#### ARIS SUMMARY SHEET

Discrict Geologist, Victoria Off Confidential: 92.03.01

ASSESSMENT REPORT 21371 MINING DIVISION: Nanaimo

PROPERTY: Lake

LAT 50 43 00 LONG 128 11 00

UTM 09 5618417 557655

NTS 102109E

031 Island Copper Area

CLAIM(S): Will 11-16, Lake 1-10 OPERATOR(S): Universal Trident Ind.

AUTHOR(S): Pawliuk, D.J. REPORT YEAR: 1991, 27 Pages

KEYWORDS: Triassic-Jurassic, Karmutsen Formation, Tuffs, Conglomerates

Limestones, Skarns, Chalcopyrite, Malachite, Bornite

WORK

CAMP:

LOCATION:

Prospecting, Physical

LINE 2.0 km

PROS 375.0 ha

MINFILE: 1021

#### Daiwan Engineering Ltd.

1030-609 Granville Street, Vancouver, B. C. Canada. V7Y 1G5

Phone: (604) 688-1508

LOG NO:	0530	RD.
ACTION.		
*		
-		

# GEOCHEMICAL AND PROSPECTING ASSESSMENT REPORT

#### ON THE

#### LAKE PROJECT

Lake 1 - 10, Will 11 - 16, Stran 1, Stran 2 and Stran 10
Mineral Claims

#### NANAIMO MINING DIVISION BRITISH COLUMBIA

# SUB-RECORDER RECEIVED

MAY 24 1991

M.R. #.....\$....

VANCOUVER, B.C.

NTS: 102I/9E

Latitude: 50° 43'N Longitude: 128° 11'W

For

Universal Trident Industries Ltd. 1030 - 609 Granville Street Vancouver, B.C. V7Y 1G5

Ву

David J. Pawliuk, B.Sc., P.Geol.

GEOLOGICAL BRANCH ASSESSMENT REPORT

March 4, 1991

21,371

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**SUMMARY** 

This assessment report details the results of prospecting, and geochemical stream sediment and rock

sampling on the Lake Project, Holberg, B. C.

The Lake Project is within a strongly mineralized belt of Bonanza Formation rocks north of Holberg

Inlet. These rocks are coeval with the porphyry copper-gold mineralizing events at the Island Copper,

Hushamu and Red Dog deposits.

The project area covers part of a major, northwesterly aeromagnetic trend. The local magnetic features

are similar in signature to that in the vicinity of the porphyry copper deposits to the east and southeast.

Copper minerals are finely disseminated and line fractures within the andesites and pyroclastic rocks

northeast of William Lake. The extent of these occurrences has not yet been determined. Prospecting

has provided grab samples which assay up to 13,805 ppm copper and 24.1 ppm silver.

A total of \$7,858.02 was expended on reconnaissance prospecting, sampling, and linecutting at the Lake

Project from August 1, 1990 to February 28, 1991.

INTRODUCTION

At the request of Mr. Ron Philp, President of Universal Trident Industries Ltd., Daiwan Engineering Ltd.

conducted an exploration program on the Lake 1-10, Will 11-16, Stran 1, Stran 2 and Stran 10 mineral claims near Holberg, British Columbia. This program consisted of prospecting, and geochemical stream

sediment and rock sampling during August 1990, and linecutting during January 1991.

Thirty-one geochemical samples were collected. A baseline two km in length was cut along the southern

edge of Stran 10 mineral claim in preparation for establishing hipchain-and-compass crosslines over the

claim. This assessment report is a description of work completed on the property during August 1990

and January 1991.

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**LOCATION AND ACCESS** 

The Lake Project of Universal Trident Industries Ltd. is located approximately 370 km (230 miles)

northwest of Vancouver, British Columbia (Figure 1). The property is 13 km northwest of Holberg, in

N.T.S. map-sheet 102I/9E.

Access to the project area is by logging roads which extend west from Holberg to a boat launching site

at the southeastern corner of William Lake. From here, a boat was used to reach the areas north and

northeast of William Lake.

The project area is accessible by road year-round; however, heavy wet snow during mid-winter may

cause difficult driving conditions. Port Hardy is the local commercial centre, but Holberg has motel

accommodation and supports local forest industry activity.

Regular airline service to Port Hardy is provided by both Air Canada and Canadian Airlines International

from Vancouver, each on a daily schedule. Alternately there is good highway access, with travel from

Vancouver taking eight hours.

TOPOGRAPHY AND VEGETATION

William Lake is the major topographic feature of the Lake Project area, and borders the southwest

portion of the property; it is at 71 m (234 ft.) a.s.l.

The Lake Project contains moderately steep-sided, northwesterly trending ridges and hills. Elevations

range from approximately 70 to 425 m (230 to 1,400 ft.) a.s.l. Much of the property is covered by

dense, second growth underbrush. An active logging area, with associated road-building, is approaching

