																				
4																				
5									0 16-4-6 PE											

DEPTH SCALE

Golder Associates

CHECKED Bum

BH88-1B2

SHEET: 1 OF 1 DATUM GEODETIC

LOCATION SKINNY LAKE BORROW 7,162,242.5N X 571,808.8E (LOWER TEMPACE)
SAMPLER HAMMER, 63.5kg, DROP, 760mm

BORING DATE 27 JUNE 1988

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm

	ILE	T	METHOD	SOIL PROFILE	I E		\$A	MPLI		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, CM/SEC  PIEZOMETER
	DEPTH SCALE METRES		BORING MET	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH nat.V + Q ● rem.V ⊕ U O	WATER CONTENT, PERCENT Q Q INSTALLATION
PROJECT 881-1814D	_ 1		MOBILE AUGERS	Ground Surface  SAND AND GRAVEL - medium and coarse subrounded Sand, trace fine Sand, fine and coarse subrounded Gravel, trace Silt, <10% Cobbles to 110mm dia., non-plastic, medium brown, damp (SW)  PERMARROST @ 0.80m 0.80 to 1.78m - Nbe (Est'd) 1.78 to 1.98m - Nbe (Est'd)  @ 0.90 to 1.78m Cobbles and boulders encountered		174.90		AS	, -		O Non-Plastic M PETROGRAPHIC ANALYSIS -
	_ 2	2		SAND TILL - reddish brown fine to coarse sand and gravel subrounded End of Borehole Auger refusal in cobbles and boulders		173.12 1.78 172.92 1.98	2	AS	-		-
	_ 3	3		PERMATROST descriptions estimated - thawed by auger drilling							
	_ 4	4									
	_ 6			CALE						16 - 6 PERCENT AXIAL STRAIN AT FAILURE	LOGGED R.W.M.

DEPTH SCALE

Golder Associates

LOGGED R.W.M. CHECKED BLOW.

BH88-1B3

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

SHEET 1 OF 1

LOCATION SKINNY LAKE BORROW 7,152,317.1N X 571,728.7E (LOWER TERRACE)

SAMPLER HAMMER, 63.5kg, DROP, 760mm

BORING DATE 18 JULY 1988

DATUM GEODETIC



SOIL PROFILE DYNAMIC PENETRATION HYDRAULIC CONDUCTIVITY, SAMPLES METHOD DEPTH SCALE METRES ADDITIONAL LAB. TESTING RESISTANCE, BLOWS/0.3m k, CM/SEC PIEZOMETER PLOT BLOWS/0.3M OR NUMBER STANDPIPE TYPE ELEV. BORING SHEAR STRENGTH WATER CONTENT, PERCENT DESCRIPTION nat.V.- + Q.- @ INSTALLATION DEPTH Cu, kPa rem.V.- ⊕ U.- O (m) 20 40 60 Ground Surface
TOPSOIL- highly organic, black 175.30 881-1814D 175.20 SAND AND GRAVEL - fine 0.10 to coarse subrounded sand, fine to coarse subrounded gravel, some rounded to sub-rounded cobbles, dry 1 AS -1 174.00 GRAVELLY SAND TILL - coarse 1.30 subangular to subrounded sand fine subangular to subrounded gravel, some silt, wet, medium reddish brown PERMAFROST @ 1.30m (Est'd) 1.30 to 2.90m - Nbn (Est'd) 2.90 to 4.80m - Nbn (Est'd) 2 AS 2 MOBILE B-40 Cobbies @ 2.70 to 2.90m 172.40 SANDY SILT TILL - fine to coarse, sand, wet, medium brown 2.90 3 AS 3 4 4 AS -170.70 End of Borehole 4.60 Auger refusal in cobbles and boulders PERMAFROST description estimated - thawed by augers 5 DEPTH SCALE LOGGED R.B. CHECKED Burn Golder Associates 1: 25

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

SHEET 1 of 2

LOCATION SKINNY LAKE BORROW 7,152,226.3N X 571,897.8E (LOWER TERFACE)
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 18,19 JULY 1988

DATUM GEODETIC

THOD	\$OIL PROFILE	T⊨		SA	MPL		DYNAMIC PE RESISTANCE,	NETRAT BLOWS	10N > /0.3m	۲,	HYDR	AULIC (	M\SEC	TIVITY,	T	SNS F	HEZOMET	TER
BORING MET	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRE	n				WP -	—ŏ—	<del>"</del>	A ADDITION		OR STANDPIP STALLAT	PE TON
$\overline{\Box}$	Ground Surface COBBLES- angular to subangula	r																
П	dry		474 40													-		
	GRAVEL - coarse rounded to subrounded grave!, some	<del> </del>				,												
	rounded to subrounded cobble, dry	l																
					1	-		-					_		$\dashv$			
	GRAVELLY SAND - fine to coars	e	_															
	sand, fine and coarse subroun-	-																
	@ 1.50m medium to coarse sand, fine trace coarse sub- rounded gravel, trace slit, wet																	1
																31 198	AUG B	1.9
				2	AS	-					0	Non-F	lastic		M	09 198		1.9
S S	cobbles @ 1.90 to 2.20m																	
MOBILE B-4	PERMAFROST @ 2.00m (Est'd) 2.00 to 6.80m - Nbn and Nbe (Est'd)																	
	Increase in silt content below 3.25m																	
				٠	40													
					1													±3.8
П																		
Ц	continued on next page	_	189.70	_		_						<u> </u>		_	-	_ -		_
- 1		1	1			1 1	16-6 PERCENT					1			- 1			
	MOBILE B-10 MOBILE AUGERS MOBILE AUGERS	GRAVELLY SAND - fine to coarse sand, fine and coarse subrounded Gravel, some rounded to subrounded to subrounded to subrounded subrounded coarse sand, fine and coarse subrounded Gravel, some Silt and Clanon-plastic, medium brown, dry (SP-SM)  9 1.50m medium to coarse sand, fine trace coarse subrounded gravel, trace silt, wet  Cobbles 9 1.90 to 2.20m  PERMAFROST 9 2.00m (Est'd) 2.00 to 6.80m - Nbn and Nbe (Est'd)  Increase in silt content below 3.25m	GRAVELLY SAND - fine to coarse sand, fine and coarse subrounded gravel, some rounded to subrounded gravel, some stand, fine and coarse subrounded Gravel, some Silt and Clay non-plastic, medium brown, dry (SP-SM)  9 1.50m medium to coarse sand, fine trace coarse subrounded gravel, trace slit, wet  cobbles 9 1.90 to 2.20m  PERMAFROST 9 2.00m (Est'd) 2.00 to 5.60m - Nbn and Nbe (Est'd)  Increase in silt content below 3.25m	GRAVELLY SAND - fine to coarse sand, fine and coarse subrounded gravel, some sand, fine trace coarse sand, fine trace coarse sand, fine trace coarse sand, fine trace coarse sand, fine trace sait, wet  GRAVELLY SAND - fine to coarse sand, fine trace coarse subrounded gravel, some Silt and Clay non-plastic, medium brown, dry (SP-SM)  PERMAFROST @ 2.00m (Est'd) 2.00 to 5.80m - Nbn and Nbe (Est'd)  Increase in silt content below 3.25m	DESCRIPTION  Ground Surface  Ground Surface  COBBLES - angular to subangular dry  174.40  GRAVEL - coarse rounded to subrounded gravel, some rounded to subrounded cobble, dry  173.80  GRAVELLY SAND - fine to coarse sand, fine and coarse subrounded Gravel, some Silt and Clay non-plastic, medium brown, dry (SP-SM)  9 1.50m medium to coarse sand, fine trace coarse subrounded gravel, trace silt, wet  2 cobbles 9 1.90 to 2.20m  PEFAMAFROST 9 2.00m (Est'd) 2.00 to 5.80m - Nbn and Nbe (Est'd)  Increase in silt content below 3.25m	GRAVELLY SAND - fine to coarse sand, fine and coarse sand, fine and coarse sand, fine trace sait, wet  2 AS  Cobbles © 1.90 to 2.20m  Cobbles © 1.90 to 2.20m  Cobbles © 1.90 to 2.20m  Increase in silt content below 3.25m  Continued on next page  Continued on next page  189.70	DESCRIPTION    Total   Company   Com	DESCRIPTION  DESCR	DESCRIPTION  A V V V DEPTH  DESCRIPTION  A V V V DEPTH  DESCRIPTION  ORDER  SHEAR STRENGTH  CU. KPa  174.40  174.40  174.40  GRAVEL - coarse rounded to subrounded gravel, some rounded to subrounded cobble, dry  GRAVELLY SAND - fine to coarse sand, fine and coarse subrounded Gravel, some Silt and Clay non-plastic, medium brown, dry (SP-SM)  9 1.50m medium to coarse sand, fine trace coarse subrounded gravel, trace slit, wet  cobbles 9 1.90 to 2.20m  Cobbles 9 1.90 to 2.20m  Cobbles 9 1.90 to 2.20m  Cobbles 9 1.90 to 5.60m - Nbn and Nbe (Est'd)  2 AS -  Cobbles 9 1.90 to 5.60m - Nbn and Nbe (Est'd)  Increase in silt content below 3.25m	DESCRIPTION  Ground Surface  Ground Surface  COBBLES - angular to subangular of 174.40  GRAVEL - coarse rounded to subrounded gravel, some rounded to subrounded gravel, some silt and clay non-plastic, medium brown, dry (SP-SM)  GRAVELLY SAND - fine to coarse sand, fine and coarse subrounded gravel, some silt and clay non-plastic, medium brown, dry (SP-SM)  SHANE STRENGTH native - delivery - de	DESCRIPTION  The state of the s	DESCRIPTION  VEX. DEPTH   VEX.	DESCRIPTION    Comparison   Com	DESCRIPTION  OBSIGNATION  OBSIG	DESCRIPTION    Continued for the content below 3.26 on the continued on next page   199.70     199.	DESIGNIPTION  CITCUIT SUPPLY AND - Inter to coarse sub-rended grave1, some of the trace coarse sub-rended grave1, trace sit1, and	BESTANCE, BLOWNORM  CROUND SUPPORTION  CROUND SUPPORT SUPPORTION  CROUND SUPPORT  CROUND SUPPORTION  CROUND	DESCRIPTION  SERVICE SUBSTITUTE  COUNTY OF THE CONTENT PERCENT  ON APP SUBSTITUTE  COUNTY OF THE CONTENT PERCENT  TO APP SUBSTITUTE  CONTENT OF THE CONTENT PERCENT  TO APP SUBSTITUTE  TO APP SU

BH88-1B4

PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm

SHEET 2 OF 2

DATUM GEODETIC

LOCATION SKINNY LAKE BORROW

SAMPLER HAMMER, 83.5kg, DROP, 780mm

BORING DATE 18,19 JULY 1988



ı		,	ء ا	SOIL PROFILE			SA	MPLE	E\$	DYNA	AIC PEN	ETRAT	ON >	```	HYDR		CONDUC	TIVITY.	Т	.,	
1	DEPTH SCALE METRES	Ì	BORING METHOD		PLOT				ĭ	RESIST	ANCE,	BLOW\$/	0.3m	`		k, C	M/\$EC		Τ	ADDITIONAL LAB. TESTING	PIEZOMETER OR
	TRE	3	፮   <u>ଅ</u>	DESCRIPTION	4	ELEV.	BER	ᆵ	\$70.3	SHEAF	STREN	IGTH			WA	TER CO	ONTENT,	PERCE	NT	DITIO	STANDPIPE
1	DEP.			DESCRIPTION	STRATA	DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	Cu, ki		n	at.V + om.V €	U O		-	<del></del> 0-	——		LAB	INSTALLATION
ŀ		-	ě		E				ă			-		-	2	20 4	40 6	80 8	30		
40	- 5	-	Н	continued from page 1	-	189.70 5.00				_					<del> </del>		<del>-</del> -		┼		
881-1814D			П			0.00															ŀ
881			П															ĺ			
5		1	Н																		
PROJECT																					
٦		٥	ERS	SANDY GRAVEL TILL - fine to	┼	189.10															
-		B-1	MOBILE AUGERS	medium gravel, coarse sand, some silt, medium brown,		5.60							-		-			-			- 1
-		BILE	삝	some sitt, medium brown,						1											
l	- 8	ĭ	Ş	PERMAFROST	1																J
	·		Н	5.80 to 8.80 - Nbe and Nbn (Est'd)			4	AS	_												- 1
										ł											
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١											ļ			ĺ	ļ						
						168.10															
				End of Borehole Auger refusal on cobbles and		6.60								1							
١			ı	boulders						]					ĺ					[ ]	
١	_				l								ĺ								
İ	- 7			PERMAFROST description							ĺ				l	,				1 1	
١				estimated - thawed by augers	1																
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	_ 10									0	PERCENT	AYIA: **	RAIN AT	FAILURE							
t	Di	рт	H c	CALE	-					10	- Enveil	MAINE \$1	- AI	. ATEUNE					L	OGGED	R.B.
										Go	ldar	Δοο	ociat	28							0 Bum
Ĺ	1	•	25							<u> </u>	1001	733	JUIA							• • • •	- 177716

BH88-1B5

SHEET 1 OF 1

LOCATION SKINNY LAKE BORROW 7,152,504.3N X 571,519.2E

BORING DATE 18 JULY 1988

DATUM GEODETIC

(UPPER TERRACE) SAMPLER HAMMER, 83.5kg, DROP, 760mm PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm DYNAMIC PENETRATION HYDRAULIC CONDUCTIVITY, SOIL PROFILE SAMPLES METHOD ADDITIONAL LAB. TESTING DEPTH SCALE METRES RESISTANCE, BLOWS/0.3m k, CM/SEC PIEZOMETER PC OR NUMBER STANDPIPE TYPE ELEV. WATER CONTENT, PERCENT SHEAR STRENGTH DESCRIPTION ₽p 20 + nat.V.- + Q.- • INSTALLATION DEPTH Cu, kPa rem.V.- ⊕ U.- O (m) ۱80 40 60 179.50 Ground Surface TOPSOIL - highly organic, dark 0.00 brown 179.35 GRAVELLY SAND TILL med i um 0.15 1 AS to coarse subrounded sand, fine and coarse subrounded gravel, some silt, dark brown AS @ 0.4 to 0.8m SILTY SAND TILL medium to coarse sub-rounded sand, some cobbles, moist, medium reddish brown 3 AS @ 0.6 to 0.75m SILTY SAND TILL medium subrounded sand, moist, medium reddish brown Cobbles @ 0.75m PERMAFROST @ 1.20m (Est'd) 1.20 to 4.70m - Nbn (Est'd) 2 MOBILE AUGERS MOBILE B-40 @ 2.60m, sand fraction 4 ASHREL becomes coarser, cobbles encountered 3 5 AS

DEPTH SCALE

End of Borehole

boulders

Auger refusal on cobbles and

PERMAFROST description estimated - melted by augering

Golder Associates

6-6 PERCENT AXIAL STRAIN AT FAILURE

174.80

4.70

LOGGED R.B. CHECKED Blume

5

LOCATION SKINNY LAKE BORROW 7,152,466.3N X 571,676.7E (LOWER TEPRACE)
SAMPLER HAMMER, 63.5kg, DROP, 760mm

BORING DATE 18 JULY 1988

SHEET 1 OF 1 DATUM GEODETIC



PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

<u> </u>	METHOD	SOIL PROFILE	J t-	1	SA	MPL	_	DYNAMIC PENETR RESISTANCE, BLO	ATION \	۷,	HYDRAULIC CONDU	C T	څ نـ	
METRES	BORING MET	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH			WATER CONTER	T, PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	$\overline{}$	Ground Surace TOPSOIL - organics,	<u>"</u>	174.00	+									
		dark brown SAND AND GRAVEL-fine and coar	$\perp$	173.8										
		se subrounded gravel, medium to coarse subrounded sand, some cobbles, dry		0.11		AS	_							
		Cobble layer from 0.75 to 1.00m												
1		SAND TILL - medium to coarse subrounded sand, fine sub-		172.80										
		rounded gravel, some slit, very wet, medium reddish brown	1											
		PERMAFROST @ 1.20m (Est'd) 1.20 to 4.70m - Nbe (Est'd)												
		PERMAFROST description estimated - melted by augers			2	AS	-							
2														
	GERS													
	MOBILE B-40 MOBILE AUGERS													
	MOR													
					3	AS	_							
3														
4														
-		End of Borehole Auger refusal on cobbles and	H	169.30 4.70										
5		boulders												
								0 16 6 PERCENT AXIAL	STRAIN AT FA	LURE				
DEP	TH S	CALE					L	10	-			L	OGGED	R.B.

