84-1105-13132

KUTCHO CREEK SOILS INVESTIGATION

on the

SMRB, KC, JEFF, ANDREA and POND MINERAL CLAIMS

58°12'N - 128°22'W
N.T.S. M1041/1W
LIARD MINING DIVISION

Owned and Operated by:

SUMAC MINES LTD. and ESSO MINERALS CANADA

Prepared by
E.S. Holt, P.Eng.(B.C.)
Holt Engineering Ltd.

September, 1984

TABLE OF CONTENTS

Page

INTRODUCTION 1

DRILLING & TEST PITTING REPORT 4

ILLUSTRATIONS

Location of Kutcho Creek Deposits 2

Claim Ownership Location Map 3

General Site Arrangement 5

Topographic Plan 6

APPENDIX A

Statement of Costs.....12

APPENDIX B

Distribution of Expenditures on Individual Claims 17

APPENDIX C

Statement of Qualifications.....19

APPENDIX D

Geotechnical Field Data for Test Pits and Drill Holes.....20

INTRODUCTION

The Kutcho Creek property is located in the Liard Mining Division in the northern interior of British Columbia, approximately 100 kilometres east of Dease Lake. The geodetic coordinates are 58° 12'N, 128° 22'W.

The property is not directly accessible by road. The Kutcho Creek airstrip is located 10 kilometres west of the site and serves as the main transportation link with the property. Usual access is via fixed wing aircraft from Watson Lake, Smithers or Dease Lake to the Kutcho Creek airstrip. Onward transportation to the site is by 4-wheel drive vehicle or helicopter.

To date, two significant concentrations of copper-zinc-silver mineralization have been located at Kutcho Creek. The principal minerals of economic importance are chalcopyrite, bornite and sphalerite. Mineral claims covering the known deposits are owned by Sumac Mines Ltd. and Esso Minerals Canada. The 1984 soils investigation work is part of a joint development program and includes work done on claims owned by both companies.

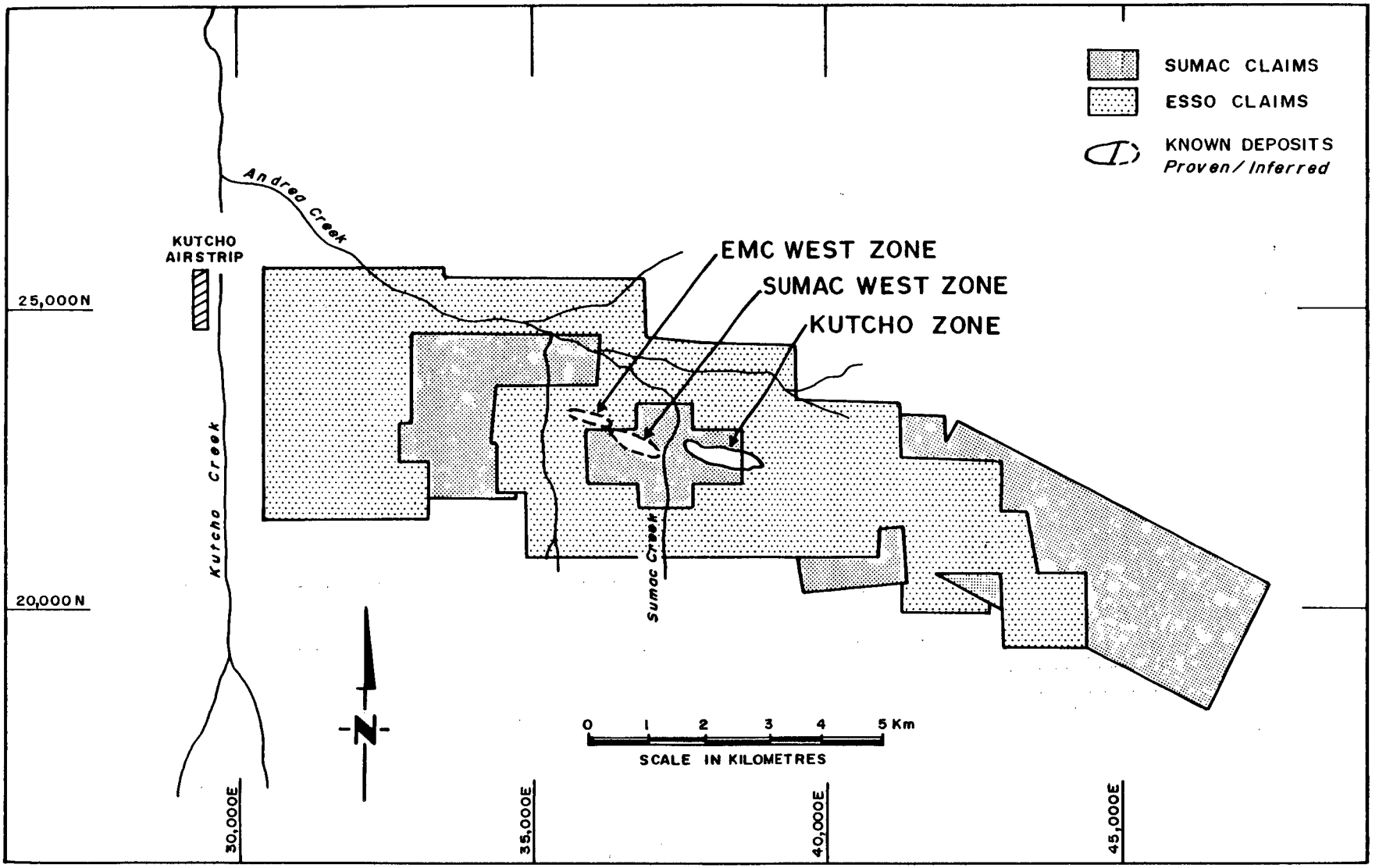
The initial discovery and claim staking occurred in 1972. Exploration programs have been carried out on an annual basis since that time. The 1984 field work consisted primarily of soils engineering investigations, including back-hoe trenching and drilling, and the collection of environmental data. The work described in this report is part of a continuing program to determine the potential viability of the project. Ten holes totaling 136.2 metres of drilling and 114 test pits were completed during the 1984 field season.

LOCATION OF KUTCHO CREEK DEPOSITS

Lat. 58° 12' N - Long. 128° 23' W

0 100 200 300 400 500 km

SCALE IN KILOMETRES



CLAIM OWNERSHIP LOCATION MAP

JUNE, 1984

DRILLING AND TEST PITTING REPORT

During the period July 12 to August 17, 1984, a soils engineering program was completed on the Kutcho Creek property. The work included both surface and subsurface investigations and was carried out under the direction of Golder Associates, consulting geotechnical and mining engineers of Vancouver.

The primary objective of the soils investigation program was to determine the suitability of specific sites to accommodate the mine plant and related infrastructure. Some proposed locations were essentially eliminated at an early stage of the investigation while others were analysed in considerable detail.

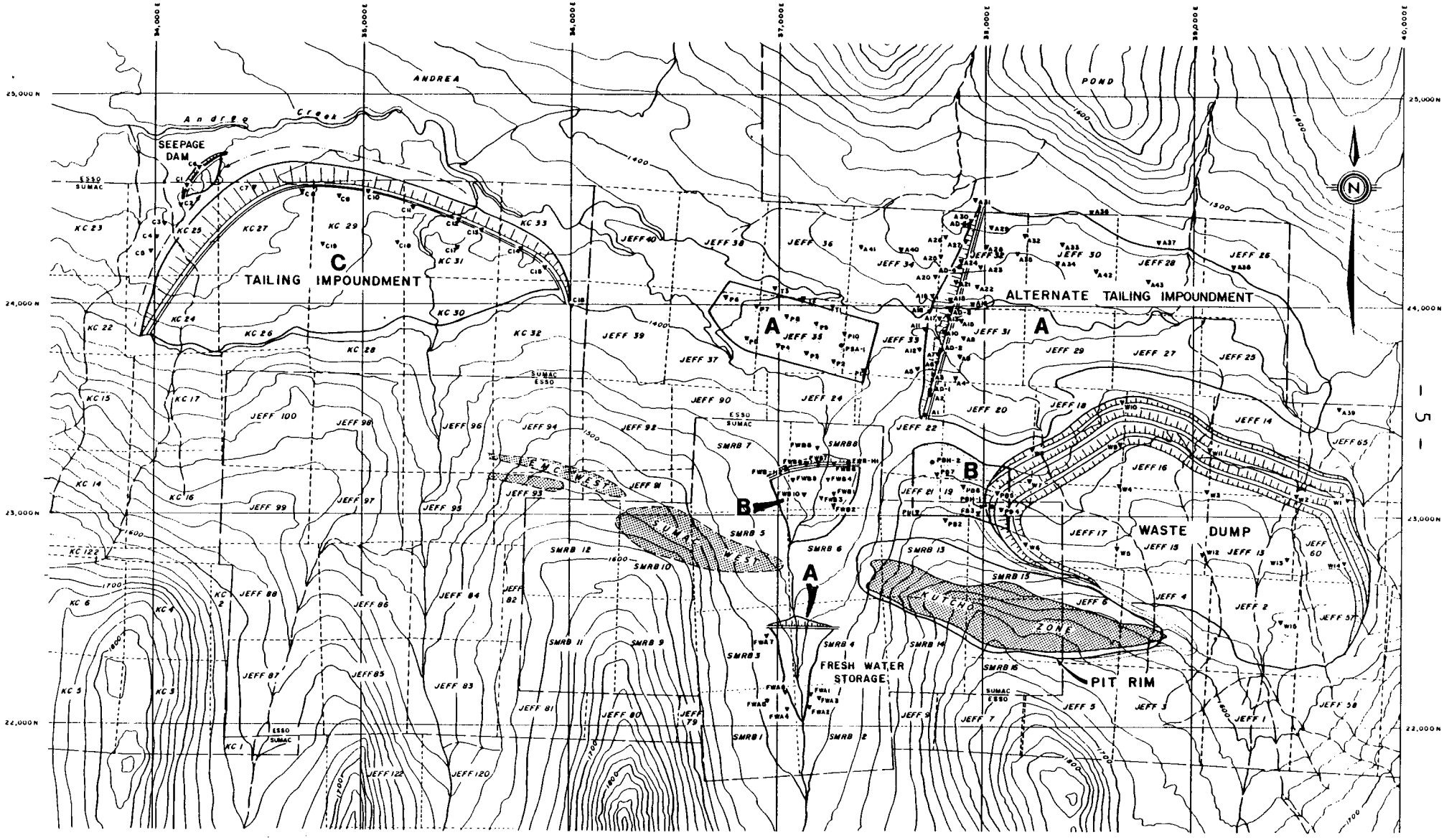
The program consisted primarily of:

1. Air photo interpretation,
2. On-site surface investigation,
3. Subsurface investigation with back-hoe providing profile mapping and sampling to a 3 metre depth,
4. Drilling to bedrock with related on-site tests and observations, and
5. Laboratory analysis of soils encountered and the collection of groundwater data from piezometres installed in drill holes

The test pit and drill collar locations are illustrated by the small scale drawing on the following page and on the 1:5000 scale plan provided in the pocket.

A total of nine sites were investigated during the 1984 field program:

Possible Tailing Impoundments	4



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KUTCHO CREEK PROJECT

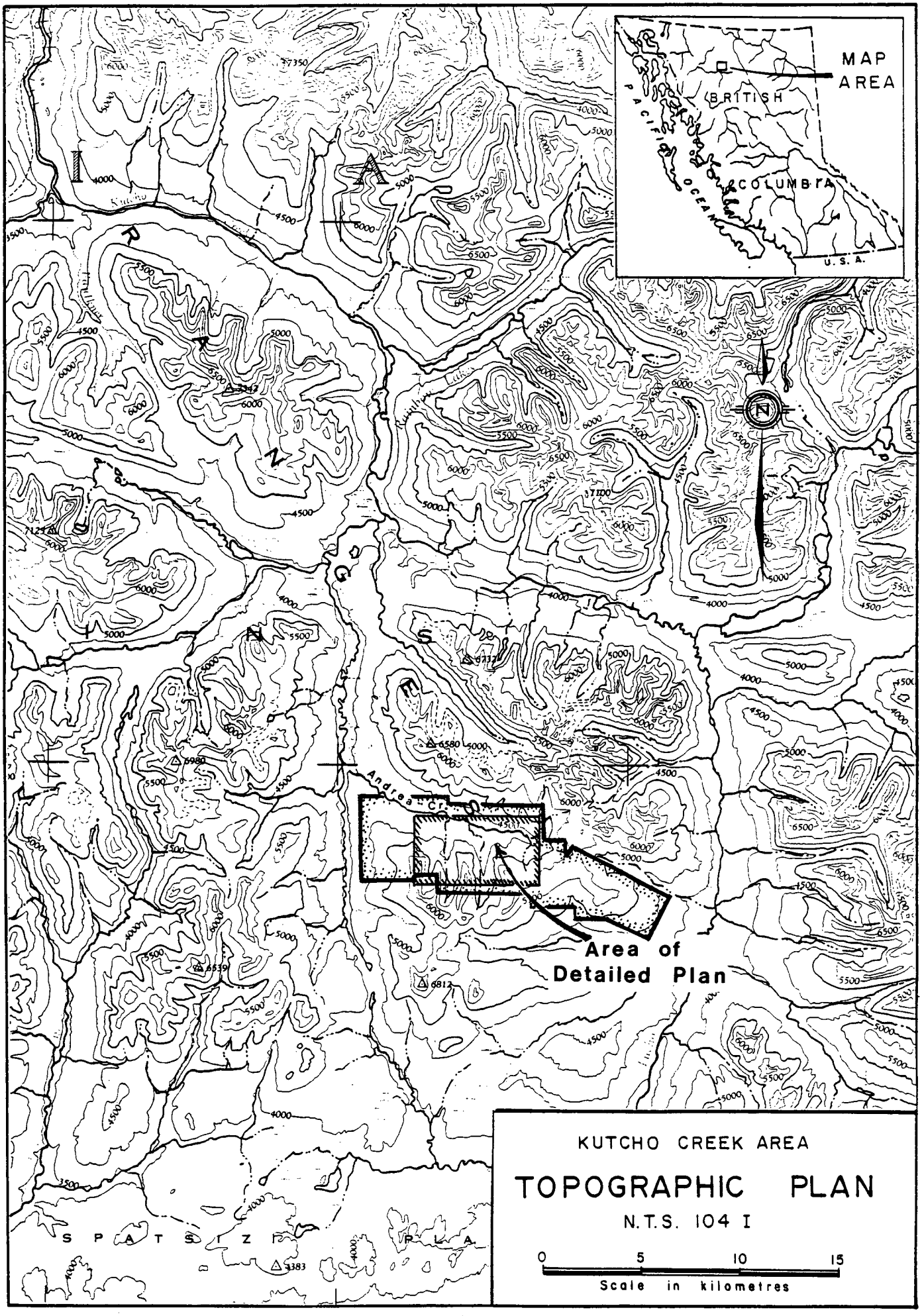
1984 SOILS ENGINEERING PROGRAM

GENERAL SITE ARRANGEMENT

- Drill collar location
- Test pit location
- Boundary between Sumac and Esso claims
- Internal claim boundaries

