

ARIS SUMMARY SHEET

District Geologist, Prince George

Off Confidential: 91.10.30

ASSESSMENT REPORT 20417

MINING DIVISION: Omineca

PROPERTY: Rain  
LOCATION: LAT 55 09 00 LONG 123 50 00  
UTM 10 6111585 446890  
NTS 093004W  
CLAIM(S): Rain 6-8,Rain 13-14,Rain 45  
OPERATOR(S): Continental Gold  
AUTHOR(S): Sivertz, G.W.  
REPORT YEAR: 1990, 49 Pages  
KEYWORDS: Overburden,Tills,Glaciolacustrine deposits,Glaciofluvial deposits  
Aluvium,Cross sections

WORK  
DONE: Drilling,Physical  
OBDR 538.6 m 11 hole(s);NQ  
Map(s) - 2; Scale(s) - 1:2500,1:10 000  
ROAD 5.0 km

O

D



TYPE OF REPORT/SURVEY(S)

DRILLING

TOTAL COST

\$ 80,329.21

AUTHOR(S) George Sivertz

SIGNATURE(S) George Sivertz

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED April 30, 1990. (SEE) YEAR OF WORK 1990

PROPERTY NAME(S) RAIN

COMMODITIES PRESENT Unknown

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN -

MINING DIVISION OMINECA

NTS 93.0/4W

LATITUDE 55° 09' N

LONGITUDE 123° 50' W

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units), PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)]:

RAIN 1-74

OWNER(S)

(1) Continental Gold Corp. (2)

MAILING ADDRESS

Suite 1020 - 800 W. Pender St.  
Vancouver, BC V6C 2V6

OPERATOR(S) (that is, Company paying for the work)

(1) Continental Gold Corp. (2)

MAILING ADDRESS

As Above.

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

The overburden on the RAIN 1-74 claims consists of sandy and silty till overlying glaciolacustrine, glaciofluvial, and alluvial deposits. These in turn overlie boulder clay basal tills. Overburden thicknesses are highly variable, from 1-75 + m. Bedrock on the SW

REFERENCES TO PREVIOUS WORK NONE is Takla Group, and on the E and NE is Paleozoic volcanics/sediments.

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	COST APPORTIONED
<b>GEOLOGICAL (scale, area)</b>			
Ground			
Photo			
<b>GEOPHYSICAL (line-kilometres)</b>			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
<b>GEOCHEMICAL (number of samples analysed for ....)</b>			
Soil			
Silt			
Rock			
Other			
<b>DRILLING (total metres; number of holes, size)</b>			
Core			
Non-core	538.59m, 11 holes, NW	RAIN 6, 7, 8, 13, 14 and 45 claims	
<b>RELATED TECHNICAL</b>			
Sampling/assaying			
Petrographic		RAIN 6, 7, 8	\$ 34,038.15
Mineralogic		RAIN 13, 14	\$ 23,218.12
Metallurgic		RAIN 45	\$ 23,072.96
<b>PROSPECTING (scale, area)</b>			
<b>PREPARATORY/PHYSICAL</b>			
Legal surveys (scale, area)			
Topographic (scale, area)			
Photogrammetric (scale, area)			
Line/grid (kilometres)			
Road, local access (kilometres)			
Trench (metres)			
Underground (metres)			
			<b>TOTAL COST</b>
			\$ 80,329.21

FOR MINISTRY USE ONLY	NAME OF PAC ACCOUNT	DEBIT	CREDIT	REMARKS:
Value work done (from report)				
Value of work approved				
Value claimed (from statement)				
Value credited to PAC account				
Value debited to PAC account				
Accepted . . . . . Date	Rept. No.			Information Class

LOG NO: 11 01	RD.
ACTION:	
FILE NO:	

**CONTINENTAL GOLD CORP.**  
**ASSESSMENT REPORT**  
**OVERBURDEN DRILL PROGRAM**  
**RAIN 1 - 74**  
**PLACER CLAIMS**  
**PHILIP LAKES AREA**  
**OMINECA MINING DIVISION**  
**NTS 93 0 / 4 W**

**LATITUDE 55° 09' N / LONGITUDE 123° 50' W**

by

**G.W.G. SIVERTZ, B.Sc.**  
**CONTINENTAL GOLD CORP.**  
**OCTOBER 1, 1990**

**GEOLOGICAL BRANCH**  
**ASSESSMENT REPORT**

**20,417**

## TABLE OF CONTENTS

	Page
Summary	1
Introduction	1
Claim Data	2
Location, Access and Physiography	4
Geology of Surficial Deposits	4
Recommendations	6
References	6
Statement of Costs	7
Statement of Qualifications	8

## LIST OF FIGURES

	Following Page
Figure 1      Claim Map	1
Figure 2      Location Map	3
Figure 3      Drill Hole Location Plan	in pocket
Figure 4      Cross Section, DDH 90-690 to DDH 90-698	in pocket
Figure 5      Cross Section, DDH 90-681 to DDH 90-682	in pocket

## APPENDICES

Appendix I	Drill Hole Data and Costs
Appendix II	Drill Hole Overburden Logs

## SUMMARY

Continental Gold Corp. completed eleven drill holes on the RAIN 6-8, 13-14, and 45 placer claims during the period June 26 - July 19, 1990. The holes were drilled to assess the nature and thickness of the surficial deposits in the western and south-central sections of the RAIN 1 - 74 claim block.

A total of 538.59 m of overburden was drilled at a direct cost of \$62,734.21 or \$106.19 per m.

The eleven vertical holes were drilled on two sections perpendicular to the valleys of two creeks. Overburden thicknesses varied from 41.76 m to 81.99 m across the main creek section, and from 3.35 m to 34.14 m in the south-central valley. Materials intersected included: recent alluvial deposits, glaciofluvial sands and gravels, varved lacustrine clays and silts, and dense boulder clay tills. The glacial deposits form the thickest parts of the sequence except in areas of very shallow overburden.

## INTRODUCTION

This report describes an overburden drilling program conducted on the RAIN 6-8, 13-14, and 45 placer claims owned by Continental Gold Corp. The holes were drilled using a Longyear 38 drill. The overburden was cored; a tricone was used in sections of hard ground. Appendix I summarizes drill hole data and costs.

Cored and triconed overburden materials were logged in detail; drill logs are provided as Appendix II at the rear of this report.



## CLAIM DATA

The RAIN 1 - 74 placer claims are owned by Continental Gold Corp. The claims form a contiguous block. The following list provides claim data with expiry dates contingent upon acceptance of assessment work described in this report. Figure 1 shows the location of the subject claims.

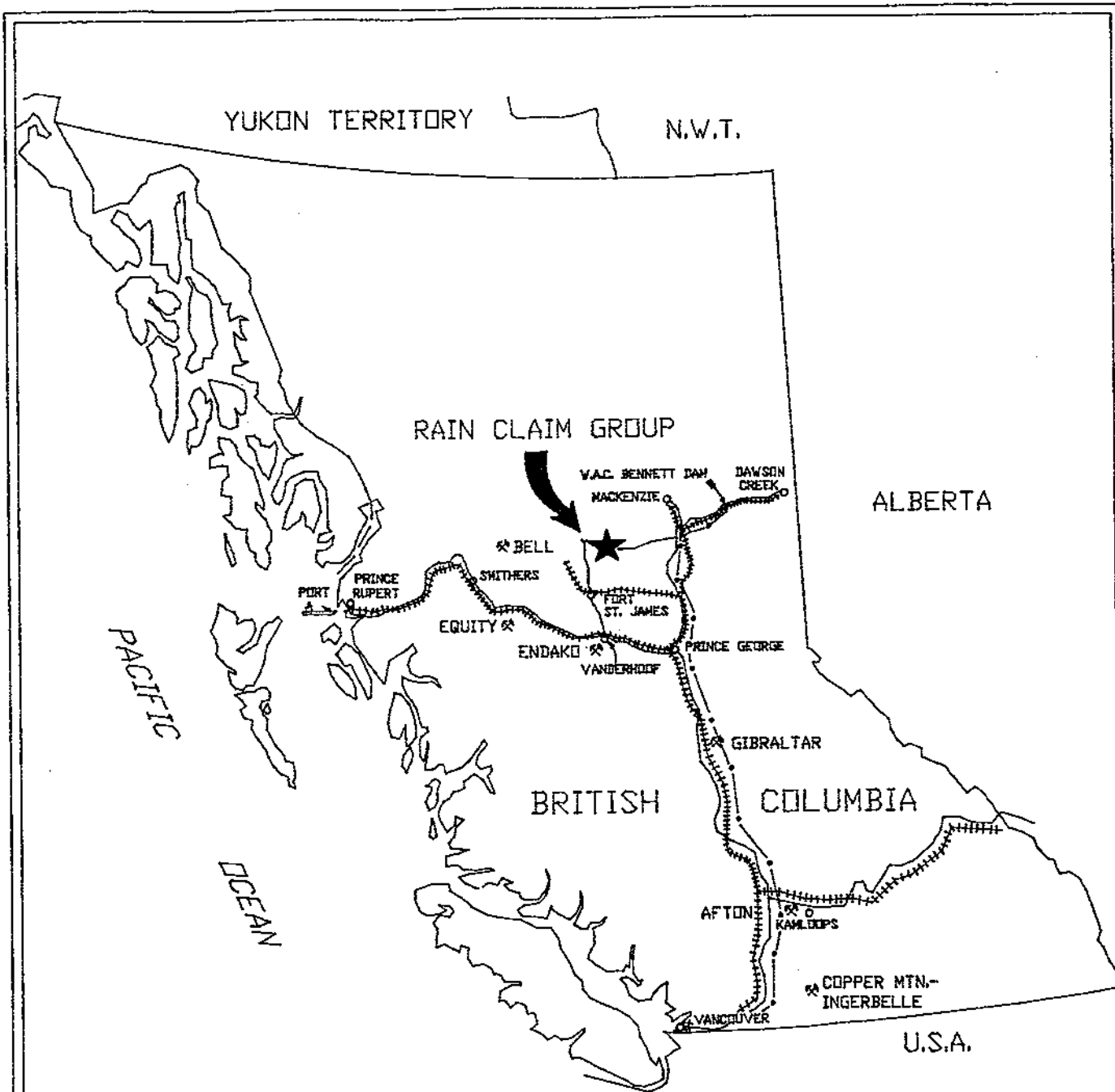
### RAIN 1 - 74 PLACER CLAIMS Omineca Mining Division

Claim	Record No.	Year Recorded	Expiry Date
RAIN 1	274	May 3, 1990	1993
RAIN 2	275	May 3, 1990	1993
RAIN 3	276	May 3, 1990	1993
RAIN 4	277	May 3, 1990	1993
RAIN 5	278	May 3, 1990	1993
RAIN 6	279	May 3, 1990	1993
RAIN 7	280	May 3, 1990	1995
RAIN 8	281	May 3, 1990	1995
RAIN 9	282	May 3, 1990	1993
RAIN 10	283	May 3, 1990	1993
RAIN 11	284	May 3, 1990	1993
RAIN 12	285	May 3, 1990	1993
RAIN 13	286	May 3, 1990	1993
RAIN 14	287	May 3, 1990	1993
RAIN 15	288	May 3, 1990	1993
RAIN 16	289	May 3, 1990	1993
RAIN 17	290	May 3, 1990	1993
RAIN 18	291	May 3, 1990	1993
RAIN 19	292	May 4, 1990	1993
RAIN 20	293	May 4, 1990	1993
RAIN 21	294	May 4, 1990	1993
RAIN 22	295	May 4, 1990	1993
RAIN 23	296	May 4, 1990	1993
RAIN 24	297	May 4, 1990	1993
RAIN 25	298	May 4, 1990	1992
RAIN 26	299	May 3, 1990	1993
RAIN 27	300	May 3, 1990	1991
RAIN 28	301	May 3, 1990	1991
RAIN 29	302	May 3, 1990	1991
RAIN 30	303	May 4, 1990	1991