SHEET 1 OF 2

DATUM GEODETIC

LOCATION SKINNY LAKE BORROW 7,152,248.8N X 572,083.7E (LOWER TERRACE) SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 19 JULY 1988

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

METRES	METHOD		ΙĖ	1	1	1	1		ANCE, E					M/SEC				
2	BORING	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR Cu, kP	STREN	nat.V +			TER C	ONTENT,	<del>`</del>	ENT 80	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		Ground Surface		173.50														
		TOPSOIL- highly organic, black	╁	0.05	1												ΙÍ	
	11	GRAVEL AND COBBLES - coarse subrounded gravel, subrounded		173.30														
		cobbles, red to brown	l	0.20	1	AS	-											
			l	ľ														
	$ \cdot $	SANDY GRAVEL - fine to medium	l														l i	
		sand, medium subrounded gravel moist, light brown															1 1	
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- 1								,									] ]	
	$ \cdot $		l															
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			l	1														
ı			l					<b> </b>									1 1	
											-	<del>  </del>		1	<del>                                     </del>	+		
				171.70														
- 1		SILTY SAND TILL - medium to	Т	1.80		1		<b>!</b>			1				l	1		
2	$\mathbb{R}^{1}$	coarse sand, some fine sub- angular gravel, saturated,	ĺ		l				- 1								1 1	
		medium reddish brown																
		PERMAFROST @ 1.80m (Est'd)																
٥	ا <u>چ</u> ا د	1.80 to 3.45m - Nbe (Est'd)	ĺ		,	AS	_										1	
1		3.45 to 7.20m - Nbe (Est'd)			_													
u u		PERMAFROST description estimated - melted by augers	l							 	_						] [	
Ş	MOBILE AUGERS	norted by adjets							ļ								1 1	
	2									1								
	11					ł						ĺĺ					ĺΙ	
	11						]											
3						ĺ												
	П		ľ															
		SILTY SAND TILL - medium	-	170.05 3.45														
		to coarse sand, trace coarse subrounded gravel, saturated,		3.40														
		medium reddish brown																
					_							<b>j</b>						
4					3	AS	-											
	$\  \ $																	
	$\prod$																	
				168.70														
		See next page for description		4.80														
6		continued on next page		168.50	4	AS	_						_					
٦٢				5.00			Γ.	-	_								[	

Golder Associates

CHECKED Bum

BH88-1B7

SHEET 2 OF 2 DATUM GEODETIC

CHECKED Bum

LOCATION SKINNY LAKE BORROW
SAMPLER HAMMER, 83.5kg, DROP, 760mm

1: 25

BORING DATE 19 JULY 1988

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

<u> </u>	90	SOIL PROFILE			SA	MPL	ES	DYNAMIC RESISTANO	PENETRA	TION >	`\	HYDRAUL	IC COI		ITY.	- Ş	
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR ST Cu, kPa		nat.V.~ - rem.V 6	- O • • U •	WATEI WI 	R CONT	ENT, P	ERCENT 	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
5		continued from page 1	Ű	168.60													
5		SILTY SAND TILL - 4.80 to 7.20m, medium to coarse sub- angular sand, trace fine subrounded gravel, medium reddish brown		5.00		AS	-										
6	MOBILE B-40 MOBILE AUGERS																
7		End of Borehole Not at auger refusal		168.30 7.20													
8																	
9																	
10								0 16 - 5 PERCI	ENT AXIAL	STRAIN AT	FAILURE						

Golder Associates

BH88-1B8

SHEET 1 OF 1

LOCATION SKINNY LAKE BORROW 7,162,694.6N X 672,329.7E

881-1814D

BORING DATE 19 JULY 1988

DATUM GEODETIC

(EAST TERRACE) SAMPLER HAMMER, 83.5kg, DROP, 760mm PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm DYNAMIC PENETRATION HYDRAULIC CONDUCTIVITY, METHOD SOIL PROFILE SAMPLES DEPTH SCALE METRES ADDITIONAL LAB. TESTING RESISTANCE, BLOWS/0.3m k, CM/SEC PIEZOMETER PLOT BLOWS/0.3M OR STANDPIPE NUMBER TYPE ELEV. SHEAR STRENGTH WATER CONTENT, PERCENT DESCRIPTION INSTALLATION nat.V.- + Q.- • DEPTH Cu, kPa ۳p rem.V.- @ U.- O 20 40 60 80 173.20 Ground Surface TOPSOIL- highly organic, black 173.10 to brown 0.10 COBBLES AND BOULDERS - sub-rounded to rounded cobble. small subrounded boulders 1 AS 1 172.10 SILTY SAND TILL - medium to coarse angular sand, non-plastic silt, moist, reddish 1.10 171.90 SANDY GRAVEL TILL - fine to medium subrounded gravel, coarse subrounded sand, moist 1.30 Cobbles @ 1.50m 171.60 MOBILE B-40
MOBILE AUGERS SILTY SAND TILL - medium to 1.60 to coarse angular sand, some fine angular gravel, saturated PERMAFROST @ 1.80m (Est'd) 1.80 to 3.70m - Nbe (Est'd) 2 AS -Cobbles from 2.60 to 2.70m 3 3 AS -169.50 End of Borehole 3.70 Auger refusal on cobbles and

DEPTH SCALE

boulders

PERMAFROST description estimated - melted by augers

Golder Associates

LOGGED R.B. CHECKED BUNK

1: 25

5

4

BH88-1B9

SHEET 1 OF 2 DATUM GEODETIC

LOCATION SKINNY LAKE BORROW 7,152,448.2N X 572,349.3E BORING DATE 19 JULY 1988 (EAST TERPACE)

SAMPLER HAMMER, 63.5kg, DROP, 760mm PENETRATION

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

ļ																					
ı	щ	g		SOIL PROFILE			\$A	MPLI	E\$			BLOWS/		۲.	HYDR	AULIC C	M\SEC	TIVITY,	TI	٦ Ş	
	DEPTH SCALE METRES	BORING METHOD		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR Cu, kF	STREN	n.	at.V +			TER CO	<b>—</b> 0—	<b>─</b> ─Ĭ	T TM	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
آړ	- 0		$\Box$	Ground Surface		173.60															
PROJECT 881-1814D				SANDY GRAVEL - fine to coarse Sand, fine and coarse subrounded Gravel, trace Silt and Clay, non-plastic, some Cobbles (GP)		173.00	1	AS	_						o	Non-	Plasti	c		м	
		Ш	۲	SAND - medium to coarse sub- rounded to subangular sand,		0.60					-										
١				moist		172.80													l		
١		$  \  $	┢	GRAVEL - medium to coarse sub-		0.80									ĺ						
	- 1		iRs	PERMAFROST @ 2.10m (Est'd) 2.10 to 6.25m - Nbe (Est'd)  SILTY SAND TILL - medium to coarse angular sand, fine sub-angular gravel some, saturat-		171.40		AS	-						0						-
	_ 3	MOBILE B-40	MOBILE AUG	angular gravel some, saturated, medium reddish brown  9 2.50m fine to coarse angular sand, some subrounded to subangular fine to coarse gravel, few subrounded to subangular cobbles, saturated																	
	4						3	AS	-												
	- 4			@ 4.30m fine to coarse angular sand, trace subangular to subrounded gravel, few medium subangular to subrounded cobbles, saturated			4	AS	-												
	_			continued on next page		168.60															
- 1	- 5	-	+	THE PARTY OF THE PARTY PARTY		5.00				· ·				+							
1										16- <b>+</b> -6	PERCENT	AXIAL ST	RAIN AT	PATLURE					- 1	OGGED	D.B.

DEPTH SCALE

Golder Associates

LOGGED R.B. CHECKED 134m

BH88-1B9

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

SHEET 2 OF 2

LOCATION SKINNY LAKE BORROW

1: 25

SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE: 19 JULY 1988

DATUM GEODETIC



DYNAMIC PENETRATION HYDRAULIC CONDUCTIVITY, SOIL PROFILE SAMPLES BORING METHOD ADDITIONAL LAB. TESTING DEPTH SCALE METRES RESISTANCE, BLOWS/0.3m k, CM/SEC PIEZOMETER PLOT BLOWS/0.3M OR STANDPIPE NUMBER TYPE ELEV. WATER CONTENT, PERCENT SHEAR STRENGTH DESCRIPTION STRATA nat.V.- + Q.- ● INSTALLATION DEPTH (m) Cu, kPa rem.V.- ⊕ U.- O 168.60 continued from page 1 881-1814D 5.00 8 167.35 End of Borehole Auger refusal on cobbles and boulders 6.25 PERMAFROST description estimated - melted by augers 7 8 9 10 18 6 PERCENT AXIAL STRAIN AT FAILURE LOGGED R.B. DEPTH SCALE Golder Associates CHECKED Bun

SHEET 1 OF 1

DATUM GEODETIC

CHECKED Burn

LOCATION SKINNY LAKE BORROW 7,152,007.5N X 572,149.4E (LOWER TEFRACE) SAMPLER HAMMER, 83.5kg, DROP, 760mm

1: 25

BORING DATE 19 JULY 1988

PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

L																					
-1	щ		8	SOIL PROFILE			\$ <b>A</b>	MPLI	E\$		MIC PEN			7	HYDRA		ONDUCT	IVITY,	T	اي د	
	DEPTH SCALE METRES		BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M		R STREN	GTH	nat.V	+ Q • • U O		ER CC	ONTENT,	<u>`</u>	ENT BO	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
ł	_ 0	+-	-	Ground Surface	Š	174.70				<del> </del>	_	_	-		-						
PROJECT 881-1814D	_ 0			GRAVEL AND COBBLES - fine to medium subrounded to subangul- ar gravel, subrounded to sub- angular cobbles, clean, dry		0.00	1	AS	-												
4				SAND- medium to coarse subangt	_	174.10															
				ular to subrounded sand, trace fine subrounded gravel, medium reddish brown		0.60 173.90	_														
	_ 1	1	ERS	SANDY GRAVEL - fine to coarse subrounded to rounded gravel, medium to coarse subangular to subrounded sand, clean, moist		0.80															_
		MOBILE B-	MOBILE AUGERS	GRAVELLY SAND TILL -		173.20	1	AS	_												
				medium to coarse subangular to angular sand, some fine sub- rounded to subangular gravel, wet, light brown		1.50		1													
	_ 2			PERSWAFROST @ 1.50m (Est'd) 1.50 to 2.75m - Nbn (Est'd)																	_
				@ 2.30m increasing Slit content																	
				End of Borehole		171.95		AS	-											-	
	_ 3			Auger refusal on cobbles and boulders																	_
				PERMATROST description estimated - meited by augers																	
	_ 4																				_
	6	,																			
											PERCENT	AXIAL	STRAIN A	T FAILURE							
	D	EP	rh s	SCALE						10									L	-OGGED	R.B.
	1 1									_											

Golder Associates

SHEET: 1 OF 1

LOCATION SKINNY LAKE BORROW 7,152,085.1N X 572,0313E (LOWER TERPACE) SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 20 JULY 1988

DATUM GEODETIC

MPLER HAMMER, 83.6kg, DROP, 760mm PENETRATION TEST HAMMER, 83.6kg, DROP, 760mm

ı	962																				
ſ	ш	T	5	3	SOIL PROFILE			SA	MPL	E\$	DYNAMIC P	ENETRAT	ION >		HYDRAU			TIVITY.	T		
	DEPTH SCALE	ا ۾	DOBING METHOD			6				ĭ	RESISTANCE	, BLOWS/	v.sm \	`		R, UN	A/SEC		Τ	ADDITIONAL LAB. TESTING	PIEZOMETER OR
١	F	#	2	<u> </u>	DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	m	BLOWS/0.3M	SHEAR STR	ENGTH			WATE	R CO	NTENT.	PERC	ENT	실티	STANDPIPE
ı	E	1	ğ		DESCRIPTION	Į ₹	DEPTH (m)	] ]	TYPE	Š.	Cu, kPa		at.V.− + Q em.V.− ⊕ U	) <b>©</b> J O	W	P	—~~	W	1	¥ ¥	INSTALLATION
l			ă	<u> </u>		STR	(,,,,	_		18	1		1		20	4	0 в	30	80		
.[	_	0	_		Ground Surface		175.70	_													
			-		GRAVEL AND COBBLES - coarse subrounded to subangular		0.00														
۱		-			gravel, subrounded cobbles, trace fine to coarse subround- ed to subangular sand, trace silt, dry light brown		1														
1		-			ed to subangular sand, trace	1															
ı		-	ا	8	silt, dry light brown			1	A\$	-											
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l			≥∣	MOBILE AUGERS																1	
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I		1		П		l															
I				Ц			174.50					1			]						
١		ſ		T	End of Borehole Auger refusal on cobbles		1.20														
١																					
					No permafrost observed																
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		νEF			CALE																. к.в. п. <i>Вим</i>
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## RECORD OF TEST PIT TP88-1B1

LOCATION Skinny Lake Borrow (UPPER TERRACE) 7,152,415N x 571,655E

Pruject No. 881-1814Drawn CG Reviewed Date Oct88

DATE 09 August 1988

METHOD	OF EXCAVATION Hand Shove1				E s	ATU <b>M</b> stimat	Geod ed C	etic o-or	dinates & Elevation
ELEV. DEPTH (m)	DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	V	ER CO	NTENT W 0 60	W	CENT / 0	GROUNDWATER CONDITIONS ADDITIONAL LAB TESTING
177.00	Ground Surface  damp, light brown, silt, sandy 7TOPSOIL, rootlets, organics								No Water Table or Seepage
0.06	SAND and GRAVEL, fine to coarse subrounded Sand, fine and coarse subrounded Gravel, trace silt, <5% cobbles to 150mm dia., non plastic, medium brown, damp (GP/SP)	1	CS	0.0% D	Non-	·Plast	:ic	М	Combined Sample
176.40 0.60 176.20	damp, light brown, SAND, fine to medium grained, subrounded	2	CS						
0.80	Bottom of Test Pit  Test Pit in short gully in S.E. corner of Upper Terrace  NO PERMAFROST								
VERTICA	L SCALE 1:10 Golden	r A	SSC	ciat	es		T E	ST P	TP88-1B1 SHEET 1 OF 1

# RECORD OF TEST PIT TP88-1B2

LOCATION

Skinny Lake Borrow

(LOWER TERRACE) 7,152,315N x 571,795E

DATE 09 August 1988

Hand Shovel

METHO	D OF EXCAVATION Hand Shovel				E:	ATUM stima		odeti Co-or	c dinates & Elevatio
ELEV. DEPTH (m)	DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	l	ER CO	₩ 	\	CENT V 1	GROUNDWATER CONDITIONS ADDITIONAL LAB TESTING
172.00	Ground Surface								
0.00	dark brown, silty sandy TOPSOIL, rootlets, organics								No Water Table or Seepage
0.10	SANDY GRAVEL, fine and coarse subrounded Gravel, fine to coarse subrounded Sand, trace silt, non plastic, <5% cobbles to 100mm dia., dark brown, damp, (GP)	1	CS (	1.6% D					
171.40					Non-I	Plast	ic	М	Combined Sample
0.60	damp, dark brown, clean, loose GRAVEL and SAND, sand medium to coarse, subangular to subrounded, gravel, fine trace medium subangular to subrounded	2	CS	0.0%					CST and CS2
170.90					NOTE:	; CS	l and	CS2	from TP88-1B2
1.10	Bottom of Test Pit Dry Caving  Test Pit in short gully on East edge of Lower Terrace, about 50m South of Pumphouse Site No. 1  NO PERMAFROST				Combi TP88- - org - spe - pot	ned 1 1B3 anic cific	with for a colo c gra al re	CSl a dditi r pla vity activ	nd CS2 from onal testing: te test and absorption
VERTICA	AL SCALE 1:10 Golder	- Δ	ssc	ociat	es		Т	EST P	IT No. TP88-1B2 SHEET 1 OF 1

#### RECORD OF TEST PIT TP88-1B3

LOCATION Skinny Lake Borrow (LOWER TERRACE) 7,152,240N x 572,000E

DATE 09 August 1988

METHOD OF EXCAVATION Hand Shovel

DATUM Geodetic

METHO	O OF EXCAVATION Hand Shove1				C	A <b>TUM</b> Estim		detic Co-or	dinates and Elevat
ELEV. DEPTH (m)	DESCRIPTION	SAMPLE NUMBER	SAMPLE TYPE	V	ER CO	₩ ———	•	<b>V</b> _	GROUNDWATER CONDITIONS ADDITIONAL LAB TESTING
171.00	Ground Surface								
0.00	damp, light brown, silty, sandy TOPSOIL, rootlets								No Water Table or Seepage
0.10	SAND and GRAVEL, medium and coarse subrounded Sand, trace fine sand, fine and coarse subrounded Gravel, trace silt, < 5% cobbles to 100mm dia., light brown, damp, (SP)	1	cs (	0.2%					
170.40					Non	-Plas	tic	М	Combined Sample
0.60	damp, light brown, clean, gravelly SAND, sand is medium to coarse, subangular, gravel is fine, subrounded	2	CS (	<b>9.</b> 4%					CS1 and CS2
169.80					NOTE				from TP88-1B3
1.20	Bottom of Test Pit Dry Caving  Test Pit on South edge of Lower Terrace, near N.W. end of small lake, about 65m South of Skinny Lake  NO PERMAFROST				TP88- - org - spe	1B2 anic cifi enti	for a cold c gra al re	dditi r pla vity activ	nd CS2 from lonal testing: le test and absorption lity e soundness
VERTICA	AL SCALE 1:10 Golde	r Δ	<u>.                                    </u>		es		T	EST P	IT No. <u>TP88-1B3</u> SHEET <u>1</u> OF <u>1</u>
	<del></del>								SMEETUF

BH88-8B1

SHEET 1 OF 1

LOCATION SQUIGGLY LAKE (EAST) BORROW 7,155,340N X 584,480E SAMPLER HAMMER, 83.5kg, DROP, 780mm

BORING DATE 20 JULY 1988 DATUM GEODETI UTM CO-ORDINTAES AND ELEVATION ESTIMATED PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

DATUM GEODETIC

J																		
	ALE	METHOD	SOIL PROFILE	Ĕ		SAI	MPLI		DYNAMIC RESISTANG			٦,	HYDR		ONDUCT M/SEC	IVITY.	ING LING	PIEZOMETER
	DEPTH SCALE METRES	BORING MET	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR ST Cu, kPa		nat.V  rem.V 6			₩p	ONTENT.	PERCENT  M	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
او	_ 0		Ground Surface GRAVEL AND COBBLES - coarse	_	216.00												4 l	_
-181			subrounded gravel, sub-		0.00													
PROJECT 881-1814D			rounded cobbles, clean, dry		215.70													
5			SAND AND GRAVEL - medium and coarse subrounded Sand, trace		0.30													
30 JE			fine Sand, fine and coarse subrounded Gravel, trace Silt,											١	<u>.</u>			
٠			non-plastic (GP)			1	AS	-					0	Non-	Plasti		M	
- [																	1	
	- 1																	_
			moist @ 1.10m															
			PERMAFROST @ 1.50m (Est'd) 1.50 to 4.70m - Nbe (Est'd)															
			PERMAFROST description estimated - melted by augers			2	۸S	-					0	Non-	Plastic		M	
			1.20 to 2.40m - SAND, medium and coarse Sand, trace fine															
ŀ	- 2		Sand, fine Gravel, trace coarse Gravel, trace Silt,															-
		-40 SERS	non-plastic, very wet (SW)															
		LE B																
		MOBILE B-40 MOBILE AUGERS																
		-  <del>-</del>																
	_ 3		3.00 to 4.20m - SAND, fine to															
			coarse Sand, some Silt and Clay, non-plastic, trace fine															
			Gravel (SM)															
						3	AS	-					0	Non-	Plastic	>	м	
ı	_ 4										-						$\mid \cdot \mid$	-
					211.80													
			SAND - fine to medium sand, some coarse sand		4.20													
			trace fine angular to sub- angular gravel			_	AS	_					_					
						4	^3	-					°					
					211.30													
			End of Borehole		4.70													
			No puggs softward															
	_ 6		No auger refusal						0 16	ENT AVIAL	*************************	FALLURE						
Ì	DE	рти -	SCALE						10 PERC	CUI AXIAL	JINAIR AT	PATEURE					OGGED	R.B.
- 1	DE	. 111	W/100							_						•		