0 1 2

Scale in Kilometres


MAP AREA
BRITISH COLUMBIA
PACIFIC OCEAN
U.S.A.
Andrea Cr.
Area of Detailed Plan
SPATSIZI PLA
KUTCHO CREEK AREA
TOPOGRAPHIC PLAN
N.T.S. 104 I
0 5 10 15
Scale in kilometres

Fresh Water Storage Areas	2
Mine Waste Dump	1
Alternate Plant Sites	2

Following air photo analysis and on-site surficial investigation, eight locations were subjected to test piting and four were drilled. Distribution of the principal subsurface work was as follows:

	Test Pits	Boreholes
Tailing Disposal		
Alternate A (foundation)	31	5
(borrow areas)	8	-
(diversion channel)	4	-
Alternate B	-	-
Alternate C	19	-
Water Supply		
Upper	7	-
Lower	10	2
Plant Site		
Upper	7	2
Lower	13	1
Waste Dump	15	-

On the basis of the test pit investigation data, five drillhole locations were selected in the site A dam foundation area, two at the more favourable water supply and plant site areas and one at the alternate plant site. The purpose of the drillholes was to assess soil conditions below the depths that could be reached in test pit investigations, and to determine the depth to and

condition of underlying bedrock foundations. Piezometers were installed at selected depths in the drillholes to assist in assessment of ground water conditions in both the soil and bedrock formations.

The drill hole locations and depths are summarized as follows:

HOLE NUMBER	LOCATION	DIP	DEPTH IN METRES
AD-1	Tailing Impoundment A	-90	8.7
AD-2	Tailing Impoundment A	-90	6.4
AD-3	Tailing Impoundment A	-90	9.5
AD-4	Tailing Impoundment A	-90	21.0
AD-5	Tailing Impoundment A	-90	31.1
PSA-1	Lower plant site	-90	16.3
PSB-1	Upper plant site	-90	12.2
PSB-2	Upper plant site	-90	11.7
FWB-1	Lower water storage	-90	11.0
FWB-2	Lower water storage	-90	8.3
	Total Metres Drilled		136.2

The results of the geotechnical work indicate that suitable locations for the various facilities required to carry out a mining operation are available in the immediate vicinity of the known Kutcho Creek deposits. Golder Associates have provided a preliminary assessment of the geotechnical investigation. The results to date are summarized below.

Tailings Dam Sites

The results of an airphoto interpretation indicated that

foundation conditions at Tailings Dam Site A are superior to the conditions at Site C or at Site D. In addition, preliminary cost estimates indicate that Site A is significantly more attractive than any of the others investigated.

The superior conditions at Site A, as indicated by the airphoto interpretation, were supported by the results of field reconnaissance. Hence, a relatively large proportion of the field test pit investigation program at the potential tailings dam sites was directed at the Site A alternative. The work included examination of potential borrow sources and the sub-soil conditions along the alignment for a diversion channel around the north side of the impoundment. Modest coverage of Sites C and D was also provided. The results of the test pit investigations confirmed the superiority of the Site A alternative.

On the basis of the test pit investigation data, five drillhole sites were selected in the Site A dam foundation area. The purpose of the drillholes was to assess soil conditions below the three metre depth that could be investigated with the back-hoe, and to determine the depth to and condition of underlying bedrock formations. The drill holes permit a number of geotechnical tests to be performed including the installation of piezometers at selected depths to assist in assessment of ground water conditions in both the soil and bedrock formations.

Waste Dump Area

Airphoto coverage of the waste dump area was examined and a field reconnaissance carried out. Test pits were excavated at spacings of 200 to 400 metres over the proposed waste dump area. The results indicated that either competent dense glacially consolidated soils or bedrock are present over most of the waste dump area within depths of 1 to 2 metres below gound surface.

Drilling investigation of the waste dump area was not considered necessary.

Plant Sites

Two potential sites for the concentrator have been investigated. Test pit investigations were carried out at both the lower and upper sites which are labled "A" and "B" as illustrated by the drawing on page 5.

Two holes were drilled at the upper plant site. The upper surface of bedrock is within 2 metres of ground surface over most of the upper plant site area.

The upper plant site appears to be attractive from the operational viewpoint and the results of the test pits and drillholes indicate that conditions at the site are suitable. Consequently, it was decided to limit drilling investigation of the lower plant site to a single hole.

Water Supply Dam Sites

A test pit investigation of the site initially selected for the water supply dam was carried out. The results of this work indicated that the foundation soils are quite variable and that it would be difficult to form a stable and watertight impoundment at the site originally proposed. Hence, a second site labeled Site "B" and located further downstream in the vicinity of the tent camp was investigated. Test pits were excavated over a broad area and the results indicated that the lower site is suitable for development of a water impoundment. Two foundation test holes were drilled in the area of the right and left abutments to determine soil conditions below the depths reached by the test pits, and the nature of, and depth to, the underlying bedrock.

Representative disturbed and undisturbed samples of the soils encountered were obtained during the test pit and drilling investigations. These samples have now been shipped to Golder Associates' laboratories where selective testing to determine material characteristics is currently in progress. At the same time, collation and analysis of the field data is continuing as part of the ongoing program to determine the feasibility of developing the Kutcho Creek deposits.

Respectfully submitted,

Edward S. Holt, P.Eng.

APPENDIX A

Statement of Costs

STATEMENT OF COSTS

The geotechnical work was carried out in conjunction with other field work and the cost of support personnel, mobilization, camp operation, etc. has therefore been prorated to reflect appropriate costs. Sumac crew mobilization commenced on July 9th and the soils engineering work continued on-site through to August 15th. Laboratory anaysis and final report preparation are still in progress.

The cost of the program has been adversely affected by the logistics of the project. This is particularly true with regard to the lack of road access and the consequent need for aircraft to deliver all personnel and supplies from Watson Lake, Dease Lake or Smithers. Helicopter support was required on-site during the entire field program.

The cost of the 1984 geotechnical activities at Kutcho Creek was approximately as follows:

Back-hoe trenching equipment operation		$24,347
Drilling and related road construction		27,800
Support services		
Related soils engineering	$2,533	
Laboratory test analysis	37,949	
Piezometer monitoring	13,000	
Travel and accommodation	9,120	
Camp operation (80% of $24,284)	19,427	
Field personnel	9,130	
Fixed wing aircraft (70% of $9,800)	6,860	
Helicopter (70% of $34,500)	24,150	
Supervision (70% of $7,500)	5,250	
		127,419

Total Cost of Soils Engineering Program $179,566

With support services assigned 65% to test pitting and 35% to the drilling program, the average cost per pit or metre of drilling is estimated as follows:

Test Pitting cost per pit

Equipment operation	$24,347
Support services (65% of $127,419)	82,822
	$107,169

Average cost per pit $107,169/114 = $940

Drilling cost per metre

Equipment operation	$27,800
Support services (35% of $127,419)	44,597
	$72,397

Average cost per metre $72,397/136.2 = $532

The average cost per test pit or metre of drilling was used for a basis for the calculation of expenditures on individual claims as shown in Appendix B.

Detail of the principal costs incurred during the 1984 geotechnical program are outlined below:

DRILLING

Contrractor Arctic Diamond Drilling

Personnel: V.Berry - Driller/Foreman
D.Genner - Driller
K.Rauman - Helper

Costs: Due to the nature of the soils engineering test requirements, all drilling was on an hourly rental basis. Principal equipment utilized was as follows:

Drill	192 hrs. @ $130
Wagon	184 hrs. @ $ 30
D-6 Tractor	86 hrs. @ $ 70

Equipment rental rates did not include fuel, accommodation, transportation and related support expenses.

TEST PITTING

Equipment Rental: Mohawk Oil Co. Ltd.

Back-hoe	148 hrs. @ $60
D-6 Tractor	120 hrs. @ $70

Personnel: W.Ludwig - tractor operator
L.Flemming - back-hoe operator

ENGINEERING

Geotechnical Consultants: Golder Associates, Vancouver

On-Site Engineering Services:

Personnel	Period	Charge Rate for Geotechnical Services
D.B.Campbell, P.Eng.	July 12 - 15 Aug. 8 - 10	$72.00 per hour
A.H.Kent, P.Eng.	July 12 - 19 July 26 - Aug. 3	$53.50 per hour
Larry Wong, (technician)	July 16 - 27 July 30 - Aug. 17	$32.00 per hour

SUPPORT SERVICES

The principal support services required were:

- Operation of a ten man camp

- Provision of on-site helicopter
- Transportation of equipment and supplies to Kutcho Creek airstrip or Rainbow Lake
- Supervision

The on-site personnel involved in providing the support services were:

K. Kataya	- Senior Supervisor, Sumac Mines Ltd.
E. Holt	- Coordinating Consultant ($375/day)
A. Grace	- Cook ($2500/month)
T. Fujisawa	- Assistant ($9.00/hour)
C. Watanabe	- Helicopter Pilot, Airlift Corp.

Chronology of the 1984 geotechnical activities is outlined below:

Date	Activity
July 3 - 6	Air photo interpretation to delineate surficial geology in Andrea Creek Valley
July 12 - 15	Field reconnaissance of Tailing Dam Sites A through C, waste dump area, lower plant site and upper water supply dam site.
July 16 - 25	Test Pit Investigation: - 31 test pits over Tailing Dam Site A foundation - 4 Test Pits in Site A Borrow Area. - 4 Test Pits along Site A Diversion Channel. - 15 Test Pits over Waste Dump Area. - 7 Test Pits at upper Water Supply Dam Site - 13 Test Pits at Lower Plant Site. - 19 Test Pits at Tailing Dam Site C.

	- 8 Test Pits at Tailing Dam Site D.
July 26 - 31	Review of data obtained, planning of drilling investigation and selection of additional test pits.
August 1 - 3	Additional Test Pits: - 7 Test Pits at Upper Plant Site - 10 Test Pits at Lower Water Supply Dam Site. - 4 Test Pits in Tailing Dam Site A Borrow Area.
August 1 - 15	Drilling Investigation: - 5 Drillholes at Tailing Dam Site A - 2 Drillholes at Lower Water Supply Dam Site. - 2 Drillholes at Upper Plant Site - 1 Drillhole at Lower Plant Site.
August 15 - date	Laboratory testing and data analysis continuing.

APPENDIX B

Distribution of Expenditures
on
Individual Claims

DISTRIBUTION OF EXPENDITURES ON INDIVIDUAL CLAIMS

SMRB Claim Group					
SMRB 1	Pits	FWA 4,5 & 6	3 @ $940		$2,820
SMRB 2	Pits	FWA 1,2 & 3	3 @ $940		2,820
SMRB 3	Pits	FWA 7	1 @ $940		940
SMRB 7	Hole	FWB - H2	8.3m @ $532		4,416
SMRB 8	Hole	FWB - H1	11.0m @ 532	$5852	
	Pits	FWB 1 to 10 incl.	10 @ 940	9400	
					15,252
SMRB 13	Pits	PB 1 & 2	2 @ $940		1,880
SMRB 15	Hole	PBH - 1	12.2m @ 532	$6490	
	Pits	PB 3,4 & W6	3 @ $940	2820	
					9,310
TOTAL EXPENDITURE SMRB CLAIM GROUP					$37,438
SPAN Claim Group (KC Claims,					
KC - 25	Pits C 1 to 5		5 @ $940		$4,700
KC - 27	Pits C 7 & 8		2 @ 940		1,880
KC - 29	Pits C 9,10,18 & 19		4 @ 940		3,760
KC - 31	Pits C 11,12,13 & 17		4 @ 940		3,760
KC - 32	Pit C 16		1 @ 940		940
KC - 33	Pits C 14 & 15		2 @ 940		1,880
TOTAL SPAN CLAIM GROUP					$17,860
JEFF Mineral Claims					
JEFF 2	Pits	W 15	1 @ $940		$ 940
JEFF 13	Pits	W 13	1 @ 940		940
JEFF 14	Pits	W 2	1 @ 940		940
JEFF 15	Pits	W5 & 12	2 @ 940		1,880
JEFF 16	Pits	W 3 & 11	2 @ 940		1,880
JEFF 18	Pits	W 4,9 & 10	3 @ 940		2,820
JEFF 19	Pits	PB5 & 6	2 @ 940		1,880
JEFF 20	Pits	W 7 & 8	2 @ 940		1,880

JEFF 22	Pits	PB 7, A1 & A2	3 @ 940	2,820	
	Holes	PBH-2 & AD1	20.4m @ 532	10,853	
					13,673
JEFF 26	Pit	A 38	1 @ 940		940
JEFF 28	Pits	A 37 & 43	2 @ 940		1,880
JEFF 30	Pits	A 33,34,42	3 @ 940		2,820
JEFF 31	Pits	A3,4,6-10,13,15,17	10 @ 940	9,400	
	Holes	AD-2 & 3	15.9m @ 532	8,459	
					17,859
JEFF 32	Pits	A16,18,21-30,32,35	14 @ 940	13,160	
	Holes	AD - 4 & 5	52.1m @ 532	27,717	
					40,877
JEFF 33	Pits	A5,11,12,14 & P1	5 @ 940		4,700
JEFF 34	Pits	A19,20,40,41	4 @ 940		3,760
JEFF 35	Pits	P2,3,4,8,10,11 & T1	7 @ 940	6,580	
	Hole	PSA-1	16.3m @ 532	8,671	
					15,251
JEFF 36	Pits	T2 & 3	2 @ 940		1,880
JEFF 37	Pits	P5,6 & 7	3 @ 940		2,820
JEFF 60	Pit	W 14	1 @ 940		940
JEFF 65	Pits	W 1 & A39	2 @ 940		1,880
TOTAL EXPENDITURE JEFF CLAIMS					$122,440
ANDREA	Pit	C 6	1 @ 940		940
POND 1	Pits	A31 & 36	2 @ 940		1,880

APPENDIX C

Certification

STATEMENT OF QUALIFICATIONS

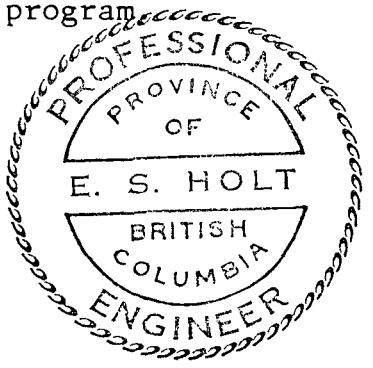
I, Edward S. Holt of North Vancouver, British Columbia, do hereby certify:

1. that I am a geologist residing at 4091 St. Albans Avenue, North Vancouver, British Columbia,

2. that I am a Professional Engineer registered in the Province of British Columbia,

3. that I am employed by Holt Engineering Ltd., 4091 St. Albans Avenue, North Vancouver, British Columbia,

4. that I have personal knowledge of the Kutcho Creek project being developed by Sumac Mines Ltd. and Esso Minerals Canada, having personally spent extensive time on the property. I have examined a number of the test pits, observed the drilling operation and familiarized myself with both the objectives and results of the 1984 geotechnical program.