RAIN 1 - 74 PLACER CLAIMS (Continued)

Claim	Record No.	Year Recorded	Expiry Date
RAIN 31	304	May 4, 1990	1991
RAIN 32	305	May 4, 1990	1991
RAIN 33	306	May 4, 1990	1991
RAIN 34	307	May 4, 1990	1993
RAIN 35	308	May 4, 1990	1993
RAIN 36	309	May 4, 1990	1991
RAIN 37	310	May 4, 1990	1993
RAIN 38	311	May 4, 1990	1992
RAIN 39	312	May 4, 1990	1992
RAIN 40	313	May 3, 1990	1991
RAIN 41	314	May 3, 1990	1991
RAIN 42	315	May 3, 1990	1991
RAIN 43	316	May 3, 1990	1991
RAIN 44	317	May 4, 1990	1991
RAIN 45	318	May 4, 1990	1995
RAIN 46	319	May 4, 1990	1995
RAIN 47	320	May 4, 1990	1995
RAIN 48	321	May 4, 1990	1995
RAIN 49	322	May 4, 1990	1995
RAIN 50	323	May 4, 1990	1995
RAIN 51	324	May 4, 1990	1995
RAIN 52	325	May 4, 1990	1993
RAIN 53	326	May 4, 1990	1992
RAIN 54	327	May 6, 1990	1991
RAIN 55	328	May 6, 1990	1991
RAIN 56	329	May 6, 1990	1991
RAIN 57	330	May 6, 1990	1991
RAIN 58	331	May 4, 1990	1991
RAIN 59	332	May 4, 1990	1991
RAIN 60	333	May 4, 1990	1991
RAIN 61	334	May 4, 1990	1991
RAIN 62	335	May 6, 1990	1991
RAIN 63	336	May 6, 1990	1991
RAIN 64	337	May 6, 1990	1991
RAIN 65	338	May 6, 1990	1991
RAIN 66	339	May 6, 1990	1991
RAIN 67	340	May 6, 1990	1991
RAIN 68	341	May 6, 1990	1991
RAIN 69	342	May 6, 1990	1991
RAIN 70	343	May 6, 1990	1991
RAIN 71	344	May 6, 1990	1993
RAIN 72	345	May 6, 1990	1993
RAIN 73	346	May 6, 1990	1991
RAIN 74	347	May 6, 1990	1991



**LEGEND**

- ROAD
- +++ RAILWAY
- MAJOR POWER LINE
- \* PRODUCING PORPHYRY MINES



**CONTINENTAL GOLD CORP.**

MT. MILLIGAN

RAIN CLAIM GROUP  
LOCATION MAP

SCALE: AS SHOWN	FILE: PLAN\RAINLOC
DATE: 18/10/90	DWG. NO.: 2
DRAWN BY: D.M.C.	REVISED:

## LOCATION, ACCESS AND PHYSIOGRAPHY

The RAIN placer claims are situated in the Mt. Milligan area, approximately 10 km east of the Mt. Milligan gold-copper deposit and 5 km north of the north end of the Philip Lakes chain. Access can be gained by all-weather logging road from Windy Point on Highway 97, 86 km to the east. Helicopter access can be had from Prince George, 150 km to the southeast, MacKenzie, 55 km to the northeast, or Fort St. James, 85 km to the south-southwest (Figure 2).

The claims cover gently rolling terrain; local relief is approximately 275 m and average elevation is 1,100 m asl. Small portions of the claim block have been logged but most of the land is forested with pine, spruce and poplar.

## GEOLOGY OF SURFICIAL DEPOSITS

The drill holes were located across sections of the two valleys, approximately 3.5 km apart. The main focus of drilling was on the Limestone Creek valley, on the RAIN 6-8 and 13-14 claims. A total of seven holes was drilled across the valley along a northeast trend (Figure 3). A further four holes were drilled across a smaller, unnamed valley on the RAIN 45 claim along a southeasterly trend (Figure 3).

Drill holes in the Limestone Creek valley intersected a variety of unconsolidated materials. Holes drilled on the benches southwest and northeast of the valley trough intersected a thin layer of silty till, typically 2-4 m thick (see DDH 90-685, 690, 698, 700; Figure 4). Underlying this till is a layer of alluvial sands and gravels, locally dense and containing some silt. This layer averages 5 m in thickness and is truncated by the recent erosional valley of Limestone Creek (Figure 4).

Below the alluvium on the southwest side of Limestone Creek, a thick layer of dense boulder clay till overlies bedrock and averages 35 m in thickness. On the northeast side of the creek, the alluvial layer overlies varved lacustrine clays and silts containing sand and gravel lenses. This lacustrine unit averages 60 m in thickness and thins gradually to the northeast.

The lacustrine deposits overlie a 10 to 15 m thick layer of dense boulder clay till, which thickens abruptly to the southwest and may have been thinned to the northeast by erosion in an outwash channel.

The bedrock channel has a gentle, open U-shaped section with a width of at least 1,300 m and a maximum relief of approximately 75 m between the center of the channel and the rimrock (Figure 4). The cross-sectional area of all categories of unconsolidated material along the section of drilling is estimated to be 88,000 square meters. Approximately 60% of this material is lacustrine clay and silt, with lesser coarser glaciofluvial material.

Drilling on the RAIN 45 claim was completed across an unnamed creek valley, along a northwest trend orthogonal to the valley axis (Figure 3). A total of four holes were drilled, three along a single section and one 300 m upstream, in the valley bottom (Figure 5). The holes intersected a 3-5 m thick surface layer of sandy till, overlying glaciofluvial sands and gravels 5 m to 20 m thick, which in turn overlie a basal sandy till unit 3-8 m thick. The bedrock channel is 250-300 m wide with 30 m of maximum relief. The northwest bedrock wall and ground surface are both much steeper than those across the valley, and bedrock comes within 2 m of surface at the break in slope at the foot of the northwest valley wall (DDH 90-682, Figure 5). This point marks the limit of glaciofluvial valley fill to the northwest.

The lopsided "U" shaped bedrock channel has a cross-sectional area of approximately 8,300 square meters, of which 4,400 square meters are glaciofluvial sands and gravels.

#### RECOMMENDATIONS

- 1) Drilling should continue downstream (northeast) from the RAIN 45 claim to determine the course and terminus of the outwash channel intersected by the drill holes.
- 2) Sampling of the gold content of glaciofluvial gravels should be conducted from open cuts or pits in the northwest wide of the valley floor on the RAIN 45 claim, near the collar of DDH 90-682.
- 3) Testing of the recent alluvium and colluvium for gold content is recommended for the area of drilling on the RAIN 13 and 14 claims. This testing should include test pitting or trenching on the valley walls to investigate gold content of older alluvial sands and gravels exposed below the capping silty tills.

#### REFERENCES

Knight and Piesold Ltd., 1990: Private Report on Overburden Drilling, RAIN Claims, for Continental Gold Corp.

STATEMENT OF COSTS

**RAIN 6, 7, 8 Claims**

DDH 90-695, 90-698, 90-700, 90-705, 90-707 313.34 m of overburden drilling	\$ 25,803.13
91.5 hours bulldozer time at \$90/hr	<u>8,235.00</u>
	34,038.13

**RAIN 13, 14 Claims**

DDH 90-685, 90-690 136.25 m of overburden drilling	19,528.12
41 hours bulldozer time at \$90/hr	<u>3,690.00</u>
	23,218.12

**RAIN 45 Claim**

DDH 90-676, 90-681, 90-682, 90-711 89.0 m of overburden drilling	17,402.96
63 hours bulldozer time at \$90/hr	<u>5,670.00</u>
	23,072.96

**TOTAL**

\$ 80,329.21

### STATEMENT OF QUALIFICATIONS

I, GEORGE WILLIAM GUSTAV SIVERTZ, of the District of Maple Ridge, B.C., hereby certify:

- 1) That I am a Geologist employed by Continental Gold Corp., with offices at Suite 1020 - 800 West Pender Street, Vancouver, B.C.
- 2) That I graduated from the University of British Columbia with an Honours B.Sc. in Geology in 1976.
- 3) That I have practised my profession as an exploration Geologist since 1976.
- 4) That I have no interest, beneficial or otherwise, in the securities of Continental Gold Corp. or in the RAIN 1- 74 placer claims.
- 5) That I have been a Project Geologist employed by Continental Gold Corp. on the Mt. Milligan Project since February 11, 1990, and have been directly involved in the exploration of the RAIN 1 - 74 claims.

DATED this 25<sup>th</sup> day of *October*, 1990.

  
George William Gustav Sivertz

APPENDIX I

DRILL HOLE DATA AND COSTS



APPENDIX I  
**CONTINENTAL GOLD CORP.**  
**RAIN PLACER CLAIMS**  
**DRILL HOLE DATA**

Hole No.	Northing	Easting	Dip	OB Depth	Direct Cost
90-676	10951.46	22917.74	-90°	34.14 m	\$ 9,277.76
90-681	10808.22	23025.57	-90°	18.90 m	3,076.50
90-682	11087.42	22825.03	-90°	3.35 m	682.50
90-685	13701.56	20673.98	-90°	81.99 m	10,237.00
90-690	13513.42	20452.48	-90°	54.26 m	9,291.12
90-695	14580.97	20454.65	-90°	78.03 m	6,451.15
90-698	14483.20	21348.24	-90°	41.76 m	1,494.00
90-700	14133.12	21161.89	-90°	65.23 m	9,831.88
90-705	13845.06	20765.50	-90°	49.68 m	4,226.00
90-707	13973.06	20976.85	-90°	78.64 m	3,800.10
90-711	10805.14	22679.55	-90°	32.61 m	4,366.20
<b>TOTAL</b>				<u>538.59 m</u>	<u>\$62,734.21</u>

APPENDIX II

DRILL HOLE OVERBURDEN LOGS

# TEST HOLE LOG

PROJECT Mt. Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE S.E. Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN June 27 /90 DATE FINISHED June 30 /90

LOGGED BY KGB/RNK

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
-NQ Hole -Bw rods. -SPT hammer operated with wire line. -Tricone from 0'-16'  -SPT at 14'-16' -Coring overburden at 16' -Pump pressure increase, along with some sand and in cuttings during brief L.O.C.					0	+	At Surface: - Sand and gravel with some silt and clay (Sandy Till) - visible from drill pad clearing.
	25	35/16" 35/12" 15/18" 15/24"	50	#1	6	+	- Sand and gravel with some silt and clay - angular fragments - grey colour
					8	+	
					10	+	
	63	0/16" 30/12" 24/18" 62/24"	54	#2	14	+	- Gravel with some sand and silt (⇒ Sandy Gravel Till) - angular fragments. - trace rust staining on fragments. - possible weathered bedrock
	30				16	+	- Coarse gravel and fine cobbles only recovered, with exception of a clump of clayey sand and gravel (Gravelly Till)
	2				20	+	Very few stones recovered; rare finer clumps
	15				25	+	Only stones recovered
	30				30	+	Only stones recovered
				low K		36	+
			K=3.2 <sup>2</sup> on/s		40	+	No core recovery, but drilling conditions and extremely low K, indicated by packer test, suggests glacial till.
					42	+	
	5				45	+	Some gravel and fine cobbles recovered. Mud washing out of top of casing contains sand and small pebbles.
	0				48	+	
	0				50	+	Drilling conditions indicate that soil is consistently gravelly.

PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE SE Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN June 27/90

DATE FINISHED June 30/90

LOGGED BY KGB/RNK

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
<p>Water loss, type and size of hole, drilling method, groundwater level, etc.</p> <p>Casing put down to 60' to prevent further sloughing.</p> <p>Temporary L.O.C. at 63' for 2min, and Intermittent L.O.C. down to 72'.</p> <p>Serious L.O.C. at 70'-72'.</p> <p>Casing put down to 72' prior to SPT to prevent any sloughing.</p> <p>Get some returns while lowering casing.</p> <p>Nearly full circ. returned when switching back to mud.</p> <p>SPT attempted at 72' but no recovery.</p> <p>Tricone down 2' to 74' to get past rock.</p> <p>Tricone to 85'.</p> <p>SPT at 74'-76'.</p>	0	K=5			50	0	<p>Pecker test indicates a more permeable soil medium, but seal washed out at highest pressure, so leakage is probable around the pecker during the entire test.</p> <p>Several large stones recovered</p> <p>Drilling conditions unchanged from before.</p> <p>Sloughing of the hole may indicate a sandier fill.</p> <p>Circulation problems may indicate gravel and sand.</p> <p>Pecker test attempted, but unable to fill interval while pumping at 50 litres/minute. May indicate gravel and sand with only trace silt and/or clay (if any at all).</p> <p>Large rock hit during SPT</p> <p>Lots of rock chips coming out of top of casing. Much coarser material being flushed out in drilling mud than previously.</p> <p>Sand and gravel with some cobbles (1/2" dia). Angular particles. Grey colour.</p> <p>Drilling conditions very rough. Probably still sand and gravel.</p>
	5				52	0	
	5				58.5	0	
	50				60	0	
	5			high K	62	0	
	0	50+1/8"			66	0	
	0				70	0	
	20	72/6" 102/12" 114/18" 11/24"	216	#3	72	0	
					72.5	0	
					73	0	
				74	0		
				76	0		
				81	0		

# TEST HOLE LOG

PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE SE Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN June 27/90 DATE FINISHED June 30/90

LOGGED BY KGB/RNK

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL		
<p>Complete L.O.C. between 81'-84'. Hole sloughing.</p> <p>Full return at 84'</p> <p>SPT at 85'-85½'</p> <p>Coring from 85.5' to 96'</p> <p>Piezometer slotted every foot. Open hole around piezo. 1" thick butanite cap installed at surface to prevent surface runoff into piezo.</p> <p>Piezometer installed to 93'</p> <p>Tricone from 96' to bedrock.</p>	0	236/6"			81		Drilling conditions indicate boulders. Hole sloughing again.		
	0		84						
	90		85		Sand and gravel with some clay and silt (Sandy Till) 2½" long sample is cohesive Angular frags Grey-brown colour				
	38		85.5						
	<p>Coring starts at 112'</p> <p>Internal RQD</p>		27				90		Drilling conditions indicate coarse material (gravel) Same conditions as before. Large gravel / fine cobbles (~½"-2" dia) recovered.
			27	93					
				96		Cored through 3" thick boulder. Stones recovered.			
				100					
			88	112		<p>Bedrock → Gabbro Dark green colour, coarse-grained, white phenocrysts, oriented bands Very competent (few fractures)</p>			
			70%	117					
70%		122							
63%		127							
55%		132							
65%		137							
47%	142								
55%	147								
73%	152								
55%	157								
88%	162								
80%	167								
E.O.H = 172'	97				172				

PROJECT CONTINENTAL GOLD CORP. - MT. MILLIGAN

PROJECT No. 1672

LOCATION OF TEST HOLE S.E. of S.E. EMBANKMENT

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JUNE 30, 1990 DATE FINISHED JULY 1, 1990

LOGGED BY MDG / KGB

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
SPT 0'-2' Tricone 4 1/4"  SPT test: single pulley cuthead w 2" rope	63	6 1/6"		#1	0		Clay fill - some pebbles and some sand Dark brown and wet Sandy till - with coarse sand and pebbles at base Sample #1 - 14" over 0'-2' interval  SPT: Hit rock at 18"; final blow count may be too high
		8 1/6"			2		
SPT 4.5'-6.5'	38	19 1/6" 47 1/6" 37 1/6" 31 1/6"		#2	4.5 6.5		Sand and Gravel with some silt & trace clay ⇒ Sandy Gravel Till SPT: hit rock at 12"
SPT 13'-15'	29	26 1/6" 31 1/6" 35 1/6" 27 1/6"		#3	13 15		Sandy Gravel Till - as above for 4.5'-6.5' interval SPT: consistent blow counts; uniform over 13'-15' interval
Coring from 22' casing at 22'	50	12 1/6" 15 1/6" 16 1/6" 52 1/6"		#4	19 20 22		start of silt at 19' - easy tricone drilling Silty sand - very uniform & well sorted. Medium brown colour sand medium grain size SPT: hit rock at 24"
	33				22.5 23.5		Boulders encountered 1" to 3" core samples Sands and gravel with some silt & trace clay.
Coring smoothly & easily	17				30 32		Sand and Gravel with some silt & trace clay - many rock core samples (boulders) ave. dia. = 3" - grey/brown colour ⇒ Sand & Gravel Till
	80		34		37		Sand and silt with some gravel and trace clay - few boulders present (unlike above) - finer particle size than above
	60	k < 3 x 10 <sup>-8</sup> cm/s	low K = 3 x 10 <sup>-8</sup> cm/s	#5	40 42		As above (32'-37') Sample #5: 1' core sample - representative of the impervious material. Packer test No. 1 34'-42': K very low (permeability) As above

# TEST HOLE LOG

PROJECT CONTINENTAL GOLD CORP. - MT. MILLIGAN

PROJECT No. 1672

LOCATION OF TEST HOLE S.E. of S.E. EMBANKMENT

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JUNE 30, 1990 DATE FINISHED JULY 1, 1990

LOGGED BY KGB / MDG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
SPT test attempt at 42'. Hit rock. Sample taken but blow count too high. Tricone down to 45' SPT at 45' Hit boulder again	100	75+1/6"		#6	42		Sand and silt with some gravel, trace clay Increasing amount of boulders.
Tricone 45'-55'	0	56+1/6"			45		Hole is staying open - implies competent material e.g. till in the hole - more rocks (gravel) encountered as SPT is attempted repeatedly. - Driller says material feels same as till in upper intervals.
SPT at 55'-56' Coring from 56'	25	130+1/6" 100+1/6"		#7	55 56		Rock and boulders encountered => High blow counts Sand and gravel with some silt and trace clay - More gravel than in Sample #6 - angular fragments. - sample has same colour as above samples ] Sample #7
RQD 0%					60		White rock core recovered - Quartzite - probably large boulder. Quartzite broken but very hard RQD = 0 in quartzite
28		k=4x10 <sup>-8</sup> cm/s	64		62		Bedrock - altered to clay-like consistency but has bedrock appearance Gabbro: crumbly, broken - can break with fingers poor quality rock
25			72		70 72		Dark green gabbro. Easily broken with rock hammer - broken in part.
31					75		Metamorphosed intrusive. Schistose texture in part - mafic inclusions surrounded by felsic stringers - broken to 1cm pieces in part. Planar frac.
28					80 82		As above (75-82) - Planar frac. at high angle to core axis
67					87		Bedrock: Dark green gabbro. Crumbly in part ~7 frac./m but weak rock - can break with fingers. Soft rock - easily indented w rock hammer
57					92		As above (87-92') - easily indented w rock hammer. Crumbly. Although rock quality low, primary perm. probably low. Perm. is likely controlled by frac. in rock.
42					97		As above (92-97) Packer Test: 74'-102' Could not get seal in rock.
62					102		As above
					108		As above

KNIGHT AND PIESOLD LTD.  
CONSULTING ENGINEERS

# TEST HOLE LOG

TEST HOLE No  
**90-681**  
SHEET **3** of **3**

PROJECT CONTINENTAL GOLD CORP. - MT. MILLIGAN

PROJECT No. 1672

LOCATION OF TEST HOLE S.E. of S.E. EMBANKMENT

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JUNE 30, 1990 DATE FINISHED JULY 1, 1990

LOGGED BY MDG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Coring Continues in bedrock	RQD 46				108	/ / / / /	Dark green Gabbro (as above)
					112	- - - - -	Clay at 112' ~ 1cm thick. Probably fault gouge.
					117	/ / / / /	Bedrock. High RQD values. Good quality rock.
					122	/ / / / /	Packer test at 124'-132' indicates very low permeability bedrock.
			124		127	/ / / / /	
		$k \times 10^{-6}$ cm/s			132	/ / / / /	END OF HOLE



PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE SE Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 1/90

DATE FINISHED July 2/90

LOGGED BY KGB/MQG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tricone down to 5'					0	+ + +	Sandy silt with trace gravel and clay, some organics.
					1	o o o	Sand and gravel lens; visible from road cut.
SPT at 5'-5 1/2'					5	+ + +	Drilling conditions indicate less gravel but more boulders. (drilling into finer sandy silt material again)
Hit two rocks during test.	100	66/6"		#3	5	+ + +	
Tricone to 11' (thru 8' of bedrock)					7	+ + +	Sandy silt with trace gravel and clay. ⇒ Silty Till - Brown colour. Boulders encountered.
Casing at 11'					7	x	Rock chips in sample due to triconing through boulders (in first 2" of the sample).
Coring NQ at 11'					10	x	BEDROCK (Gabbro)
11'-14' RQD = 0%	89				10	x	Weakly metamorphosed, green rock with oriented bands and white phenocrysts.
14'-18' RQD = 0%	77		14'		14	x	Soft, clay-like consistency rock in several spots. Clay-like along fracture surfaces. (can indent rock with thumb nail)
18'-22' RQD = 19%	71	k=6x10 <sup>-8</sup> cm/s		low K	18	x	Bedrock has several intervals of extremely fractured bedrock (1'-2' intervals); clay along fracture surfaces.
22'-26' RQD = 20%	92		22'		20	x	Bedrock is rigid and not soft and crumbly and clay-like as in the beginning (7' to 18')
26'-30.5' RQD = 31%	70				20	x	Two fracture planes contain lots of clay (at 25' to 25.5')
30.5'-35.5' RQD = 52%	96		31'		30	y	
35.5'-40' RQD = 0%	28		31'	high K	30	x	No apparent clay along fracture surfaces.
40'-42' RQD = 0%	79	k=1x10 <sup>-5</sup> cm/s	42'		40	x	- Loss of core recovery; grinding core
42'-47' RQD = 15%	67		42'		40	y	- Very fractured.
47'-52' RQD = 0%	72				50	y	Very fractured bedrock; frags ~ 1" wide.
52'-56' RQD = 35%	75		52'		50	x	
56'-56.5' RQD = 0%	42		52'	high K	50	x	
56.5'-60' RQD = 10%	57	k=3x10 <sup>-5</sup> cm/s	60'		60	y	Badly broken bedrock at 60'
60'-67' RQD = 11%	60				60	x	Pieces ~ 1/4" to 3"
67'-70' RQD = 34%	45				70	y	

PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE SE Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 1/90

DATE FINISHED July 2/90

LOGGED BY KGB/MOG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
70'-75' RQD = 55%	77		75'		70	x x x x	At 70 1/4" Break in drilling Broken core but good recovery Broken zone at 71' - pieces ave 1" (4" zone)
75'-81' RQD = 25%	69	$k=1 \times 10^{-6}$ cm/s	low K		75	x x x x	Drilling conditions indicate clay zone at 78'
81'-88' RQD = 30%	85		81'		80	x x x x	2 clay gouge zones from 80'-81' - 5" and 4" zones. clay matrix in rock frag. (1mm → 10mm)
88'-90' RQD = 44%	88				85	x x x x	Dark clayey shale; possibly gouge (6" zone) Crumbly and badly broken.
90'-95' RQD = 52%	92		92'		90	x x x x	Badly broken at 89'-90' Ground bedrock core.
95'-98' RQD = 42%	100	$k=6 \times 10^{-6}$ cm/s	high K		95	x x x x	Hard bedrock; excellent recovery Competent rock; planar fractures; ~7 fracs/meter. Occasional quartz bands (1cm thick).
			100'		100	x x	E.O.H. at 100'

PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 3/90 DATE FINISHED July 5/90