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SHEET 1 OF 1

DATUM GEODETIC

LOCATION SQUIGGLY LAKE (EAST) BORROW PROSTPECT No. 8 BORING DATE 20 JULY 1988 DATUM GEOD 7,164,790N X 564,700E UTM CO-CRDINATES AND ELEVATION SAMPLER HAMMER, 63.5kg, DROP, 760mm ESTIMATED PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

-	7.7	1910	,01116	hodosom a distriction of a section of a section of the section of	arth (mile				ratification	100000000000000000000000000000000000000			nu schölerhagd is	corida rgalijali	profitances.	agri, Prijiljaja,	International (International	perfilia di	5 - 4 -		Historial Collection of Advanced
	ш		8	SOIL PROFILE			SA	MPL	ES	DYNA	MIC PE	NETRATI	ON >	`\	HYDR		CONDUC		·Т	ای, ا	
	S CAL		ETH		PLOT				¥ S	]				•		,			1	NA NE	PIEZOMETER OR
	TRE		<b>∑</b>	DESCRIPTION	4	ELEV.	BER	m	3,0%	SHEAF	STRE	NGTH	-	1	WA	TER C	ONTENT	r. PER	CENT	불門	STANDPIPE
	DEPTH SCALE METRES		BORING METHOD	DESCRIPTION	STRATA	DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	Cu, ki		n	at.V  em.V €	- Q • U O	"	₩p			₩ <sub>1</sub>	ADDITIONAL LAB. TESTING	INSTALLATION
	۵		В		ĭ. TR	(111)	_		ם						:	20	40	60	180		
٦٢	- (	0		Ground Surface		214.00															
PROJECT 881-1814D				GRAVEL AND COBBLES - coarse some fine subrounded Gravel,		0.00															
<u>-</u>				subrounded Cobbles, some fine	l												1				
8				to coarse subrounded Sand.		ľ												1		1 1	
٦,		1		clean, dry																	
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ı		1				i l							l			]				1 1	
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ı			Ι.			212.50															
				GRAVELLY SAND - fine to coarse subrounded sand, fine	1	1.50										}					
1			<u>چ</u>	subrounded sand, fine subrounded gravel, trace coarse Gravel, some Silt and																	
				coarse Gravel, some Silt and Clay, non-plastic, moist																	
		1	MOBILE AUGERS	(SW-SM)																	
l		2 3					2	AS	-						0					M	
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ı				Cobbles @ 2.90m																1 1	
ŀ	- :	3	1	@ 3.00m - GRAVELLY SAND, fine to coarse subangular Sand,	l			1										1		-	•
I				fine subrounded Gravel, trace																	
				coarse Gravel, some Silt and Clay, non-plastic, light																	
ı				Clay, non-plastic, light brown, saturated (SM)																	
I							3	AS	-	]					0					м	
		-		End of Borehole	+	3.80	_														
1				Auger refusal on cobbles		3.80															
ŀ		4																			-
				PERMAFROST not recorded																	
				Frost cracks on surface of deposit																	
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١																					
l		6																			
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t	_									15 + 5	PERCENT	AXIAL ST	RAIN AT	FAILURE							
	[	DEP	TH S	CALE																LOGGED	
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SHEET 1 OF 1

DATUM GEODETIC

LOCATION SQUIGGLY LAKE (EAST) BORROW PROSPECT No. 9 BORING DATE 20 JULY 1988 DATUM GEOD 7, 163,870N X 564,925E UTM CO-ORDINATES AND ELEVATION SAMPLER HAMMER, 63.5kg, DROP, 760mm ESTIMATED PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

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ı		Τ	ě	SOIL PROFILE			SA	MPL	ES	DYNAMIC PENET		<del>,</del>	HYDRA	AULIC C		TIVITY,	$\overline{T}$	<u>"</u>	
١	DEPTH SCALE METRES		BORING METHOD		Ę	T -	_		3	RESISTANCE, BL	OW\$/0.3m	``		k, Ci	M/SEC		$\perp$	ADDITIONAL LAB. TESTING	PIEZOMETER
Į	SE ES		₩		STRATA PLOT		æ		BLOWS/0.3M		1 1					f	1		OR STANDPIPE
- 1	£ 5		Ş	DESCRIPTION	I₹	ELEV.	NUMBER	TYPE	#S/	SHEAR STRENGT	H nat.V +	Q.~ •	WA	TER CO	NTENT.	PERCE	ENT	§	INSTALLATION
			8		¥	DEPTH (m)	₹	<b>–</b>	وَ	Cu, kPa	rem.V.− ⊕			<u> </u>	_ō_	<del></del>		₹ 5	
		Ц.	<u>a</u>		ST				•				2	20 4	o e	30	80		
	_ (	ıL		Ground Surface	<u> </u>	212.00												1 1	4
PROJECT 881-1814D		1	11	GRAVEL AND COBBLES - coarse subangular Gravel, some fine	l	0.00												1 1	
Ŧ		1		Gravel, some fine to coarse															
88		1		Sand, trace Slit, non-plastic,															
⊢		1		dry (GP)	ı	244 80										1		1 1	
E		1	1 1	SAND AND GRAVEL - medium to	┝	211.60												ΙI	
õ		1		Coarse subrounded sand, medium	1	0.40	1	AS	_				<u> </u>	Non-	Plasti	С		lm í	
<u>-</u>		1		and coarse subrounded gravel,					1		1 1		Γ						
		1	11	clean, dry															
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		Т	11	0.55104.45			l						ľ					1 1	1
		٦	\ <u>%</u>	Cobbles @ 1.15m	┖	210.80	_		,							)		1 1	
			MOBILE AUGERS	SAND AND GRAVEL - fine to coarse Sand, fine and coarse	1	1.20		)										1 1	
		[	ا <u>&gt; ا</u> ر	subrounded Gravel, trace Silt,			ĺ								1			1 1	
		وَ		subrounded Gravel, trace Silt, non-plastic, dry (SP-SM)		Į.					,					1	1	] [	
		15					l						ļ					ΙÍ	
		1	1-1				2	AS	-				o	Non-	Plasti	С		M	
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	_	2		Cobbles @ 2.00m		1			1									1 1	ال
	•	1	11	becoming wet @ 2.00m			_	1									1	1	
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			1.1		ĺ		ĺ				1		l		ĺ			1 1	
		1	Н				_	4.0										1 1	
		1				209.55	3	AS	-				0						1
-		1	П	SILTY SAND - fine to medium	$\vdash$	2.45											1	] }	
- 1		1	П	sand, wet, medium reddish															
		1		brown													1	ll	
		1				209.20		1						1				ĺ	Į.
		Г		End of Borehole		2.80					1							ll	
				Auger refusal	ĺ	1								l		ĺ	1	1 1	
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		ſ		PERMAFROST not recorded	]												1	1 1	
				Frost cracks on surface of		1												ĺ	
				deposit														ll	1
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BH88-2B1

SHEET 1 OF 1

DATUM GEODETIC

LOCATION RHYOLITE LAKE BORROW PROSPECT No. 2 7,145,875N X 561,740E SAMPLER HAMMER, 63.5kg, DROP, 760mm BORING DATE 21 JULY 1988 DATUM GEOLUTM CO-CRD I NATES AND ELEVATION EST MAMMER, 63.5kg, DROP, 760mm

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ALE	МЕТНОВ	SOIL PROFILE	1-		SA	MPL	-	DYNAMIC PENETRATI RESISTANCE, BLOWS/	0.3m	1	HYDRAULIC k, (	CONDUCT CM/SEC	TVITY,	7 5	20200
DEPTH SCALE METRES	BORING ME	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M		nt.V +		WP	ONTENT,	PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	T	Ground Surface GRAVEL AND COBBLES - coarse	F	178.00	-										
		subrounded gravel, subrounded cobbles, cobbles are frequent- ly split		0.00											
		SAND - medium Sand, trace coarse Sand, trace fine, some coarse subrounded Gravel, medium brown		0.50		AS	3								
1		@ 1.20 to 2.10m medium Sand, some fine subrounded gravel, moist, light brown													
	MOBILE B-40 MOBILE AUGERS				2	AS	- 1								
2	MO	PERMAFROST @ 2.20m (Est'd) 2.20 to 3.80m - Nbn (Est'd)													
		2.10 to 3.80m - madium to coarse Sand, fine to coarse subrounded to subangular Gravel													
3					3	AS									
4		End of Borehole Auger refusal on cobbles or boulders		3.80											
	- 1	PERMAFROST description estimated - meited by augers Frost cracks on surface of deposit													
5								0							

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# RECORD OF BOREHOLE BH88-4B1 SHEET 1 OF 1

LOCATION SLEEK LAKE BORROW PROSPECT No. 4 7,146,985N X 558,775E SAMPLER HAMMER, 83.5kg, DROP, 760mm

1: 25

BORING DATE 21 JULY 1988 DATUM GEOD UTM CO-ORDINATES AND ELEVATION ESTIMATED PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm

DATUM GEODETIC

CHECKED Burn.

NG METHOD						1	RESISTANCE, B				k, C	M/SEC	크 물	DIFFERENCE
BORING	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENG Cu, kPa	nat.v	+ Q. ⁄ ⊜ U.	- 0	WD	ONTENT. PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
	Ground Surface		199.00						-					
	The second secon			-									-	
	angular to subangular sand, some fine, trace coarse, gravel, dry		0.10		AS									
	© 1.20m medium subrounded sand some fine subrounded gravel, moist  Cobbles © 1.50m some silt from 1.50 to 2.10m wet			2	AS									
	PERMAFROST @ 2.00m (Est'd)												11	
JGERS	aver to violating (Est d)			3	AS	-								
MOBILE A	subangular to subrounded sand l		2.10											
				4	AS	-								
	@ 3.70 to 4.30m silty fine sand, light brown													
				5	AS	-	-			+			-	
	Auger refusal on cobbles or boulders  PERMAFROST description estimated - melted by augers Frost cracks on surface of		4.30											
							o de appropriation							
	MOBIL	COBBLES - subrounded  SAND - madium to coarse angular to subangular sand, some fine, trace coarse, gravel, dry  0 1.20m medium subrounded sand some fine subrounded gravel, moist  Cobbles 0 1.50m  some slit from 1.50 to 2.10m wet  PERMAFROST 0 2.00m (Est'd) 2.00 to 4.30m - Nbn (Est'd)  SILTY SAND - fine to coarse subangular to subrounded sand, trace fine subrounded and, trace fine subrounded or sand,	SAND - madium to coarse angular to subangular sand, some fine, trace coarse, gravel, dry  0 1.20m medium subrounded sand some fine subrounded gravel, moist  Cobbles 0 1.50m some silt from 1.50 to 2.10m wet  PERMAFROST 0 2.00m (Est'd) 2.00 to 4.30m - Nbn (Est'd)  SILTY SAND - fine to coarse subangular to subrounded sand, trace fine subrounded gravel, wet, light brown  End of Borehole Auger refusal on cobbles or boulders  PERMAFROST description estimated - melted by augers Frost cracks on surface of deposit	SAND - medium to coarse angular to subangular sand, some fine, trace coarse, gravel, dry  0 1.20m medium subrounded sand some fine subrounded gravel, moist  Cobbles 0 1.50m some slit from 1.50 to 2.10m wet  PERMAFROST 0 2.00m (Est'd) 2.00 to 4.30m - Nbn (Est'd)  SILTY SAND - fine to coarse subangular to subrounded gravel, wet, light brown  9 3.70 to 4.30m slity fine sand, light brown  End of Borehole Auger refusel on cobbles or boulders  PERMAFROST description estimated - malted by augers frost cracks on surface of deposit	COBBLES - subrounded 198.90  SAND - madium to coarse angular to subangular sand, some fine, trace coarse, gravel, dry  0.10  1.20m modium subrounded sand some fine subrounded gravel, moist  Cobbles 0 1.50m  some silt from 1.50 to 2.10m  wet  PERMAFROST 0 2.00m (Est'd) 2.00 to 4.30m - Nbn (Est'd)  SILTY SAND - fine to coarse subangular to subrounded sand, trace fine subrounded gravel, wet, light brown  4  4  6 3.70 to 4.30m silty fine sand, light brown  5  End of Borehole Auger refusal on cobbles or boulders  PERMAFROST description estimated - melted by augers frost cracks on surface of deposit	COBBLES - subrounded 198.90  SAND - medium to coarse angular to subangular sand, some fine, trace coarse, gravel, dry  1 AS  0 1.20m medium subrounded sand some fine subrounded gravel, moist  Cobbles 0 1.50m some silt from 1.50 to 2.10m wet  PERMAFROST 0 2.00m (Est'd) 2.00 to 4.30m - Nbn (Est'd)  SILTY SAND - fine to coarse subangular to subrounded sand, trace fine subrounded gravel, wet, light brown  4 AS  6 3.70 to 4.30m silty fine sand, light brown  5 AS  End of Borehole Auger refusal on cobbles or boulders  PERMAFROST description estimated - melted by sugers frost cracks on surface of deposit	COBBLES - subrounded  SAND - madium to coarse angular to subangular sand, some fine, trace coarse, gravel, dry  1 AS -	SAND - medium to coarse angular to subangular and, some fine, trace coarse, gravel, dry  8 1.20m medium subrounded sand some fine subrounded gravel, moist  Cobbles 0 1.50m some silt from 1.50 to 2.10m wel  PERMAFROST 0 2.00m (Est'd) 2.00 to 4.30m - Nbn (Est'd) 3 AS -  3 ILTY SAND - fine to coarse subangular to subrounded sand, frace fine subrounded gravel, wel, light brown  4 AS -  End of Borehole Auger refusal on cobbles or boulders  PERMAFROST description estimated - meltod by augers Frost cracks on surface of deposit	SAND - medium to coarse angular to subangular sand, some fine subrounded sand some fine subrounded gravel, moist  Cobbles 0 1.50m aome silt from 1.50 to 2.10m well  SILTY SAND - fine to coarse subangular to subrounded sand, trace fine subrounded gravel, wet, light brown  SILTY SAND - fine to coarse subangular to subrounded gravel, wet, light brown  4 AS -  End of Borehole Auger refusal on cobbles or boulders  PERMAFROST 4.30m silty fine sand, light brown  End of Borehole Auger refusal on cobbles or boulders  PERMAFROST description estimated - meited by sugers  SSUES - subrounded	SAND - madium to coarse and user to subsequiar sand, some fine, trace coarse, gravel, dry  et 1.20m medium subrounded sand some fine aubrounded gravel, moist  Cobbles et 1.60m acme slift from 1.50 to 2.10m wet subsequiar some fine aubrounded gravel, moist  SILTY SAND - line to coarse aubangular to subrounded sand, trace fine subrounded gravel, wet, light brown  et 3.70 to 4.30m slifty fine sand, light brown  et	COORLES - subrounded SAND - medium to coarse angular to subangular to subangular to subangular and some fine trace coarse.  9 1.20m medium subrounded sand some fine subrounded gravel, maint Cobbles 0 1.80m same silt from 1.60 to 2.10m well PERMARPORT 0 2.00m (Est'd) 2.00 to 4.30m - Hine to coarse subangular to subrounded sand, wet, light brown  9 11 AS -  100.00 3 AS -  2 AS -  2 AS -  2 AS -  3 LITY SAND - fine to coarse subangular to subrounded sand, wet, light brown  4 AS -  2 End of Borshola subangular rounded gravel,  End of Borshola coarse subangular rounded gravel,  End of Borshola subangular rounded gravel,  End of Borshol	COORDES - subrounded sand sand large fine subrounded sand case fine subrounded gravel, moist in the subrounded gravel, moist in the subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, moist in subrounded gravel, gra	COCRUE - subrounded   1988 90   SANO - medium subrounded sand some fine subrounded sand some fine subrounded sand some fine subrounded sand some site from 1.90 to 2.10m well   Cobblea 0 1.50m some sitt from 1.90 to 2.10m well   PERMAPROST 8 2.00m (Est'd)   2.45   SILTY SANO - fine to coarse   198.00   3 AS   SILTY SANO - fine to coarse   198.00   3 AS   SILTY SANO - fine to coarse   198.00   3 AS   SILTY SANO - fine to coarse   198.00   3 AS   SILTY SANO - fine to coarse   198.00   3 AS   SILTY SANO - fine subrounded sand   2.10   SILTY SANO - fine subrounded sand   198.00   3 AS   SILTY SANO - fine subrounded sand   2.10   SILTY SANO - fine subrounded sand   2.	