Edward S. Holt

September 25, 1984
North Vancouver, B.C.

APPENDIX D

Geotechnical Field Data
for
Test Pits and Drill Holes

APPENDIX D.1

Tailings Dam Site A (A1 thru A43)

TEST PIT LOG

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A1	37,720E 23,484N 1460 m	0.0 to 0.6	Soft dark brown SILT and SAND, trace gravel, stone, cobbles, damp.	0.25
		0.6 to 1.5	Compact brown coarse SAND and FINE GRAVEL, trace to some stones, cobbles, moist. Minor seepage at 1.0 m.	0.6
		1.5 to 2.2	Brown silty sand, fine gravel, some stones, cobbles and boulders.	1.7 (NMC=9.0%)
		2.2	End of Test Pit, refusal on boulder.	
A2	37,744E 23,578N 1450 m	0.0 to 0.2	PEAT.	
		0.2 to 0.9	Loose to compact brown silty FINE GRAVEL and SAND some cobbles getting finer at 0.7 m, moist. Minor seepage at 0.6 m.	0.7
		0.9 to 1.5	Dense brown silty FINE SAND and GRAVEL, some cobbles and boulders.	1.2 (MNC=10.0%)
		1.5 to 2.7	Compact to dense brown sandy SILT, some gravel and cobbles, moist (TILL).	1.9 (MNC=14.3%) 2.6 (MNC=14.2%)
		2.7	End of Test Pit, maximum reach.	
A3	37,763E 23,677N 1444 m	0.0 to 0.05	PEAT.	
		0.05 to 0.9	Compact brown SAND and GRAVEL, some cobbles and silt, moist. Minor seepage at 0.9 m.	0.5

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A3 (Cont'd)		0.9 to 2.2	Compact to dense grey-brown silty SAND and GRAVEL, some cobbles, wet (TILL).	1.1 (MNC=10.6%) 2.2 (MNC=13.7%)
		2.2 to 3.0	Compact to dense brown sandy SILT, some gravel and cobbles, moist (TILL).	3.0
		3.0	Hard brown SILT, some sand and gravel, occasional cobbles (TILL).	
		3.0	End of Test Pit, maximum reach.	
A4	37,850E 23,655N 1446 m	0.0 to 0.05	PEAT.	
		0.05 to 0.7	Loose brown silty SAND with gravel, occasional cobbles, moist. Minor seepage at 0.7 m.	0.5
		0.7 to 2.5	Soft brown SILT with sand and gravel, occasional cobbles, moist.	0.8 (MNC=14.7%)
		2.5 to 3.0	Dense grey-brown silty SAND with gravel, some cobbles, moist (TILL).	3.0 (MNC=8.7%)
		3.0	End of Test Pit, maximum reach.	
A5	37,680E 23,698N 1440 m	0.0 to 0.2	Brown SILT and PEAT.	
		0.2 to 0.6	Compact brown fine SAND with gravel, cobbles, small boulders, some to trace silt, moist.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A5 (Cont'd)		0.6 to 2.8	Dense brown silty SAND with gravel, some to occasional boulders and cobbles, moist. Becomes very dense below 2.4 m (TILL). Minor seepage at 2.4 m.	1.1 (NMC=12.0%) 2.4 (NMC=11.2%)
		2.8	End of Test Pit, maximum reach.	
A6	37,773E 23,725N 1437 m	0.0 to 0.2	Brown PEAT and SILT.	
		0.2 to 0.5	Loose brown SAND and GRAVEL, some silt and cobbles, moist.	
		0.5 to 3.0	Dense grey-brown silty SAND and GRAVEL, occasional cobbles, moist (TILL). Moderate seepage at 2.1 m.	0.8 (NMC=12.9%) 1.4 3.0
		3.0	End of Test Pit, maximum reach.	
A7	37,783E 23,775N 1430 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 2.7	Compact to dense brown silty SAND with gravel, some to occasional cobbles, moist (TILL). Becomes dense below 0.5 m. No seepage observed.	1.1 (NMC=11.1%) 2.7 (NMC=11.0%)
		2.7	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A8	37,882E 23,754N 1439 m	0.0 to 0.05	Brown PEAT and SILT.	
		0.05 to 0.4	Loose brown sandy GRAVEL.	
		0.4 to 3.0	Compact brown SAND and SILT with gravel, occasional cobbles and boulders, moist. Becomes dense at 3.0 m. No seepage observed.	1.1 (NMC=14.3%) 3.0 (NMC=10.8%)
		3.0	End of Test Pit, maximum reach.	
A9	37,902E 23,847N 1430 m	0.0 to 0.1	Brown SILT and PEAT.	
		0.1 to 0.7	Compact brown silty SAND, some gravel, occasional cobbles and boulders, moist.	
		0.7 to 2.3	Very stiff grey sandy SILT with some gravel and very flaky weak rock, occasional cobbles and boulders, moist (TILL). Minor seepage at 1.2 m.	1.4 (NMC=15.9%) 1.8
		2.3	End of Test Pit, refusal on large boulder.	
A10	37,807E 23,873N 1426 m	0.0 to 0.1	Brown PEAT and SILT.	
		0.1 to 1.	Compact brown silty SAND and GRAVEL, cobbles and occasional boulders, moist.	0.8 (NMC=15.2%)
		1.9 to 2.5	Very stiff grey-brown sandy SILT with some gravel, occasional cobbles and boulders, moist (TILL). Minor seepage at 2.3 m.	2.0 (NMC=13.0%)

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A10 (Cont'd)		2.5 to 2.6	Hard brittle grey fine grained flaky schist.	2.6
		2.6	End of Test Pit, refusal.	
A11	37,716E 23,890N 1420 m	0.0 to 0.1	Brown PEAT and SILT.	
		0.1 to 2.1	Compact to dense brown silty SAND with gravel, some cobbles and occasional boulders, damp.	1.2 (NMC=10.9%)
		2.1 to 3.0	Dense grey-brown SAND with gravel, trace silt, occasional cobbles, damp.	3.0 (NMC=5.4%)
		3.0	End of Test Pit, maximum reach. No seepage observed.	
A12	37,687E 23,797N 1428 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 3.0	Compact to dense brown silty SAND with gravel, some cobbles, occasional boulders, wet (TILL). Minor seepage at 1.2 m.	1.2 (NCM=10.8%) 3.0 (NMC=10.0%)
		3.0	End of Test Pit, maximum reach.	
A13	37,824E 23,951N 1418 m	0.0 to 0.1	Dark brown PEAT and SILT.	
		0.1 to 0.6	Compact brown-grey SAND with fine gravel, trace silt, occasional cobbles, wet. Moderate seepage at 0.4 m.	0.5 (NMC=4.4%)

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A13 (Cont'd)		0.6 to 1.2	Dense brown-grey coarse GRAVEL with sand, trace silt, very cobbley with some boulders.	0.8 (NMC=8.3%)
		1.2	End of Test Pit, refusal on large boulder.	
A14	37,740E 23,972N 1415 m	0.0 to 0.05	Dark brown PEAT.	
		0.05 to 0.5	Soft brown sandy SILT, some organics, wet.	
		0.5 to 1.8	Compact to dense brown GRAVEL with some sand, cobbles and small boulders, wet. Minor seepage at 1.2 m.	1.2
		1.8 to 2.2	Dense grey-brown sandy SILT with gravel, occasional cobbles, moist (TILL).	1.9 (NMC=11.6%)
		2.2	End of Test Pit, hard digging.	
A15	37,884 23,937N 1424 m	0.0 to 0.05	Dark brown SILT and PEAT.	
		0.05 to 0.5	Soft brown sandy SILT with some organics, wet. Strong seepage below 0.2 m.	0.4 (NMC=39.4%)
		0.5 to 1.5	Dense grey-brown GRAVEL, COBBLES and SAND, occasional boulders, wet.	1.0
		1.5 to 1.7	Dense brown-grey SILT with gravel and sand, occasional cobbles (TILL).	1.7 (NMC=11.3%)
		1.7	End of Test Pit, hard digging.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A16	37,940E 24,010N 1419 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 0.9	Firm brown sandy SILT with some gravel and cobbles, moist.	0.9 (NMC=22.9%)
		0.9 to 1.8	Stiff brown sandy GRAVEL with some cobbles, trace silt, occasional boulders, wet. Minor seepage at 1.0 m.	1.7 (NMC=8.5%)
		1.8 to 2.5	Hard brown-grey SILT with some gravel, trace sand, occasinal cobbles, moist (TILL).	2.4 (NMC=14.8%)
		2.5	End of Test Pit, hard digging.	
A17	37,790E 23,940N 1417 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 0.9	Compact to dense SILT and SAND with gravel, cobbles and boulders.	0.9
		0.9 to 1.6	Dense brown GRAVEL and COBBLES, trace sand and silt, wet. Moderate seepage at 1.1 m.	
		1.6 to 1.7	Hard dark grey brittle flaky SCHIST.	1.7
		1.7	End of Test Pit, refusal in rock.	
A18	37,842E 24,032N 1426 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.4	Stiff brown sandy SILT with some gravel, occasional cobbles, wet.	1.2 (NMC=14.7%)

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A18		1.4 to 2.4	Hard brown-grey clayey SILT, some sand, gravel, occasional cobbles, moist (TILL). No seepage observed.	1.8 (NMC=10.8%)
		2.4	End of Test Pit, hard digging.	
A19	37,745E 24,053N 1425 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.5	Compact brown silty SAND with some cobbles, occasional boulders, moist. Minor seepage at 0.9 m.	1.0
		1.5 to 2.3	Hard brown SILT with gravel, some sand, occasional cobbles (TILL).	2.3
		2.3	End of Test Pit, hard digging.	
A20	37,765E 24,140N 1437 m	0.0 to 0.2	Dark brown PEAT.	
		0.2 to 2.1	Stiff olive brown SILT with gravel and some to trace sand, occasional cobbles and boulders (TILL). Minor to moderate seepage at 0.4 m.	1.4 (NMC=12.7%) 2.1 (NMC=12.1%)
		2.1	End of Test Pit, refusal on boulder.	
A21	37,862 24,116N 1439 m	0.0 to 0.1	Dark brown PEAT.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A21 (Cont'd)		0.1 to 2.0	Firm brown sandy SILT, some gravel, occasional cobbles, moist. Minor seepage at 0.8 m.	1.1 (NMC=11.6%)
		2.0 to 2.5	Stiff olive brown SILT, some sand and gravel, occasional cobbles, moist (TILL).	2.5 (NMC=9.1%)
		2.5	End of Test Pit, maximum reach.	
A22	37,960E 24,093N 1435 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.5	Compact to dense brown silty SAND, some gravel and occasional cobbles, wet. Minor seepage at 0.3 m.	1.0 (NMC=9.5%)
		1.5 to 2.2	Hard brown SILT with some sand and gravel, occasional cobbles, moist (TILL).	2.1 (NMC=10.1%)
		2.2 to 2.3	Hard grey SILT with some gravel and sand, occasional cobbles, damp (TILL).	2.3 (NMC=9.5%)
		2.3	End of Test Pit, hard digging.	
A23	37,980E 24,190N 1446 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 1.0	Firm to stiff brown sandy SILT with some gravel, occasional cobbles, wet.	
		1.0 to 1.5	Stiff olive brown SILT with some gravel and sand, occasional cobbles, moist.	1.1 (NMC=12.4%)