LOGGED BY MDG/KGB

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL	
<p>Tricone 4 1/4" with Mud.</p> <p>SPT at 5'-7'</p> <p>SPT at 10'-12'. Very dense. Decide to core.</p> <p>Coring at 12'. NQ rods.</p> <p>17'-22'. Coring with water.</p>	100	37/6" 59/6" 42/6" 53/6"		#1	5 7		Very dense clay with some silt and trace pebbles, <sup>seeds</sup> and rock frags. (to 1cm). Light brown clay ⇒ silty clay with trace pebbles ⇒ Clayey till.	
	88	33/6" 46/6" 58/6" 85/6"		#2	10 12		Difficult hammering ⇒ very dense. Very dense clayey till with some silt and trace small pebbles and sand. Hit rock at 11'6" 55 blows/4" for last blow count = 85/6" may be high.	
	17				17		Pebbles and clay with rock frags (to 3cm). Clay matrix holding pebbles. low recovery. ⇒ Boulder Clay Till.	
	21		19	#3	17		Clay and pebbles (to 1cm) with some silt. 1mm rock frags in clottings. Medium dense clay and some sand.	
	29		K=2410 <sup>4</sup> cm/s	#4	22		Clay with some silt and sand. Uniform, well sorted, poorly graded.	
	50				24		Silty clay with some subangular pebbles (to 2cm)	
	0				25		Silty clay is homogeneous and uniform. Easily indented with fingers.	
				21	27		No recovery. Probably loose silt unit which washed during coring.	
		100	14/6" 18/6" 22/6" 24/6"		#5	32 34		Coarse sand (1-3mm). Very well sorted, poorly graded. Occasional pebble to 1cm. Clean sand, trace silt.
	<p>SPT at 32'-34'</p> <p>SPT at 37'-39'. Tricone (2 1/8") from 37'.</p>	65	19/6" 38/6" 38/6" 42/6"		#6 #7	37 39		Coarse grained sand (6" sample), very clean and uniform contact well defined. Sandy silt with trace clay (9.5" sample). Brown colour, well sorted, uniform. Easily indented with fingernail.
<p>Packer at 42'-44' took long to deflate. Possible sloughing of hole wall.</p> <p>SPT at 47'-49'. Dense material with high blow counts.</p>	50	44/6" 83/6" 116/6" 83/6"		#8	47 49		Return from top of casing is dark brown with a few sand particles. (from hand sieve). Smooth drilling conditions. Probably interbedded sequence of coarse sand / sandy silt. Coarse grained sand (as above). 2" sample. Well defined contact. Sandy silt (as above). 10" sample.	
<p>Switched to coring at 52'.</p>	20				52		Hole stays open very well when rods repeatedly withdrawn. A competent, cohesive unit.	
	100			#9	57		Brown-grey Clay with trace silt. Very homogeneous and uniform. Very stiff (barely indent with finger) and competent. Upper 2" of sample is clay / coarse sand mixture.	
	75				59		Clay, as above, except blue-grey in colour.	
	100				62		Clay, as above.	
<p>Packer test at 64-72'. Clay smeared on bottom packer, indicating a good seal.</p>					64			
					67			

PROJECT Mt. Milligan  
LOCATION OF TEST HOLE Main Embankment  
DATE BEGUN July 3/90 DATE FINISHED July 5/90

PROJECT No. 1672  
GROUND ELEVATION \_\_\_\_\_  
LOGGED BY MD6/KGB.

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
<p>67'-72' Packer test hydrofractured (?) clay. High Q rate. SPT 72'-73 1/2'</p>	75			#10	67		Clay, as above.
	100	38/6" 51/6" 41/4.5"	72	#11	72		On 3rd 6" interval, clay became v. dense and hammer wouldn't punch through.
	15		74		73.5		Core recovery is low. Clay clumps continue from top of casing in return.
	75	K=9x10 <sup>4</sup> cm/s			77		
	68		82		79		Clay, as above.
	45				82		Trace pebbles found in clay core. Some silt. ⇒ Silty clay.
					87		
							Clay, as above; easy drilling conditions.
Switched to tri-coning at 87' with 4 1/2" tri-cone (to keep hole open). Casing to 87'							
	0				102		Trace of clay recovery on core tube wall, probably soft clay with some silt.
	17				107		Silty clay with trace fine sand. Cohesive and somewhat stiff. Light brown colour. Different from blue-grey clay above in colour and higher silt content. Probably glacial/estuarine sed. Silt washed outside casing.
	15			#12	112		Clayey silt, as above.
	23		119		117		Blue clay with some silt. Similar appearance to clay found in 60'-87' interval. Stiff clay.
Sand and clay washing up outside casing	38	K=4x10 <sup>5</sup> cm/s			122		Clay and pebbles with some sand. Cored through boulder. Dense. Boulder Clay Till.
	19				124		Pebbles and clay with some cobbles (to 4cm), silt and sand. Very well graded, poorly sorted. Typical Glacial Till.
Rock chips and brown clay washing out of casing.	10		127		127		Clay and pebbles with some sand, as above. Some pebbles rounded. Most angular. Cored through 2" boulder.
	13				132		As above. Core return has some lumps of clay and pebbles.
	28				137		As above. Turning more brown in colour. Intersected zone of angular rock chips, with clay and coarse sand. Very iron stained. Rock chips ~ 2cm wide.
					142		

PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 3/90

DATE FINISHED July 5/90

LOGGED BY MDS/KGB

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
<p>Water loss, type and size of hole, drilling method, groundwater level, etc.</p> <p>Changed bit at 157'. Pulled out rods and put them down again. Continued coring.</p>	17				142		Recovered pebbles and small clump of clay and sand. Most recovery was pebbles with the clay matrix washed out. Pebbles show iron staining and mottled appearance. Boulder Clay Till.
	7				147		As above. Small clay clump recovered, but mostly pebbles. Drilling conditions unchanged over last 25'.
	3				152		Drilling conditions unchanged.
	0				157		More sand recovered in sieve samples. Drilling conditions are smoother as drill moves down on its own weight. Dark brown colour from return (as before). Silt appears with sand. => Sandy Clay Till.
	5				162		Cored through boulder. Has sandy clay adhering to its ends. Looks like the same clay till recovered previously. Several pebbles recovered with same staining pattern.
	0		169		167		No change in drilling conditions.
	10		low K K=2x10 <sup>-4</sup> cm/s		172		Only pebbles recovered. Have the same iron stained/mottled pattern as those in the boulder clay till recovered before. Packer test has low K, indicating a fine-grained material.
	5		177		177		Only pebbles recovered. Some are fractured into smaller pieces. Have the same appearance as before.
	0				182		Drilling conditions unchanged.
	7				187		A few pebbles recovered. Trace of clay and silt stuck to pebbles.
<p>Difficult drilling conditions. High pressure drilling. Good mud return.</p> <p>Tricone from 206' to bedrock with 2 5/16" bit inside casing with mud.</p>	75			#13	192		Clay and pebbles with some silt and sand. Very dense. Brown colour. Pebbles partially coated in silty clay matrix. Till, as above, with higher clay content. => Boulder-Clay.
	50				193.5		As above, with more silt and sand. Cored through large boulder (8" long).
	30		198		197		As above.
	25		K=1x10 <sup>-4</sup> cm/s		202		As above.
			206		206		As above, from drilling conditions.
					220		← Hardpan, hard clay from drilling conditions and brown mud return. (Hard but smooth drilling suggests dense clay with few boulders).

PROJECT Mt. Milligan

PROJECT No. 1672

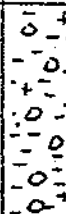
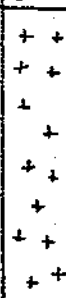
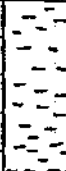
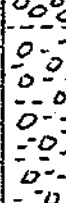

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 3/90

DATE FINISHED July 5/90

LOGGED BY MDG / KGB.

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
<p>Good mud return suggests good ground conditions. i.e. competent and low K fill.</p> <p>Continued to tricone through bedrock.</p>					220		<p>Dense clay; hardpan (from driller). Uncharged drilling conditions.</p>
<p>Triconing with 2 1/2" continues to 259'.</p>					232		<p>Bedrock slab (?), 16' thick. Gray mud return and smooth, hard drilling conditions suggests bedrock.</p>
					248		<p>Clay again from drilling conditions. Increase in pressure. Reddish brown mud returns with small clumps of red clay in cuttings.</p> <p>Sticky grey clay. Tough mucking for tricone bit.</p>
					260		<p>Boulders at 259' from drilling conditions.</p> <p>Boulder material. Shaky drilling, low water pressure.</p> <p>Triconing through boulders and clay.</p>
					269'		<p>E.D.H.</p>

PROJECT MOUNT MILLIGAN

PROJECT No. 1672

LOCATION OF TEST HOLE MAIN EMBANKMENT

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JULY 6, 1990 DATE FINISHED JULY 8, 1990

LOGGED BY KGB/MDG

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tricone from 0' with mud, no casing					0	+ + +	Rough drilling conditions. Triconing through boulders. Surface road cuts reveal silt with some sand, gravel, boulders and trace clay ⇒ Silt Boulder Till
SPT not performed at 5' and 10' due to the amount of boulders encountered during triconing.				Unable to Sample	5	+ + +	
SPT at 15' aborted due to boulders.						10	+ + +
Tried to withdraw tricone at 20', but hole caving. Till not very consolidated or dense.					20	+ + +	
					27'	+ + +	Drilling conditions improve slightly. Fewer boulders encountered than before. Returns from top of hole is coarse-grained sand and rock chips. Still in the Silt Boulder Till. Hole staying open fairly well.
					29'	+ + +	
Triconing @ 4 1/4" bit continues, open hole.	70	105/6"		90-690 #1	30	+ + +	As above
No SPT test because drilling conditions suggest boulder rich till.					30	+ + +	
					40	+ + +	Boulders at 27'; Aborted SPT test. Rock cuttings from tricone very dense sand & gravel till with some silt & clay. 6" sample
					40	+ + +	
			42		46	+ + +	Sand and silt - Smooth drilling conditions
					46	+ + +	
Install casing at 46' Coring begins at 46' -reamed casing shoe 4" into boundary gravel.	29	K=4	5	90-690 #2	48	+ + +	Boulders & gravel.
	100		10		48	+ + +	
					52	+ + +	Pebbles & grey clay with trace of silt. Very dense clay matrix supporting pebbles & cobbles to 4cm.
					52	+ + +	
					57	+ + +	very coarse sand & pebbles in grey stiff clay matrix Clay ~ 80%, Clasts ~ 20% (est. very low permeability).
					57	+ + +	
					62	+ + +	As above (48-52') but with higher coarse sand fraction.
					62	+ + +	
Hole caved in after pulling up from 62' to 52' for packer test ∴ must pull casing & tricone past caved zone with 4 1/4" bit with mud than case past caved zone	10		57	Packer Attempted	57	+ + +	Recovered pebbles only from core tube. Pebbles 1 to 4cm with trace of clay coating on some pebbles. Poor recovery. (est. very high K zone).
			62		62	+ + +	
					70	+ + +	Dense Till
					70	+ + +	
					80	+ + +	Driller's log: Drilling conditions same as above. Lots of pebbles and some boulders encountered. Hole staying open. Driller says that the material in this interval is same as for 48'-52' interval.
					80	+ + +	

PROJECT MOUNT MILLIGAN

PROJECT No. 1672

LOCATION OF TEST HOLE MAIN EMBANKMENT

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JULY 6, 1990 DATE FINISHED JULY 8, 1990