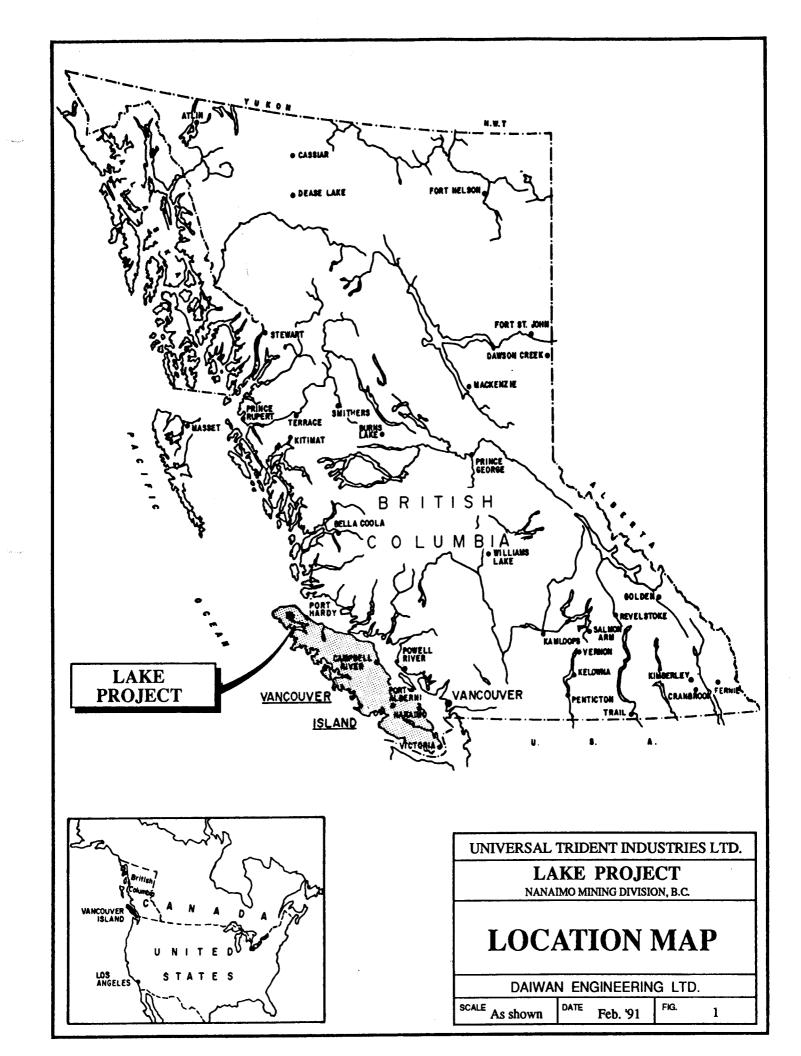
the Lake Project area from the south.

Rock outcrop is moderately well exposed along creeks. Dense underbrush and thick overburden are

present in the low-lying, swampy areas.

Daiwan Engineering Ltd.

Phone: (604) 688-1508



#### **PROPERTY**

The Lake Project is comprised of the 20 unit Stran 1, Stran 2 and Stran 10 mineral claims, and the adjoining two-post Will 11 - 16 and Lake 1 - 10 mineral claims. All of these mineral claims are recorded within the Nanaimo Mining Division.

The claims are shown in Figure 2 and the claim data are depicted below:

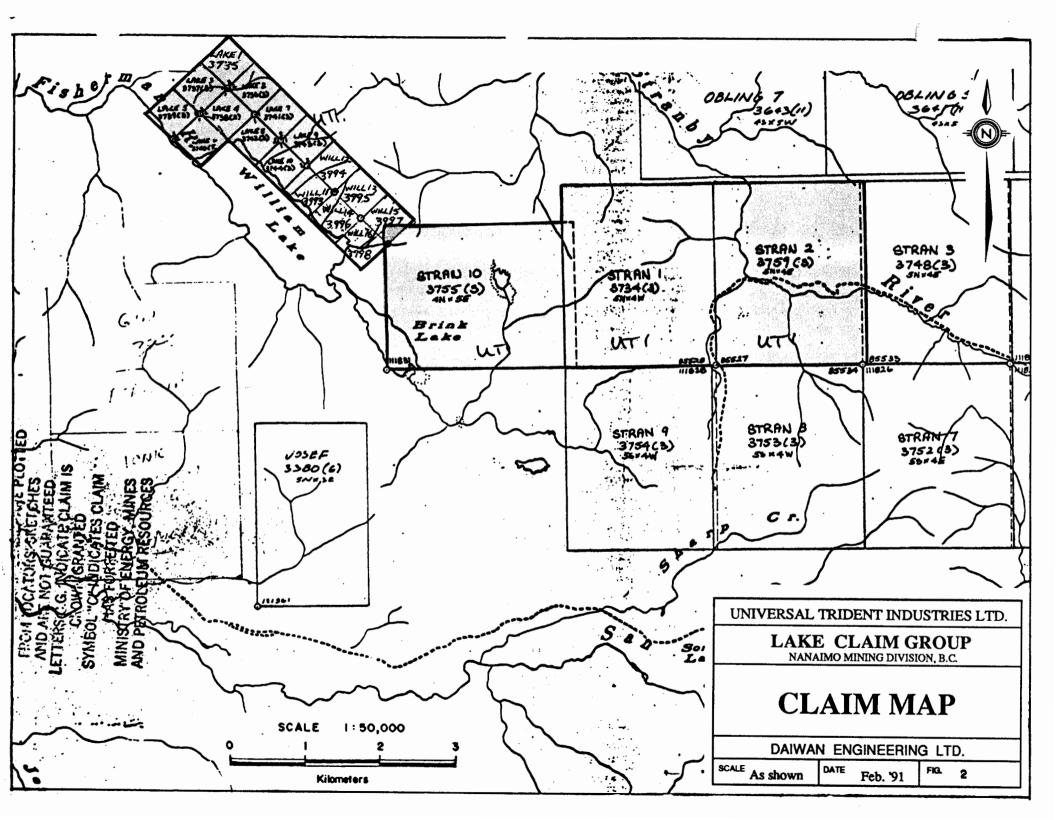
<u>Claim</u>	<u>Units</u>	Record <u>Number</u>	Record <u>Date</u>	Expiry <u>Date</u>	<u>Owner</u>
Stran 1	20	3734	Mar.01/90	Mar.01/92	Daiwan Engineering Ltd.*
Stran 2	20	3759	Mar.09/90	Mar.09/92	"
Stran 10	20	3755	Mar.15/90	Mar.15/92	"
Lake 1-10	10	3735-3744	Mar.06/90	Mar.06/92	"
Will 11,12	2	3993-3994	Aug.08/90	Aug.08/92	n
Will 13-16	4	3995-3998	Aug.13/90	Aug.13/92	n

<sup>\*</sup> Daiwan Engineering Ltd. holds the mineral claims in trust for Universal Trident Industries Ltd.