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A23		1.5 to 2.7	Hard brown SILT with gravel, some sand, occasional cobbles and small boulders damp (TILL). No seepage observed.	2.7 (MNC=13.0%)
		2.7	End of Test Pit, maximum reach.	
A24	37,885E 24,214N 1447 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 1.1	Soft to firm brown SILT, some sand and gravel, occasional cobbles, wet. Minor seepage at 0.3 m.	
		1.1 to 1.5	Stiff brown SILT, some sand and gravel, occasional cobbles, moist.	1.2 (MNC=10.9%)
		1.5 to 2.6	Hard brown SILT, some gravel, sand and cobbles, occasional small boulders, damp (TILL).	2.6 (NMC=9.3%)
		2.6	End of Test Pit, maximum reach.	
A25	37,790E 24,237N 1445 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.9	Firm brown SILT, some gravel and sand, occasional cobbles, wet. Minor seepage at 1.9 m.	1.0 (NMC=12.3%)
		1.9 to 2.6	Stiff brown SILT, some gravel and sand, occasional cobbles, wet.	2.6 (NMC=14.5%)
		2.6	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A26	37,810E 24,333N 1458 m	0.0 to 0.2	Brown PEAT and SILT.	
		0.2 to 1.4	Firm to stiff brown SILT, some gravel and sand, occasional cobbles, moist.	1.2
		1.4 to 2.4	Very stiff brown SILT, some gravel and sand, occasional cobbles, damp (TILL). No seepage observed.	2.4
		2.4	End of Test Pit, hard digging.	
A27	37,907E 24,310N 1455 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 0.2	Loose brown SILT, SAND and GRAVEL.	
		0.2 to 1.5	Stiff brown SILT, some gravel and sand, occasional cobbles, moist.	1.1 (NMC=13.9%)
		1.5 to 2.4	Very stiff brown SILT, some gravel and sand, occasional cobbles, damp (TILL). No seepage observed.	2.4 (NMC=11.0%)
		2.4	End of Test Pit, hard digging.	
A28	38,005E 24,287N 1458 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 0.2	Loose brown SILT and FINE GRAVEL.	
		0.2 to 1.5	Stiff brown SILT, some gravel and sand, occasional cobbles and small boulders, moist.	1.1

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A28 (Cont'd)		1.5 to 2.5	Very stiff brown SILT, some gravel and sand, occasional cobbles, damp (TILL). No seepage observed.	1.5
		2.5	End of Test Pit, hard digging.	
A29	38,024E 24,377N 1462 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.6	Soft to firm SILT, some sand and gravel, occasional cobbles, moist. Minor seepage at 1.2 m.	1.1
		1.6 to 2.4	Very stiff SILT with some gravel and sand, some cobbles and occasional small boulders, moist (TILL).	2.4
		2.4	End of Test Pit, hard digging.	
A30	37,930E 24,408N 1462 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 0.2	Loose brown SILT, SAND and FINE GRAVEL.	
		0.2 to 1.2	Very stiff brown SILT with some gravel and sand, some cobbles and occasional small boulders, moist.	1.0 (NMC=10.1%)
		1.2 to 2.3	Hard brown SILT with some gravel and sand, some cobbles and occasional small boulders, moist (TILL). No seepage observed.	2.3 (NMC=10.8%)
		2.3	End of Test Pit, hard digging.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A31	37,954E 24,505N 1462 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.3	Stiff brown SILT with some gravel and sand, occasional cobbles, moist.	1.2
		1.3 to 2.3	Very stiff to hard SILT with some gravel and sand, occasional cobbles, moist (TILL). No seepage observed.	2.3
		2.3	End of Test Pit, hard digging.	
A32	38,187E 24,338N 1456 m	0.0 to 0.05	Brown PEAT.	
		0.05 to 1.0	Stiff brown SILT with some gravel and sand, some cobbles, occasional small boulder, moist. Minor seepage at 0.6 m.	1.0 (NMC=8.7%)
		1.0 to 3.0	Very stiff brown SILT with some gravel and sand, occasional cobbles, moist (TILL).	3.0 (NMC=11.9%)
		3.0	End of Test Pit, maximum reach.	
A33	38,364E 24,298N 1454 m	0.0 to 0.2	Dark brown PEAT.	
		0.2 to 0.5	Firm brown SILT with some gravel and sand, some cobbles, and occasional boulders, moist.	0.5 (NMC=15.4%)
		0.5 to 2.0	Firm to stiff grey silty CLAY, some gravel, some to trace sand and organics, occasional cobbles.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A33 (Cont'd)		2.0 to 2.5	Very stiff to hard grey SILT, some gravel and sand occasional cobbles, moist (TILL). No seepage observed.	2.5 (NMC=9.6%)
		2.5	End of Test Pit, hard digging.	
A34	38,345E 24,210N 1444 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.5	Firm to stiff brown-grey clayey SILT, some gravel, trace sand, occasional cobbles, wet.	1.2 (NMC=20.8%)
		1.5 to 2.6	Stiff to very stiff olive grey SILT, some gravel and sand, occasional cobbles, moist (TILL). No seepage observed.	2.6 (NMC=11.1%)
		2.6	End of Test Pit, hard digging.	
A35	38,150E 24,256N 1444 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.4	Firm brown SILT, some gravel and trace sand, occasional cobbles, moist.	1.3 (NMC=16.2%)
		1.4 to 2.1	Very stiff brown SILT with some gravel and sand, occasional cobbles, damp (TILL). No seepage observed.	2.1 (NMC=15.7%)
		2.1	End of Test Pit, hard digging.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A36	38,504E 24,454N 1470 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.1	Stiff brown sandy SILT, some gravel, occasional cobbles and boulders.	1.1 to 1.2
		1.1 to 2.8	Stiff to very stiff olive grey SILT, some gravel and sand, occasional cobbles, damp (TILL). No seepage observed.	2.8
		2.8	End of Test Pit, maximum reach.	
A37	38,834E 24,305N 1470 m	0.0 to 0.1	Dark brown PEAT and SILT.	
		0.1 to 0.7	Firm brown SILT, some gravel, trace sand, occasional cobbles, moist. Minor seepage at 0.7 m.	
		0.7 to 1.0	Compact to dense brown coarse to fine GRAVEL, some sand, trace silt, wet.	0.8
		1.0 to 2.4	Very stiff brown SILT, some gravel and sand, occasional cobbles, moist (TILL).	2.3
		2.4 to 2.7	Hard grey SILT, some gravel, some to trace sand, occasional cobbles, damp (TILL).	2.7
		2.7	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A38	39,190E 24,194N 1470 m	0.0 to 0.1	Dark brown PEAT and SILT.	
		0.1 to 1.3	Compact to dense GRAVEL, some sand and silt, occasional cobbles, wet.	1.1
		1.3 to 2.8	Very stiff to hard grey SILT, some gravel, trace sand, occasional cobbles, damp (TILL). No seepage observed.	2.8
		2.8	End of Test Pit, maximum reach.	
A39	39,700E 23,514N 1470 m	0.0 to 0.1	Dark brown PEAT and SILT.	
		0.1 to 1.5	Stiff brown SILT, some gravel and sand, occasional cobbles, moist.	1.2
		1.5 to 2.9	Very stiff grey SILT, some gravel and sand, occasional cobbles, damp (TILL). No seepage observed.	2.9
		2.9	End of Test Pit, maximum reach.	
A40	37,600E 24,270N 1443 m	0.0 to 0.05	PEAT.	
		0.05 to 0.6	Compact to dense grey-brown sandy SILT, some gravel, occasional to some cobbles and boulders, moist to wet. Minor seepage in this stratum.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A40 (Cont'd)		0.6 to 2.4	Very dense grey-brown sandy SILT, some gravel, occasional cobbles and boulders, moist to damp (TILL).	1.4 1.8
		2.4	End of Test Pit, hard digging.	
A41	37,400E 24,286N 1435 m	0.0 to 0.1	PEAT (minor seepage).	
		0.1 to 1.2	Compact to dense brown silty SAND, some gravel, occasional cobbles and boulders, moist. (Frozen down to 0.7 m depth).	0.8
		1.2 to 2.0	Very dense grey sandy SILT, some gravel, occasional cobbles and boulders, moist to damp (TILL).	2.0
		2.0	End of Test Pit, refusal on boulder.	
A42	38,535E 24,165N 1446 m	0.0 to 0.25	PEAT (minor seepage).	
		0.25 to 0.7	Firm brown sandy SILT, moist.	
		0.7 to 1.5	Firm blue-grey clayey SILT, some sand and gravel occasional cobbles and boulders, moist.	1.2 (NMC=18.8%)
		1.5 to 3.0	Dense grey-brown sandy SILT, some gravel, occasional cobbles and boulders, moist to damp (TILL).	2.2 (NMC=15.0%)

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
A42 (Cont'd)			Becomes more sandy at 2.9 m.	
		3.0	End of Test Pit, maximum reach.	
A43	38,770E 24,120N 1449 m	0.0 to 0.4	PEAT.	
		0.4 to 2.6	Compact to dense grey-brown sandy SILT, trace clay, some gravel, occasional cobbles and boulders, moist to wet. Becomes dense to very dense below 2.0 m. Becomes hard at 2.5 m (TILL). No seepage observed.	1.3 (NMC=20.4%) 2.0 (NMC=10.8%)
		2.6	End of Test Pit, hard digging.	

APPENDIX D.2

Tailings Dam Site C (C1 thru A19)

TEST PIT LOG

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
C1	34,160E 24,560N 1340 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 1.0	Firm brown SILT, trace organics, moist.	1.0
		1.0 to 2.5	Dense brown-grey gravelly SAND, trace silt, occasional cobbles, damp. No seepage observed.	2.5
		2.5	End of Test Pit, maximum reach.	
C2	34,135E 24,470N 1340 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 0.8	Firm brown SILT, trace organics, moist.	
		0.8 to 2.5	Dense brown-grey gravelly SAND, some to trace silt, occasional cobbles, damp. No seepage observed.	1.2 2.5
		2.5	End of Test Pit, maximum reach.	
C3	34,055E 24,379N 1340 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 1.1	Compact brwon sandy GRAVEL, trace silt, occasional cobbles.	0.8
		1.1 to 2.8	Firm to stiff brown SILT, trace of gravel and sand, moist. No seepage observed.	2.8
		2.8	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
C4	34,018E 24,316N 1346 m	0.0 to 0.5	Soft dark brown PEAT. Minor seepage at 0.5 m.	
		0.5 to 2.7	Firm brown SILT, trace sand, occasional gravel, wet.	1.5 2.7
		2.7	End of Test Pit, maximum reach.	
C5	33,990E 24,250N 1348 m	0.0 to 0.4	Loose brown PEAT, SILT, SAND and GRAVEL.	
		0.4 to 1.6	Dense brown sandy GRAVEL, some silt and cobbles, moist.	1.2
		1.6 to 2.8	Compact brown medium SAND, trace silt, damp. No seepage observed.	2.8
		2.8	End of Test Pit, maximum reach.	
C6	34,220E 24,648N 1335 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 1.2	Stiff brown gravelly SILT, some sand, occasional cobbles, moist.	1.1
		1.2 to 1.8	Very stiff to hard grey SILT, some gravel, trace sand, damp (TILL). No seepage observed.	1.7
		1.8	End of Test Pit, refusal on boulder.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
C7	34,481E 24,550N 1350 m	0.0 to 0.3	Brown PEAT and SILT, some gravel.	
		0.3 to 2.9	Compact brown SAND, some gravel, trace silt, damp. No seepage observed.	1.2 2.9
		2.9	End of Test Pit, maximum reach.	
C8	34,710E 24,530N 1358 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 1.6	Firm to stiff brown SILT, some weak black flaky broken rock and gravel and sand, moist. Moderate seepage at 1.5 m.	1.1
		1.6 to 1.9	Hard moderately strong to weak black flaky SCHIST.	1.9
		1.9	End of Test Pit, refusal in rock.	
C9	34,890E 24,512N 1368 m	0.0 to 0.2	Brown PEAT and SILT.	
		0.2 to 1.1	Firm to stiff brown SILT, some gravel and sand, occasional cobbles and boulders, damp.	1.1
		1.1 to 2.5	Very stiff to hard brown gravelly SILT, some sand, occasional cobbles and boulders, damp (TILL). No seepage observed.	2.5
		2.5	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
C10	35,025E 24,533N 1378 m	0.0 to 0.2	Brown PEAT and SILT, some fine gravel.	
		0.2 to 1.6	Stiff brown SILT, some fine gravel and sand, occasional cobbles, damp.	1.1
		1.6 to 2.8	Very stiff to hard gravelly SILT, some sand, occasional cobbles, damp. No seepage observed.	2.8
		2.8	End of Test Pit, maximum reach.	
C11	35,240E 24,460N 1374 m	0.0 to 0.3	Brown PEAT and SILT.	
		0.3 to 0.8	Firm to stiff SILT with weak flaky broken rock, some fine gravel, trace sand, damp.	0.7
		0.8 to 1.3	Hard moderately strong to weak weathered fine grained SCHIST. No seepage observed.	1.3
		1.3	End of Test Pit, refusal in rock.	
C12	35,461E 24,403N 1368 m	0.0 to 0.3	Brown PEAT and SILT.	
		0.3 to 1.6	Stiff brown SILT with weak black flaky broken rock, some gravel and sand, occasional cobbles, damp. Minor seepage at 1.6 m.	0.9

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
C12 (Cont'd)		1.6 to 2.1	Moderately strong to weak black weathered, fine grained flaky SCHIST (BEDROCK?).	2.1
		2.1	End of Test Pit, refusal in rock.	
C13	35,567E 24,355N 1379 m	0.0 to 0.3	Brown PEAT and SILT.	
		0.3 to 1.7	Stiff brown SILT, some weak flaky broken rock, gravel and sand, occasional cobbles, damp.	1.0
		1.7 to 2.5	Very stiff brown gravelly SILT, some sand, occasional cobbles, damp. No seepage observed.	2.5
		2.5	End of Test Pit, hard digging.	
C14	35,750E 24,265N 1380 m	0.0 to 0.2	Brown PEAT.	
		0.2 to 1.7	Firm brown clayey SILT, trace organics, moist.	1.1
		1.7 to 2.2	Very weak weathered black flaky SCHIST, some silt, damp. Minor seepage at 1.9 m.	2.2
		2.2	End of Test Pit, refusal in rock.	
C15	35,870 24,176N 1386 m	0.0 to 0.05	Brown PEAT.	
		0.05 to 1.7	Firm brown SILT, moist.	1.2

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
C15 (Cont'd)		1.7 to 2.5	Very stiff brown and grey gravelly SILT, some sand, occasional cobbles (TILL). No seepage observed.	2.5
		2.5	End of Test Pit, maximum reach.	
C16	36,000E 23,994N 1400 m	0.0 to 0.4	Soft dark brown PEAT.	
		0.4 to 0.6	Soft SILT with some organics, moist.	
		0.6 to 2.3	Compact to dense sandy GRAVEL, some highly weathered black flaky schist, trace silt, wet. No seepage observed.	1.2 2.3
		2.3	End of Test Pit, refusal in rock.	
C17	35,456E 24,270N 1383 m	0.0 to 0.4	Soft dark brown PEAT and SILT.	
		0.4 to 1.5	Firm to stiff grey SILT, some organics, moist.	1.1
		1.5 to 2.4	Stiff brown and grey SILT, trace clay and organics, moist. No seepage observed.	2.4
		2.4	End of Test Pit, maximum reach.	
C18	35,166E 24,293N 1381 m	0.0 to 0.3	Brown PEAT and SILT, some gravel.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
C18 (Cont'd)		0.3 to 2.3	Compact brown gravelly SAND and SILT, occasional cobbles and boulders, damp. Becomes dense below 1.2 m. Becomes wet at 2.3 m. No seepage observed.	1.2
		2.3	End of Test Pit, maximum reach.	
C19	34,807E 24,283N 1372 m	0.0 to 0.3	Brown PEAT and SILT, some gravel.	
		0.3 to 0.9	Compact to dense sandy GRAVEL, some to trace silt, occasional cobbles, moist.	0.7
		0.9 to 2.3	Dense brown gravelly SAND and SILT, some cobbles. No seepage observed.	2.3
		2.3	End of Test Pit, maximum reach.	