LOGGED BY KGB / MDG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL	
<p>Casing at 122' Coring from 122'-132' Packer test at 124'-132' but did not seal. Realized that casing disappeared down hole, so packer probably hit it. Casing slid down to 126". Coring to 142' for packer test.</p>					80	0	<p>Driller's Log: Drilling conditions indicate lots of boulders. 1' thick on average. Boulderly clay till (?) Same drilling as 0-20' interval.</p>	
					90	0		
					100	0		
					110	0		<p>Driller's log: Drilling conditions as in 52'-80' interval. Pebbles encountered, relatively smooth drilling. Driller says that this is the same type of conditions as in 48'-52' ⇒ Pebble Clay till</p>
					120	0		<p>← More sand</p>
					122	0		<p>Drilling conditions same as above, but more sand encountered in sieve samples (cuttings) from top of hole. Chocolate brown coloured mud from returns. Mud return is much more brown than in 100'-110'. Could be higher silt content. Sand content decreases at 116' ⇒ Sandy Clay Till.</p>
		40			127	0		<p>clay is coarse sand &amp; gravel, trace silt. Very cohesive. Cannot indent w/ finger, can scratch w/ fingernail. Medium brown colour. Rock chips ~ 1". Well graded, poorly sorted. Same material as hole 90-695 ⇒ Sandy Clay Till.</p>
		13			132	0		<p>As above</p>
		10		134	134	0		<p>Small clumps of clay &amp; coarse sand &amp; gravel as above. Chumps very stiff &amp; hard. Mostly a "soggy mess". ⇒ Sandy Clay Till</p>
					139	0		<p>Packer test indicates an impermeable medium (as above)</p>
<p>Tricoring 2 1/8" bit from 142'</p>	0		142	142	0	<p>Mud return turn colour to a brownish-grey. Driller says something is pulling on the rods (adhesion could mean clay). Sand particles from top of hole and from casing when sieved. Probably higher clay content / lower sand content till. Drilling conditions smooth. No pebbles or boulders. Drilling conditions changed. No more pulling on rods. Return still brown-grey, but more pebbles encountered. Tricone gets continually plugged up, indicating a dense clay. ⇒ Sandy Clay Till.</p>		
				144	0			
					149		0	
					155		0	
					155		0	<p>Mud return becomes chocolate brown again at 152' (same as 110'-144'. Brown mud suggests possible brown clay fill</p>



PROJECT MOUNT MILLIGAN

PROJECT No. 1672

LOCATION OF TEST HOLE MAIN EMBANKMENT

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JULY 6, 1990 DATE FINISHED JULY 8, 1990

LOGGED BY KGB / MDG

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL		
Tricone to 165' with 2 5/16" bit. Coring starts at 164' - bottom 22' of hole sloughed (caved) after pulling tricone - rods binding at 167'.  Coring at 176' to prevent hole from squeezing & binding drill rods. Coring at 176'	20				160	0-0 -0-0 -0-0 -0-0 -0-0	Brown mud return suggests brown clay till. Driller says "sticky" drilling. Drill bit pressure down suggesting dense clay till as above. (Smooth but hard & sticky drilling → clay till). Angular rock frag. Black, pieces ~ 1-2 cm recovered from core tube. Cuttings consist of mafic rock frags. & occasional red clay clumps.		
					170	-0-0 -0-0 -0-0 -0-0 -0-0	As above  Driller says boulders at 176'.		
Interval   RQD(%) 176-182   25 82-191   0 191-195   10 195-198   0 198-202   38 202-207   33 207-212   68 212-217   37 217-222   7	9	k=5x10 <sup>-7</sup> cm/s low k	184		180	* * * * * *	Dark grey-brown mud return. Pieces of mafic rock chips collected from sieve. Some rock frags. as 164-170' interval. Very coarse, sand-like texture. Good core recovery. Rocks mafic, silicified, fractures into blocky fragments (planar edges), iron stained on frac. surfaces, qtz/calcite infilling on frac. surfaces. Very hard. Some parts very fractured & broken. → Andesite (?) Bedrock at ~178'.		
				191		190	x x	Mafic rock as above. Poor recovery	
	100					195	x x	Frac. very frequent. Several large zones of very fractured rock (5"-12")	
	67					198	x x	Rock mostly fractured.	
	92					202	x x	Single fractures only. Mostly competent rock.	
	100					207	x x	As above	
	100					212	x x	Good competent core. Fractures mostly all single, planar.	
	100				214		217	x x	Locally fractured zones 1"-2" wide; mostly single fractures throughout.
	80				low k		222	x x	locally very fractured zones 3" wide. Rock has more of a clay-gouge appearance than earlier intervals. Still very hard.
	3						232	x x	Ground core due to mismatch. E.D.H. at 232'

mismatch at end of hole, caused poor core recovery.

PROJECT Mt. Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 8/90

DATE FINISHED July 10/90

LOGGED BY MDG/KGB

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH (ft)	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tricone 4 1/4" bit. Open hole.					0		Abundant angular rock frags in drill cuttings. Drilling smoothly. A few clumps of grey clay in returns (clay could be from surface). Rock chips could be boulders.
Casing and casing at 6'.	23				6		Boulders and rock core (probably from broken pieces of large boulders). 2" long piece of rock - volcanic - green aphanite groundmass and white phenocrysts - Andesite. 5" long piece of metamorphosed breccia. Rounded and uneven fractured - probably boulders.
	46			#1	11		Pebbles and rock frags overlying very dense grey clay.
	6				13		Rock frag (pebble) recovered. Everything else washed out.
Drill bit plugged at 17'. No recovery.	0				17		No cuttings in mud return. Return consists of blue-grey coloured mud. Very smooth drilling conditions.
SPT attempted but hole sloughed in. Continued triconing with 4 1/4".					22		
					27		As above. Blue-grey clay in mud return. Some matrix cuttings in mud.
Tricone to 36'. Ramed hole out and put down casing to 36'.					34		
Shelby Tube at 37'-39'.	100			SHELBY #2	37		
Coring at 39' with triple tube core barrel.	100				39		Dense blue grey clay. Very uniform. Very dense.
	57	K < 2.0	44		45		
	83	11/8"	52		50		Homogeneous blue-grey clay. Few fractures. Very dense (cannot indent with finger; can barely indent with thumbnail.)
SPT at 52'-54'. Easily punched through clay.	100	15/8"		#3	52		
	100	19/16"			54		
	50	23/16"			57		
					62		At 62', a pebble was found in the end of the core. Contact between clay and pebble clay.
	37				67		Only pebbles and rock core (boulders) recovered. Pebbles range in size from 1-3cm. Rock (boulder) is 3cm long. Trace clay on end of rock core. Mud return is the same dark grey colour as before. Pebbles are more angular than rounded.
71'-72" Hole sloughed in when rods withdrawn.	0				72		No recovery. Drilling conditions indicate more pebbles. Seive sample from return shows sand.
Switched to triconing at 72'.					77		
Failed packer test at 72'.					80		Drilling conditions indicate more pebbles, not boulders. Seive sample has lots of fine to coarse grained sand in it. Some particles are rounded (like beach sand). Different types of sand particles. Lots of sand in return. Running up tricone. No more pebbles.

PROJECT Mt Milligan  
LOCATION OF TEST HOLE Main Embankment  
DATE BEGUN July 8/90 DATE FINISHED July 10/90

PROJECT No. 1672  
GROUND ELEVATION \_\_\_\_\_  
LOGGED BY KGB /MDG

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
SPT at 94'-96'. First blow cant too low (slough material at bottom of hole).	100	7/16" 22/16" 30/16" 33/16"		#4	80-96'		Drilling very easy. Tricone moves through material quickly. Mud return is same grey colour as before, and lots of sand in sieve. Hole staying open well.
	8				96-104'		Pebbles only recovered. Fine sand in mud return washed away. Easy drilling conditions indicate low density sand and pebbles. Sand and rock frags recovered from screen sampling drill cuttings.
SPT at 104'-106'	50	23/16" 38/16" 42/16" 47/16"		#5	104-106'		As above, but grey clay clumps recovered in drill cuttings. Same sample as in 94'-96'.
					106-110'		Gray mud return. Few cuttings. Smooth drilling conditions. Probably grey clay with some sand.
SPT at 143'-145'. Bottom 10' of hole cased in after test. Continued to tricone.	100	25/16" 33/16" 39/16" 58/16"		#6	120-145'		Gray clay and sand with some pebbles. Angular cuttings, sand, and clay clumps in return.
					145-150'		Fine sand with trace to some clay. Sand is fine-grained and is very poorly graded and uniform.
					150-160'		Silt and clay with some very fine sand. Can easily indent with finger. Bluish-grey colour. Poorly graded and uniform. SPT test hit rock in last 3".
					160'		Sand and clumps of sticky blue-grey clay in cuttings. Same as above.
					160'		Fine sand particles and grey clay particles in mud return. Same as above. Mud is grey.

PROJECT Mt Milligan  
LOCATION OF TEST HOLE Main Embankment  
DATE BEGUN July 8/90 DATE FINISHED July 10/90

PROJECT No. 1672  
GROUND ELEVATION \_\_\_\_\_  
LOGGED BY MD6/K68.

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
<p>176' at shift change. Hole sloughed in 6' before the next shift came on.</p>					160		
<p>Piezometer installed to 231'. Top 37' not slotted. Plug seated at 13'. Backfilled with sandy silt to surface.</p>					170		<p>Grey clay and the sand, as above.</p>
<p>220-256' Hole sloughed in when rods withdrawn. Unable to ram down through. Hole also seeping in.</p>					180		
					190		
					200		<p>Gravel encountered with clay.</p>
					210		
					220		
					223		<p>More dense clay encountered. Trying to plug up the tricone. Deep grey mud return, as above. Sieve sample shows grey clay clumps and some angular rock frags.</p>
					230		
					237		
					240		

# TEST HOLE LOG

PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 8/90 DATE FINISHED July 10/90

LOGGED BY KGB/MDG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
<p>Hole abandoned at 266' due to squeezing ground conditions.</p>					<p>240</p> <p>250</p> <p>256</p> <p>260</p> <p>266</p>		<p>Gray clay, as above.</p> <p>Bedrock. Many black matrix rock chips in return. Extremely hard tripping.</p> <p>E.O.H.</p>

PROJECT Mt. Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JULY 10/90 DATE FINISHED JULY 11/90

LOGGED BY MDG/KGB

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tricone 4 1/4" bit with mud, open hole.					0		
	75	15/6" 14/6" 10/6" 14/6"		#1	5		Medium sand with trace silt. Very uniform, well sorted and poorly graded.
	75	19/6" 22/6" 37/6" 57/6"		#2	12		
	75	16/6" 30/6" 40/6" 63/6"		#3	22		Medium grained sand with trace silt (as above). Very homogeneous & uniform clean sand.  Medium sand in drill cuttings (as above)  very fine sand & silt. Very uniform, poorly graded. Brown colour. Soft, low water content.
SPT Test - 1st blow count good but bit rock on second 6" blow count.	100	37/6" 64/6"		#4	44		Loose fine to medium sand with some silt recovered from returns (as above). Drilling conditions unchanged. Mud return is medium brown colour (as above).
					46		silt and clay with some fine to medium sand. (more clay than above)
					50		
					60		silt with some clay and some fine sand (as above). Drilling conditions unchanged.
					75		← Grey mud return at 75'. Grey clay and fine sand in returns.
					78		
					80	0.00	pebbles and sand

PROJECT Mt. Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JULY 10/90 DATE FINISHED JULY 11/90