#### **HISTORY**

In 1963, the Geological Survey of Canada published the results of a recently completed aeromagnetic survey covering the northern end of Vancouver Island.<sup>6</sup> Since porphyry copper deposits were of interest at this time, considerable exploration activity was generated in the area examining all magnetic anomalies for mineralized intrusive stocks. A continuous zone of high magnetic response was delineated parallel to the north shore of Holberg Inlet, and crossing the entire northern tip of Vancouver Island. Part of this zone crosses the property.

A large copper-molybdenum deposit discovered at the eastern end of Rupert Inlet during the 1960s was developed into Island Copper Mine. This discovery generated a great deal of interest in the area by individuals and companies searching for copper.



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Many copper occurrences were located along Holberg Inlet during this exploration activity. One of these copper occurrences is the Hushamu copper-gold deposit, estimated to contain 107,000,000 mineable tons

grading 0.29% copper, 0.010% molybdenum, and 0.010 opt gold with a stripping ratio of 0.7:1.1 The

Hushamu copper-gold deposit is about 22 km east-southeast of the Lake Project. The Lake Project is

centred about 15 km east of the Red Dog copper-gold deposit of Crew Natural Resources Ltd. The Red

Dog deposit is reported to contain 70 million tons grading 0.32% copper and 413 ppb gold.<sup>5</sup>

Quintana Minerals Corporation performed reconnaissance geochemical soil sampling over the present

Lake 7 - 10 and Will 11 - 16 mineral claims, and over the western half of the present Stran 10 mineral

claim during 1968. In addition, they did more detailed soil sampling within an area of anomalous

copper-in-soil concentrations northeast of William Lake<sup>7</sup>: this irregular, anomalous area is about 1.5 km

by 2 km across (Figure 5).

During 1969 Utah Construction & Mining Co. performed geological mapping and geochemical soil

sampling over the Aird 1 - 20 claims north of the northwestern end of William Lake.8 Several

geochemical anomalies of both copper and zinc in soil were outlined. This area was mapped as being

mainly underlain by Karmutsen Formation mafic flows, with Bonanza Formation sediments and

pyroclastic rocks present in the southwestern part of the map-area (Figure 5). The mafic flows mapped

as Karmutsen Formation during this 1969 work may in fact be part of the Bonanza Formation. Small

chalcopyrite occurrences were found within silicified zones in argillite, and in small skarns in limestone8

(Figure 5).

A regional geochemical stream sediment survey by the British Columbia government in 1988 covered

the Lake Project area; high mercury values were obtained from two samples collected within and near

the northwestern part of the property<sup>2</sup> (Figure 5).

REGIONAL GEOLOGY

Vancouver Island north of Holberg and Rupert inlets is underlain by Upper Triassic to Lower Jurassic

rocks of the Vancouver Group. The Vancouver Group rocks are intruded by rocks of Jurassic and

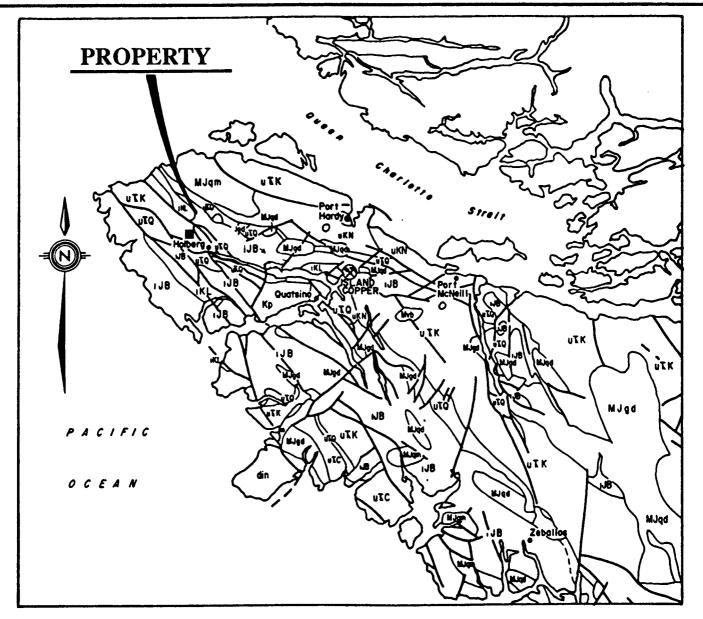
Tertiary age, and disconformably overlain by Cretaceous sedimentary rocks. Figure 3 shows a 1:500,000

scale geological map of the northern part of the island.

Faulting is prevalent in the area. Large-scale block faults with hundreds to thousands of metres of

displacement are offset by younger strike-slip faults with displacements of up to 750 metres (2,500 feet).

C:wp61w91.57/16



#### **LEGEND**

MIOCENE

Mvb basalt flows, sills and dykes

UPPER CRETACEOUS, PALEOCENE, EOCENE

Kp QUEEN CHARLOTTE GROUP: siltstone, shale, greywacke

UPPER CRETACEOUS

uKN NANAIMO GROUP: sandstone, shale, conglomerate

LOWER CRETACEOUS

iKL LONGARM; greywacke, conglomerate

JURASSIC Jgd

granodiorite, quartz diorite

MIDDLE JURASSIC

MJqm quartz monzonite, granite, monzonite

MJgd granodiorite

MJqd quartz diorite

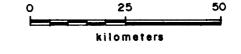
LOWER JURASSIC

UB BONANZA; and esite, dacite, rhyolite

UPPER TRIASSIC

uTQ QUATSINO and PARSON BAY: limestone, argillite

uTK KARMUTSEN:basalt, pillow lava



SCALE

UNIVERSAL TRIDENT INDUSTRIES LTD.