APPENDIX D.3

Tailings Dam Site D (D1 thru A8)

TEST PIT LOG

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
D1	25,780N 31,220E 1310 m	0.0 to 0.05	PEAT.	
		0.05 to 2.8	Compact to dense brown silty fine SAND, occasional gravel, cobbles, damp.	0.7
			Becomes more dense, more gravel with depth.	2.1
			No seepage observed.	
		2.8	End of Test Pit, maximum reach.	
D2	25,620N 31,220N 1315 m	0.0 to 0.1	PEAT.	
		0.1 to 0.6	Compact brown silty SAND, some gravel, occasional boulders, damp.	
		0.6 to 1.6	Compact sandy fine GRAVEL, occasional to some cobbles and boulders.	0.9
			Ground water at 1.2 m (minor seepage).	
		1.6 to 2.8	Compact orange SILT, and fine SAND, damp.	2.4
		2.8	End of Test Pit, maximum reach.	
D3	25,470N 31,250E 1325 m	0.0 to 0.1	PEAT.	
		0.1 to 1.4	Loose to compact grey-brown medium to coarse SAND, some gravel, trace to some silt, occasional cobbles and boulders, damp.	1.0
			Minor seepage at 1.4 m.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
D3 (Cont'd)		1.4 to 2.5	Compact grey-brown silty fine SAND, occasional cobbles and boulders, some gravel.	
		2.5	End of Test Pit, maximum reach.	2.4
D4	25,300N 31,330E 1335 m	0.0 to 0.1	PEAT.	
		0.1 to 1.0	Loose to compact brown medium SAND to fine GRAVEL, occasional cobbles and boulders, damp. Minor seepage at 1.0 m.	0.8
		1.0 to 2.5	Compact to dense grey silty SAND, some gravel, occasional cobbles and boulders, damp to moist.	2.5
		2.5	End of Test Pit, maximum reach.	
D5	26,000N 31,470E 1290 m	0.0 to 0.1	PEAT.	
		0.1 to 0.3	Loose brown SAND, some gravel, trace silt, moist.	
		0.3 to 0.6	Compact grey sandy SILT, some gravel, occasional cobbles, moist.	
		0.6 to 1.0	Loose to compact grey SAND and GRAVEL, trace silt, moist to wet. Minor seepage in this stratum.	
		1.0 to 2.8	Compact to dense grey silty SAND and GRAVEL, occasional cobbles, moist.	2.5
		2.8	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
D6	25,800N 31,730E 1290 m	0.0 to 0.1	PEAT.	
		0.1 to 0.3	Loose brown silty SAND, occasional gravel, damp.	
		0.3 to 0.5	Becomes grey, compact.	
		0.5 to 0.8	Compact medium SAND to fine gravel, trace silt, moist.	
		0.8 to 1.1	Dense fine sandy SILT, occasional to trace gravel, cobbles.	1.0
		1.1 to 2.2	Very dense grey silty fine SAND, some gravel, moist to damp (TILL).	
		2.2	End of Test Pit, hard digging.	
D7	25,580N 31,850E 1300 m	0.0 to 0.1	PEAT.	
		0.1 to 0.6	Loose brown GRAVEL, trace to some sand, silt, occasional cobbles and boulders.	
		0.6 to 1.8	Compact brown silty fine SAND, trace gravel, occasional cobbles and boulders, moist.	1.0
		1.8 to 2.6	Dense grey silty SAND, some gravel, occasional cobbles and boulders, moist (TILL?).	1.9
		2.6	End of Test Pit, hard digging.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
D8	25,440N 32,200E 1300 m	0.0 to 0.1	PEAT.	
		0.1 to 0.9	Loose to compact brown SAND and GRAVEL, occasional cobbles and boulders, damp.	0.5
		0.9 to 1.7	Compact to dense brown silty SAND, trace to some gravel, occasional boulders. Minor seepage at 1.7 m.	
		1.7 to 2.1	Very dense dark grey silty SAND, trace to some gravel, occasional cobbles, damp, friable (TILL).	1.8
		2.1	End of Test Pit, hard digging.	

APPENDIX D.4

Waste Dump (W1 thru P13)

TEST PIT LOG

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
W1	39,745E 23,077N 1505 m	0.0 to 0.2	Dark brown PEAT AND SILT.	
		0.2 to 1.4	Stiff brown SILT, some gravel and sand, occasional cobbles and boulders, damp.	1.0 (NMC=12.9%)
		1.4 to 2.5	Very stiff brown sandy SILT with gravel, occasional cobbles, damp (TILL). No seepage observed.	2.5 (NMC=12.7%)
		2.5	End of Test Pit, refusal, maximum reach.	
W2	39,495E 23,092N 1508 m	0.0 to 0.2	Dark brown PEAT and SILT.	
		0.2 to 1.9	Stiff brown SILT, some gravel and sand, occasional cobbles, moist. Very stiff below 1.4 m (TILL).	0.9 (NMC=14.0%)
		1.9 to 2.7	Hard brown SILT with WEAK GREY FLAKY ROCK, some gravel and sand, occasional cobbles (TILL). No seepage observed.	2.7
		2.7	End of Test Pit, maximum reach.	
W3	39,070E 23,114N 1518 m	0.0 to 0.2	Dark brown PEAT and SILT.	
		0.2 to 1.3	Compact brown silty GRAVEL with sand, occasional cobbles, moist. Minor seepage at 0.9 m.	1.0 (NMC=7.8%)

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
W3 (Cont'd)		1.3 to 2.2	Very stiff brown SILT, some gravel and sand, occasional cobbles, damp (TILL).	2.2 (NMC=15.4%)
		2.2	End of Test Pit, hard digging.	
W4	38,646E 23,141N 1510 m	0.0 to 0.2	Dark brown SILT and PEAT.	
		0.2 to 1.1	Firm brown SILT with boulders, gravel and some sand and cobbles, moist.	0.7 (NMC=15.4%)
		1.1 to 1.2	Brown, weak, WEATHERED ROCK with stiff silt and gravel (BEDROCK?). No seepage observed.	1.1
		1.2	End of Test Pit, hard digging.	
W5	38,635E 22,843N 1528 m	0.0 to 0.1	Brown PEAT (minor seepage).	
		0.1 to 1.1	Compact brown silty SAND, trace to some gravel, occasional cobbles, wet.	1.0 (NMC=15.3%)
		1.1 to 1.6	Brown weathered weak to moderately strong rock (BEDROCK?).	
		1.6	End of Test Pit, refusal in bedrock.	
W6	38,202E 22,865N 1527 m	0.0 to 0.05	Dark brown PEAT (moderate seepage).	
		0.05 to 1.0	Stiff brown SILT, some gravel, some to trace sand, occasional cobbles, moist.	1.0 (NMC=14.8%)

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
W6 (Cont'd)		1.0 to 2.7	Very stiff brown SILT, some to trace sand, occasional cobbles, damp (TILL).	2.7 (NMC=10.2%)
		2.7	End of Test Pit, maximum reach.	
W7	38,220E 23,162N 1485 m	0.0 to 0.1	Dark brown PEAT.	
		0.1 to 1.0	Compact brown silty SAND and GRAVEL, occasional cobbles, wet.	0.8 (NMC=19.3%)
		1.0 to 2.5	Very stiff grey clayey SILT, some gravel, trace sand, occasional cobbles, moist (TILL). No seepage observed.	2.5
		2.5	End of Test Pit, maximum reach.	
W8	28230E 23312N 1474 m	0.0 to 0.05	Brown PEAT.	
		0.05 to 1.1	Stiff grey-brown sandy SILT and GRAVEL, occasional cobbles, moist.	0.08 (NMC=36.0%)
		1.1 to 2.6	Very stiff grey SILT, some gravel and sand, occasional cobbles, moist (TILL). No seepage observed.	2.6 (NMC=14.2%)
		2.6	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
W9	38,653E 23,340N 1497 m	0.0 to 0.1	Dark brown PEAT and SILT.	
		0.1 to 1.8	Stiff to very stiff brown SILT, some grave and trace sand, occasional cobbles and boulders, moist. Very stiff below 1.0 m. No seepage observed.	1.0 (NMC=13.8%)
		1.8	End of Test Pit, refusal on boulder.	
W10	38,660E 23,541 N 1488 m	0.0 to 1.5	Firm to very stiff brown sandy SILT and GRAVEL, some cobbles, occasional boulders, moist. Becomes stiff at 0.5 to 1.0 m. Becomes very stiff at 1.0 m.	1.1 (NMC=12.4%)
		1.5 to 2.4	Hard brown SILT, some gravel and sand, occasional cobbles, damp (TILL). No seepage observec.	2.4 (NMC=8.9%)
		2.4	End of Test Pit, maximum reach.	
W11	39,083E 23,313N 1498 m	0.0 to 0.1	Brown PEAT and SILT.	
		0.1 to 0.7	Loose to compact brown SILT, some gravel and sand, occasional cobbles, wet. Moderate seepage at 0.5 m.	
		0.7 to 2.5	Very stiff brown SILT, some gravel, trace sand, occasional cobbles, damp (TILL).	0.8 (NMC=15.7%) 2.5 (NMC=12.1%)
		2.5	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
W12	39,050E 22,814N 1539 m	0.0 to 0.05	Brown PEAT.	
		0.05 to 0.5	Firm brown SILT, some gravel and sand, occasional cobbles, moist. Minor to moderate seepage at 0.5 m.	
		0.5 to 2.3	Very stiff brown SILT, some gravel and sand, occasional cobbles, damp (TILL).	1.0 (NMC=15.5%) 2.3 (NMC=12.1%)
		2.3	End of Test Pit, maximum reach.	
W13	39,462E 22,790N 1535 m	0.0 to 0.05	Brown PEAT.	
		0.05 to 0.6	Firm brown SILT, some gravel and sand, occasional cobbles, wet.	
		0.6 to 2.1	Very stiff brown SILT, some gravel and sand, occasional cobbles, damp (TILL). No seepage observed.	1.0 (NMC=15.7%) 2.1 (NMC=15.1%)
		2.1	End of Test Pit, refusal.	
W14	39,728E 22,775N 1535 m	0.0 to 0.3	Brown PEAT and SILT, some cobbles.	
		0.3 to 1.0	Very stiff brown SILT, some gravel and sand, occasional cobbles, moist. Minor seepage at 0.8 m.	0.9 (NMC=16.0%)
		1.0 to 2.3	Hard brown SILT, some gravel and sand, occasional cobbles, damp (TILL).	2.2 (NMC=11.4%)
		2.3	End of Test Pit, refusal in weathered rock.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
W15	39,432E 22,493N 1565 m	0.0 to 0.2	Brown PEAT, some silt.	
		0.2 to 1.0	Stiff to very stiff SILT, some gravel and sand, occasional cobbles, moist. Very stiff below 0.5 m. Minor seepage at 0.5 m.	1.0 (NMC=15.9%)
		1.0 to 2.3	Very stiff to hard SILT, some gravel, trace sand, occasional cobbles, damp (TILL).	2.3 (NMC=12.2%)
		2.3	End of Test Pit, maximum reach.	

APPENDIX D.5

Plant Site A (PB1 thru PB13)

TEST PIT LOG

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
P1	23,696N 37,422E 1417 m	0.0 to 0.1	Brown PEAT and SILT.	
		0.1 to 2.0	Compact, brown silty GRAVEL and SAND, occasional cobbles, wet. Moderate seepage at 1.2 m. Compact to dense at 2.0 m.	1.2
		2.0	End of Test Pit, hole caving.	
P2	23,735N 37,280E 1420 m	0.0 to 0.2	Brown PEAT and SILT.	
		0.2 to 1.5	Compact to dense, brown silty SAND, some gravel, occasional cobbles and boulders, damp.	1.2
		1.5 to 2.5	Dense, grey sandy GRAVEL, with some silt, occasional cobbles, damp. No seepage observed.	2.5 (NMC=8.7%)
		2.5	End of Test Pit, maximum reach.	
P3	23,775N 37,140E 1416 m	0.0 to 0.4	Brown PEAT and SILT, some gravel.	
		0.4 to 2.3	Dense, brown sandy GRAVEL, some silt, occasional cobbles and boulders, damp.	1.2
		2.3 to 2.6	Dense, brown silty GRAVEL and SAND, occasional cobbles and boulders, moist. Minor seepage at 2.6 m.	2.6
		2.6	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
P4	23,813N 37,000E 1410 m	0.0 to 0.3	Dark brown PEAT and COBBLES.	
		0.3 to 1.0	Stiff brown gravelly SILT, some sand, occasional cobbles, damp.	1.0
		1.0 to 2.0	Dense, brown sandy GRAVEL, some silt, occasional cobbles and boulders, damp.	
		2.0 to 2.5	Very stiff brown SILT, with gravel and sand, occasional cobbles, damp. No seepage observed.	2.5
		2.5	End of Test Pit, maximum reach.	
P5	23,850N 36,850E 1405 m	0.0 to 0.2	Dark brown PEAT.	
		0.2 to 1.4	Stiff brown silty GRAVEL, with sand, occasional cobbles, moist. Moderate to minor seepage at 1.2 m.	1.0
		1.4 to 2.0	Very stiff grey gravelly SILT, some sand, occasional cobbles, damp (TILL). (Liquid Limit=19.0%) (Plastic Limit=14.9%)	2.0 (NMC=9.4%)
		2.0	End of Test Pit, hole sloughing in.	
P6	24,035N 36,750E 1397 m	0.0 to 0.2	Dark brown PEAT and SILT.	
		0.2 to 1.9	Compact, brown sandy GRAVEL, some silt, occasional cobbles and boulders, moist. Minor seepage at 0.5 m.	1.5