LOGGED BY MDG/KGB

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL		
<p>Triconing 4 1/4" bit open hole with mud loose sand &amp; gravel ∴ cannot perform SPT test, core, or perform packer test ∴ keep triconing</p> <p>No packer test performed since material is too loose &amp; would wash away, preventing packer from sealing.</p>					80	0 0	<p>Coarse sand &amp; pebbles from screen sample of returns. Also some blown clay present. Shaky drilling conditions suggest pebbles - Brown colour mud return. Easy drilling ∴ probably not till.</p> <p>Medium grained sand and pebble fragments recovered from screen sample. Drilling conditions smoother ∴ probably more sand than pebbles. Boulders at 90'</p>		
					40	0 0 0			
					100	0 0		Medium sand and some gravel from cuttings (as above)	
					110	0 0 0		Medium sand with occasional gravel	
					111	0 0 0		Gravel-rich layer. Heavily shaky drilling conditions for ~2 feet.	
					116			Drilling condition changed - smooth but hard drilling. Cuttings consist of dark green fragments ∴ could be bedrock or dense till.	
					117			Casing at 116'	
		75			#5	120		0 0	<p>Very dense till. Well graded, very poorly sorted. Pebbles and cobbles to 3cm in matrix of very dense blue-grey clay and coarse sand. Sub-angular clasts comprise ~30 to 40% and average 1cm. (Estimate very low permeability).</p>
		13				122		0 0	
						127		0 0	Only rock fragments and pebbles recovered. Also one clump of dense coarse sand recovered.
	20				130	0 0	Pebbles only recovered. Sub-rounded to rounded pebbles from 1cm to 5cm → ave. 2cm. No evidence of clay.		
	27				132	0 0	Small pebbles in matrix of grey clayey silt. Breaks apart in fingers - not very well consolidated. Small pebbles comprise ~20%.		
R&D					137	x	<p>Bedrock at 137'. 137'-139' weathered and broken rock. Altered felsic metamorphic rock → Micaceous schist. Sub-schistose fabric parallel to planar, rough frac. planes. Healed, iron stained vein-like frac. throughout. Pinkish light brown colour.</p>		
28	100				140	x			
					142	x	<p>Bedrock (as above). Badly broken and crumbly in part to coarse sand texture. Micaceous throughout. Highly weathered, poor quality rock in general.</p>		
8	50		144		147	x			
					150	x	<p>Bedrock (as above). Good quality. Few planar fractures.</p>		
58	100		152		152	x			
					157	x	<p>As above. Clay alteration along fractures.</p>		
30	100				157	x			
					160				

PROJECT Mt. Milligan  
LOCATION OF TEST HOLE Main Embankment  
DATE BEGUN July 10/90 DATE FINISHED JULY 11/90

PROJECT No. 1672  
GROUND ELEVATION \_\_\_\_\_  
LOGGED BY MDG/KGB

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
<u>RQD</u> 0	20				157	* * *	Crushed up bedrock, ave. particle size $\approx$ 1 cm. Poor recovery zone.
32	100		164		162	* * *	Excellent rock quality, very solid and few fractures.
13	50	$k = 1 \times 10^{-7}$ cm/s	172		167	* * *	Much more weathered than earlier intervals; gouge-like texture, very soft in some places. Rock quality deteriorates towards the end of the hole.
					172	*	E.O.H.



PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 11/90 DATE FINISHED July 13/90

LOGGED BY KGB/MDG

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tricone 4 1/4"					0		Smooth drilling conditions, a few pebbles encountered.
SPT at 5'-7'. Hit boulder at 12'-18" of test interval.	33	22/16" 31/16" 44/16" 26/16"		#1	5		Silty sand with some gravel, medium to coarse grained sand. Brown colour, quite cohesive. Fine grained gravel. SPT hit rock during test.
SPT at 12'-14'.	75	40/16" 53/16" 60/16" 30/16"		#2	12		Smooth drilling conditions indicate sand and occasional pebbles.
SPT at 19'-20 1/2'. Hit rock on last 2" but slowly moved down through it.	67	34/16" 62/16" 72/16"		#3	19		Silty sand with some fine grained gravel, medium grained sand, well sorted, poorly graded. Similar to 5'-7'.
SPT at 36'-38'.	71	28/16" 40/16" 56/16" 69/16"		#4	36		Drilling conditions indicate sand and pebbles. Hit boulder at 19'.
SPT at 56'-58'. Casing to 56'. Reamed shoe 4". Tricone 2 5/16" inside casing.	33	19/16" 34/16" 57/16" 63/16"		#5	56		Silty sand with trace gravel. Similar to samples #1 and #2. Boulders encountered at end of SPT and just before the test.
Packer test at 74'-82'	83	K=8x10 cm/s	74	#6	74		Many boulders encountered from drilling. Overall drilling conditions smooth. Some rock frags, but mostly coarse grained sand in mud return.
					38		Sandy silt. Very fine grained sand, no visible gravel. Very uniform, well sorted, poorly-graded. Medium brown colour.
					40		As above, Sandy silt. Sand from mud return is fine to medium grained. Mud return is medium brown in colour. Occasional boulder encountered.
					50		Blue-gray clay with some silt. Drilling conditions very smooth and mud return is gray colour.
					57		Gray clay with some silt. Also wood pieces 3cm long in clay. Med. stiff (can easily indent with finger).
					60		Gray coloured mud return with flecks of silt in return. Silty grey clay, as above. Smooth and easy drilling conditions.
					70		
					77		Homogeneous and uniform grey clay and silt. Clay somewhat sensitive and stiff. Can indent with finger.
					80		

PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 11/90

DATE FINISHED July 13/90

LOGGED BY KGB/MOG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tritone plugging up in grey clay.	83		82	#6	80 82 8 100 120 126 130 134 140 150 160		<p>As above, blue-gray clay. Clay is well indurated and hard in parts. (has consistency of weak shale in parts).</p> <p>Smooth, easy drilling conditions. Grey mud, no cuttings in return. ∴ Grey clay, as above.</p> <p>Fine sand. Uniform, dark-green and black sand grains from sieve samples. Similar to the sand recovered above hard till from the previous hole (90-698).</p> <p>Grey clay again at 134'. Interbedded fine sand and clay.</p> <p>Grey clay with fine sand.</p> <p>Drilling conditions at 156' indicate a "harder" unit (at 156'). No cuttings in mud return. Probably a more dense clay.</p>

PROJECT Mt Milligan

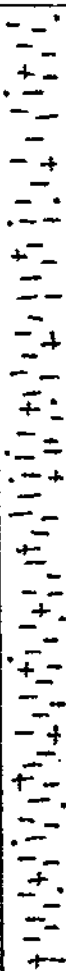

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 11/90 DATE FINISHED July 13/90

LOGGED BY K68/MDG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
<p>High mud pressure at friction bit suggests bit is clogged with clay.</p>					160		<p>Few flecks of sand but otherwise grey clay in mud return. As above.</p>
<p>At shift change, sand and clay clogged the drill rods so they were unable to turn or be raised. Flushing hole didn't work. Reamed casing down to 170' to pull rods out. Hole abandoned.</p>					170		<p>Grey clay clumps, with a trace of very fine sand grains in mud return. Drilling conditions unchanged. Grey clay with some silt and trace fine sand, as above. Grey silty clay.</p>
					180		
					190		
					200		
					210		
					214		<p>E.O.H.</p>

# TEST HOLE LOG

PROJECT Mt. Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JULY 13/90 DATE FINISHED JULY 14/90

LOGGED BY KGB / MDG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tricone 4 1/4" through top 17' open hole, with mud (top 10' is fill from drill pad)					0	* * * * *	At surface:
					10	FILL	Clayey silt with trace sand, gravel & cobbles. Dark brown-grey colour. Very homogeneous, well sorted, poorly graded. Very cohesive. High water content. Moderately stiff (difficult to indent with finger). Banded black organic layers (2cm wide) in top 2'-3'. Sand is fine grained. Ground surface at 10'.
SPT at 16'-18'	79	8/6"		#1	16		Clayey silt with trace sand, gravel, cobbles; As above.
		9 1/4"			18	Clayey silt with some sand. Well sorted, poorly graded. Sand is fine grained with occasional coarse grains; very homogeneous & uniform. Cohesive, brown-grey colour.	
SPT at 28'-30'	25	26/6"		#2	20		Boulders encountered more frequently
		22 1/6"			30	Dense grey clay with some small pebbles and trace coarse sand. Drilling conditions suggest pebbles & boulders with some sand	
SPT at 46'-48' nothing recovered	0	19 1/6"		NONE	40		Coarse sand & pebbles with some grey clay from cuttings.
		20/6"			46	Coarse sand, pebble fragments & grey clay in cuttings (as above) - mud return medium grey colour.	
		24 1/6"			48		Silt & clay remnants line inner walls of split spoon tube. Coarser sand was not recovered.
		45 1/6"			50		Grey clay & medium grained sand. Very smooth drilling conditions. Grey mud return, as above.
		55 1/6"			60		Medium to coarse sand and clay, in equal proportions, found in returns (as above). Fine sand & grey clay.
					70		Medium sand & grey clay in returns
					80		Medium sand & grey clay. Wood pieces present from 46'.
					85		Drilling conditions changed. Hard drilling. Could be hardpan till or boulder. Grey mud colour return.
					88		Boulders from 74'-76'. Vibrating drilling conditions.
					90		Rock fragments with trace clay in cuttings. Hard drilling.



PROJECT Mt. Milligan  
LOCATION OF TEST HOLE Main Embankment  
DATE BEGUN JULY 13/90 DATE FINISHED JULY 14/90

PROJECT No. 1672  
GROUND ELEVATION \_\_\_\_\_  
LOGGED BY KGB/MDG

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Water loss, type and size of hole, drilling method, groundwater level, etc.							
Coring at 161' RQD					162	o o	Rock fragments & pebbles.
	0 - 77				162	o o o	Pebbles from 162'-163'.
	87 - 100				165	x x	Rock core & shear zone 163'-164.5'
Driller says rock is plugging up the bit. soft & broken rock.					165	x	Bedrock. Soft, weathered bedrock mottled texture. Purple & white colour. Felsic micaceous schist. Crumbles easily to coarse grains.
	33 - 100				170	x	Bedrock, as above. Lower RQD than above. Rock is slightly more broken & weaker than above. Broken in part. Badly broken to coarse grains in 5" zone. Rock easily broken out of core tube - Rock is highly weathered. Crumbles in fingers.
	53 - 100				175	x x	Bedrock, as above. Rock quality slightly improved. Estimate low permeability.
	60 - 100				180	x x	Bedrock. Broken, soft & weathered as above. Core broke coming out of core tube. RQD is higher than indicated.
Packer Test: 184'-192' was aborted due to high water press. down hole at depth (artesian conditions).			189		183.5	x x	Bedrock. Slightly harder than above - can easily indent w. rock hammer. Approx. 3-4 planar frac. per foot. Frac. planes contain clay infilling ~ 2mm thick. Rock slightly less weathered than above.
	55 - 100				189	x	189'-191' bedrock as above (felsic)
	80 - 100				192	x	191'-192' Mafic gneiss - dark green colour.
	67 - 100		192		197	x x	Bedrock: Alternating felsic (white) & mafic (dark green) metamorphic bedrock - Conorted bands. Crumbly & very soft in parts. Can indent & easily break w. fingers.
	73 - 100				202	x	Bedrock, as above (192-197') from 197'-199'. Very crumbly and badly broken in part. Soft & weak, highly weathered bedrock, as above. 199'-202' mafic schist. Clay-like coating on core. Very soft & pulverized in part.
	82 - 100				207	x	Bedrock (202'-205') - Soft, very crumbly & weathered. Bedrock (205'-207') - Good quality rock. Few frac. Banded gneiss or schist. Purple & white colour bands.
					207	x	E.O.H. at 207'.