LAKE CLAIM GROUP

NANAIMO MINING DIVISION, B.C.

**REGIONAL GEOLOGY** 

DAIWAN ENGINEERING LTD.

SCALE As shown DATE Feb. '91 Fig. 3

- 5 -

Sedimentary and Volcanic Rocks

The Vancouver Group includes a basal sediment-sill unit of shales and siltstones invaded by diabase sills,

Karmutsen Formation volcanic flows and pyroclastics, Quatsino Formation limestone, Parson's Bay

Formation argillite, Harbledown Formation argillite-greywacke and Bonanza Formation tuffs and

breccias.3

The Vancouver Group is unconformably overlain by the non-marine Cretaceous Longarm Formation

sediments which occupy local basins. Early coal mining in the district was from several of these basins.

**Intrusive Rocks** 

The Vancouver Group rocks are intruded by Jurassic stocks and batholiths. A northwest-trending belt

of stocks extends from the east end of Rupert Inlet to the mouth of Stranby River on the north coast of Vancouver Island.<sup>4</sup> Dykes and irregular bodies of quartz-feldspar porphyry occur along the south edge

of this belt of stocks. The porphyries are characterized by coarse, subhedral quartz and plagioclase

phenocrysts set in a pink, very fine grained, quartz and feldspar matrix. They are commonly extensively

phenocrysts set in a pink, very fine gramed, quartz and releaspar matrix. They are commonly extensively

altered and pyritized. At Island Copper Mine these porphyries are enveloped by altered, brecciated and mineralized Bonanza Formation wallrocks. The porphyries are also cut by siliceous veins, pyritized,

extensively altered, and are mineralized where they have been brecciated. The quartz-feldspar porphyries

are thought to be differentiates of middle Jurassic felsic intrusive rocks.

Other intrusive rocks of lesser significance include felsic dykes and sills around the margins of some

intrusive stocks; andesitic dykes which cut the Karmutsen, Quatsino and Parson's Bay Formations, and

represent feeders for Bonanza volcanism; and Tertiary basalt-dacite dykes intruding Cretaceous

sediments.

**Structure** 

The rocks north of Holberg and Rupert inlets are folded into shallow synclines along northwesterly fold

axes. The steeper southwesterly limbs of these folds have apparently been truncated by faults roughly

parallel to the fold axes. Failure of limestone during folding may have influenced the location of some

of the faults, as indicated by the proximity of the Dawson and Stranby River faults to Quatsino

Formation limestone. Transverse faulting is pronounced and manifested by numerous north and

northeasterly trending faults and topographic lineaments (Figure 3).

- 6 -

Northeasterly trending faults comprise a subordinate fault system. In some cases, apparent lateral

displacement in the order of several hundred metres can be measured on certain horizons. Movement,

however, could be entirely vertical with the apparent lateral offset resulting from the regional dip of the

beds.

The beds generally dip gently to moderately to the southwest. West of Holberg dips are locally much

steeper where measured in close proximity to major faults. There is little folding or flexuring of bedding

visible, except along loci of major faults where it is particularly conspicuous in thinly bedded sediments

of lower Bonanza Formation. Bedding is generally inconspicuous in massive beds of Karmutsen,

Quatsino and Bonanza Formation rocks, particularly inland where outcrops are widely scattered.

**REGIONAL MINERALIZATION** 

A number of types of mineral occurrences are known on northern Vancouver Island. These include:

1. Skarn deposits: copper-iron and lead-zinc skarns.

2. Copper in mafic volcanic rocks (Karmutsen Formation): in amygdules, fractures, small shears and

quartz-carbonate veins, with no apparent relationship to intrusive activity.

3. Veins: with gold and/or base metal sulphides, related to intrusive rocks.

4. Porphyry copper deposits: largely in the country rock surrounding or enveloping granitic rocks and

their porphyritic phases.

<u>1990/91 WORK PROGRAM</u>

The exploration work program on the Lake Project was completed in two phases: prospecting and

sampling during August 1990, and linecutting during January 1991.

Twenty-four geochemical rock samples and seven panned moss mat samples were collected during

August, 1990. Sample descriptions form Appendix 2. The rock samples contain up to 13,805 parts per

million (ppm) copper, 119 ppm zinc, 24.2 ppm silver, and 72 parts per billion (ppb) gold (Appendix 1).

A cut baseline 2 km in length was established along the southern edge of Stran 10 mineral claim during

January 1991 in preparation for the surveying of hipchain-and-compass crosslines.

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**PROPERTY GEOLOGY** 

There has been little geological information recorded for the Lake Project area. The available maps have

been compiled in Figures 4 and 5.

The property was detailed by Muller et al<sup>3</sup> to be underlain by a large block of Karmutsen Formation

volcanics. These basic volcanic flows and tuffs are covered to the north by Cretaceous sediments. A

fault contact with the Quatsino Formation limestone was noted to the south.

The 1990 prospecting on the Lake Project confirms that fine to medium grained, locally amygdaloidal

andesite underlies most of the area northeast of William Lake (Figure 4). However, Bonanza Formation

non-calcareous sediments, conglomerate (?), quartz-carbonate altered volcanics, pyroclastic rocks and

limestone are also present.

The andesite northeast of William Lake has previously been identified as belonging to the Karmutsen

Formation, but may be part of the Bonanza Formation. This is because mapping has not revealed any

of the predicted intervening Quatsino or Parson's Bay formation rocks along this portion of the regional

trend.

During prospecting, a small copper occurrence was discovered along a creek draining into the north side

of William Lake. Chalcopyrite, malachite and bornite were observed here. Rock sample 32781 (grab)

was taken from this occurrence; it contains 13,805 ppm copper and 24.2 ppm silver. The sample appears

to be associated with a small quartz-feldspar intrusive. A piece of malachite- and bornite-bearing float,

rock sample number 32783, was collected along strike in the next creek 1.2 km west of sample 32781.