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
P6 (Cont'd)		1.9 to 2.2	Dense, grey silty GRAVEL and SAND, occasional boulders and cobbles.	2.2
		2.2	End of Test Pit, refusal on boulder.	
P7	24,000N 3,6900E 1402 m	0.0 to 0.2	Dark brown PEAT and SILT.	
		0.2 to 1.8	Compact to dense, brown gravelly SAND, some to trace silt, occasional cobbles and boulders, moist. Minor seepage at 0.5 m.	1.0
		1.8 to 2.3	Dense, olive grey silt, GRAVEL, some sand, occasional cobbles, damp.	2.3
		2.3	End of Test Pit, maximum reach.	
P8	23,950N 37,038E 1408 m	0.0 to 0.2	Dark brown PEAT.	
		0.2 to 1.3	Stiff brown SILT, some gravel, trace sand, occasional cobbles, moist. Frost 0 to 0.3 m. Minor seepage at 0.5 m.	1.2
		1.3 to 2.1	Dense, brown gravelly SAND, some silt, occasional small boulders, moist.	2.1 (NMC=11.4%)
		2.1	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
P9	23,915N 27,188E 1410 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 1.5	Compact to dense, brown gravelly SAND, some silt, occasional cobbles, moist. Minor seepage at 0.9 m.	1.0
		1.5 to 2.3	Dense, brown gravelly SILT and SAND, occasional cobbles, moist.	2.3
		2.3	End of Test Pit, maximum reach.	
P10	23,870N 37,325E 1410.5 m	0.0 to 0.3	Soft brown PEAT and SILT, occasional gravel.	
		0.3 to 1.1	Compact to dense, brown gravelly SAND, trace silt, occasional cobbles, damp.	1.1
		1.1 to 2.2	Dense, brown sandy GRAVEL, trace silt, occasional cobbles, damp to moist.	
		2.2 to 2.9	Very stiff brown SILT, trace gravel and sand, occasional cobbles (TILL). No seepage observed.	2.9
		2.9	End of Test Pit, maximum reach.	
P11	24,000N 37,270E 1405 m	0.0 to 1.0	Soft dark brown PEAT. Seepage at 1.0 m.	
		1.0 to 2.4	Compact, grey and brown gravelly SILT and SAND, occasional cobbles, wet.	1.3 2.4
		2.4	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
P12	24,035N 37,120E 1400 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 0.9	Firm to stiff brown SILT, some gravel, trace sand, occasional cobbles.	
		0.9 to 2.0	Compact to dense, brown gravelly SAND, trace silt, some cobbles. Minor seepage at 1.0 m.	0.9
		2.0 to 2.3	Stiff to very stiff grey clayey SILT, some gravel, trace sand (TILL?).	2.3
		2.3	End of Test Pit, hole sloughing in.	
P13	24,085N 36,980E 1396 m	0.0 to 0.2	Dark brown PEAT.	
		0.2 to 1.8	Compact brown GRAVEL, some sand and cobbles, trace silt, occasional boulders, wet. Below 1.0 m, very cobbly. Moderate seepage at 1.0 m.	1.2
		1.8 to 2.0	Stiff grey SILT, some gravel, trace sand, occasional cobbles, moist.	2.0
		2.0	End of Test Pit, hole sloughing in.	

APPENDIX B.6

Plant Site B (PB1 thru PB7)

TEST PIT LOG

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
PB1	37,700E 23,020N 1521 m	0.0 to 0.1	PEAT.	
		0.1 to 0.6	Compact to dense, dark brown silty SAND, some gravel, occasional cobbles, damp to moist. Minor seepage at 0.6 m.	
		0.6 to 1.9	Very dense grey SILT, trace to some sand, gravel, occasional cobbles, damp (TILL).	0.7 (NMC=14.2%) (Liquid Limit=34.4%) (Plastic Limit=16.4%)
		1.9	End of Test Pit, hard digging.	
PB2	37,850E 22,980N 1526 m	0.0 to 0.1	PEAT.	
		0.1 to 0.5	Compact, brown silty SAND, some gravel, occasional cobbles and boulders, damp to moist.	0.1
		0.5 to 1.0	Very dense, grey sandy SILT, trace gravel, occasional cobbles, damp (TILL).	
		1.0 to 1.4	Bedrock, dark grey-green SCHIST, slightly weathered joints at about 0.5 m. STR =064°; DIP=56°NW. No seepage observed.	
		1.4	End of Test Pit, refusal in rock.	
PB3	37,975E 23,010N 1520 m	0.0 to 0.05	PEAT.	
		0.05 to 0.8	Compact, brown sandy SILT, trace to some gravel, moist. Minor seepage at 0.7 m.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
PB3 (Cont'd)		0.8 to 1.5	Dense, brown sandy SILT, trace to some gravel, occasional cobbles, damp to moist. Frozen 0.7 to 1.0 m.	1.0
		1.5 to 2.0	Grey, flaky SCHIST. STR= 284°; DIP= 90°.	1.9
		2.0	End of Test Pit, refusal in rock.	
PB4	38,090E 23,020N 1512 m	0.0 to 0.05	PEAT.	
		0.05 to 1.0	Compact, silty SAND, trace to some gravel, occasional cobbles and boulders, damp to moist. Moderate seepage at 1.0 m.	0.6
		1.0 to 1.6	Dense to very dense, grey sandy SILT, some gravel, occasional cobbles and boulders (TILL).	1.1
		1.6 to 1.8	Bedrock, grey-green SCHIST.	
		1.8	End of Test Pit, refusal in bedrock.	
PB5	38,070E 23,120N 1500 m	0.0 to 0.05	PEAT.	
		0.05 to 0.75	Loose to compact, brown silty SAND, some gravel, occasional cobbles and boulders, moist to wet. Moderate seepage at 0.5 to 0.7 m.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
PB5 (Cont'd)		0.75 to 1.9	Very dense, grey sandy SILT, some gravel, occasional cobbles and boulders, moist (TILL). More sand, gravel below 1.3 m.	1.0 (NMC=15.4%)
		1.9 to 2.0	Highly weathered SCHIST bedrock.	
		2.0	End of Test Pit, refusal in bedrock.	
PB6	37,910E 23,160N 1504 m	0.0 to 0.05	PEAT.	
		0.05 to 0.5	Loose to compact, brown silty SAND, some gravel, occasional cobbles and boulders, moist to damp.	
		0.5 to 1.3	Dense to very dense, grey sandy SILT, some gravel, occasional cobbles and boulders.	1.0
		1.3 to 1.5	Bedrock, dark grey green SCHIST, STR=300°; DIP= vertical. No seepage observed.	
		1.5	End of Test Pit, refusal in bedrock.	
PB7	37,780E 23,200N 1498 m	0.0 to 0.1	PEAT.	
		0.1 to 1.0	Loose to compact, brown mottled grey silty SAND, occasional cobbles and boulders, moist.	0.6 (NMC=9.9%)

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
PB7 (Cont'd)		1.0 to 2.2	Very dense, brown sandy SILT, trace to some gravel, occasional cobbles and boulders. Moderate seepage at 1.1 m.	1.3 (NMC=10.6%)
		2.2 to 2.9	Dense, brown sandy SILT, occasional cobbles and boulders, moist.	2.9 (NMC=12.8%)
		2.9 to 3.0	Very dense, grey silty SAND, trace gravel, moist (TILL?).	3.0 (NMC=11.7%)
		3.0	End of Test Pit, maximum reach.	

APPENDIX D.7

Fresh Water Supply Site A (FWA1 thru FWA7)

TEST PIT LOG

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
FWA1	37,165E 22,145N 1490 m	0.0 to 0.4	Dark brown PEAT and SILT. Moderate seepage at surface.	
		0.4 to 2.3	Stiff grey clayey SILT, some gravel and organics, trace sand, occasional cobbles and boulders, wet.	1.1
		2.3 to 2.6	Very stiff grey gravelly SILT, some sand, occasional cobbles and boulders, moist.	2.6
		2.6	End of Test Pit, maximum reach.	
FWA2	37,157E 22,086N 1490 m	0.0 to 0.1	Brown PEAT.	
		0.1 to 1.9	Stiff to very stiff brown and grey clayey SILT, some gravel, trace sand, occasional cobbles, moist. Minor seepage at 1.9 m.	1.0
		1.9 to 2.7	Compact grey silty GRAVEL and SAND, occasional cobbles and small boulders, wet.	2.7
		2.7	End of Test Pit, maximum reach.	
FWA3	37,207E 22,125N 1493 m	0.0 to 0.5	Brown PEAT and SILT, some gravel and sand, wet.	
		0.5 to 1.5	Stiff to very stiff brown SILT, some gravel and sand, occasional cobbles, moist.	0.9

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
FWA3 (Cont'd)		1.5 to 2.0	Compact to dense, light brown silty GRAVEL and SAND, occasional cobbles and boulders, wet. Minor seepage at 2.0 m.	2.0
		2.0	End of Test Pit, refusal on boulder.	
FWA4	37,052E 22,074N 1490 m	0.0 to 0.5	Soft brown PEAT and SILT.	
		0.5 to 1.6	Stiff brown SILT and GRAVEL, some sand, occasional cobbles, moist. Minor seepage at 0.9 m.	1.1
		1.6 to 2.7	Very stiff to hard SILT, some gravel, some to trace sand, occasional cobbles, damp (TILL).	2.7
		2.7	End of Test Pit, maximum reach.	
FWA5	36,959E 22,116N 1496 m	0.0 to 0.4	Brown PEAT and SILT. Moderate seepage at 0.4 m.	
		0.4 to 1.1	Compact brown silty GRAVEL and SAND, occasional cobbles, moist.	1.0
		1.1 to 2.6	Very stiff brown silt with some gravel and sand, occasional cobbles (TILL).	2.6
		2.6	End of Test Pit, maximum reach.	
FWA6	37,045E 22,152N 1489 m	0.0 to 0.4	Soft brown PEAT and SILT. Moderate seepage at surface.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
FWA6 (Cont'd)		0.4 to 1.5	Stiff grey sandy SILT, some organics, moist.	1.1
		1.5 to 2.5	Very stiff grey clayey SILT, some gravel, trace sand, occasional cobbles and boulders, damp (TILL).	2.5
		2.5	End of Test Pit, refusal on boulder.	
FWA7	37,035E 22,330N 1485 m	0.0 to 1.2	Dark brown PEAT and SILT. Minor seepage at 1.2 m.	
		1.2 to 1.4	Loose silty SAND, wet.	
		1.4 to 2.5	Firm to stiff grey clayey SILT, trace gravel and sand, some organics.	1.6 2.5
		2.5	End of Test Pit, maximum reach.	

APPENDIX D.8

Fresh Water Supply Site B (FWB1 thru FWB10)

TEST PIT LOG

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
FWB1	23,102N 37,278E 1437 m	0.0 to 1.0	Firm to stiff grey (mottled orange) clayey SILT, trace sand, trace to some gravel, moist.	0.5
		1.0 to 1.8	Very dense grey, mottled orange sandy SILT, trace to some gravel, occasional cobbles and boulders, moist.	1.5
		1.8 to 2.7	Very dense grey silty fine SAND, trace to some gravel, occasional cobbles and boulders. No seepage observed.	2.2
		2.7	End of Test Pit, hard digging.	
FWB2	23,044N 37,278E 1440 m	0.0 to 1.2	Soft to firm dark brown SILT, trace to some fine sand, roots, moist to wet.	
		1.2 to 1.4	Loose brown silty GRAVEL, trace to some sand, occasional cobbles and boulders, wet. Minor seepage.	
		1.4 to 2.1	Soft to firm dark grey silty CLAY, moist.	1.6
		2.1 to 2.7	Firm to stiff grey clayey SILT, some sand, occasional cobbles and boulders, moist.	2.4
		2.7	End of Test Pit, maximum reach.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
FWB3	23,082N 37,209E 1436 m	0.0 to 0.5	PEAT.	
		0.5 to 2.0	Compact to dense, orange-brown silty SAND and GRAVEL, some cobbles and boulders, wet. Minor seepage at 1.1 m.	2.0 (NMC=10.3%)
		2.0 to 3.0	Very dense light grey silty SAND, trace to some gravel, occasional cobbles and boulders, moist.	3.0
		3.0	End of Test Pit, maximum reach.	
FWB4	23,164N 37,257E 1435 m	0.0 to 0.3	Soft to firm dark brown SILT, damp.	
		0.3 to 1.4	Dense to very dense, grey to orange sandy SILT, some gravel, occasional cobbles and boulders, damp to moist (TILL?).	0.8
		1.4 to 1.9	Dense orange silty SAND, some gravel, occasional cobbles and boulders, moist to wet. Minor seepage in this stratum.	1.7 (NMC=9.5%)
		1.9 to 2.8	Very dense light grey silty SAND, moist.	2.8 (NMC=7.4%)
		2.8	End of Test Pit, maximum reach.	
FWB5	23,189N 37,317E 1436 m	0.0 to 0.8	PEAT. Minor seepage at 0.7 m.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
FWB5 (Cont'd)		0.8 to 1.5	Firm to stiff, blue grey silty CLAY, trace sand, trace to some gravel, occasional cobbles and boulders, moist.	1.0
		1.5 to 2.8	Dense grey sandy SILT, some clay, some gravel, occasional cobbles, wet.	2.0
		2.8 to 3.0	Very dense light grey silty SAND, some gravel, moist (TILL?).	2.9
		3.0	End of Test Pit, maximum reach.	
FWB6	23,246N 37,271E 1532 m	0.0 to 0.2	PEAT.	
		0.2 to 1.2	Firm to stiff, orange and grey sandy SILT, trace to some gravel, moist.	0.6
		1.2 to 2.2	Stiff blue-grey clayey SILT, trace to some sand, some gravel, occasional cobbles and boulders, moist (TILL?).	1.5
		2.2 to 2.3	Very dense grey silty SAND, some gravel, occasional cobbles and boulders, moist. No seepage observed.	2.2 (NMC=8.5%)
		2.3	End of Test Pit, hard digging.	
FWB7	23,243N 37,195E 1432 m	0.0 to 0.1	PEAT.	