PROJECT Mt. Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JULY 15/90

DATE FINISHED JULY 16/90

LOGGED BY KGB/MDG

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tricone 4 1/4" open hole with mud.					0		At surface:
SPT at 5'-7'. Ground so soft that one hit drove spoon 6".	100	5/24"		#1	5		Clay with some silt & organics, see below. Same material as at surface at hole 90-705.
SPT at 12'-14'. Rock lodged in end of split spoon.	58	5/6" 9/6" 17/6" 13/6"		#2	7		clay with some silt and organics. Very high water content. Very soft - easily indented with finger. Grey-brown colour. Some small wood fibres included. Well sorted, poorly graded to swamp.
SPT at 20'-22'	67	4/6" 4/6" 9/6" 11/6"		#3	12		Smooth drilling conditions - Assume clay.
SPT at 32'-34'	100	4/6" 4/6" 6/6" 4/6"		#4	14		1st 6" is clay with some silt, sand & gravel. Dark brown colour, as above. 8" is sand with some silt & gravel, trace clay. Med. grained sand. Brown colour. Gravel is fine to coarse grained. Rounded fragments. Med.-sorted, well graded. Low density, cohesionless.
Casing to 42'. SPT at 42'-44'. Coring at 44' for packer test.	92	16/6" 15/6" 34/6" 33/6"		#5	20		Clay with some silt and trace sand & gravel. Very cohesive. Local 1cm interval coarse sand / fine gravel. Well sorted, mod. graded. Grey-brown colour.
Lost core from 52'-57' as core tube was not put down rods.	Lost				22		Drilling conditions indicate a hard clay. Alternating high mud return with "clogging" conditions ∴ likely clay.
	75				32		Blue-grey clay with trace silt. Very uniform, well sorted and poorly graded. Easily indented with finger. Very cohesive and "sticky".
	58				34		Smooth drilling; Clay clumps in mud return; grey mud return. ⇒ Blue-grey clay.
	70				42		Blue-grey clay with some silt and sand. Cohesive. Difficult to indent with finger. High water content. Well sorted, poorly graded. Same as above but higher silt content.
	92				44		As above
	72				47		As above
	95		77	V. low K	52		Drilling conditions unchanged from above ∴ Blue-grey clay, as above
	60			#6	57		As above
					62		
					67		
					72		Uniform, very dense blue grey clay form very hard discs throughout core. Hard discs separated by thinner soft discs. Soft zones represent clay with some silt & fine sand. Hard zones represent 100% dense clay which consolidates to higher density than clay which contains silt and sand.
					77		
					82		

# TEST HOLE LOG

PROJECT Mt. Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE Main Embankment

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN JULY 15/90 DATE FINISHED JULY 16/90

LOGGED BY KGB/MDG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tricone 4 1/4" open hole with mud from 82'.					82	-	Very dense grey clay, as above.
						-	Grey clay, as above. Drilling conditions unchanged. Grey colour mud return, as above.
					94	0.0	Boulders encountered at 94'. Probably boulders in clay. Light grey mud. (lighter than above).
						0.0	Rock fragments & coarse sand in cuttings. No clay found. Shaky drilling conditions.
					100	0.0	Driller thinks it may be hardpan (?)
						0.0	Return of dark grey mud return. Rock frag. & coarse sand with trace grey clay.
						0.0	Abundant boulder & pebble fragments & coarse sand in cuttings. Heavily vibrating drilling conditions. Dark grey colour mud return. Hard drilling conditions. Little clay present.
					110	0.0	
						0.0	Abundant coarse boulder fragments with some very coarse sand in cuttings.
						0.0	
					120	-	Grey clay returns at approx. 120'.
						-	Grey clay, as before boulder zone above. Quiet & smooth drilling conditions.
					130	-	Very easy & smooth drilling conditions suggest loose sand - likely contains some clay as well. at 130'.
					134	-	Grey clay at 134'.
					140	-	
						-	Grey clay, as above.
					150	-	
						-	
					160	-	



PROJECT Mt. Milligan  
LOCATION OF TEST HOLE Main Embankment  
DATE BEGUN JULY 15/90 DATE FINISHED JULY 16/90

PROJECT No. 1672  
GROUND ELEVATION \_\_\_\_\_  
LOGGED BY KGB / MDG

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
<p>Tricone 4 1/4" open hole with mud. Hole staying open in clay.</p> <p>Losing circulation down hole at 176'</p>					<p>160</p> <p>168</p> <p>180</p>		<p>Grey clay, as above.</p> <p>Easy, smooth drilling suggests loose sand with some clay. Tricone bit not plugging up ∴ probably sand &amp; clay.</p>
<p>Circulation over shift change to prevent clay from squeezing rods.</p>					<p>190</p> <p>200</p> <p>206</p>		<p>Drilling conditions suggest sand &amp; clay to 206' - easy, smooth drilling.</p> <p>As above.</p>
					<p>220</p> <p>230</p> <p>238</p> <p>240</p>		<p>Drilling conditions indicate hard and soft material. Tricone plugging. Probably a few rocks in with clay &amp; sand.</p> <p>Drilling becomes smooth again. Clay clumps and sand in mud return.</p> <p>← Hit boulders at 230'. Black rock chips and clay clumps in mud return.</p> <p>Possible till. No clay clumps recovered in mud return.</p> <p>Bedrock at 238' (?)</p>



PROJECT Mt Milligan

PROJECT No. 1672

LOCATION OF TEST HOLE SE Embankment Monitoring Hole

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 17/90 DATE FINISHED \_\_\_\_\_

LOGGED BY KGB/MDG

NOTES	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL
Tricone 4 1/4"					0		At Surface: Clay with some silt and sand. Interbedded with sand with some clay and silt. Smooth Drilling Conditions.
SPT at 7'-9'	92	5/16" 3/16" 5/16" 4/8"		#1	7		Clay with some silt, trace sand and fine-grained gravel. Interbedded with sand with some coarse grained gravel and clay and silt. Sand is fine to mod. grained. Both well sorted, moderately graded. Brown colour, cohesive. Sand portion is approx 6" long.
SPT at 14'-16'	100	4/16" 2/16" 2/16" 4/16"		#2	14		Easy drilling conditions. Interbedded clay and sand layers, as above. Some sections are sandy clay and others are sand, both with some silt and clay and trace gravel. Similar properties as above.
SPT at 22'-24'	71	6/16" 6/16" 4/16" 8/16"		#3	22		Smooth drilling conditions. Fine grained sand with some silt and trace clay. Very uniform. Well sorted, mod. graded. Dark brown colour, as above. Cohesive, high water content (liquefies when tapped repeatedly).
SPT at 32'-34'	88	2/16" 3/16" 4/16" 5/16"		#4	32		Interbedded clay with some silt / sand with some silt and trace clay. Same properties as above.
SPT at 48'-50'	50	12/16" 23/16" 25/16" 27/16"		#5	48		Occasional boulder encountered, otherwise smooth drilling. Mostly sand recovered in mud return, but some clay clumps retrieved. Still in interbedded sand and clay layers. Hit boulders at 44'. Rough drilling conditions. Lots of sand (only) in mud return. ⇒ Sand and gravel.
					50		Clean sand with some gravel and trace silt. Sand mod. grain size. Gravel is coarse grained (up to 3cm wide). Some cohesion due to silt content. Overall colour is brown. Mod. dense, well sorted, poorly graded, uniform.
					60		Drilling conditions rough. Several boulders encountered. Lots of sand and rock chips in mud return. ⇒ sand and gravel.
					70		
					80		

PROJECT Mt Milligan














PROJECT No. 1672

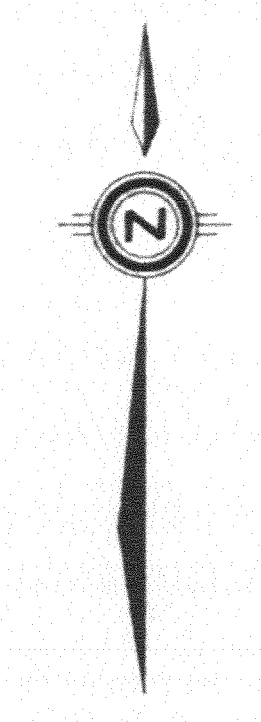
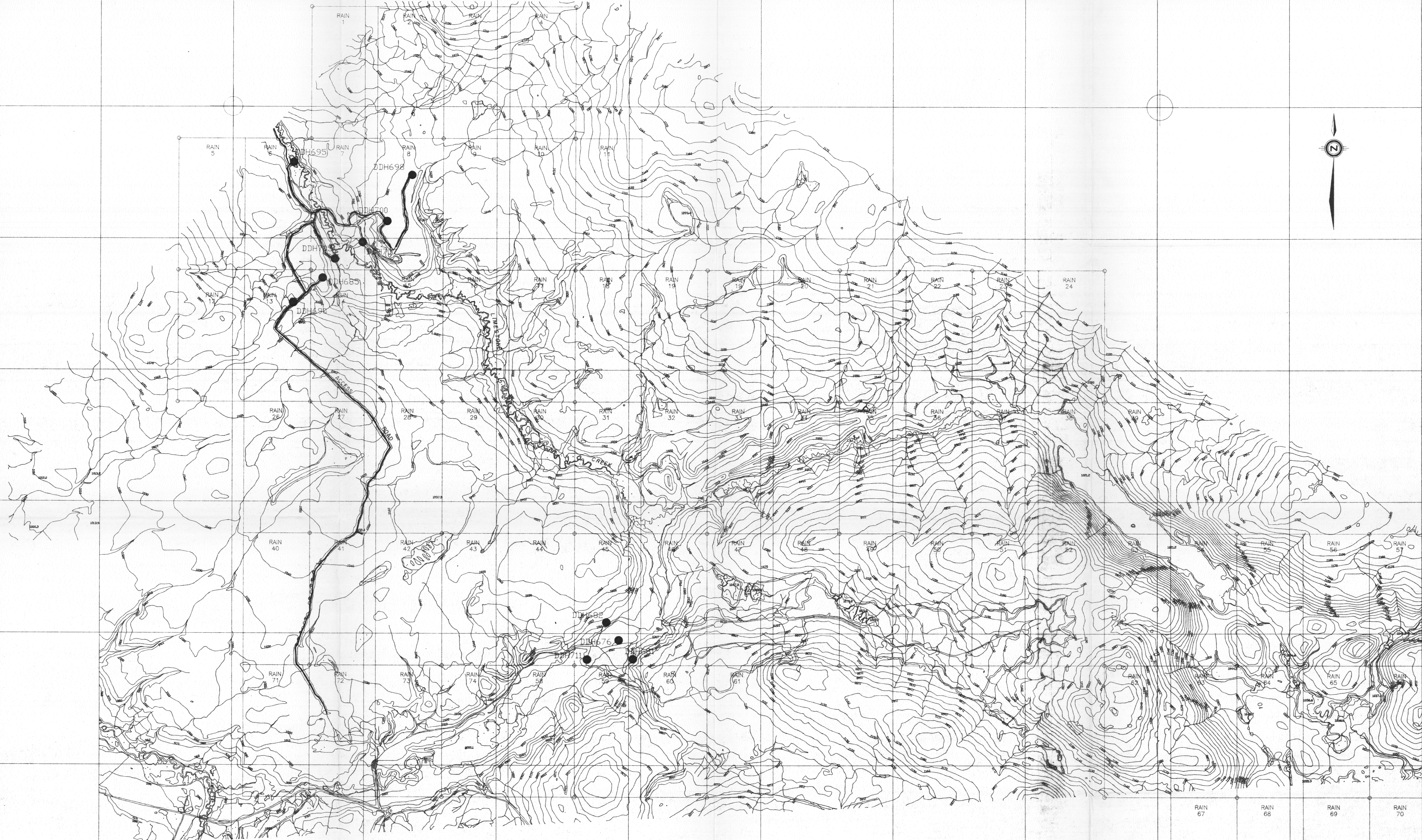
LOCATION OF TEST HOLE SE Embankment Monitoring Hole

GROUND ELEVATION \_\_\_\_\_

DATE BEGUN July 17/90 DATE FINISHED July 18/90

LOGGED BY KGB/MDS

NOTES Water loss, type and size of hole, drilling method, groundwater level, etc.	CORE RECOVERY %	BLOWS / FOOT	MOISTURE CONTENT %	SAMPLES FOR TESTING	DEPTH	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION OF MATERIAL	
Tricone to 90' Set casing to 90' Coring at 90'					80		Hit hard stratum at 80'. Hard and smooth drilling conditions. Light green mud return. White and green frags in cuttings. Uniform, poorly graded and well sorted, med. grained sand, Ave. size 1mm.	
	2				90		Med. to coarse grained sand. Hard and smooth drilling conditions, therefore sand is quite dense. Recovered only a handful of sand in core tube.	
					92			
					100		As above. Drilling conditions hard and smooth as before.	
					107			
	RQD = 28%	83				110		Bedrock: Dark green gabbro with felsic (plag) phenocrysts. Good, hard, quality rock. Broken to 5cm pieces in upper zone, increases in rock quality with depth.
	RQD = 17%	83				112		
	RQD = 0%	97				117		
	RQD = 30%	53				122		
	RQD = 45%	95				127		
RQD = 43%	85				132		E.O.H.	
RQD = 38%	58		133 v. low K		137			
RQD = 69%	100				141			
Piezometer installed to 141. Slotted all along its length. Bentonite seal at surface.					141			