Golder Associates

SHEET 1 OF 1

LOCATION SLEEK LAKE BORROW PROSPECT No. 5
7,144,630N X 557,740E
SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 21 JULY 1988 DATUM GEOD UTM CO-ORDINATES AND ELEVATION ESTIMATED PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

DATUM GEODETIC

ALE	METHOD	SOIL PROFILE	F		3/	MPL	-	RESISTANCE, BLOW		1	HYDRAULIC CON		HG HG	DIESO:
METRES	BORING ME	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V		WATER CONT	ENT, PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETEI OR STANDPIPE INSTALLATION
0		Ground Surface		180.00										
	П	SAND AND GRAVEL - medium sand and coarse subangular gravel,		0.00	1	1							1	
	Н	SAND - medium to coarse	-	179.80	4							1 1		
		subangular to angular Sand, acme coarse subangular Gravel, few cobbles, moist		0.20		AS	-							
1		@ 1.20 to 2.10m medium to coarse angular to subangular sand, trace fine subangular to subrounded gravel, trace silt, moist, light brown												
MOBILE B-40	E AUGERS	PERMAFROST @ 2.00m 2.00 to 2.10m - Nbe		177.00	2	AS								
MOB	MOBIL	SILTY SAND- medium sand. light brown		2.10										
3	1	PERMAFROST 2.10 to 3.30m - Nbe 3.30 to 3.80m - Ice 3.80 to 4.10m - Ice and sand			3	AS	e e							
	-	ICE - clear hard, colourless		176.70										
										1				
	L			176.20										
		ICE AND SAND- medium to coarse	T	3.80										
4	1		1	176 00	4	AS	-			-				
	L	End of Borehole No refusal Frost cracks on surface of deposit		4.10										
5								5 PERCENT AXIAL 3		ALLURE				

1: 25

Golder Associates

CHECKED Burn

# RECORD OF BOREHOLE BH88-MZ1 SHEET 1 OF 1

LOCATION MAIN ZONE 7,146,675.8N X 565,371.7E BORING DATE 13 JULY 1988

1: 25

DATUM GEODETIC

CHECKED

SAMPLER HAMMER, 63.5kg, DROP, 760mm PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm

	qo	SOIL PROFILE			SA	MPL	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0,3m		CONDUCTIVITY. T	T	
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH nat.V + Q • rem.V • U O	WATER C	ONTENT, PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION Frost Depth
0	T	Ground Surface TOPSOIL - dark brown organic	-	176.10	-							Indicator
4		SAND- fine to medium subrounded sand, trace silt, medium brown, loose, moist  PERMAFROST @ 0.70m 0.70 to 0.80m - Nbe		0.10	1 2	AS						
MOBILE B-40	MOBILE AUGERS	SAND TILL - fine to coarse Sand, some fine Gravel, subrounded, some Silt, trace Clay, non-plastic (SM) PEPMAFROST 0.80 to 1.25m - Vs. 1-3mm thick, clear, hard 1.45 to 1.70m - Vs to Vr.		0.80		AS CP	REL		o			09 AUG 0.8 1988 31 AUG 1.0 1988 b = 1920kg/cr d = 1552kg/cr
		2-3mm thick, hard, light brown from 1.45 to 1.70m SANDY GRAVEL TILL - fine to coarse subrounded Gravel, fine to coarse Sand, some Silt, trace Clay, non-plastic (GM) 1.70 to 2.30m Cobbles and			4	AS CP	REL			o	М,Н	b = 1640kg/cn d = 1064kg/cn
2		Boulders		173.80	5	AS CFI	- 1		0		м,н	
3		End of Borehole Auger refusal in boulders and cobbles		2.30								2.30
4												
5							-	9				
DEPTH	-1				_		-	16-6-6 PERCENT AXIAL STRAIN AT FAILURE		1	_	R.W.M.

Golder Associates

BH88-MZ2

SHEET 1 OF 1

LOCATION MAIN ZONE

1: 25

7,148,729.3N X 585,152.8E

BORING DATE 13/07/88

DATUM GEODETIC

CHECKED

SAMPLER HAMMER, 83.5kg, DROP, 760mm PENETRATION TEST HAMMER, 63.5kg, DROP, 780mm SOIL PROFILE DYNAMIC PENETRATION METHOD DEPTH SCALE SAMPLES HYDRAULIC CONDUCTIVITY, RESISTANCE, BLOWS/0.3m ADDITIONAL LAB, TESTING k, CM/SEC PLOT PIEZOMETER BLOWS/0.3M OR STANDPIPE TYPE ELEV. BORING STRATA DESCRIPTION SHEAR STRENGTH WATER CONTENT, PERCENT nat.V.- + Q.- ● rem.V.- ⊕ U.- O DEPTH INSTALLATION Cu, kPa (m) 20 40 60 80 Ground Surface 178.40 0 TOPSOIL - dark brown organic 178.30 Silt 0.10 881 SANDY SILT TILL - some fine 1 AS to coarse subrounded Sand, fine and coarse Gravel, some Clay, non-plastic (ML) MOBILE B-40 No PERMAFROST 2 AS M, H 0 177.00 1.40 End of Borehole Auger refusal in boulders or cobbles 16 6 PERCENT AXIAL STRAIN AT FAILURE DEPTH SCALE LOGGED R.W.M.

Golder Associates

# RECORD OF BOREHOLE BH88-CZ1 SHEET 1 OF 1

LOCATION CENTRE ZONE 7,148,959.7N X 585,843.8 BORING DATE 12 JULY 1988 DATUM GEODETIC

SAMPLER HAMMER, 63.5kg, DROP, 760mm PENETRATION TEST HAMMER, 63.5kg, DROP, 780mm

	90				SA	MPL	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HY	HYDRAULIC CONDUCTIVITY, k, CM/SEC			
METRES	BORING METHOD	DESCRIPTION	TA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH nat.V + Q		WATER CONTENT, P	L ERCENT	ADDITIONAL LAB, TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
	BOR		STRATA	DEPTH (m)	N	-	BLO	Cu, kPa rem.V @ U O		20 40 80	- T <sub>80</sub>	LAB	INSTALLATION
0		Ground Surface		180.90					1				
		TOPSOIL - black, organics		180.80									
		SILTY SAND TILL - fine to coarse subrounded Sand, some fine and coarse subrounded Gravel, some Clay, non-plastic (SM) PERMAFROST @ 0.90m	C	0.10		AS	9						
	B-40 UGERS	0.90 to 1.12m - Vs, 2-4mm thick, clear, hard			2	AS			0			м,н	
1	MOBILE B-40 MOBILE AUGERS	@ 1.13 to 1.80m abundant cobbles and boulders			3	AS	- REL			o		м,н	b = 2109kg/cd d = 1717kg/cd
					4	AS			0			м,н	
1		End of Borehole		179.05									
2		Auger refusal in cobbles or boulders											
3													
1	1												
1													ti a
4													
5								0 16 to PERCENT AXIAL STRAIN AT FAILURE					
DEPT	TH SC	ALE					L	10			LO	GGED	R.W.M.
	25							Golder Associates			011	ECKED	

BH88-1WD1

PENETRATION TEST HAMMER, 63.5kg, DROP, 780mm

SHEET 1 OF 1

LOCATION WASTE DUMP

SAMPLER HAMMER, 83.5kg, DROP, 780mm

7,146,381.2N X 565,538.7E

BORING DATE 12 JULY 1988

DATUM GEODETIC

DYNAMIC PENETRATION SOIL PROFILE SAMPLES HYDRAULIC CONDUCTIVITY, METHOD DEPTH SCALE METRES RESISTANCE, BLOWS/0.3m ADDITIONAL LAB. TESTING k, CM/SEC PLOT PIEZOMETER BLOWS/0.3M OR TYPE ELEV. STANDPIPE DESCRIPTION STRATA SHEAR STRENGTH WATER CONTENT, PERCENT nat.V.- + Q.- ● rem.V.- ⊕ U.- O DEPTH (m) INSTALLATION Cu, kPa 40 60 Ground Surface TOPSOIL - black organic Silt, 174.10 0 174.00 damp 0.10 SILTY SAND TILL - fine to coarse subrounded Sand, some fine subrounded Gravel, some 1 AS Clay, non-plastic (SM) B-40 PERMAFROST @ 0.50m 0.50m to 1.25m - Nbn (Est'd) 2 AS 0 M,H 172.85 End of Borehole 1.25 Auger refusal in boulders or cobbles 2 3 16 6 PERCENT AXIAL STRAIN AT FAILURE DEPTH SCALE LOGGED R.W.M. 1: 25 Golder Associates CHECKED

LOCATION WASTE DUMP

7,146,358.3N X 566,891.8E BORING DATE 12 JULY 1988

DATUM GEODETIC

SHEET 1 OF 1

SAMPLER HAMMER, 63.5kg, DROP, 760mm PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

4	윤	SOIL PROFILE		AC CONTROL OF THE PARTY OF THE				DYNAMIC PENETRATION > RESISTANCE, BLOWS/0.3m	1	HYDRAULIC CONDUCTIVITY, k, CM/SEC	7 8	PIEZOMETER
METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa nat.V + rem.V ⊕	Q • U O	WATER CONTENT, PERCENT	ADDITIONAL LAB. TESTING	OR STANDPIPE INSTALLATION
0		Ground Surface		173.70								
	1	TOPSOIL - black organcs, Silt		173.60								
	48	sand and gravel, medium to coarse subrounded sand and gravel, trace silt, medium brown		0.10		AS	-					
MOBILE B-40	MOBILE AUGERS	0.95 to 1.25m SAND AND GRAVEL			2	AS	4					
	П	PERMAFROST @ 1.00m 1.00 to 1.70m - Nbe										
	1	GRAVELLY SAND TILL - fine to	-	172.40					1			
		coarse subrounded Sand, fine and coarse subrounded Gravel, trace Silt, trace Clay, non-plastic (SP)  © 1.50m cobbies encountered		172.00	3	AS	4			0	м,н	
-	1	End of Borehole Auger refusal in boulders and		1.70				-1-1-2-	-		-	
3												
1			П									
4												
			П									
5							1	,				
DEPTH	1 00	AI E		_	_			0 16-6 PERCENT AXIAL STRAIN AT F 10	AILURE .		LOCOTO	DWN
DEL IL	1 90	ALL						Golder Associate			LOGGED	M.W.M.

### RECORD OF BOREHOLE BH88-2WD1

LOCATION WASTE DUMP

7,147,588.1N X 585,791.0E

BORING DATE 12 JULY 1988

DATUM GEODETIC

SHEET 1 OF 1

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm

DESCRIPTION  EXECUTE BY SHEAR STREAM NAME - 0e	RES	\$OIL PROFILE			SA	MPL	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, T. CM/SEC	, ,	
CFORM STATES AND A	METRES BORING METHOD	DESCRIPTION	STRATA PLOT	DEPTH	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH nat.V + Q	WATER CONTENT, PERCENT	ADDITIONAL LAB, TESTING	OR STANDPIPE
PPIN SCALE    Control of the control	0	Ground Surface		_	4						
PETHI SCALE    AS -	111									- 1	
PETRACEPROST # 1.00m (Est'd)  196.00  196.00  Augus refusal in boulders and coobles  1.20	MOBILE B-40 MOBILE AUGERS	subrounded sand and gravel, slity damp with abundant cobbies throughout		0.10	1						
EPTH SCALE  EPTH SCALE  1.20	,	PERMAFROST @ 1.00m (Est'd)			2	AŞ					
EPTH SCALE  EPTH SCALE  1.20				195.00						İ	
EPTH SCALE  LOGGED R.W.M.	2	Auger refusal in boulders and									
10 PEPTH SCALE  10 PERCENT AXIAL STRAIN AT FAILURE LOGGED R.W.M.	3										
PEPTH SCALE  O FERCENT AXIAL STRAIN AT FAILURE  LOGGED R.W.M.	4										
PEPTH SCALE  O 6 PERCENT AXIAL STRAIN AT FAILURE  LOGGED R.W.M.											
EPTH SCALE  LOGGED R.W.M.	5										
LOGGED R.W.M.							-	0 6 6 PERCENT AXIAL STRAIN AT FAILURE			
		ALE							LO	GGED	R.W.M.

			FRA	сти	RES	Comment of the Comment	D07							Main Zone	FRMFABILITY
PERCENT CORE BO LOSS Feet) 25 50 75		INCLINATION	DESCRIPTION AND REMARKS		BRECCIA/GOUGE	на	RDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY						
30				47		Casing set to 32.0' (9.75)						m		Assume 100% rec.	
40						32.0'-35.8' Slight to mod. weathered, massive, white-pale-pinkish, coarse, v. strong (R4) biotite Felspar Porphory  35.8'-88.0' Fresh, foliated, dark grey-green, fine to med. grained, strong (R4) chloritised, matic META ARKOSE								Rec 92% RQD 48% -	
50						Foliation 65°-70°TCA. locally silicified (almost schistose)								RQD 75%	
60						60.0'-88.0' Silicified, foliated, meta arkose (R5) Foliation approx. 60° TCA								RQD 75% —  8a.*1 71.5' - 72.8'  Silicitied Quartrite	
70							1000							RQD 75°	
80								-						RQD 90°	

LOGGED BY:\_\_

DATE: 7. 7. 88

PROJECT No. 887-1421

Hole No. <u>88-331</u>

-Golder Associates -

SHEET / OF 13

	Jacobski I	FRA	CTU	RES	1442/4124 PARTINEO	9				To the second	4 . 4		7
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG BRECCIA/GOUGE BROKEN CORE N		HARD	NESS	ROCK N QUALITY FR DESIGNATION FR 75 50 25	ACTURAL ACTURE EQUENCY		the state of the
					Silicitied meta arkose-asabove							RQD 90%	5
90	х.				88.0'-93.1' Fresh, massive, dk grey, med. grained, extremely strong Lamprophyre	L L L L L L L L L L L L L L L L L L L		R5				Core broken -	
100					93.1'-122.2' Fresh, foliated, grey- green, fine to med. grained, sili- cified, very strong META-ARKOSE Foliations at 55-60°TCA 102.0' local undulation in foliations 106.0'-107.0' Quartz vein along folia- tion at 60°TCA. Chloritisation each side of vein	1 1 1 1						RQD 36%	
110						1 1 1						RQD 60%	
120					121.0'-124.0' Fresh, massive, pink, med.grained, biotite Felspar- Extremely strong, Porphory							RQD 71%	
130				- Vi	37.8'-49.4' Silicitied meta-arkose see Sheet 3.		-						

LOGGED BY :_	
DATE :	7. 7. 88
DOO IF CT No	007-1171

Hole No. <u>88-33/</u> SHEET <u>2</u> OF <u>/3</u>

	2522545	FRA	CTU	RES		9				
ОЕРТН	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNES	ROCK NATUR S QUALITY FRACTU DESIGNATION FREQUE 75 50 25	RE
					Fresh, toliated at 60°TCA, light green-grey, fine to med. grained v.strong (R4), silicified META ARKOSE.					RQD 75%
140					Unit is uniformly foliated at 60-65° TCA.					RQD 61%
150					149.5'-150.0' Quartz veining with pyrite					RQD 79%
160					162.0'-213.0' Fresh, foliated at	-				RQD 88%
170					55-60°TCA, dark grey, tine to med. grained, extremely strong, biotite - chlorite garnotiferous META-ARKOSE			R5		Sa.#2 166.0'-167.1'- RQD 80%

DATE: 7.7.88
PROJECT No. 882-1481

Hole No. <u>88-33/</u> SHEET <u>3</u> OF <u>/3</u>

			FRA	ACTU	RES	and the land of	FOG				-
DEPTH	со	RE SS 0 75	TYPE	TYPE INFILLING INCLINATION		DESCRIPTION AND REMARKS		BRECCIA/GOUGE	HARDNESS	ROCK NATUR QUALITY FRACTU DESIGNATION FREQUE 75 50 25	IRE
						As above Local concentrations of biotite chlorite, felspar. Foliation constant at 55-60° TCA			R5		RQO 92%
190						Extremely strong			R5		RQD 93% -
200					s				R5		RQD 85%
210						213.0'-223.0' Fresh, massive, dark	-		R5		R.QD 96%
220						113.0'-123.0' Fresh, massive, dark grey, medium grained, v. strong biotite alteration to chlorite LAMPROPHYRE. At 220.6' slickensides on broken core at 55°TCA - chlorite Shear Zone?					Sa.*3 218.5'-219.4 - Lamprophyre - RQD 93% -
230						223.0'-243.4 Sec sheet 5	L	-			Attempted orienta- tion - nomark

DATE: 7.7.88

PROJECT No. 882-1481

Hole No. <u>88-331</u>

SHEET 4 OF 13

		FRA	CTU	RES	1000	90				
ОЕРТН	CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	AND REMARKS	GRAPHIC L	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK NAT QUALITY FRAC DESIGNATION FREQU 75 50 25	
					Fresh, massive, pink, med.grained extremely strong biotite rich FELSPAR PORPHORY			R5		RQO 91%
240						-	-	R5		RQD 99%
					243.4'-261.6' Fresh foliated at 50-60°TCA, fine to med. grained, v. strong META-ARKOSE.				1	1
50					Upper contract (1) chlorite rich variable specified with pyrite and molybdenum Lower contact (2) possible healed shear zone - chlorite rich	1				RQD 90% -
60					157.0'-259.0' Chlorite rich zone -smooth, planar foliations	11	-			]
					261.6-266.0' Fresh, massive, fine grained ext. strong Fel. Porphory has assimilated meta-arkose.			R5		RQD 89%
?70					166.0'-272.0' Fresh, foliated, silici- fied, fine grained, v. strong Meta Arkose					moly bdenumand chlorite. Planer rough
2.80	· .				272.0 - 292.3' Fresh foliated at 45° TCA, fine grained, green, chloritised, strong (R3) Meta - Arkose HEALED SHEAR ZONE Pyrite mineralization					Sa.*4 174.5'-776.5'- RQD 48%

LOGGED BY :_	
DATE :	7.7.88
PROJECT No	882-1121

-Golder Associates

Hole No. <u>88-331</u>

SHEET 5 OF 13

	12220	FRA	CTU	RES	Caral Caral	9						3
ОЕРТН	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNESS	ROCK NA QUALITY FRA DESIGNATION FRE 75 50 25	ATURAL ACTURE EQUENCY		
					As above						RQD 72%	
290					292.0'-352.0' Fresh, foliated at						RQD 91%	
300					50-60° variably silicified, fine to med. grained, v.strong R4, light dark grey META-ARKOSE  293.6'-295.5' Chlorite/biotite rich  303.0'-305.0' Quartz rich  299.0'-301.0' Biotite-chlorite  rich + Pyrite		-				RQD 82%	
310					314.0'-317.0' Core broken by rig on foliation at 60° TCA	L 1 1 1					RQD 68%	
320					Foliation 50-60° (constant)					6	RQD 93% - a.#5 326.5'-327.0'-	
330 0GGED												