It contained 8,584 ppm copper and 5.0 ppm silver. These two samples may indicate an intervening zone

of significant copper mineralization.

The panned moss mat samples collected in the program contain up to 163 ppm copper, 171 ppm zinc,

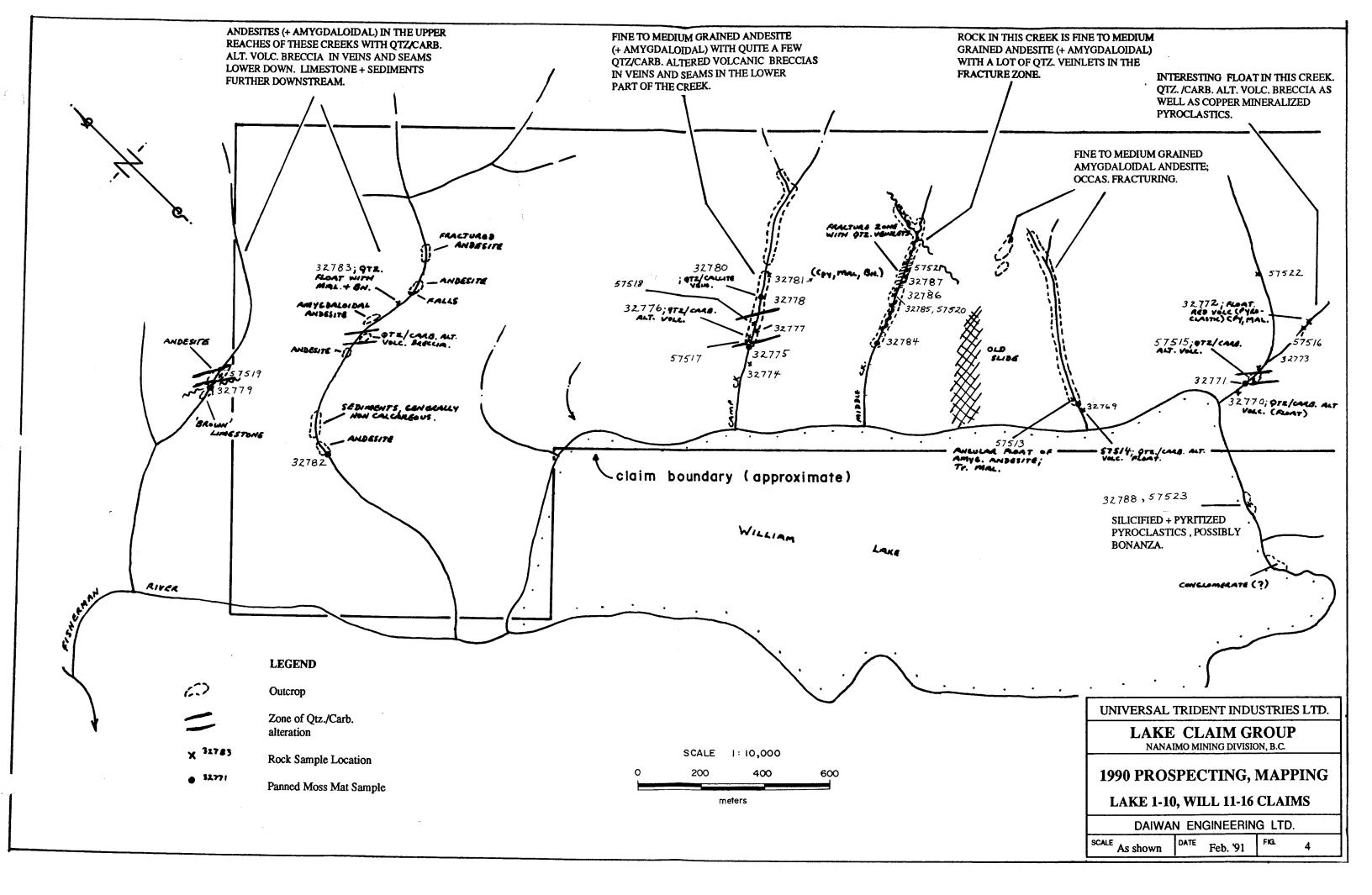
2.1 ppm silver and 71 ppb gold. Sample 32784 contains 163 ppm copper and 71 ppb gold; it was taken

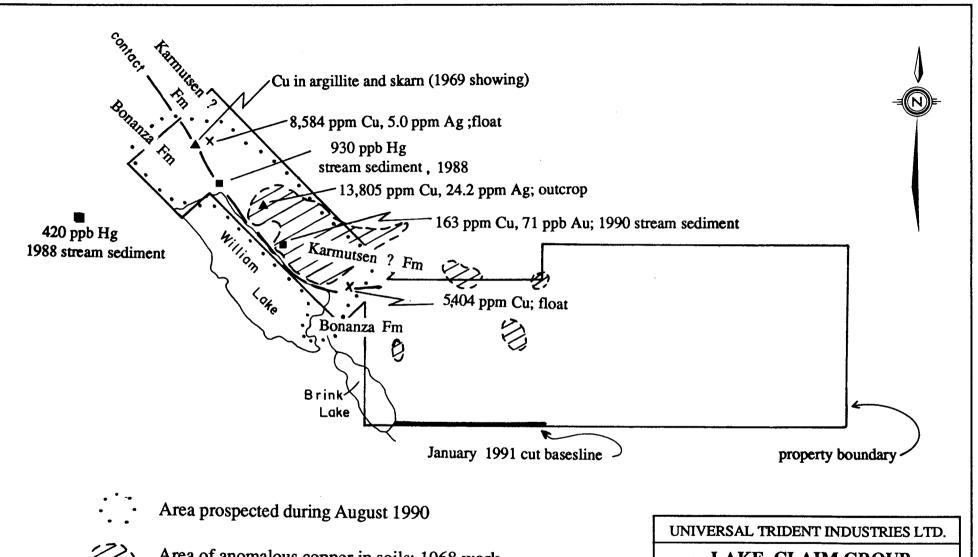
at the downstream end of an exposure of andesite with abundant quartz veinlets along fractures 400

metres east of rock sample 32781.