CONTINENTAL GOLD CORP.  
RAIN 1-74 PLACER CLAIMS

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

20,417

ACCESS ROAD and  
DRILLHOLE PLAN

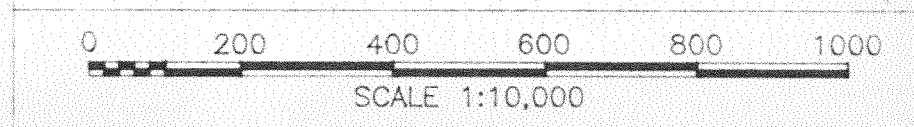


FIGURE 4  
**CROSS SECTION THROUGH DDH90-690 TO DDH 90-698**  
**RAIN 7-8 AND 13-14 CLAIMS**

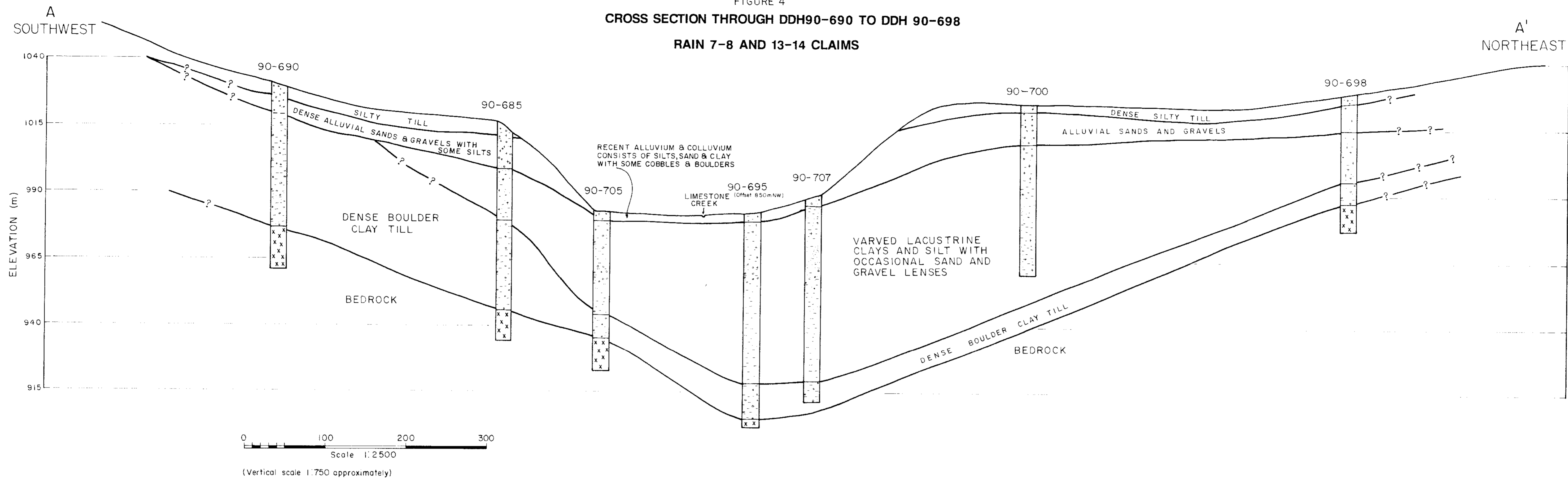
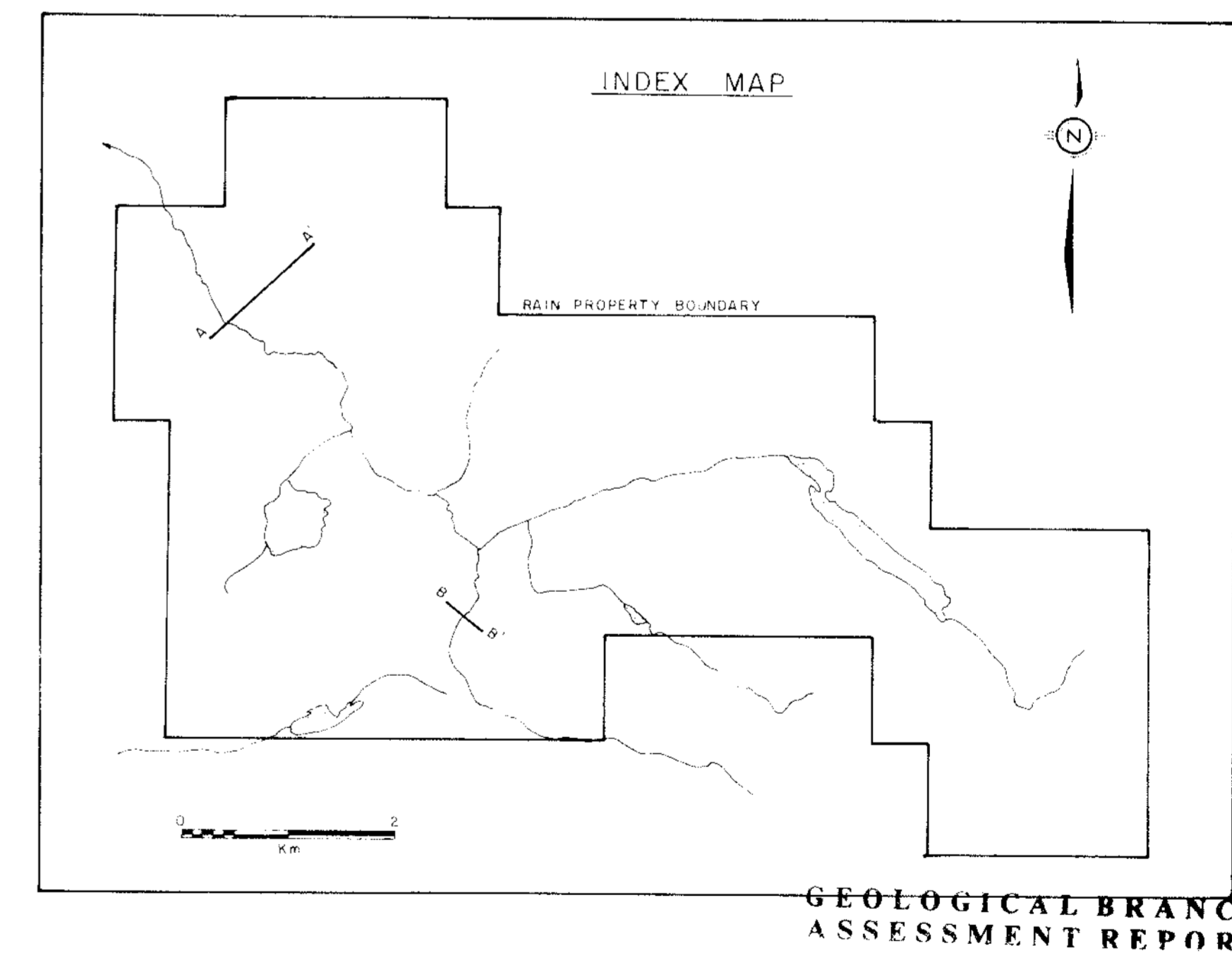
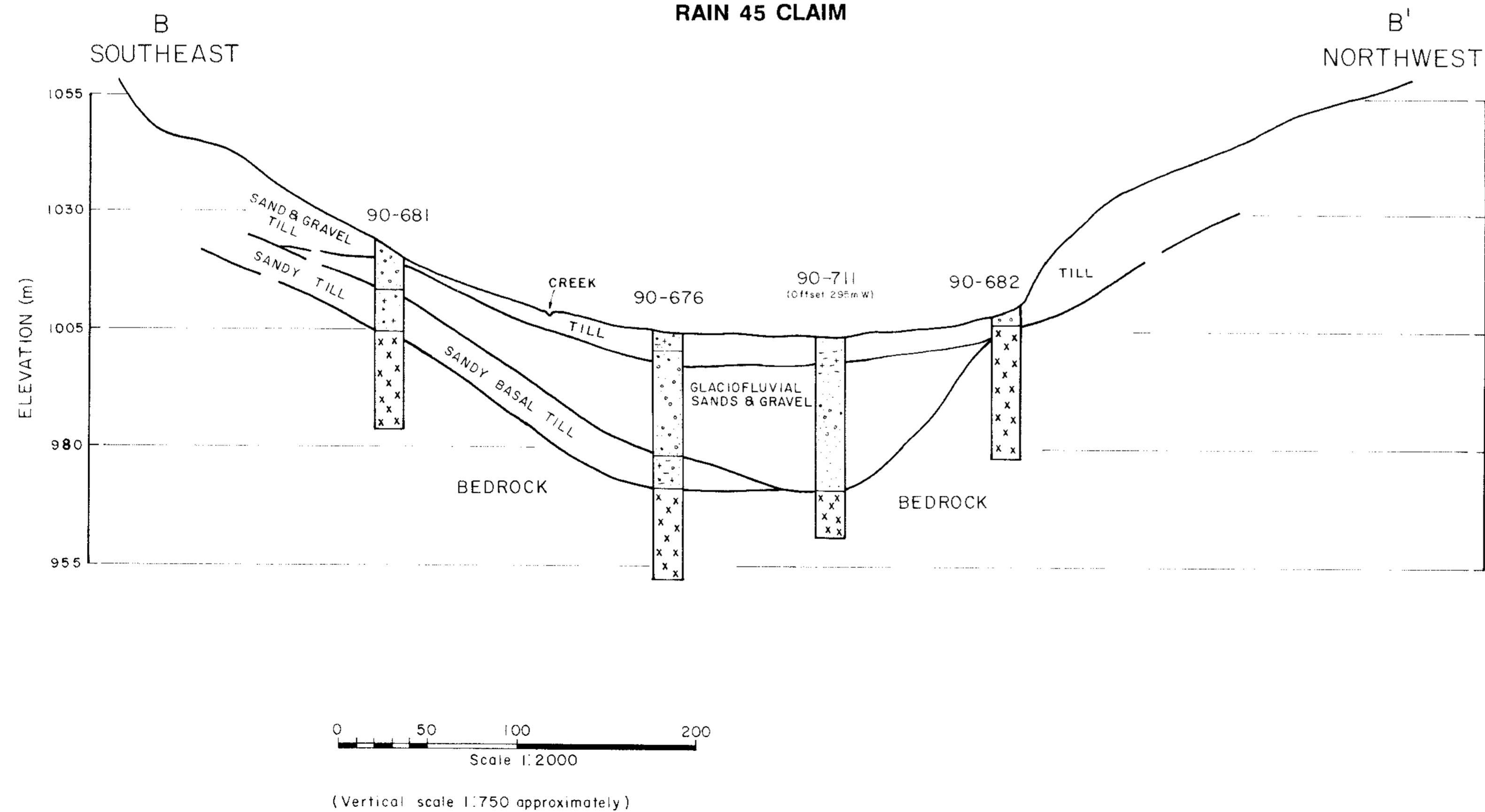


FIGURE 5  
**CROSS SECTION THROUGH DDH90-681 TO DDH 90-682**  
**RAIN 45 CLAIM**



20,117

CONTINENTAL GOLD CORP.  
 MT. MILLIGAN GOLD PROJECT  
**RAIN PLACER CLAIMS**  
**DRILLHOLE CROSS SECTIONS**