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
FWB7 (Cont'd)		0.1 to 1.4	Very dense grey and orange sandy SILT, some gravel, moist to damp. Minor seepage at 1.2 m.	0.9
		1.4 to 2.9	Compact to dense blue grey sandy SILT, trace to some clay, some gravel, occasional cobbles and boulders. Moderate seepage at 2.0 m.	1.8 2.0 (NMC=9.6%)
		2.9	End of Test Pit, maximum reach.	
FWB8	23,248N 37,141E 1435 m	0.0 to 0.1	PEAT.	
		0.1 to 0.7	Soft to firm brown sandy SILT, moist to wet.	
		0.7 to 2.1	Firm to stiff, grey to orange sandy SILT, some gravel, occasional cobbles and boulders.	0.8 2.0 (NMC=13.3%)
		2.1 to 2.8	Compact to dense light grey sandy SILT, some gravel, occasional cobbles and boulders, moist (TILL). No seepage observed.	2.5
		2.8	End of Test Pit, maximum reach.	
FWB9	23,168N 37,074E 1439 m	0.0 to 1.7	PEAT.	
		1.7 to 2.4	Firm grey sandy SILT, trace clay, trace to some gravel, moist.	2.2

TEST PIT LOG (Cont'd)

Test Pit Number	Location	Depth (m)	Stratigraphy	Sample Depth (m)
FWB9 (Cont'd)		2.4 to 3.0	Very dense dark grey SILT, trace to some sand, trace to some gravel, occasional cobbles and boulders, moist (TILL). No seepage observed.	2.9
		3.0	End of Test Pit, hard digging.	
FWB10	23,099N 37,129E 1438 m	0.0 to 0.1	PEAT.	
		0.1 to 1.1	Compact grey-blue silty SAND, some gravel, occasional cobbles and boulders, moist to wet. Moderate seepage.	0.9
		1.1 to 1.5	Soft to firm dark grey clayey SILT, moist to wet.	1.3
		1.5 to 2.9	Dense to very dense grey silty SAND, trace clay, some gravel, occasional cobbles and boulders, moist.	1.9
		2.9	End of Test Pit, maximum reach.	

RECORD OF BOREHOLE # AH 1

Location (See Figure) 23594N, 31746E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 2&3, 1984
Borehole Diameter 76 mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (Wp, W, WL; 5 10 15 20)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1449.50	Ground Surface						P1 P1A
0.00	Very stiff to hard gravelly SILT, trace to some sand, occ. cobbles, boulders, moist. (TILL)		1	D.O.	28		Bent. Seal; Sand Back-fill; Piezo-meter
1446.45			2	T.O.	REC = 100%		Cutting Backfill
3.05	Moderately strong, slightly weathered chloritic SCHIST. Jointing is generally irregular and smooth with trace clayey infill. Indicator is 20-30° with core axis.		Run 1	BQ Core	RQD = 41% REC = 80%		Bentonite Seal
			Run 2	BQ Core	RQD = 66% REC = 84%		Sand Backfill
1440.80							Piezometer
8.70	End of Borehole.						

Vertical Scale: 1:50

Sheet 1 of 1

Golder Associates

PROJECT NO. 842-1092 DRAWN DATE Sept. '84 REVIEWED DATE

RECORD OF BOREHOLE #AH 2

Location (See Figure) 23786N 37787E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 3 & 4, 1984
Borehole Diameter 76mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (W_P W W_L) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1430.00	Ground Surface						P2 9.8.84 P2a
0.00	Dark brown PEAT						Bent. Seal; Sand Back-fill; Piezo-meter
0.20	Very stiff to hard brown gravelly SAND, some silt occ. cobbles & boulders (TILL)		1	T.O.	REC = 100%	H	
1428.17			2	D.O.	60/200mm		
1.83	Very hard grey gravelly SILT, some to trace sand (TILL)						Cutting Backfill
2.13	Mod. strong slightly weathered to fresh grey SCHIST, some calcite and pyrite veins. Jointing zones from planar to irregular, smooth to rough, generally with trace clay infill. Inclination 25-50° with core axis. Broken zones, 0.1 to 0.3 thick, with trace clayey infill at 3.16, 4.14, 5.47 m.		Run 1	BQ Core	RQD = 19.8% REC = 83%		Bentonite Seal
			Run 2	BQ Core	RQD = 0 REC = 85%		
			Run 3	BQ Core	RQD = 22% REC = 95%		Sand Backfill
1423.60			Run 4	BQ Core	RQD = 16% REC = 80%		
6.40	End of Borehole.						

Vertical Scale: 1:50

Sheet 1 of 1

PROJECT NO. 842-1092 DRAWN J. REVIEWED DATE Sept 184

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RECORD OF BOREHOLE #AH3

Location (See Figure) 23985N 37833E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 4 to 6, 1984
Borehole Diameter 76mm
Datum ·

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (Wp, W, WL; 10 15 20 25)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1416.00	Ground Surface						P3* See note below P3A
0.00	PEAT						
0.12	Firm to stiff SILT, some gravel, occ. cobbles & boulders						9.8.84 Bent. Seal; Sand Backfill; Piezometer
1415.24							
0.76	Very stiff brown gravelly SILT and SAND, occ. cobbles & boulders, damp/moist (TILL)		1	D.O.	47		
1414.17							
1.83	Hard grey gravelly clayey SILT, trace sand and organics, occ. cobbles & boulders, damp (TILL)		2	T.O.	REC = 100%		Cutting Backfill
			3	T.O.	REC = 100%		
1410.06							
5.94	Mod. strong to strong grey fresh SCHIST, some calcite and pyrite veins. Fractures vary smooth to rough, irregular to planar. Inclination is 20-30° with core axis.		Run 1	BQ Core	RQD = 83% REC = 100%		Bent. Seal; Sand Backfill
1408.53							
7.47	Highly fractured zone 8.65 - 8.85						
	Con't. on Sheet 2 of 2						*Artesian flow of 2.4 litres/hour from standpipe elevated 2m above ground surface.

Vertical Scale: 1:50

PROJECT NO. 842-1092 DRAWN ..... REVIEWED ..... DATE Sept. 184

Golder Associates

RECORD OF BOREHOLE #AH 3

Location (See Figure) 23985N 37833E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 4 to 6, 1984
Borehole Diameter 76 mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % Wp W WL	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1408.53	Con't. from Sheet 1 of 2						
7.47	Mod. strong to strong fresh SCHIST, some calcite and pyrite veins		Run 2	BQ Core	RQD = 70% REC = 100%		Sand Backfill; Piezometer
1406.55							
9.45	End of Borehole.						

Vertical Scale: 1:50

Sheet 2 of 2

Golder Associates

PROJECT NO. 842-1092 DRAWN d' REVIEWED DATE Sept. 04

RECORD OF BOREHOLE # AH4

Location (See Figure) 24187N 37880E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 6 & 7, 1984
Borehole Diameter 76 mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (Wp, W, WL; 10 20 30 40)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1445.00	Ground Surface						P4 ▽ 9.8.84 P4A
0.00 / 1444.54 / 0.46	Brown gravelly SILT & SAND, occ. cobbles & boulders						Bent. Seal; Sand Back-fill; Piezo-meter
	Very stiff brown to olive brown gravelly SILT, some to trace sand, some cobbles & boulders, moist (TILL)		1	D.O.	32	•	
1441.30 / 3.70			2	BQ Core	REC = 50%		Cutting Backfill
	Very hard grey gravelly clayey SILT, some to trace sand, occ. cobbles, damp (TILL)		3	T.O.	REC = 83%		
			4	O.O.	83/279mm	° ⊢	
			5	T.O.	REC = 100%		
1437.00 / 8.00	Cont. on Sheet 2 of 3						

Vertical Scale: 1:50

Sheet 1 of 3

PROJECT NO. 842-1092 DRAWN L. REVIEWED DATE Sept. '84

Golder Associates

RECORD OF BOREHOLE # AH 4

Location (See Figure) 24 187 N 37880 E
Borehole Type Rotary, Water flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 6 & 7, 1984
Borehole Diameter 76 mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (Wp, W, WL; 5 10 15 20)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1437.00	Con't. from Sheet 1 of 3						
8.00	Very hard grey gravelly clayey SILT, some to trace sand, occ. cobbles, damp (TILL)		6	BQ Core	REC =17%		Cutting Backfill
			7	D.O.	60/100mm		
			Run 1	BQ Core	REC = 0		
			Run 2 Sa. 8	BQ Core	REC = 14%		
			Run 3 Sa. 9	BQ Core	REC = 10%		
1429.20							Bentonite Seal
15.80	Con't. on Sheet 3 of 3.						

PROJECT NO. 842-1092 DRAWN J. REVIEWED ..... DATE Sept. '84

Vertical Scale: 1:50

RECORD OF BOREHOLE # AH 4

Location (See Figure) 24 187N 37880E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 6 & 7, 1984
Borehole Diameter 76mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % W_P W W_L	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1429.20	Cont. from Sheet 2 of 3						
15.80	Very hard grey gravelly clayey SILT, some to trace sand, occ. cobbles, damp (TILL)		Run 4 Sa. 10	BQ Core	REC =10%		Bentonite Seal; Sand Backfill
			Run 5 Sa. 11	BQ Core	REC =20%		
			Run 6 Sa. 12	BQ Core	REC =20%		
1423.97			Run 7 Sa. 13	BQ Core	REC =25%		
21.03	End of Borehole.						

PROJECT NO. 842-1092 DRAWN d.l. REVIEWED ..... DATE Sept '84

Vertical Scale: 1:50

Golder Associates

RECORD OF BOREHOLE #AH 5

Location (See Figure) 24393N, 37927E
Borehole Type Rotary Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 10, 1984
Borehole Diameter 76 mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (Wp, W, WL; 10 20 30 40)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1462.00	Ground Surface						P5 P5A
0.10	PEAT						
0.30	Brown SILT, some gravel trace sand						16.8.84
	Very stiff brown gravelly clayey SILT, some to trace sand, occ. cobbles, moist		1	D.O.	43/229mm		Cutting Backfill
1460.50							
1.50	Hard brownish grey gravelly clayey SILT, trace sand, occ. cobbles, damp (TILL)		2	T.O.	REC = 83%		Bent. Seal; Cutting Backfill; Sand Backfill
1457.70							
4.30	Hard grey gravelly clayey SILT, trace sand, occ. cobbles & small boulders, damp (TILL)		3	D.O.	24/150mm		Piezometer
			4	D.O.	32/150mm		Bentonite Seal
							Sand Backfill
			5	T.O.	REC = 100%		
1453.50							
8.50	Cont. on Sheet 2 of 4						

Vertical Scale: 1:50

Sheet 1 of 4

PROJECT NO. 842-1092 DRAWN J. REVIEWED DATE Sept. '84

Golder Associates

RECORD OF BOREHOLE #AH5

Location (See Figure) 24393N, 37927E
Borehole Type Rotary Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 10, 1984
Borehole Diameter 76mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (Wp, W, WL; 5 10 15 20)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1453.50	Cont. from Sheet 1 of 4						
8.50	Hard grey gravelly clayey SILT, trace sand, occ. cobbles & small boulders, damp (TILL)		6	D.O.	75/150mm		Sand Backfill
			7	T.O.	REC = 91%		Piezometer
			Run 1 Sa. 8	BQ Core	REC = 3%		
1445.09							
16.91	Cont. on Sheet 3 of 4						

Vertical Scale: 1:50

Sheet 2 of 4

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PROJECT NO. 842-1092 DRAWN ... REVIEWED ... DATE Sept. '84

RECORD OF BOREHOLE # AH 5

Location (See Figure) 24393 N, 37927 E
Boring Date August 10, 1984
Borehole Type Rotary Water Flush
Borehole Diameter 76 mm
Sampler Hammer Wt. 63.5kg., Drop 0.76m.
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % Wp W WL	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1445.09	Cont. from Sheet 2 of 4						
16.91	Hard grey gravelly clayey SILT, trace sand, occ. cobbles & small boulders (TILL)		Run 2 Sa. 9	BQ Core	REC = 39%		
			Run 3 Sa. 10	BQ Core	REC = 5%		
			Run 4 Sa. 11	BQ Core	REC = 15%		
1437.01							
24.99	Cont. on Sheet 4 of 4						

Vertical Scale: 1 : 50

Sheet 3 of 4

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PROJECT NO. 842-1092 DRAWN ... REVIEWED ... DATE Sept. 84

RECORD OF BOREHOLE # AH 5

Location (See Figure) 24393 N, 37927 E
Borehole Type Rotary Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 10, 1984
Borehole Diameter 76 mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % W_P W W_L	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1437.01	Con't. from Sheet 3 of 4						
24.99	Hard grey gravelly clayey SILT, trace sand, occ. cobbles & small boulders (TILL)		Run 5 Sa. 12	BQ Core	REC = 10%		
			Run 6 Sa. 13	BQ Core	REC = 7%		
1431.00							
31.10	End of Borehole.						