The locations of the above samples are shown on Figure 4, and in the sample descriptions are listed in

Appendix 2.





Area of anomalous copper in soils; 1968 work



LAKE CLAIM GROUP NANAIMO MINING DIVISION, B.C.

**COMPILATION MAP** 

DAIWAN ENGINEERING LTD.

SCALE As shown

Feb. '91

5

-8-

**DISCUSSION** 

The results of the 1990 prospecting and sampling show that significant mineralization occurs in volcanic

rocks northeast of William Lake. This large area has anomalous copper-in-soil concentrations delineated

by earlier (1968) work. The extent and grade of these copper occurrences have not yet been determined.

The rocks hosting these occurrences have previously been assigned to the Karmutsen Formation during

the regional mapping by the GSC<sup>3</sup>. As noted above, more recent mapping indicates the area may be

underlain by Bonanza Formation rocks. The porphyry copper-gold deposits within the region are all

within Bonanza Formation rocks, and hence the determination of the age of the rocks on the property

has economic significance. The regional geological setting can probably be determined by a relatively

small amount of mapping along new exposures created by recent logging activity, and by compilation

of information from adjoining properties.

Anomalous copper-in-soil concentrations exist within Stran 10 mineral claim, in an area of mainly thick

overburden cover. The source of these anomalies is unknown. This area also has an aeromagnetic

signature similar to that at porphyry copper-gold deposits within the region.

**CONCLUSIONS** 

1. There has been little geological information recorded for the Lake Project area.

2. Previous operators have found small bornite and chalcopyrite occurrences northwest of William

Lake.

3. The prospecting and geochemical rock and stream sediment sampling performed on the Lake Project

during 1990 shows that copper occurs extensively within the andesites and pyroclastic rocks

northeast of William Lake.

4. The rocks which host the copper occurrences northeast of William Lake which previously have been

assigned to the Karmutsen Formation may belong to the Bonanza Formation.

5. The Lake Project area has a similar aeromagnetic signature to that of porphyry copper-gold deposits

in the region. These magnetic anomalies may be caused by magnetite-copper mineralization

adjacent to feldspar porphyry dyke systems, or by intrusive bodies which may form classic skarns

in the limestone horizons.

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**RECOMMENDATIONS** 

1. Further prospecting and geological mapping should be completed to define the copper occurrences

northeast of William Lake.

2. Some regional-scale geological mapping should be done in and around the Lake Project area to

attempt to determine whether Bonanza or Karmutsen Formation rocks underlie the area northeast

of William Lake.

3. Ground magnetometer and very low frequency electromagnetic (VLF-EM) surveying and

geochemical soil sampling should be performed along grid lines on the Stran 10 mineral claim to

better define the aeromagnetic features, and to evaluate the potential for copper occurrences in this

David & Partick

area of mainly thick overburden.

## PROPOSED BUDGET

## Phase I

Geological mapping and prospecting - 6 man days @ \$360/day - 6 man days @ \$300/day	\$ 2,160 1,800	
Hipchain-and-compass grid surveying - 10 man days @ \$250/day	2,500	
Magnetometer survey	1,400	
- 5 man days @ \$280/day	1,400	
VLF-EM Survey	1 400	
- 5 man days @ \$280	1,400	
Geochemical soil sampling		,
- 4 man days @ \$250/day	1,000	
Analyses:		
50 rocks @ \$20/ea	1,000	
250 soils @ \$13.50/ea	3,375	
Accommodation, food	1,500	
Mobilization/demobilization	2,500	
Vehicle	1,000	
Shipping, telephone	250	
Field supplies, rentals	_300	
Total		\$ 20,185
GST GST and Contingency		1,413 <u>3,402</u>
Sub Total		\$ 25,000

## PROPOSED BUDGET

## Phase II

Contingent on favourable results from Phase I exploration work, a program of detailed follow-up work, including diamond drilling of suitable targets, will be required.

Mobilization	\$ 3,000	
Geologist - 20 days @ \$360	7,200	
Field assistants - 3 x 20 days x \$250	15,000	
Accommodations	_5,500	\$ 30,700
Diamond Drilling		
Mobilization	5,000	
Drilling 1,750 feet at \$35/foot all-inclusive	61,250	
Helicopter support	10,000	76,250
GST Contingency and GST		7,486 10,564
Sub Total		\$ 125,000
TOTAL OF PHASE I AND II		\$ 150,000

## **CERTIFICATE OF EXPENDITURES**

## **Personnel**

95.00	
170.00	
1,560.00	
1,200.00	\$ 3,025.00
207.22	
27.71	
429.77	
150.00	
11.90	1,833.02
	170.00  1,560.00  1,200.00  207.22  27.71  429.77  150.00 659.75 270.19 76.48

## January - February 1991 Program

Mobilization (pro-rata share of Stranby Project 1991)

Baseline, setting up and running grid lines 2.5 line km cut and 24 line km flagged

3,000.00

#### TOTAL PROJECT COSTS

\$ 7,858.02

#### **CERTIFICATE OF QUALIFICATIONS**

I, David J. Pawliuk, do hereby certify that:

- 1. I am a geologist for Daiwan Engineering Ltd. with offices at 1030 609 Granville Street, Vancouver, British Columbia.
- 2. I am a graduate of the University of Alberta, Edmonton, Alberta with a degree of B.Sc., Geology.
- 3. I am a member, in good standing, of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
- 4. I have practised my profession continuously since 1975.
- 5. This report is based on fieldwork carried out by R. Bilquist, K. Bilquist, L. Allen, S. Robertson and S. Oakley, on my personal fieldwork in the region since April 1990, and on the reports of others working in the area.
- 6. I have not visited the Lake Project.
- 7. I have no interest, either direct or indirect, nor do I expect to receive any such interest, in the properties or securities of Universal Trident Industries Ltd.
- 8. This report has been prepared for British Columbia Ministry of Energy, Mines and Petroleum Resources assessment purposes only, but when quoted in full, may be used by Universal Trident Industries Ltd. for stock exchange requirements and for the raising of funds.

avid. Pawiink Bo. F Geol.