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		FRA	CTU	RES	Table Association A	90					
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK N QUALITY FR DESIGNATION FR 75 50 25	NATURAL RACTURE EQUENCY	
					As above Foliations at 52° in chloriti- sed meta arkose with pyrite veining						RQD 93%
340											RQD 84%
350					352.0'-402.0' Fresh, massive, grey-pink, fine to med. grained	1 1		R5			RQD 74%  Core broken on - contact.
360					grey-pink, fine to med. grained ext. strong FELSPAR PORPHORY  Two joint sets Set I at approx. 35° TCA close space, 2nd set at approx. 20° spaced 1 to 1.5 m chlorite & moly on both set	1 1 1					RQD 98% 5a.*6 360.3'-362.0'
370					surfaces	-		R5			RQD 75% - Core broken on intersecting joints
380						+					RQD 90%

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			FRA	CTU	RES	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9						ITY
DEPTH	CO LO	CENT RE SS 60 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		PERMEABILITY
						Felspar Porphory - as above			R5				
390						389.0' Fresh, foliated, green- grey, fine to medium grained, very strong mafic META ARKOSE						RQD 75%	
400						Two joint sets  Set one at 30-40°TCA. Close to  med. spacing.  Set two at approx. 20°TCA -  wide space  Foliation 50-60°TCA	-					RQD 80%	
410						Foliation at 63°TCA						6a.#7 412.0'-412.8T RQD 95%	T3
420						423.4'-424.1' Broken zone with chlorite fhaematite	-					RQD 65% -	
430							1	+					

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Hole No. <u>88-331</u> SHEET <u>8</u> OF <u>/3</u>

2.	DEBORNE	FRA	CTU	RES		9		3		1177		
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNES	ROCK S QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		
					As above						RQD 88% -	
440					439.6'-440.3' Broken zone with chlorite, pyrite mineralisa- tion and faint slickensiding		- - - -				RQD 55% - Core broken by rig	
450					Foliation 50°TCA Foliation 52°TCA						RQD 91% -	
460											RQD 94% -	
470					Foliation 58 TCA						RQD 85%	
480					-	+						

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Hole No. <u>88-331</u> SHEET <u>9</u> OF <u>/3</u>

		FRA	CTU	RES	40.31.00	9						1
DEPTH	PERCENT CORE LOSS 25 50 75	PE FILLING		INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK S QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		To make Land Land
					Meta-Arkose-as above						RQD 79% -	
190					489.0'-518.0' (approx.) silicitied with thin chloritic horizons  496.6 Molybdenite on planar, rough joint at 50° TCA-photo.						RQD 90% 493.7'- 494.8'54*8	-
00					Foliation 50° TCA	1 1 1					RQD 92% -	
510					517.0' Foliation at 35 locally	-					RQD 81%	
520					519.0'-543.0' Hematite minerali- sation 528.8'-531.0' Core broken by						522.0'-523.0' Sa.# 9 _ RQD 80% -	
530					528.8'-531.0' Core broken by 533.d-534.5' rig action on chloritic horizons	-	.					

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		FRA	CTU	RES		9	E SE					1 }
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	1 45 O	HARDNESS	ROCK QUALITY FE DESIGNATION FE 75 50 25	NATURAL RACTURE REQUENCY		PERMEABILITY
					Hematised meta-arkose -as above						RQD 79%	
540					543.0' Silicified meta-arkose with quartz stringers						RQD 81%	
<i>55</i> 0						2 1 2 4					RQO 72%	
560					Foliation 30°TCA over 1' from 160.0' - 161.0' on chloritic horizon	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					RQD 77%	
570					8	-					RQD 84%	<b>←</b> 75
580					Foliation 53°							

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	25225		FRA	сти	RES		90				TOTAL	
DEPTH	PERCENT CORE LOSS 25 50 75		PE SSOT		INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY	
						As above	3-					RQD 90%
590						Foliation 35° TCA						RQD 92%
600						615.01 - Foliation at 35°	-					RQD 87% - 604.8'-605.7' 5a.*10
610							-	-				RQD 93%
620						625.0'- Foliation at 45°				4		RQD 99%
530												RQD 81%

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Hole No. <u>88-331</u> SHEET <u>12</u> OF <u>13</u>

	Cabban	.27	FRA	сти	RES	See Auth Australia	9			11 (2.5)			}
DEPTH	CORE LOSS 25 50 7	ORE U		INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BROKEN CORE	HARDNE:	ROCK SS QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		VE HOVEMOND
						635.0' Foliation at 45° 635.71-637.0' Quartz Vein						RQD 81%	
40						645.8-646.6' Broken Core	-					RQD 85%	
50						652.0' Foliation at 50° 652.8'-653.4' Core broken on foliation at 50° TCA						RQD 72%	-
						End of Hole 657.0'	-						

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39.5	39.5	N H	ORIENTATION				
39.5	39.5	ATTI AC	o'z	INGII I INGS	X	₩ GH	
39.5	39.5	SC FE	F E E	INFILLINGS	H	DO OO	BHN <sup>o</sup> 88-331
43.5	43.5	y s	0 01	1 2 3	F	표정	1
225.7 J 55 P P R) INTERSECT 235.4 J 19 170 K P R)	238.4 J 60 150 K P R	39.5 J 43.5 J 44.1 J 53.7 J 61.8 J 71.5 J 74.5 J 86.8 J 95.0 J 99.7 J 101.0 J 107.0 J 112.0 J 120.5 J 121.2 J 123.0 J 126.2 J 135.4 J 143.5 J 146.1 J 148.7 J 153.1 J 154.3 J 159.4 J 166.0 J 174.2 J 179.8 J 181.9 J 188.5 J 191.6 Fo 205.6 J 214.0 J 219.4 J 225.7 J 235.4 J	30 21 16 29 33 16 13 12 25 10 14 25 30 43 25 3 39 6 30 22 35 26 30 25 35 26 30 25 35 26 30 25 35 36 30 25 35 36 30 25 36 37 37 37 37 37 37 37 37 37 37 37 37 37	Fe K Fe K Q K K P K Q K K K K K Q K K K K K K K	1	P V P V P R P V P R P R P R P R P R P R P R P R P R P R	BHN <sup>o</sup> 88-331
225.7 J 55 P P R} INTERSECT 235.4 J 19 170 K P R} 236.3 J 64 150 K P V		225.7 J 235.4 J 236.3 J	55 19 170 64 150	P K K		P R) INTERSECT P R) P V	
225.7 J 55 P P R} INTERSECT 235.4 J 19 170 K P R} 236.3 J 64 150 K P V	238.4 J 60 150 K P R	225.7 J 235.4 J 236.3 J	55 19 170 64 150	P K K		P R) INTERSECT P R) P V	

NO	ш	ORIE	NOITATION	1					
LOCATION	SURFACE	DIP	DIREC- TION	INFI	LLIN 2	iGS 3	THICK	FORM	2
243.5 243.7 244.7 245.2	J J J	27 25 58 53	300 330 355 300	K Q K K	P			P R INTA } P R	Faint slickensides in K. Joint
245.7 245.9 246.0 246.3 246.7 249.3 250.9 259.6 274.4 276.3 280.5 284.5 286.0 289.4 293.4 299.5 303.1 307.0 307.5 312.1 320.7 324.3 325.5 331.7 324.3 325.5 331.7 335.8 339.1 340.5 343.0 343.2 344.4 345.7 346.0 347.4 349.0 349.7 350.7 352.4 352.7	Fo V 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	52 58 35 74 52 22 55 33 26 30 14 55 50 24 27 42 50 60 27 34 38 28 33 37 34 56 56 56 56 56 56 56 56 56 56 56 56 56	150 135 325 310 320 225 190 315 030 195 220 360 090 235 330 170	QKKK KKKKKKKKKKKKKPPQKQKQ K KKKKKK	M M M	P	3 2 3	INTS RRIVVERRENT R	is normal to Foliation  CT Normal - slickensided - slickensided

NO	ш	ORIE	NTATION								
LOCATION	FAC		EC.	INF	LLIN	GS	X	×	JGH		
Ö	T,	DIP	DIR				Ĕ	OR	300		3
	0,1		-	1.	2	3		-	-		
353.0 355.0 358.0 359.8 362.0 368.5 383.6 398.0 403.0 405.5 410.0 413.3 415.5 420.0 422.4 433.5 428.0 439.6 440.3 443.0 450.5 450.5 460.0 467.2 467.3 467.6 473.2 477.4	SURFACE SURFACE TYPE TYPE	32 11 47 22 31 30 15 30 18 20 24 37 15 22 15 29 57 21 20 30 59 42 73 46 20 28 38 58 58 58 58 58 59 59 59 59 59 59 59 59 59 59 59 59 59	DIREC- TION	1 KKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKK	P M	Q Fe	THICK	PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	HDMON RVRRRRRRRRRRRRKKRRSKRRKRSRRRSRRSRRS	- faint slickenslides	
481.2	1	44		K	IVI			P	V		
483.5	ĵ	30		Fe				P	R	6.1.4. 11.4. 11.1	
495.4	ĵ	25		K	P			P	V	<ul> <li>faint slickenslides</li> </ul>	
496.6	Ĵ	50		M				P	R		
497.7	J	20		K				P	S		
498.6	J	22		K				P	R		
508.0	J	32		K				P	V		
513.4	J	44		K				P	R		
515.5	J	25		K				P	R		
519.2	J	40		K			2	P	V		

	NO	ш	ORIEN	NTATION						
	LOCATION	SURFACE	0.	DIREC- TION	INFI	LLIN	GS	THICK	FORM	коисн
	9	SUI	DIP	DIL	1	2	3	E	PO	RO
50 50 50 50 50 50 50 50 50 50 50 50 50 5	20.8 23.0 36.8 41.8 42.0 51.2 65.6 71.0 76.5 76.7 82.5 89.0 88.0 92.0 93.0 99.0 92.0	1 1 1 1 1 1 1 1	28 38 15 45 40 42 27 48 37 45 38 66 39 47 6 56 40 48 31		K K K K Q Q K K K K P K K K K K K K K K	Fe K M			PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	S R V R V R V R S R Intersecting R S R S R S R Intersecting R S R S R S R S R S R S R S R S R S R
66	08.2 12.0 17.5 17.5 23.6	] ] ] ]	40 25 55 33 38		K K K	M			PPPP	R R V} Intersecting R}
6	39.5 42.0	j	20 21		K K				P P	R (spacing 0.3 m)

	12.00	FRA	сти	RES	680658	9					
DEPTH	CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK NATURAL QUALITY FRACTURE DESIGNATION FREQUENCY 75 50 25		
70					72.0'-73.0' Crumbly zone lighter green weak chloritic gouge with angular rock fragments, Zone at approx. 25° TCA					RQD 23%	
80					75.0'-84.0' Broken core zone - several small shear zones. Chloritic gouge washed out,					RQO 4% -	
90					84.0'-94.5' Fresh, toliated, green- grey, fine grained, chloritic, strong (R3) meta-arkose Foliation 45-50°TCA					RQD 70%	
100					Mafic meta-arkose, v. strong below 94.5'  Foliation 48°TCA					RQD 65% -	
110					Broken lore (drill action) 106.0'-107.0'  Foliation 55°					222 269/	
120					Quartz stringer >					RQD 96%	

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		FRA	CTU	RES	adecario de	9						>
DEPTH	PERCENT CORE LOSS 25 50 75	TÝPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		VTI HOVE AND TO
					Matic meta-arkose-asabove  Foliation at 60° TCA						RQD 86% - 124.7'-125.4' 5a.*2 -	
130					133.0' Meta arkose becomes silicified						RQD 91%	
140					ž.	1 1 1					RQO 97%	
150											RQD 84%	
160											RQD 89%	
170						-					RQD 83%	

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657	DEDOCUE	FRA	сти	RES	dans to the	9				V		
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		
180					Silicified Meta-arkose  175.2'-175.6 Felspar Porphory  182.0'-183.6' Broken core zone- rig action. Run also broken on joints	-					RQD 66%	
90											RQD 99%	
00					200.1'-203.5' Fresh, massive, grey, med. grained, extremely strong LAMPROPHURE 203.5' Fresh, toliated at 50-60°TCA,	1		R5			RQD 97%	
?10					whitish, grey, fine grained, v. strong silicitied META-ARKOSE  213.3'-216.0' Core broken. Hematite stained, vuggy possibly brecciated zone		-				RQD 66%	
220					Foliation 51°TCA		-				RQO 79% -	

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2	0500505	FRA	сти	RES		9			1 2 2 1 1 1 1 1	
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK NATURAL  QUALITY FRACTURE  DESIGNATION FREQUENCY  75 50 25	1 1
					Silicified Meta-arkose-asabove					RQD 79%
230	*				Foliation 51° TCA					RQD 78% _
240										RQD 80% -
250						1 1 1 1				RQD 79%
260					Foliation 55-60° TCA		-			RQD 91%
270					TORIGION 33 60 TCA	+				RQO 82%

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	DEBOENE	FR	ACTU	RES	V. 2004 2 V. C. C. C. C. C. C. C. C. C. C. C. C. C.	g		2		
ОЕРТН	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNESS 4 3 2	ROCK NA QUALITY FRA DESIGNATION FREC 75 50 25	TURAL CTURE DUENCY
					Meta-arkose-As above Quartz stringers					RQD 82%
280					Foliation 60°TCA 283.0'-284.1' Quartz vein 287.0'-312.0' Maric well foliated	-				RQD 63% -
190					arkose has 1-2mm biotite- chlorite bands parallel to foliation. Rock is R3 but breaks on foliation only.					RQD 80%
300						1 1 2 2 3				299.5'-300.4' Sa.*3 biotite meta arkose RQD 84%
310					Foliation 50-55° TCA 312.0'- Silicified meta-arkose					RQD 89%
320					Sien Vincincy menu-arkose	-				319.2'-320.2' Sa.#4

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	2522511	FRA	CTU	RES		U		2	T				7
рертн	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNES	ss	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		TOWN A DISCORDER
			i i		foliation 60°TCA Meta-arkose - as above 325.6-327.0' Quartz vein with hematite							RQD 92% -	0
330					331.7'-334.7' Core broken on coring joint at 5°TCA Foliation - 45°TCA							RQD 70% - Core broken on sub-vertical joint	
340					337.0'-344.0' Quartz veining 339.0'-341.0' Pink quartz vein at 5°TCA-2cms wide Foliation at 58° TCA 344.8'- Soft, weak, chlorite/calcite filled joint, 1.5cm wide; normal to foliation (photo)	1			TAN TAN		-	RQD 84%  Note: Gouge-filled jt - close to pit wall?	
				- 1	354.0'-354.1' Quartz vein							RQD 83% -	
360					Foliation 60° TCA Foliation 60° TCA Foliation 50° TCA		-					RQD 98%	
70						†			1			RQD 68%	

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	0500545	FRA	CTU	RES	2 21 day 3 7 mg	90						7
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNESS	ROCK S QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		PERMEABILITY
					Silicified Meta-arkose-as above Foliation 60°TCA						RQD 68%	
380											RQD 91% -	
390					Foliation 55° TCA	7 1 2 1 1 1					RQO 78% _ 386.1'-387.0' 50.*5 _	<b>←</b> ;
400					Foliation 55° TCA						RQD 93% -	
410					411.6'-412.0' Chlorite rich arkose 412.0'-413.8' Quartz vein or quartz rich Foliation 52°TCA						RQD 76%	
420					TOHUMON SE TOA			1			RQD 80%	

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	DERGENIE	FRA	сти	RES	242 65 60 10	9					}
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BROKEN CORE N	ROCK ESS QUALITY DESIGNATION 2 75 50 25	NATURAL FRACTURE FREQUENCY		PERMEARII ITY
					Silicitied Meta-arkose	100				RQD 80%	
430					Foliation 50°TCA					RQD 87%	
440					Foliation 52°TCA					RQD 72%	
					Foliation 54°TCA					1	
450					457.0'-467.0'Variable hematite staining. Core broken on close spaced joints & foliations	-				RQD 47%	
					Foliation 50°TCA						
460					Foliation 62°TCA					RQD 67% . 467.0'-467.8' 60.#6-	
470					467.0'(approx.)-Matic Meta- arkose					RQD 90%	

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	See dens.	FRA	сти	RES		9						1
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE CA	IESS QU DES 2 75	ROCK JALITY SIGNATION 5 50 25	NATURAL FRACTURE FREQUENCY		PERMEABILITY
			7		Matic Meta-arkose  Foliation 50° TCA 427-428.0' Core broken on 20°						RQD 90%	4-7
480					TCA clean joint  481.5'-482.5' Core broken by rig on joint	-					RQD 63%	
490					Fresh, massive, fine grained, pink, extremely strong telspar porphory (RS) Fresh, foliated, green-grey, very strong matic meta-arkose.		R5		1		RQD 88%	
500					Foliation 45° TCA 494.4'-497.0' Pink, extremely strong, fine grained, massive telspar porphyry vein at 40°TCA 499.0'-500.0' Core broken on joint. 506.0'-507.0' Quartz veining Foliation 59° TCA						RQD 65%	
510					Core broken on close spaced W, K joints	1 1 1 1					RQD 56%	
520	×.		ģ		Foliation 56° TCA	1		1	$\mathcal{H}$			

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22223	FRA	CTU	RES		(g					>
CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LO	BRECCIA/GOUGE BROKEN CORE TH TH TH TH TH TH TH TH TH TH TH TH TH	ROC SS QUALI DESIGNA 2 75 50	TY FRACTURE	1	PERMEABILITY
				Meta-arkose (as above) chloritic with variable feldspar content Foliation 45° TCA					RQD 77%	
				546.5' Possible chlorite / rock					RQD 73% -	
				fragment filled joint at 70°TCA (likely rig action)					548.1'-548.9 54.*7	
				Foliation 52° TCA	+				RQD 63% -	
									RQD 89%	
			-		I					<b>-</b> 76
				End of Hole 558.01						
The same of the sa	LOSS	PERCENT CORE	PERCENT	CORE SSOT STATE OF ST	PERCENT CORE LOSS 25 50 75  Meta-arkose (as above) chloritic with variable feldspar content Foliation 45° TCA  546.5 Possible chlorite   rock fragment filled joint at 70°TCA (likely rig action)	Meta-arkose (as above) chloritic with variable feldspar content Foliation 45° TCA  546.5 Possible chlorite frock fragment filled joint at 70°TCA (likely rig action)  Foliation 52° TCA  Foliation 55° TCA	Meta-arkose (as above) chloritic with variable feldspar content Foliation 45° TCA  546.5 Possible chlorite rock fragment filled joint at 70°TCA (likely rig action)  Foliation 52° TCA	DESCRIPTION AND REMARKS 25 50 75  Meta-arkose (as above) chloritic with variable feldspar content Foliation 45° TCA  Foliation 52° TCA  POUNT NAME AND REMARKS  POUNT NAME AND	Meta-arkose (as above) chloritic with variable feldspar content Foliation 45° TCA  546.5 Possible chlorite / rock fragment filled joint at 70°TCA (likely rig action)  Foliation 52° TCA  Foliation 55° TCA	Meta-arkose (as above) chloritic with variable feldspar content Foliation 45° TCA  RQD 71%  RQD 73%  RQD 73%  RQD 73%  Foliation 52° TCA  RQD 63%  RQD 63%  RQD 63%  RQD 63%  RQD 63%  RQD 63%