Vertical Scale: 1:50

PROJECT NO. 842-1092 DRAWN ... REVIEWED ... DATE Sept. '84

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APPENDIX C.2

Plant Site A (PH1)

RECORD OF BOREHOLE #PH 1

Location (See Figure) 23,810N, 37,310E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date Aug. 14/84
Borehole Diameter 76mm
Datum Ground Surface

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (W_P W W_L) 10 20 30 40	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1414.50	Ground Surface						P1 P1A
0.00	Dark brown ORGANICS ? PEAT						Cutting Backfill
0.09							
1413.89	Brown gravelly SILT, some sand.						
0.61							
	Very stiff brown gravelly SILT, some sand; occ. cobbles, boulders, moist. (TILL)		1	50 mm D.O.	14/100 mm		Seal; Sand Backfill
1411.4							
3.1							
	Hard grey gravelly SILT, trace sand, some cobbles small boulders, damp (TILL)		RUN 1	BQ CORE	REC = 42%		Tip; Seal; Seal
			RUN 2	BQ CORE	REC = 13%		Sand Backfill
			RUN 3	BQ CORE	REC = 25%		
			2	50 mm D.O.	23/76 mm		
1406.5	1						
8.0	cont'd						

PROJECT NO. 842-1092 DRAWN G.A. REVIEWED DATE Oct. '84

Vertical Scale: 1:50

Golder Associates

RECORD OF BOREHOLE #PH 1

Location (See Figure) 23,810N, 37,310E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date Aug. 15/84
Borehole Diameter 76mm
Datum Ground Surface

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % W_P W W_L	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1406.5 / 8.0	cont'd						Sand Backfill
1405.36 / 9.14	Hard grey gravelly clayey SILT some to trace sand, occ. cobbles. (TILL)		RUN 4	BQ CORE	REC = 22%		Tip
			RUN 5	BQ CORE	REC = 27%		Seal
			RUN 6	BQ CORE	REC = 13%		Small artesian flow at 12.5m (≃ 1 litre/min.)
1401.7 / 12.8	Weak mod. weathered dark grey grophitic SCHIST, some calcite veins, trace pyrite.		RUN 7	BQ CORE	REC = 50% RQD = 0		
1401.1 / 13.4	Mod. strong faintly weathered grophitic SCHIST, some calcite veins, trace pyrite. Fracture planes inclined at 20 to 30° with axis of core.		RUN 8	BQ CORE	REC = 50% RQD = 0		
			RUN 9	BQ CORE	REC = 96% RQD = 0		
			RUN 10	BQ CORE	REC = 100% RQD = 0		
			RUN 11	BQ CORE	REC = 100% RQD = 0		
1398.14 / 16.31	End of Borehole		RUN 12	BQ CORE	REC = 100% RQD = 0		

PROJECT NO. 842-1092 DRAWN G.A. REVIEWED DATE Oct. '84

Vertical Scale: 1:50

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APPENDIX C.3

Plant Site B (PBH1, 2)

RECORD OF BOREHOLE # PBH 1

Location (See Figure) 23040N 38040E
Borehole Type Rotary, Water flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 13, 1984
Borehole Diameter 76 mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (Wp, W, WL; 5 10 15 20)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1510.00	Ground Surface						P1 16/8/84 P1A
0.00 / 1509.55	Dark brown organics, PEAT, ORGANIC SILT + brown silt						
0.45 / 1508.17	Very stiff to hard brown sandy SILT, some fine gravel, damp (TILL)		1	D.O.	43/6"		Cutting Back-fill; Bent. Seal; Sand Back-fill; Piezo-meter
1.83 / 1506.95	Hard grey-green slightly WEATHERED ROCK and brown SILT						Cutting Backfill
3.05 / 1505.73	Mod. strong, slightly weathered SCHIST with some brown silty layers		2	T.O.	REC = 63%		
4.27	Strong faintly weathered greyish-green amphibolitic chloritic SCHIST, some small calcite nodules and veins. (some clay gouge zones at 4.3 - 6.7m). Joint inclination is 40-50° with core axis.		Run 1	BQ Core	RQD = 0 REC = 67%		Bent. Seal; Sand Backfill; Piezometer; Hole caved partly as drill rods withdrawn
			Run 2	BQ Core	RQD = 96% REC = 88%		
			Run 3	BQ Core	RQD = 92% REC = 100%		
1501.80			Run 4	BQ Core	RQD = 73% REC = 100%		
8.20	Con't. on Sheet 2 of 2						

Vertical Scale: 1:50

Sheet 1 of 2

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PROJECT NO. 842-1092 DRAWN JL REVIEWED DATE Oct. '84

RECORD OF BOREHOLE # PBH 1

Location (See Figure) 23040N 38040E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 13, 1984
Borehole Diameter 76mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % Wp W WL	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1501.80	Cont'd from Sheet 1 of 2						
8.20			Run 5	BQ Core	RQD = 3% REC = 100%		
			Run 6	BQ Core	RQD = 0 REC = 94%		
			Run 7	BQ Core	RQD = 80% REC = 100%		
1498.72							
11.28	Strong fresh grey amphibolitic SCHIST, some small calcite modules + veins, some pyrites		Run 8	BQ Core	RQD = 95% REC = 100%		
1497.81							
12.19	End of Borehole.						

PROJECT NO. 842-1092 DRAWN d. REVIEWED DATE Oct. 84

Vertical Scale: 1:50

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RECORD OF BOREHOLE PBH #2

Location (See Figure) 23250N 37750E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 13 & 14, 1984
Borehole Diameter 76mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3m	WATER CONTENT - % (Wp, W, WL; 5 10 15 20)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1494.00	Ground Surface						P2 P2A
0.00	Dark brown peat, organic silt,						
0.15	some sand, gravel						
0.46	Brown SILT, some sand & gravel						
	Very stiff brownish grey gravelly SILT & SAND, occ. cobbles, moist		1	D.O.	26	o	16/8/84; Bent. Seal; Sand Backfill
1492.17							
1.83	Moderate weak & weathered brownish grey flaky SCHIST, some to trace silt and sand.		2	T.O.	REC = 83%		Cutting Backfill; Piezometer
1490.65							
3.35	Mod. strong slightly to faintly weathered grey SCHIST, some calcite veins and trace pyrites, some clay gouges and zones.		Run 1	BQ Core	RQD = 0 REC = 40%		Bent. Seal
			Run 2	BQ Core	RQD = 0 REC = 75%		
1488.51							
5.49	Mod. strong to strong faintly weathered grey amphibolitic SCHIST, some calcite veins, trace pyrites, with occ. slightly weathered zones. Joints inclined at 40-50° with core axis.		Run 3	BQ Core	RQD = 40% REC = 100%		
			Run 4	BQ Core	RQD = 70% REC = 94%		Sand Backfill
1485.77			Run 5	BQ Core	REC = 98%		
8.23	Con't. on Sheet 2 of 2						

Vertical Scale: 1:50

Sheet 1 of 2

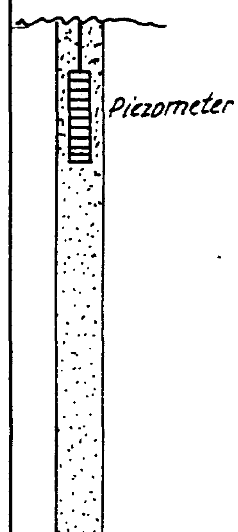
Golder Associates

PROJECT NO. 842-1092 DRAWN d'. REVIEWED ..... DATE Oct. 1/84

RECORD OF BOREHOLE PBH#2

Location (See Figure) 23250N 37750E — Boring Date August 13 & 14, 1984
Borehole Type Rotary, Water Flush — Borehole Diameter 76 mm
Sampler Hammer Wt. 63.5kg., Drop 0.76m. — Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3 m	WATER CONTENT - % (W_p W W_L)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1485.77	Con't. from Sheet 1 of 2						
8.23	Strong faintly weathered grey amphibolitic SCHIST, some calcite veins, trace pyrites (occ. slightly weathered zones).		Run 6	BQ Core	RQD = 0 REC = 50		Piezometer
			Run 7	BQ Core	RQD = 90% REC = 100%		
			Run 8	BQ Core	RQD = 95% REC = 100%		
1482.27 / 11.73	End of Borehole.						



Vertical Scale: 1: 50

Sheet 2 of 2

PROJECT NO. 842-1092 DRAWN J. REVIEWED .... DATE Oct.'84

Golder Associates

APPENDIX C.4

Fresh Water Supply (FWBH1, 2)

RECORD OF BOREHOLE FWBH #1

Location (See Figure) 23248N 37345E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 11, 1984
Borehole Diameter 76 mm
Datum

ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3 m	WATER CONTENT - % (Wp, W, WL; 10 20 30 40)	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1437.00	Ground Surface						P1 P1A 16/B/B4
0.00	Dark brown PEAT						
0.30	Stiff to very stiff grey clayey SILT, some very weathered weak micaceous rock fragments, some gravel, trace sand, occ. cobbles, moist.						
1435.08			1	D.O.	18	o——	
1.92	Very stiff brown gravelly clayey SILT, some sand						Bent. Seal; Piezometer
1434.26							
2.74	Dense to very dense brown gravelly SAND & SILT, occ. cobbles & boulder, moist (TILL)		2	T.O.	REC = 61%		Cutting Backfill
1431.73			Run 1 Sq. 3	BQ Core	REC = 100%		
5.27	Hard grey gravelly SILT, some to trace sand, moist (TILL)		4	D.O.	72/6"		
1430.90							
6.10	Strong grey fresh amphibolitic SCHIST, some calcite veins and pyrite. Some clay silt gouge zones		Run 2	BQ Core	RQD = 50% REC = 50%		Bent. Seal; Sand Backfill; Piezometer
1428.80							
8.20	Con't. on Sheet 2 of 2						Hole Caved

Vertical Scale: 1:50

Sheet 1 of 2

Golder Associates

PROJECT NO. 842-1092 DRAWN REVIEWED DATE Oct. '84

RECORD OF BOREHOLE FWBH #1

Location (See Figure) 23248N 37345E
Borehole Type Rotary, Water Flush
Sampler Hammer Wt. 63.5kg., Drop 0.76m.

Boring Date August 11, 1984
Borehole Diameter 76 mm
Datum

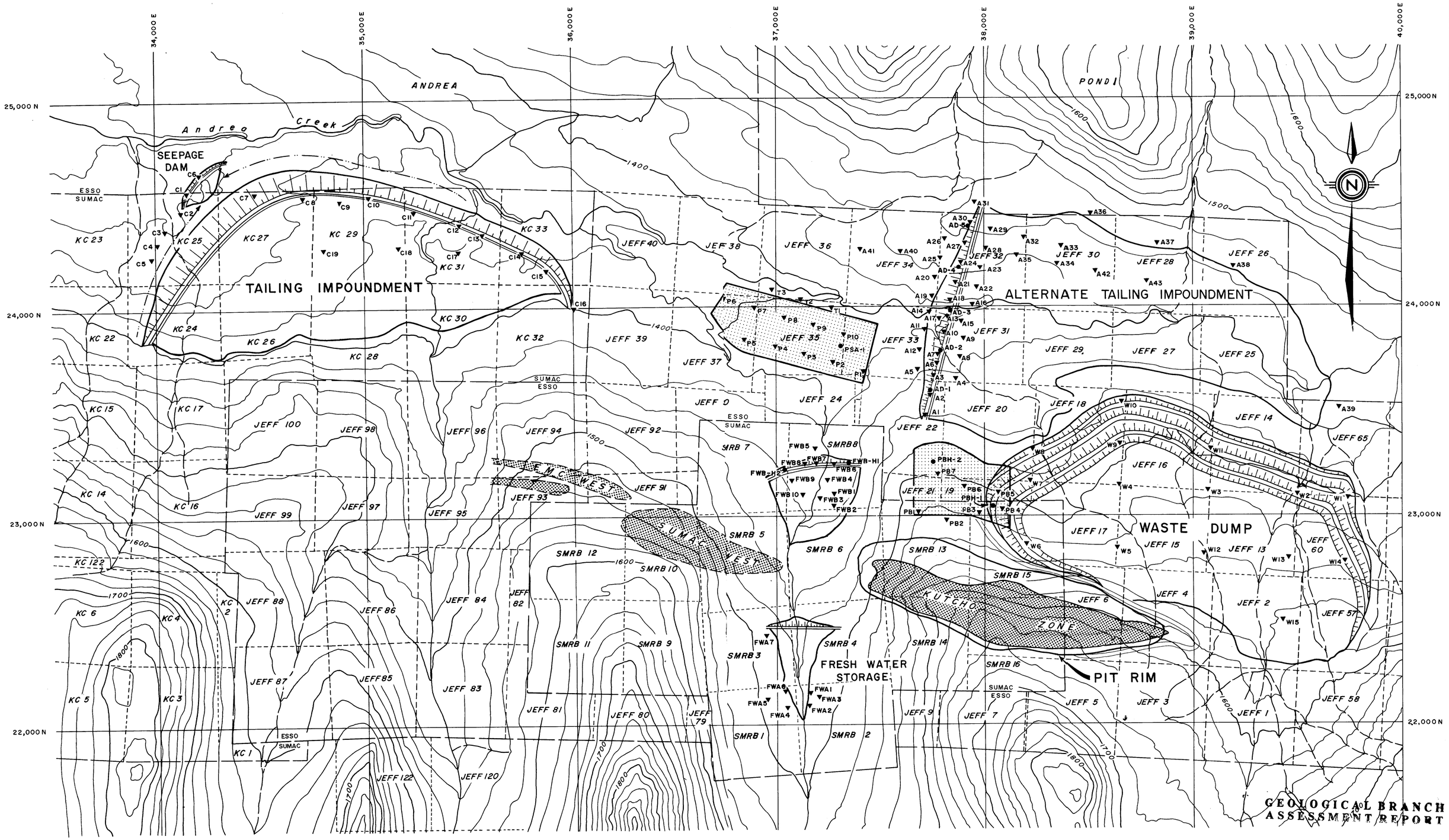
ELEV. / DEPTH (metres)	DESCRIPTION	STRATIGRAPHY PLOT	SAMPLE NUMBER	SAMPLE TYPE	BLOWS/0.3 m	WATER CONTENT - % Wp W WL	PIEZOMETER OR STANDPIPE INSTALLATION / ADDITIONAL LAB. TESTING
1428.80	Cont. from Sheet 1 of 2						
8.20			Run 3	BQ Core	RQD = 73% REC = 100%		
			Run 4	BQ Core	RQD = 38% REC = 63%		
1426.03							
10.97	End of Borehole.						

Vertical Scale: 1:50

Sheet 2 of 2

Golder Associates

PROJECT NO. 842-1092 DRAWN REVIEWED DATE Oct. '84



- Drill collar location
- Test pit location
- Boundary between Sumac and Esso claims
- Internal claim boundaries

KUTCHO CREEK PROJECT

1984 SOILS ENGINEERING PROGRAM

GENERAL SITE ARRANGEMENT

0 1 2

Scale 1 Kilometres

GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,132

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
E. G. HOLT

September, 1984

Holt Engineering Ltd.