## **REFERENCES**

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2.	Matysek, P. et al (1989)	B.C.G.S. Open File 2040 1988 B.C. Regional Geochemical Survey N.T.S. 92L/102I Alert Bay - Cape Scott.
3.	Muller, J.E., Northcote, K.E. and Carlisle, D. (1974)	Geology and Mineral Deposits of Alert Bay - Cape Scott Map - Area (92L/102I) Vancouver Island, British Columbia, Geol. Surv. Canada Paper 74-8.
4.	Carson, D.J.T. (1972)	The plutonic rocks of Vancouver Island, British Columbia; Geol. Surv. Canada Paper 72-44.
5.	(1988)	V.S.E. News Release, January 4, 1989 by Crew Natural Resources Ltd., George Cross Newsletter, November 23, 1988.
6.	(1963)	G.S.C. Geophysics Paper 1734, incl. maps 1734G, 1738G.
7.	(1968)	B.C.M.E.M.P.R. Assessment Report 2383.
8.	(1969)	Geological-geochemical report on the AIRD 1 - 20 claims; private report for Utah Construction & Mining Co. B.C.M.E.M.P.R. Assessment Report 1909.

## APPENDIX 1

# GEOCHEMICAL ANALYSIS CERTIFICATES

#### GEOCHEMICAL ANALYSIS CERTIFICATE

Daiwan Engineering Ltd. PROJECT WILLIAM File # 90-3536 Page 1

SAMPLE#	Мо	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	υ	Au	Th	Sr	Cd	Sb	Bi	٧	Ca	P	La	Cr	Hg	Ba	71	В	AL	Ka	K U	Au*
	ppm	ppm	ppm	bbu	ppm	ppm	ppm	ppm	X	ppm	ppm	bbw	ppm	ppm	ppm	ppm	ppm	ppm	<u> </u>	*	ppm	ppm	<u> </u>	ppm	<b>*** **</b>	ppm	×	X	X ppm	ppb
D 32769	1	154	2	146	.1	41	23	920	8.36	12	5	ND	1	24	.2	2	2	338	2.59	-035	6	19	1.27	14	.96	14 3	3.05	.03	.02 1	8
D 32771	1	40	2	88	.1	27	13	526	7.75	9	5	ND	1	26	.3	2	2	312	1.39	.038	5	32	.63	19	.58	6 1	.49	.03	.02 1	1
D 32775	1	119	2	171	.1	41	20	862	9.89	22	5	ND	2	27	3	2	2	443	2.41	.034	7	23	.93	14	1.00	20 2	2.43	.03	.03 1	1
D 32778	1	160	2	155	1	45	25	934	9.53	18	5	ND	1	27	5	2	2	371	2.66	.037	7	28	1.27	14	.97	16 3	3.26	.03	.02 1	1
0 32779	1	44	4	55	.1	29	13		5.36	10	5	ND	1	24	1446447070	2	2		1.31		4	35	.74	17	.46		.70	.04	.02 1	1
D 32782	1	25	2	47	2.1	23	12	393	10.28	12	5	ND	2	21	.2	2	2	352	.92	.031	5	54	.43	11	.42	2 1	.09	.03	.02 1	38
D 32784	1	163	5	135	.1	41	21	833	8.64	15	5	ND	2	28	.2	2	2	363	2.74	.039	7	26	1.20	11	.94	16 2	2.80	.03	.03 1	71

ICP - .500 GRAM SAMPLE IS DIGESTED WITH 3ML 3-1-2 HCL-HN03-H20 AT 95 DEG. C FOR ONE HOUR AND IS DILUTED TO 10 ML WITH WATER. THIS LEACH IS PARTIAL FOR MN FE SR CA P LA CR MG BA TI B W AND LIMITED FOR NA K AND AL. AU DETECTION LIMIT BY ICP IS 3 PPM. - SAMPLE TYPE: P1 Heavy Sediment P2 Rock AU\* ANALYSIS BY ACID LEACH/AA FROM 10 GM SAMPLE.