DATE: 11.7.88

PROJECT No. 882-1421

Hole No. 88-332 SHEET // OF //

-Galder Associates

NO	ш	ORIE	NTATION							
LOCATION	SURFACE	DIP	DIREC- TTON	INFI	LLIN	GS 3	THICK	FORM	ROUGH	BHN <sup>o</sup> 88-332
23.7 24.6 25.0 25.7 26.2 26.6 26.8 27.2 28.7 32.4 33.6 34.4 35.4 36.8 41.8 44.5 48.3 49.3 50.2 55.4 58.8 60.6 62.5 74.6 87.6 87.6 87.6 87.6 87.6 87.6 122.0 125.4 132.0 132.2 132.7 133.6 134.4 136.1 138.0 139.0	J J J J J J J J J J J J J J J J J J J	30 33 17 39 45 60 41 66 42 5 30 55 36 9 37 38 60 39 38 43 29 38 5 5 5 5 15 5 5 7 5 7 5 7 5 7 5 7 5 7 5	135 125 095 230 105 100 195 160 080	KKFK. KFKKKKKKKKKKKKKKKKKKKKKKKKKKKKKKK	Fe F PF F Q Q F P F F	A	1	PPPNPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	RSRRIKRVVVRRRVRVRRRRRRRRR RRRVRRVR VVRVR	FAIR CONFIDENCE LEVEL
139.5 140.3 141.0	l l	50 55 50	080 090 210	C K C				P	V R R	

NO	ш	ORIE	NOITATION								
LOCATION	SURFACE	DIP	DIREC- TION		ILLIN		THICK	FORM	ROUGH		
7	S	П	Д	1	2	3	H	I	×		
238.8 240.2 240.9 241.6 242.3 244.0 244.3 245.8 246.5 246.6 247.0 247.5	J Fo J J Fo J Fo J J	45 34 34 59 34 54 56 45 60 60 65 25	080 080 060 070 070 190 195 040 180 190 200 095	QKPPCCQCCCCF	W			PPPPPPPPP	V R R V R V R R V R R R		
232.2 233.6 233.9 235.4 236.0 237.0	Fo J J Fo Fo	52 12 48 33 59 57	195 105 005 060 200 185	CCCWPC	F	*		P P P	R R R R R		
252.0 257.8 262.1 263.5 265.1 266.1 272.2 275.9 279.8 283.8 285.5 294.9 304.5 307.4 317.5	Fo J J J J J J J J	30 55 35 5 5 8 31 32 36 60 20 45 12 40 5		FKQKKFCKKKKQKQC	P P F F			PPPPPPPPIN	R S R V R R V V R V K T A C	S	
307.4 317.5 319.2 333.7 335.1 344.8 349.5 358.7 369.4	1 1 1 1 1	50 5 70 40 14 77 63		QKQCCCWWKKK	K K Q H	Q	15	C P P P	R R R R R	R	

NO	щ	ORIE	NTATION						
LOCATION	SURFACE	0	DIREC- TION	INF	LLIN	IGS	THICK	FORM	
9	SUL	DIP	DIA	1	2	3	H	ROI	
379.5 381.1 385.2 386.1 388.9 391.6 396.8 398.5 405.3 412.6 415.5 435.8 439.7 448.1 452.6 453.0 454.1 456.2 456.8 458.5 462.1 462.2 477.0 480.1 498.5 510.2 510.9 511.2 511.5 511.8	J I FO I FO I I I I I I I I I I I I I I I	15 60 58 45 16 42 58 57 27 40 54 20 38 53 30 5 16 30 20 8 26 77 50 62		KWWKPWKFKKKWKKKCWWWKCCCCKKKKKK	FPPP W WW W W W W W W Q			P P R R P R R P R R P R R P R R P R R P R R P R R P P R R P	
512.4 513.6 517.0 519.3 519.5 521.0 521.3 523.1 529.0 533.2 534.5 536.6 538.7	J J J Fo J J J J J J	32 75 17 20 47 29 27 62 10 25 47 40 20		K W K K W W K W W W K	H H P K	w		P K P R P R P S P R} Inters P R P R P R P R P R P R P R P R P R	ect

NO	tr)	ORIE	NTATION						
LOCATION	SURFACE	Д,	DIREC- TION	INFI	LLIN	GS	THICK	FORM	ROUGH
7	SU	DIP	DI	1	2	3	H	FO	RO
538.9	J	35		K				P	R
539.7	J	30		C				P	R
543.4	J	25		K	W	P		P	V
547.1	J	35		W	P			P	V
548.9	J	45	,	W	K			P	R
552.0	J	42						P	V
555.6	J	50		K				P	P
556.0	J	72		W				P	S

-	PERCENT	F	RAC	TUR	2.56	See De See See See See See See See See S	9			7		Hole 50°/090°	
eet)	CORE LOSS 25 50 75		TYPE	INFILLING	A	RIPTION ND ARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY	Longitudinal Section 35 N	
00		4		17	Start Coring	32.0'							-
					- oreu mod str	litised ésericitisa 60°TCA) pale gree 2000 (R2) META -	355	ssch				RQD 0% -	
20					ARKOSE . limb joints & foliation associated with Bands of weak, schist (ssch) R	nite staining of n.Pitchblende n limonite white sericite	7					RQD 22%	
0		Fa	'	6	Foliation fractu typically >10 an with sericite, an	75	9/3	ssch				RQD 3% -	
		Fo		7	products and/o	or drill							
0						flaky ssch		-				RQD 5%	
1				1	67.0'-68.0'	flaky ssch 51_	99	· Ł					
0		4-			broken core			- }					
		Fo		TC	<u>Limonite staining</u> Hydro-altered, m strong LAMPRO	assive arey, mod.	L L					RQD 27% -	
0					18.9 1cm sericitic, li gouge on joint at		4					RQD 7%	

LOGGED BY :\_

DATE: 12.7.88

PROJECT No. 882-1421

Hole No. <u>88-333</u> SHEET / OF //

	DEDOENT	FRA	CTU	RES		9			1 - 1			1 ?
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		F. HOV DATE
		Fo		58°	Altered, foliated, fine grained, chloritic, illitic f sericitised, mod. strong matic META ARKOSE. Variably limonite stained. Sericitic gouge on joints and						RQD 4%	
90		Fo		64	foliations (see structural log) - very weak material Occurs on many v. close spaced foliations. 87.0'-97.0' Foliation fractures spaced. 2-15cm throughout run.	ssch					RQO 7% _	
00		Fo			96.0'-115.5' Altered, foliated, fine grained, strong (R3) mottled light grey meta arkose with limonite staining on foliation. Fol. fractures spaced 2-8 cm.	b.					RQD 5%	
110		10			115.5'-117.0' Broken core on cericitic	L' Sollier	-				RQD 7% -	
20					117.0'-124.0' Mottled, foliated, fine gravel, green-grey, mod. strong (R2) altered matic meta arkose. Unit splits easily on tolsericitic on foliation.	isch-					RQD 16% -	
30				14	grain, chloritic strong R3 mafic meta-arkose	+	-				RQD 14%	

DATE: 12.7.88 PROJECT No. 882-1421 Hole No. <u>88-333</u>

1	PERCENT	FRA	CTU	RES		9					1
DEPTH	CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK NATURAL QUALITY FRACTURE DESIGNATION FREQUENCY 75 50 25		VT. IIAA HWA HO
					As above 133.0'-187.3 Slightly altered, faintly	ssch				RQD 14%	
140					183.0'-187.3 Slightly altered, faintly foliated, fine-med. grained, strong R4 white-grey, ORTHOQUARTZITE. Sericite on tol. and joints where broken.  143.0'-157.0' Foliation at 45-55° TCA spaced 6" with 1 mm sericite. This spacing present throughout unit.	- 1				RQD 21% -	4-7
50					in bagnour unit.	1,1,1,1,1				RQD 61% -	
50							-			RQD 21%	
70					167.0'-177.0' Entire run recovered as broken fragments. At 168.0' (approx.) 3" clay seam with quartz fragments-dark grey high plastic. Possible shear zone					RQD 3%	
30							-			RQD 8%	

DATE: 12.7.88 PROJECT No. 887-1421 Hole No. <u>88-333</u>
SHEET <u>3</u> OF <u>11</u>

	0500545	FRA	CTU	RES		9					
DEPTH	CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK NATI QUALITY FRACT DESIGNATION FREQU 75 50 25		1
					ORTHOQUARTZITE-as above					RQD 8%	
190					187.3'-209.6' Altered, massive, fine to med grained, dark grey-green, very weak (\$1) LAMPROPHYRE, limonitic staining and sericite 200.0'-205.0' Pitchblende	- Jashyou				RQD 87% -	
00					2010-3"dank anau hish martin	Lampric				RQD 62%	
?10		Fo			207.0'- 3"dark grey, high plastic gouge with rock tragments 207.0'- 209.6' Highly altered meta arkose, dark grey, very weak (R1) foliated at 53° TCA, may have been silicified - high quartz content. Shear Zone 212.0'- 213.2' sand.	uartiite!   W				RQD 35%	
20					209.6'-231.5, slightly altered, massive to faintly foliated, fine grained, light grey, strong R4 ORTHOGUARTZITE. 223.5'-225.8' altered matic meta- arkose band. As 207.0'-209.6'(R)	S   orthogua	-			RQD 40%	<b>⊢</b> ;
230					126.0'-219.5'- Broken core zone.		1			RQD 3%	

DATE: 12.7.88

PROJECT No. 882-1421

Hole No. <u>88-333</u>

-Golder Associates

SHEET 4 OF 11

	DEDOCNE	FRA	CTU	RES	L. S. N.	9		3				1 2
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNESS	ROCK N QUALITY FR DESIGNATION FRE 75 50 25	ATURAL ACTURE EQUENCY		T I I I I I I I I I I I I I I I I I I I
					230.0'-230.6' Angular rounded slightly altered quartz in ground mass of granular quartz R2 BRECCIA 231.5'-237.0' Broken Core Zone	OR					RQD 3%	
240					131.5'-134.3' Highly altered (possib- ly sheared then altered ) ORTHO- QUARTZITE-dark grey, v. weak 134.3'-242.0' Highly altered dark grey, massive, v. weak (RI) LAMPROPHYRE.	LL					RQD 21% .	
250					142.0'-178.2' Highly altered, faintly foliated, fine grained,v.	sana Clay					RQD 23% -	
260					Highly altered, illitised (clay) yellow v. weak (55) sericite schist. Unit altered to sericitic, clay.	5556					RQD 31% -	
270						ssch 4					RQD 45% -	
280		Fo		57°	178.6 2" Sericitic clay seam						RQD 64%	

DATE: /2.7.88 PROJECT No. 882-142/

Hole No. <u>88-333</u> SHEET <u>5</u> OF <u>//</u>

	DEDOCAL	FRA	ACTU	RES		0					1 >
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	SR/	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK NATURAL QUALITY FRACTURE DESIGNATION FREQUENCY 75 50 25		PERMEABILIT
		Fo		50°	278.2'-310.5' Highly altered, faintly foliated, tine grained, dark red-green-black variably sericitic, very weak (R1) matic meta-arkose					RQD 64%	
290		Fo		55°		meta artose				RQD 47% -	
300		Fo		50°		Altered matic m				RQD 21% -	
10					310.5'-324.0' Mod. altered variable Fe stained, faintly foliated, white- green-rust, fine grey, mod.strong (R2) matic meta-arkose with					RQD 37% -	<b>→</b> T <sub>g</sub>
320		Fo			cericitic, highly altered, weak (R1) zones 317.3 Red stiff plastic clay seam 2"	-	-			RQD 41%	
30 GGED					324.0'-382.0' Altered, bleached, strong (R3) pale green, meta-arkose. Foliated.	-				RQD 52%	

DATE: 12.7.88
PROJECT No. 882-1421

Hole No. <u>88-333</u> SHEET <u>6</u> OF <u>//</u>

	DEBOTHE	FRA	CTU	RES	1 4 5 5 5 5 5 6 W	9					1 3
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNESS	ROCK NATU QUALITY FRACT DESIGNATION FREQU 75 50 25	TURE	YE HEAVEN
		Fo		52°	Bleached meta-arkose - as above					RQD 52%	
340					340.1' - 2" Weak sericitic zone	-	-			RQD 58%	-
250		Fo		63°	345.1' - 4" Fe stained sericitic arkose 346.0'-347.0' - Broken core	3		R3			
350						-				RQD 30%	-
360		Fo		59°			_			500 400	1
		Fo		59°	363.0'-369.3' Rock splits readily Foliation - spared 2-4"	, , ,				RQD 59%	-
370							-			RQD 50%	-
380		Fo		55	380.0'-381.0' Broken core.					RQD 18%	

LOGGED BY :\_\_

DATE: 12.7.88

PROJECT No. 882-1421

Hole No. <u>88-333</u>

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SHEET 7 OF 1/

		FRA	СТ	JRES		ဗ			7,,7			>
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORF	HARDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		PERMEARII ITY
		Fo		56°	Bleached meta-arkose-as above 382.0' - Mod. altered, foliated, variably iron stained, red-grey/ green, mod. strong R3 meta- arkose						RQD 18%	
90		Fo		57°							RQD 43%. 394.5-395.4'-8a.*2 haematised m.a.	<b>+</b> ;
00					pis wall 407.1' - 2" red plastic	1		<i>R</i> 3			RQD 54% 409.7-410.5 5a.#3	
0		Fo			Alo.8'-437.0' - Core is highly fractured, v. close spaced foliations(5-2°) and joint set at 30°TCA (spaced.6°)	11111					RQD 26%	
20					Foliation from 50-60° TCA.						RQD O	
30		Fo		51°		1					RQD 11%	

LOGGED BY :\_

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PROJECT No. 882-1421

Hole No. <u>88-333</u>

-Golder Associates -

SHEET 8 OF 11

		FRA	CTL	JRES	A National Assets	9						>
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORF	HARDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		FI HOV DMODE
					Mod. altered meta-arkose-asabo	e.		R3			RQD 11%	
140		Fo		49°	437.0'-448.0' Slightly to mod altered foliated, grey-green, fine grained, strong R3 meta arkose		†  - 				443.4'-444.1' Ga.#4_ RQD 34% -	
150		Fo		59°	448.0'- 457.0' Altered, haematised meta-arkose -amount of haema-tisation increases with depth			R3			RQO O	
160		Fo		61°	447.0'-457.0' lore broken on folia- tions and joints 457.0'-467.0' Highly altered red- beige-green structureless, very weak (55) felspar porphory			55		1 1 1 1	460.5'-461.5' 5a.*5 464.5'-465.7' 5a.*	
		Fo		59°							RQD 49% 467.0'-469.2' Core	
770					467.0'-502.0' Mod to slightly altered & haematised, foliated, dk brown to light grey strong (R3) meta arkose. Degree of haematisation decreases with depth.			R3			broken on v. close spaced foliations -	<u> </u>
7 <i>80</i>		Fo		61°		1					RQD 25%	

DATE: 12.7.88
PROJECT No. 882-1421

Hole No. <u>88-333</u> SHEET 9 OF 11

	PERCENT	FRA	CT	JRES	22432.000	9				7. 71		?
ОЕРТН	CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE	HARDNESS	ROCK QUALITY DESIGNATION 75 50 25	NATURAL FRACTURE FREQUENCY		The state of the s
		Fo		50°	Slightly altered meta arkose - as above  488.0'-510.0' Core broken on foliation i joints haematised			R3			RQD 25% 487.9-488.6 5a.*6	
490		Fo		470	from 491.0'- 502.0'	1 , , ,					RQD 28%	
500		Fo		54°	508.0'-510.5' Sericitic meta arkose						RQD 4% -	
510					502.0'-558.0' Fresh, unaltered faintly foliated fine to med grained grey-green, very strong (R4) meta arkose	-		R4			RQD 58%	
520						-					515.8-516.8 5a.#8 - RQD 97% -	
530		Fo		57°	528.9'-532.4' Quartz veining						RQD 67%	

LOGGED BY:\_\_\_

DATE: 12.7.88

PROJECT No. 882-1421

Hole No. 88-333

-Golder Associates -

SHEET 10 OF 11

	0550505	FRA	CTU	RES	N. San Vincento	g						1
DEPTH	PERCENT CORE LOSS 25 50 75	TYPE	INFILLING	INCLINATION	DESCRIPTION AND REMARKS	GRAPHIC LOG	BRECCIA/GOUGE BROKEN CORE	HARDNESS	ROCK NA QUALITY FRA DESIGNATION FRE 75 50 25	CTURAL CTURE QUENCY		PERMEABILITY
		Fo		520	Quartz vein { 532.4: -	-					RQD 67%	
540		Fo		60°	Fresh, faintly foliated, grey - green strong (R4) matic meta arkose - as above						RQD 77% -	
550		Fo		56°		+					RQD 69%	7
560					End of Hole 558.0 ft.	-		4				
OGGED	BV:					_						

LOGGED BY :\_

DATE: \_\_\_\_\_\_ 12.7.88

PROJECT No. 882-1421

Hole No. <u>88-333</u>

-Golder Associates \_\_\_\_\_\_ SHEET \_//\_ OF \_//

						$\boldsymbol{\alpha}$	Ωſ	sto.	ohn	ical Log							
						U	U	ite		iicai Lug				Page	1	of	1
PRO	JECT :	Kiggavi	ik	NORTHING: 71477	47					EASTING : 566014		HOLE I	D:		RMI-	09-01	
SITE		Mill Site		ELEVATION :210m			ΠIĐ	: -90		AZIMUTH : N000	I	Hole Dia	meter:	HQ	Core Diame	ter	HQ3
		ONTRA	-	Boart Longyear	1			GGED	BY:	BS/RQ	H	Drilling D				- 15/08/2009	
	LING T			Diamond				ECKE			H	Logging			14/08/2009	- 15/08/2009	9
									1								
RUN	Depth (m)	Graphic Log		LITHOLOGY	(%)	RQD (%)	FF/Run	IRS	WI	Description		ВС	LC	Jcon	Jn	uity Data Jr	Ja
1	1.5	-	surface coarse,	ORGANICS below the followed by fine to sub-agular to angular													
2	2.6 3.0		SI .	L with trace silt/sand radic cobbles	100	100		R3	W2		4			20	<u> </u>	<sub>3</sub>	- <del>-</del>
3	4.5		9	sh-light green, medium slightly weathered	100	100	5	R3	W2					20	6	3	2
4	6.0				93	91	6	R3	W2					20	6	3	1
5	7.5				100	90	8	R3	W2					19	9	3	1
6	9.0				69	69	2	R3	W2	LC:7.70-8.00/8.15-8.32m		Ī	***********	23	4	2	1
7	10.5		-	ed, slightly weathered, strong metasediment	100	93	14	R3	W2		i			19	6	2	1
8	12.0				93	95	9	R3	W2					21	6	2	1
9	13.5				100	100	6	R3	W2					20	4	2	1
10	15.0				100	100	3	R3	W2					17	3	1	1
11	16.5				100	100	3	R3	W2					20	6	1	1
12	18.0				93	93	3	R3	W1/W2					28	2	3	2
13	19.5				100	96	4	R3	W2		:			20	6	2	2
14	21.0				100	100	5	R3	W2	Dessiminated qz veins				20	6	3	1
15	22.5				100	100	5	R3	W2	from 21.00-21.70m ~15cm qz vein @ 21.25-21.41m with chlorite content				20	6	2	1
16	24.0	ananaa	D:	Balanca J. P. LO	93	93	1	R3	W2	LC: 10cm		į		20	1	2	1
17	25.5		weather	light red, slightly ed, strong ent granite	100	100	3	R4	W2					20	2	3	1
18	27.0				100	100	3	R4	W2		·			22	4	2	1
19	28.5				100	97	6	R4	W2					20	4	2	1
20	30.0		End of H	Hole	100	91	0	R4/R5	W2					21	5	2	1
333 333 EE	Overburde Granitic g Quartzite Intrusive Metasedir	neiss	FLT SH VN	= Joint f = Fault = Shear = Vein = Fracture	CU = UN = ST =	Planar Curved Undulat Stepped rregular	i	vavy)		SL = Slickensided, PO = Polished SM = Smooth, RO = Rough VRO = Very Rough Lost Core (LC) Broken Core (BC)				Jcon = Joint ( Jn = Joint Se Jr = Joint Rou Ja = Joint Alte (All are avera	: Number ighness Numl eration Numbe	er	

						G	eo	tec	hn	ical Log				Page	1	of	1
PRO	JECT :	Kiggavi	k	NORTHING : 714790	5					EASTING : 564975		HOLE II	D:		RMI-	09-02	
SITE	:	Mill Site	)	ELEVATION :211m			DIP	: -90		AZIMUTH : N000	Ī	Hole Diar	neter:	HQ	Core Diame	ter:	HQ3
DRII	LING C	ONTRAC	CTOR:	Boart Longyear			LO	GGED	BY:	BS/RQ		Drilling D	ate:		16/08/2009	- 17/08/2009	
DRII	LING T	YPE:		Diamond	55555555555555		СНІ	ECKE	BY:			Logging [	Date:		16/08/2009	- 17/08/2009	
	Depth	. <u>e</u>			TCR	RQD	ч								Discontin	uity Data	
RUN	(m)	Graphic Log		LITHOLOGY	(%)	(%)	FF/Run	IRS	WI	Description		ВС	LC	Jcon	Jn	Jr	Ja
	0.00		8	mately 12cm of dark rganics followed by													
	1.50		Silty Gra medium	vel up to 1.5m. Fine to sub-angular to angular													
	3.00		Gravel a Silty Gra	t 1.5-3.0m overlies vel.													
	4.10 4.50		Dink bla	ck to pink, fine	<u>-</u>			<b></b>		BC/Crushed: 4.10-4.51m	_	XXXX		<u> </u>		. — . — . 4	— . — {
1	5.50	-	to coars extremly	e crystalline, strong to strong, farily fresh to	100	29	19	R4	W3	BO/Olustieu. 4.10-4.3 IIII	Ė	×××××		20	20	3	1
2	7.00		moderat	ely weathered granite.	100	77	9	R4	W3					16	12	3	3
3	7.00				100	86	10	R4	W3	BC: 7.34-7.46m	e	xxxxx		12	12	3	4
4	8.04 8.50				100	78	9	R5	W2					20	12	3	2
5	10.00				97	85	9	R5	W2					17	12	3	2
6	11.50		Become crystallir	s medium to coarse	100	84	6	R5	W2					18	12	3	2
7	13.00	_			100	83	12	R5	W2					17	12	3	3
8					100	44	10	R5	W2					20	15	3	1
9	14.50				96	73	7	R5	W2	BC: 15.42-15.47m		* * * * *		20	12	3	1
10	16.00	_	white, sl	nd pink with some ighly weathered,	100	88	4	R5	W2			~~~~		16	6	3	3
11	17.50	_		, coarse to very coarse ne, non-porous, very ranite	100	97	4	R5	W2	BC: 17.05-17.12m				19	6	3	2
12	20.50	-			100	100	3	R5	W2					19	6	3	2
13	22.00				96	91	9	R5	W2	BC: 20.67-20.75m		<u> </u>		16	6	3	3
14	23.50	-			100	91	9	R4/45	W2					17	5	3	2
15	25.00	-			100	91	8	R4/R5	W2	BC: 24.06-24.20m				21	4	3	1
16					100	87	3	R4	W2	DO: 00 00 00 50				20	4	3	1
17	26.50				93	93	5	R5/R6	W1	BC: 26.30-26.50m	f	~~~~		20	1	2	1
18	28.00	_			97	97		R4/R5	W2	BC: 27.60-27.70m LC: 28.50-28.55m		^^^^		21	4	3	2
	29.50		End of F	lole													
888 888 888	Overburde Granitic gr Quartzite Intrusive Metasedin	neiss	FLT SH VN	= Joint = Fault = Shear = Vein = Fracture	UN = 5	Planar Curved Undulat Stepped regular	ting (v	vavy)		SL = Slickensided, PO = Polished SM = Smooth, RO = Rough VRO = Very Rough Lost Core (LC) Broken Core (BC)				Jcon = Joint ( Jn = Joint Set Jr = Joint Rou Ja = Joint Alte (All are avera	Number Ighness Number Pration Number	r	

					G	eo	te	chr	ical Log				Page	1	of	2
PRO	JECT :	Kiggavi	NORTHING : 71480	84	************				EASTING : 564983		HOLE I	D:		RMI-	10-01	
SITI	Ξ:	Mill Site	ELEVATION :212m			DIP	: -90		AZIMUTH : N000	Ī	Hole Dia	meter:	NQ	Core Diame	ter:	NQ
_		ONTRAC					GED	BY:	KR	-	Drilling D	ate:		20/08/2010	- 21/08/2010	)
DRI	LLING T	YPE:	Diamond			СНЕ	CKE	BY:			Logging	Date:		20/08/2010	- 21/08/2010	l
	Depth	O		тсв	RQD	u								Discontin	uity Data	
RUN		Graphic Log	LITHOLOGY	(%)	(%)	FF/Run	IRS	WI	Comments		ВС	LC	Jcon	Jn	Jr	Ja
	0.0		10cm of boulder rubble was retrieved													
1	2.7 3.0			ļ				- · —								. <b>—</b> . —
			Fine to medium, weakly to							-						
			strongly folidated subhorizontal to the core	92	65	20	R3		competent core					15	6	1
2	6.0		axis, strongly silicified, granitic gneiss with common quartz flooding and vening Granitic veins were generally closed and subvertical to the	102	86	12	R3		competent core	Ē				12	7	1
0	0.0		core axis.													
3	9.0		Hematite and chlorite were													
			common coatings in fracture surfaces. Fracturing increased between 12.5m and 25m.	92	82	11	R3		3% weak rock (R2) Minor alteration					12	7	1
4	12.0								overall competent core							
5	15.0		Minor strong chlorite gouge	100	74	15	R3		5% weak rock (R2) competent core	=				15	6	1
				98	97	9	R3		competent core with					6	8	1
6	18.0								granitic veining							
	10.0			97	87	9	R3		competent core with	-				6	7	1
7	21.0								minor defects							
				100	68	24	R3		<1% very weak rock (R1) clay gouge along the joint at 23.55m	=				12	7	1
8	24.0															
9	27.0		Core was competent at 25m and below.	101	101	3	R3		competent core					2	8	1
10	30.0			99	98	4	R3		competent core with minor granitic veining	=				3	7	1
00	Overburde Granitic gr		JN = Joint FLT = Fault		Planar Curved				SL = Slickensided, PO = Polished SM = Smooth, RO = Rough	<u> </u>			Jcon = Joint ( Jn = Joint Set			
8.88 ETE	Quartzite Intrusive Metasedin		SH = Shear VN = Vein FR = Fracture	UN = ST = S	Undula Stepped regular	ting (w	/avy)		VRO = Very Rough Lost Core (LC) Broken Core (BC)	80			Jr = Joint Rou Ja = Joint Alte (All are avera	ighness Numberation Numbe	r	

						G	eo	te	chr	nical Log			Page	2	of	2
PRO	JECT :	Kiggavi	k	NORTHING: 714808	4					EASTING : 564983	HOLE I	D:		RMI-	10-01	
SITE	:	Mill Site	·	ELEVATION :212m			DIP	: -90		AZIMUTH : N000	Hole Dia	meter:	NQ	Core Diame	ter:	NQ
		ONTRAC	TOR:	Boart Longyear			_	GED	BY:	KR	Drilling D	ate:		20/08/2010	- 21/08/2010	
DRIL	LING T	YPE:		Diamond			СНЕ	CKE	BY:		Logging			20/08/2010	- 21/08/2010	ĺ
RUN	Depth	Graphic Log		LITHOLOGY	TCR		FF/Run	IRS	WI	Comments	ВС	LC			uity Data	
	(m)	O Harrista	( <del></del>	\	(%)	(%)	Œ						Jcon	Jn	Jr	Ja
	30.0		(continue Fine to m	edium, weakly to												
			strongly		99	81	16	R3		Minor rubble zone from				12	7	1
				ontal to the core ongly silicified,						32.4 to 32.5m						
11	33.0			neiss with common												
				ooding and vening												
					98	88	13	R3		competent core				6	7	1
					90	00	13	KS		competent core				0	,	'
12	36.0															
					99	94	7	R3		competent core				6	8	1
13	39.0															
					00	00	0	Do		competent core				10	7	4
					99	86	9	R3		competent core				12	7	1
14	42.0															
					100	100	5	R3		competent core				2	8	1
15	45.0		End of H	ole												
	Overburde		JN =	- Joint	PL = F	Planar			ļ	SL = Slickensided, PO = Polished	J		Jcon = Joint (	Condition		
	Granitic gr Quartzite		FLT	= Fault	CU =	Curved		(O) (I)		SM = Smooth, RO = Rough VRO = Very Rough			Jn = Joint Se	Number	or.	
-:-:	Intrusive		VN =	= Shear = Vein	ST = 5	Undulat Stepped	i	ravy)		Lost Core (LC)			Ja = Joint Alte	ighness Numberation Numbe	r	
	Metasedim	nent		= Fracture		rregular				Broken Core (BC)				ge value per r		

						$\boldsymbol{\Gamma}$	ΛΛ	4.	ohn	ical Log							
						U	CU	JUE		ncai Lug				Page	1	of	2
PRO	JECT :	Kiggavi	k NORT	HING : 714750	00					EASTING : 565000	Н	IOLE II	D:		RMI-	10-02	
SITE		Mill Site	ELEV	ATION :202m			DIP	: -90		AZIMUTH : N000	Īн	ole Dia	neter:	NQ	Core Diame	eter:	NQ
		ONTRA		Longyear				GED	BY:	KR	D	rilling D	ate:		22/08/2010	- 23/08/2010	)
DRII	LING T	YPE:	Diamo	ond			CHE	CKE	BY:		Lo	ogging l	Date:		22/08/2010	- 23/08/2010	
	Depth	ic _			TCR	RQD	S.								Discontin	nuity Data	
RUN	(m)	Graphic Log	LITHO	LOGY	(%)	(%)	FF/Run	IRS	WI	Comments		ВС	LC	Jcon	Jn	Jr	Ja
	0.0	*****	Approximately 1m								-						
			including rounded of boulders	fragments													
1	3.0																
											H						
	0.0																
2	6.0				<b>!</b>						<u></u>						
			Pink to oragne, fir grained, medium														- <del>-</del>
			generally unaltere and fresh granite	ed .			7	R3	W1	competent core with 60cm vertical vein					6	6	1
3	9.0		abundant fracture	s and quartz						oociii verticai veiii							
			veins sub-vertical axis	to the core													
					101	82	17	R3	W1	competent core with subvertical fractures	-				6	7	1
										and vein							
4	12.0										F						
					100	92	7	R3	W1	quartz veining and weak					12	7	1
		-			100	32	,	110	***	rock (R2) at 14.8-15m					12	,	
5	15.0																
					99	97	5	R3	W1	subvertical joints	-				3	7	1
6	18.0																
					99	91	10	R3	W1	competent core with					12	8	1
					00	01	10	110	•••	quartz veining					,,,		
7	21.0																
					101	98	8	R3	W1	>50cm subvertical quartz					12	7	1
										VOILI							
8	24.0										$\vdash$						
					101	99	5	R3	W1	subvertical joints/fractures					6	7	1
					.01	- 55	,	1.0	**1	and quartz veins	t				, J	,	
9	27.0										L						
													_				
					97	89	4	R3	W1	subvertical joints/fractures	-				3	7	1
										and quartz veins							
10	30.0				-						+						
	Overburde Granite	en	JN = Joint FLT = Fault			Planar Curved	!			SL = Slickensided, PO = Polished SM = Smooth, RO = Rough	_			Jcon = Joint ( Jn = Joint Set			
833	Quartzite Intrusive		SH = Shear VN = Vein		UN =	Undula Stepped	ting (w	avy)		VRO = Very Rough Lost Core (LC)				Jr = Joint Rou Ja = Joint Alte	ighness Numb		
	Metasedin	nent	FR = Fracture			regular				Broken Core (BC)	Ö		000000000000000000000000000000000000000	(All are avera			

#### **Geotechnical Log** Page 2 2 **EASTING: 565000** HOLE ID: RMI-10-02 PROJECT: Kiggavik NORTHING: 7147500 SITE: Mill Site ELEVATION :202m DIP: -90 AZIMUTH: N000 Hole Diameter: NQ Core Diameter: NQ DRILLING CONTRACTOR: **Boart Longyear** LOGGED BY: Drilling Date: 22/08/2010 - 23/08/2010 22/08/2010 - 23/08/2010 DRILLING TYPE: Diamond CHECKED BY: Logging Date: Depth TCR RQD FF/Run Discontinuity Data RUN LITHOLOGY LC Comments вс (%) (m) (%) Jcon 30.0 (continued) Pink to oragne, fine to medium grained, medium strong, 101 99 8 R3 W1 4cm thick subvertical generally unaltered quartz vein at 31.9m and fresh granite with 33.0 abundant fractures and quartz veins sub-vertical to the core axis 99 99 6 R3 competent core 36.0 12 99 97 R3 5 competent core 13 39.0 97 93 8 R3 W1 competent core 6 42.0 14 97 97 4 R3 vertical joint with graphite at 43.5-44.7m 45.0 98 79 13 R3 W1 competent core with 12 chlorite-quartz veining 48.0 competent core 51.0 17 100 102 R3 competent core with 8 >1m subvertical joint 18 54.0 100 96 5 R3 competent core with minor rubble at 56.m 19 57.0 End of Hole Overburden JN = Joint PL = Planar SL = Slickensided, PO = Polished Jcon = Joint Condition SM = Smooth, RO = Rough Granite FLT = Fault CU = Curved Jn = Joint Set Number

VRO = Very Rough

Lost Core (LC)

Broken Core (BC)

Jr = Joint Roughness Number

Ja = Joint Alteration Number

(All are average value per run)

UN = Undulating (wavy)

ST = Stepped

IR = Irregular

Quartzite

Intrusive
Metasediment

SH = Shear

VN = Vein

# RECORD OF BOREHOLE BH88-D100 SHEET 1 OF 3

LOCATION 9704N 9888E LOCAL CO-ORDINATES BORING DATE 21/08/88 DATUM GEODETIC (Approx.)

SAMPLER HAMMER, 83.5kg, DROP, 760mm

PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm



SALE	<u> </u>	SOIL PROFILE	TE		SA	MPL		DYNAMIC RESISTAN	PENETR CE. BLO	ATION VS/0.3m	7	HYDRA	AULIC C	ONDUC	TIVITY.	T	- 17	
METRES	BONING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR ST Cu, kPa			+ Q o	WAT	TER CO		PERC	ENT	ADDITIONAL LAB. TESTING	PIEZOMETEI OR STANDPIPE INSTALLATIO
NOBILE AUGERS B-40	Bottom of	Ice		-0.70 1.90														
5	continued or	n next page	7	3 <u>.80</u>				6 PERCENT A										

### RECORD OF BOREHOLE BH88-D100

SHEET 2 OF 3

LOCATION 9704N 9888E LOCAL CO-ORDINATES SAMPLER HAMMER, 63.5kg, DROP, 760mm

1: 25

BORING DATE 21/08/88

DATUM GEODETIC (Approx.) PENETRATION TEST HAMMER, 63.5kg, DROP, 780mm

CHECKED BUM

METHOD DYNAMIC PENETRATION SOIL PROFILE SAMPLES DEPTH SCALE METRES HYDRAULIC CONDUCTIVITY. RESISTANCE, BLOWS/0.3m k, CM/SEC ADDITIONAL LAB. TESTING PIEZOMETER NUMBER BORING SHEAR STRENGTH nat.V.- + Q.-OR STANDPIPE DESCRIPTION ELEV. WP 20 WATER CONTENT, PERCENT CFT 8+ DEPTH (m) INSTALLATION rem.V.- @ U.- O 60 continued from page 1 -3.80 881-1814E WATER - Baker Lake -3.95 SAND, very fine to fine subangular, medium brown, trace silt, trace fine gravel 1 DO 2 0 very loose 8 2 DO 3 0 MH MOBILE AUGERS 8-40 3 DO 0 M -6.72 8 7.92 SAND and GRAVEL, occasional cobble -7.84 8.84 BEDROCK 9 4 RC --8.19 9.39 End of Borehole 10 16-6-6 PERCENT AXIAL STRAIM AT FAILURE DEPTH SCALE LOGGED RWM

# RECORD OF DRILLHOLE BH88-D100

SHEET 3 OF 3

LOCATION 9704N 9886E LOCAL CO-ORDINATES

INCLINATION

AZIMUTH

DRILLING DATE 21/08/88
DRILL RIG ROTARY/MOBILE B-40

DATUM GEODETIC (Approx.)



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	907 O	ELEV.	No.	ON RATE		FD	FRACT CLEAV SHEAR VEIN	URE	F. J.	FAUL JOINT POLIS	T T SHED		SM-SMOOTH R -ROUGH ST-STEPPED	-	-WAVY	LOAD (MPa)	NOTES
DEPTH	DRILLING		SYMBOLIC LOG	-3.80 5.00	4	PENETRATION RAT	FLUSH \$	TOT	COVER	"	.Q.D.	FRACT POEX FER 0.	. De CO	DISC	PL-PLANAR ONTINUITY DATA TYPE AND SURF, DESCRIPTION	ACE	-WAYY -CURVED HYDRAULIC CONDUCTIVITY	POINT	WATER LEVE
a																			
7																			
8																			
	Τ;	ETA SANDSTONE, fresh, folist- on 9 45 deg., light pinklah ed with dark green on folis- ion contacts, chloritic.		7.64 8.84															
9	d w a	ine grained to coarser with epth, minor hematite staining ith trace calcite on joints and foliation breaks, minor eldspar phenocrysts throughut, siliceous coment		2	190. 310.	1	111		Ш				4	CAL	R.HEMATITE, CITE LUE, TR ATITE R.CHLORITE				
	Ει	nd of Drillhole	_	8.20 9.40									0	FO,I	ATITE GALCIT				
		- I																	

1: 25

Golder Associates

LOGGED R.W.M.
DATE 24/08/08/6 Aug 34
CHECKED Bum

## RECORD OF BOREHOLE BH88-D101

BORING DATE 20/06/88

SHEET 1 OF 4

LOCATION 9644N 9919E LOCAL CO-ORDINATES SAMPLER HAMMER, 83.5kg, DROP, 760mm

1: 25

DATUM GEODETIC PENETRATION TEST HAMMER, 83.5kg, DROP, 760mm



CHECKED Bum

# RECORD OF BOREHOLE BH88-D101

BORING DATE 20/08/88

SHEET 2 OF 4

LOCATION 9844N 9919E LOCAL CO-ORDINATES SAMPLER HAMMER, 63.5kg, DROP, 760mm

20/08/88 DATUM GEODETIC (Approx.)
PENETRATION TEST HAMMER, 63.5kg, DROP, 780mm

SETHOD	SOIL PROFILE	TE		S	AMPL		DYNAMIC PENETR RESISTANCE, BLOT	ATION VS/0.3m	HYDRAULIC k,	CONDUCTIVITY, CM/SEC	TI	9
METRES  BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)		TVPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V + Q ∈ rom.V ⊕ U O	WATER (	CONTENT, PERCEN	T Applicant	PIEZOMETE OR STANDPIPE INSTALLATIO
5	conflued from page 1		-3.80						20	40 60 80		
8	SAND, fine to coarse, trace silt, subangluar, loose to very loose			2	DO				Q			
MOBILE B-40 MOBILE AUGERS				3 11	DO	5			0		М	
	SAND and GRAVEL, fine subangular gravel, fine to coarse subangular sand, trace very fine sand, loose, nulticolored	-	-7.49 8.89	4 D0	0 4				0		МН	
c	ontinued on next page	-E	3.80				-0 PERCENT AXIAL STRA					

# RECORD OF BOREHOLE

BH88-D101

SHEET 3 OF 4

LOCATION 9644N 9919E LOCAL CO-ORDINATES SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 20/08/88

0/08/88 DATUM GEODETIC (Approx.)
PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm

CHECKED Burn



CALE	THO	SOIL PROFILE	TE	_	SA	MPL	,	DYNAMIC PENETRA RESISTANCE, BLOW	TION \.	,	HYDRAULIC CONDUCT	TIVITY. T		
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH Cu, kPa	nat.V + rom.V @	Q @ U Q	WATER CONTENT.		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
- 10	-	continued from page 2		-8.80								0 80		
	40 ERS	SAND and GRAVEL (as before)		10.00		ws					o		М	
	MOBILE B-40 MOBILE AUGERS	BEDROCK	$\vdash$	-9.82 10.82										
11			П		6	RC	-							
-		End of Borehole		-10.38 11.58									Disco	of Chang and
12													Speci (2.74 Sampl	t Shear and fic Gravity ) on combin es 1 to 4.
													1	
13														
4														
						1	9	B PERCENT AXIAL STRA					- 1	

## RECORD OF DRILLHOLE BH88-D101

SHEET 4 OF 4

LOCATION 9844N 9919E LOCAL CO-ORDINATES

INCLINATION

AZIMUTH

DRILLING DATE 20/00/88

DRILL RIG ROTARY/MOBILE B-40

DATUM GEODETIC (Approx.)



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV.	RUN No.	ATION RATE	FLUSH & RETURN	FR CL SH- VN	-CL -SHE -VE	ACTUR EAVAG EAR IN	E .	7	INT LISH	SIDED	R -ROUGH ST-STEPPED	FL-FLEXURED UE-UNEVEN W -WAVY C -CURVED HYDRAULIC CONDUCTIVITY	METRAL NT LOAD EX (MPs)	NOTES WATER LEVELS
	DRILLI		SYMB	(M)	æ	PENETR	FLUSH	707 COVE	AL S	SOLID CORE 6	R.O.D.	PER		CORE AND	TYPE AND SURFACE	CONDUCTIVITY	POIN	INSTRUMENTATION
. 10				-8.80 10.00	1													
		META SANDSTONE, fresh, foliat- ion 040 deg, light pinkish		-9.62 10.82										5	FO.R			
11		red with chlorite on folia- tion contacts (joints), very micaceous (biotite), fine to coarse grained with some hematite staining on joints, several large (10-13mm), feldspar phenocrysts oriented along the foliation 640-45				9110.	-60%							9 8	J.R.HEMATITE STAINED, TR CALCITE J.HEALED CALC- ITE FILLED FO.R.FRESH J.HEALED, CALC- ITE FILLED			
-	П	degrees, siliceous cement End of Drillhole		-10.38 11.58	CN	.0021	-60%	H		Щ				d	J, SM-R CHLORITE TR S, TR HEMATIT J, S.M., S CHLOR- ITE			
12																		
13																		
14																		

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.W.M. DATE 2000108/6Ag CHECKED /320002

### RECORD OF BOREHOLE BH88-D102

LOCATION 9827N 988E LOCAL CO-ORDINATES

BORNG DATE 25/07/88

SHEET 1 OF 4

CHECKED Blume



SAMPLER HAMMER, 83.6kg, DROP, 760mm

1: 25

6/07/88 DATUM GEODETIC (Approx.)
PENETRATION TEST HAMMER, 63.5kg, DROP, 760mm

ALE	THC	SOIL PROFILE	Le		S	AMPI	-	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, T	(2)	
DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SMEAR STRENGTH nat.y + Q @ rem.y @ U O	WATER CONTENT, PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETE OR STANDPIPE INSTALLATIO
0	1	Ground Surface		7.90					20 40 60 80	-	
		SAND, medium, subangular to subrounded, moist, trace fine subrounded gravel		7.80	1	AS	-		0	мн	
		SAND, silty, gravelly, trace to some clay, with cobbles and boulders, medium brown (TILL)		0.30	0.30						
1		© 0.92 to 1.22m, increased ailt content, some fine sand, trace aubangular coarse gravel, trace subrounded cobbies, moist, reddish brown			2	AS			0	мн	
		cobbles/boulders from 1.22 to 2.35m									
2		9 1.80 to 2.35m, sand fraction becomes coarser, gravel content increases, wet			-						
UGER	S B-40	@ 2.35 to 3.80m, clay and			3	AS	-		0	мн	
SOLID STEM AUGER	MOBILE AUGERS	silt content increases to approx 50%, medium subrounded sand, moist, brown to grey		Ī			1				
3					4 A	s -	-		0 3	4H	
		Begin NO Coring at 3.60m @ 3.60m, auger refusal on boulder									
		assumed clayey silt with cobbles/boulders (TILL) from 3.60 to 4.81m					-				
		© 4.81 to 8.81m, clayey slit some fine subrounded to subrangular gravel, some fine to medium sand, trace coarse subangular to subrounded gravel, some subrounded cobbies (TILL)	2	. 90	RC	-					
	1		5	.00			-	6 PERCENT AXIAL STRAIN AT PAILURE	++++	1-	

#### RECORD OF BOREHOLE BH88-D102

SHEET 2 OF 4

LOCATION 9827N 9881E LOCAL CO-ORDINATES SAMPLER HAMMER, 83.5kg, DROP, 760mm

BORING DATE 26/07/88

DATUM GEODETIC (Approx.) PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm

CHECKED BUML

METHOD SOIL PROFILE DYNAMIC PENETRATION HYDRAULIC CONDUCTIVITY, SAMPLES DEPTH SCALE METRES RESISTANCE, BLOWS/0.3m k. CM/SEC ADDITIONAL LAB. TESTING PLOT PIEZOMETER NUMBER OR BLOWS/0. BORING ELEV. STANDPIPE DESCRIPTION SHEAR STRENGTH WATER CONTENT, PERCENT nat.v.- + Q.- @ DEPTH (m) INSTALLATION Cu, kPa rom. V.- @ U.- O 40 80 continued from page 1 2.90 881-1814E 9 4.81 to 8.81m, clayey silt, some fine subrounded to subanguiar gravel, some fine to medium sand, trace coarse subangular to subrounded gravel, some subrounded cobbles (TILL) 5.00 8 RC 8 7 RC 7 MOBILE AUGERS B-40 NO CORING 8 RC -0.91 8.81 BEDROCK 9 RC NOTE: No permirost encountered continued on next page -2.10 10 10.00 16 6 PERCENT ANIAL STRAIN AT PAILURE DEPTH SCALE LOGGED RB 1: 25 Golder Associates

RECORD OF BOREHOLE BH88-D102

SHEET 3 OF 4

LOCATION 9827N 988 LOCAL CO-ORDINATES

BORING DATE 26/07/88

8/07/88 DATUM GEODETIC (Approx.)
PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm SAMPLER HAMMER, 83.5kg, DROP, 780mm

HOD	SOIL PROFILE			SAI	MPLE	ES	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	7	HYDRAULIC CONDUCTIVITY.		
DEPTH SCALE METRES BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3M	SHEAR STRENGTH DELV.	+ 0 @ @ u O	WATER CONTENT, PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	Continued from page 2 BEDROCK see rock log		10.00								
41											
NO CORING MOBILE AUGERS B-40											
13											
14	End of Borehole		-5.51 13.41								
15							0 5-6 PERCENT AXIAL STRAIN AT				

## RECORD OF DRILLHOLE BH88-D102

LOCATION 9827N 988 LOCAL CO-ORDINATES

AZIMUTH

INCLINATION

DRILLING DATE 26/07/88
DRILL RIG ROTARY/MOBILE B-40

DATUM GEODETIC (Approx.)

SHEET 4 OF 4



DRILLING CONTRACTOR MOBILE AUGERS & RESEARCH RECORD FR-FRACTURE F-FAULT DEPTH SCALE SM-SMOOTH FL-FLEXURED CONDUCTION

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-CONTOURN CL-CLEAVAGE J-JOINT R -ROUGH M -MAAA NE-NWEAEW PENETRATION E SH-SHEAR No. P-POLISHED ST-STEPPED NOTES DESCRIPTION SYMBOLIC ELEV. VH-VEIN S-SLICKENSIDED PL-PLANAR VN-VEIN

RECOVERY
101AL SCLD 96
96
PHACT. DISCONTINUITY DATA
107AL TOTAL SCLD 96
PHACT. DISCONTINUITY DATA
107AL TYPE AND SURFACE
DESCRIPTION RUN DRILLING DEPTH (M) WATER LEVELS FLUSH TOTAL CORE IS INSTRUMENTATION 2222 -1.10 881-1814E 0.00 to 9.70m overburden see 9.00 overburden logs for description PROJECT -1.80 META ARKOSE. black to red to white alternating bands of blotite quartz and foldspar. heavily hematized micro-cyrstailine foliation @ 25-35 deg., @ 10.0 to 10.50m rock is sheared with abundant microfolds, 9.70 to 12.00m broken core with core loss due to drilling technique 9.70 083 10 .073 9 010 .03 034 10 11 .038 . 076 12 00 067 073 Oh. 13 -5.45 End of Drillhole 13.35 14

DEPTH SCALE

1: 25

Golder Associates

LOGGED R.B.
DATE 241084818/6 Page
CHECKED Burn

## RECORD OF BOREHOLE BH88-D103

SHEET 1 OF 3

LOCATION 9632N 10,128E LOCAL CO-ORDINATES SAMPLER HAMMER, 63.5kg, DROP, 760mm

1: 25

BORING DATE 27/07/88

7/07/88 DATUM GEÓDETIC (Approx.)
PENETRATION TEST HAMMER. 63.5kg, DROP, 760mm



CHECKED BUNZ

1 5 E	EZOMETE
	OR TANDPIPE STALLATIO
мн	
MH	
	. —

RECORD OF BOREHOLE BH88-D103

SHEET 2 OF 3

LOCATION 9632N 10,128E LOCAL CO-ORDINATES

SAMPLER HAMMER, 83.5kg, DROP, 760mm

1: 26

BORING DATE 27/07/88

DATUM GEODETIC (Approx.) PENETRATION TEST HAMMER, 83.5kg, DROP, 780mm



CHECKED Burne

SOIL PROFILE SAMPLES DYNAMIC PENETRATION HYDRAULIC CONDUCTIVITY, METHOD DEPTH SCALE
METRES ADDITIONAL LAB, TESTING RESISTANCE, BLOWS/0.3m k. CM/SEC PIEZOMETER STRATA PLOT BLOWS/0.3M OR STANDPIPE NUMBER TYPE ELEV. SHEAR STRENGTH WATER CONTENT, PERCENT DESCRIPTION nat.V.- + O.- @ rem.V.- @ U.- O INSTALLATION DEPTH (m) Cu, kPa continued from page 1 2.60 881-1814E 5.00 BEDROCK see rock log NO 2.18 6.42 End of Borehole 8 8 10 16-6 PERCENT AXIAL STRAIN AT FAILURE DEPTH SCALE LOGGED RB Golder Associates

### RECORD OF DRILLHOLE BH88-D103

SHEET 3 OF 3

LOCATION 9632N 10,128E LOCAL CO-ORDINATES

DRILLING DATE 27/07/88

DRILL RIG ROTARY/MOBILE 8-40

DATUM GEODETIC (Approx.)



	BD		9			ATE	N -	FR-	FR	ACTU	RE		FAULT				FL-FLEXURED JE-UNEVEN	A D	
ES TES	RECORD	DESCRIPTION	NC 106	ELEV.	RUN No.	TION R	M. RETURN COLOUR	SH-	SHE	AR		PH	POLISH			ST-STEPPED PL-PLANAR	-WAVY	WETR/ TT LO	NOTES WATER LEVELS
METRES	DRILLING	DEJONIF HON	SYMBOLIC	DEPTH (M)	RUN	PENETRATION RATE	FLUSH	TOY/	CO	SOLID CORE S	R.Q	.D.	FRACT. INDEX FER OUR	DD)		ONTINUITY DATA  TYPE AND SURFACE DESCRIPTION	EL-FLEXURED W -WAYY C -CURVED HYDRAULIC CONDUCTIVIT	POIN	INSTRUMENTATIO
2	DRII		S.			PEN	FLL	223	2	288	2 22	22	-955	99	222	DE2CKIN LION	1	1111	
2	Т	0.00 to 2.95m overburden see		5.80 2.00						Ш	Ш	Ш	Ш	Ш	Ш		ШН	1111	
		overburden log for description																	
3		META ARKOSE, black to red to		4.65 2.95		D2													
		white alternating bands of biotite feldspar and quartz, feldspar heavily hematized, fine grained, 3.90 to 4.35m rock is sheared with abundant			60	.0242													
		microfolds, foliation @ 25 deg throughout core			4	.0233				П	П	П							
4					9	.0422					,					FO,R,TR P			
					0	.0223										(J., 1			
														0		FO,R,UE,S FO,SM,TR S FO,SM,P,TR S, HEMATITE			
5					1	.0346													
															ď	PO,R,HEMATITE, TR CHLORITE J,P,TR S,UE			
		End of Drillhole		5.42	$\overline{}$										u	J,R, IRR,P,TR S			
. 6																			
7								Ш		Ш	Ш	Ш		Ш				Ш	

DEPTH SCALE

Golder Associates 1: 25

LOGGED R.B. DATE 24/88/88 /6 Plus CHECKED Burn