SAMPLE#	<b></b>	Cit	- Nb	7-		N:		Ma	-			A			0.4		0.2			18888.28	• -			n					
SATTLES	Pps pps	Cu ppm	Pb ppm	Zn ppa	Ag	Ni ppm	Co ppm	Mn ppm	Fe %	As: ppm	ppm	ppm	Th ppm	Sr ppm	Cd ppm	Sb ppm	Bi ppm	ppm	Ca X	P X	ppm	Cr ppm	Mg %	Ba Ti ppm %	ppm 3	. Na . X	X X	y pps	
D 32770	1	24	2	79	.3	30	26	1884	7.01	9	7	ND	2	198	.6	5	2	202	11.50	.034	6	13	3.62	11 _02	2 .30	.01	.03	1	1
D 32772	2	5404	3	7	.1	7	2	86	1.03	7	5	ND	1	3	.5	2	2	23	.46	.031	2	6	.01	3 -01	2 .30		.02		1
D 32773	29	80	2	5	. 1	2	1		2.32	5	5	ND	1	2	.2	2	2	10	.02	.003	Ž	3	.01	14 .01	2 .07		.01	1	4
D 32774	1	149	2	83	.2	44	22	1024	5.10	28	8	ND	2	188	.2	2	2	106	15.51	.010	2	7	4.69	7 .01	2 .11		.01	<b>***</b>	3
D 32776	1	94	2	35	.1	15	15	1886	4.77	14	5	ND	1	49	.4	8	2	64			4	12	.73	8 .01	11 .32		.10	1	2
D 32777	1	412	3	78	<b>.</b> 3	34	19	957	4.59	48	8	ND	1	118	.5	24	2	128	11.24	.025	4	27	3.00	14 .01	2 .27	.01	.02	1	2
D 32780	1	71	3	26	.1	15	8	1163	2.21	7	8	ND	1	123	.2	3	2	66	11.36	.015	2	26	.91	5 .08	4 .68	.01	.02	***	1
D 32781	1	13805	4	21	24.2	6	2	172	2.16	15	5	ND	1	22	.9	4	2	58	7.13	.007	2	6	.20	8 .12	9 4.45	.01	.02	***	1
D 32783	1	8584	4	13	5.0	5	4		2.14	2	5	ND	1	8	.7	2	2	42	3.77	.005	2	1	.09	2 .05	5 2.23	.01	.01		1
D 32785	1	225	5	66	.1	30	19	667	5.12	8	5	ND	1	33	.2	2	2	135	2.12	.046	7	10	1.53	15 _50	9 3.39	.21	.08	1	1
D 32786	1	98	6	62	.1	24	19	618		13	5	ND	1	33	.3	4	2	138	2.61	.043	6	5	1.51	6 .37	8, 3.80		.16	1	2
D 32787	1	302	3	10	.1	9	6	235	2.03	2	5	ND	1	11	.2	2	2	15	1.43	.005	2	2	.66	2 .04	2 2.40	.06	.19	<b>***</b>	1
D 32788	1	21	11	49	.1	3		1307		12	5	ND	1	33	.3	2	2	65	2.19		12		1.37	23 .13	2 2.40		.04	<b>****</b>	1
A 57513	1	279	4	85	.1	42		1205		2	5	ND	2	30	.5	3	2	214	3.31		9	66	2.29	19 .68	3 2.07		.01	<b>****</b>	1
A 57514	1	114	2	75	.1	37	22	1131	5.42	4	5	ND	2	110	.4	3	2	161	9.67	.019	3	17	3.35	6 _02	2 .21	.01	.02	1	1
A 57515	1	11	7	88	.1	45	30	1241	8.00	15	5	ND	1	60	.3	7	6	255	3.29	.062	8	26	1.63	12 .04	7 1.65		.06	1	1
A 57516	2	16	10	20	. 1	15	8		2.17	2	5	ND	1	16	.2	2	3	79		.016	2	17	.45	17 .27	2 2.39		.04	6	2
A 57517	1	89	8	48	.1	25		1081		4	5	ND	1	85	.2	2	2	92	6.77	.017	3		2.22	3 .02	2 .39		.04	3	1
A 57518	1	130	8	70	.1	40	22		5.77	39	5	ND	1	20	.2	10	5	151		.043	4	36	.42	8 .01	2 .41		.02	2	3
A 57519	1	38	7	42	.1	36	18	892	4.60	7	5	ND	1	72	.2	2	2	115	5.25	.029	4	95	1.92	19 ,02	2 .34	.02	.05	3	1
A 57520	1	409	4	24	.1	11	6		1.74	2	5	ND	1	22	.2	2	2	44	1.81	.011	2	10	.56	3 .13	2 1.92			1	3
A 57521	1	577	6	17	.1	8	_5		2.80	2	5	ND	1	17	.2	2	2	58	4.81	.010	3	5	.21	2 .21	12 3.14		.04	1	1
A 57522	1	222	3	48	.1	30	26		7.60	11	5	ND	2	23	.4	2	2	212	5.99	.050	8	11	1.21	14 .54	14 3.66		.03	<b>***</b>	2
A 57523	18	18	3	5	.1	_5	2		5.17	2	.5	ND	2	_4	.2	2	2	17	.24	.036	2	4	.04	30 .05	3 .19		.01	<b>****</b>	1
STANDARD C/AU-R	20	61	42	135	7.2	73	32	1048	3.97	38	18	8	40	53	18.9	15	20	61	52	.099	39	59	.89	181 .09	35 1.90	.06	.13	12	510

## APPENDIX 2

SAMPLE DESCRIPTIONS

# Panned heavy; a lot of black sand 32769 Siliceous, carbonate-altered volcanic; trace pyrite (Hg?); angular float 32770 32771 Panned heavy; moderate amount black sand Red volcanic breccia containing malachite and chalcopyrite; angular float 32772 Siliceous, carbonate-altered volcanic; ankerite; metallic blue mineral(?); subangular 32773 float Carbonate-altered volcanic; ankerite; metallic blue mineral; trace chalcopyrite; 32774 angular float Panned heavy; moderate amount black sand 32775 32776 Carbonate-altered volcanic; pyrite; quartz-chalcedony stringers; ankerite; outcrop 32777 Carbonate-altered volcanic; siliceous; trace blue metallic mineral 32778 Panned heavy; moderate amount black sand 32779 Panned heavy; some black sand Small (3 to 4 cm) quartz-calcite vein 32780 32781 Very small showing (less than one square metre) in a quartz/feldspar pod(?) containing malachite, chalcopyrite and bornite(?) 32782 Panned heavy; some black sand

Sample Number

Description

32783	Quartz with malachite and disseminated bornite; angular float
32784	Panned heavy; minor black sand
32785	Fractured andesite with quartz veinlet stockwork
32786	Rusty quartz veinlets in fractured andesite
32787	Sheared andesite with quartz veinlets; tiny pod magnetite
32788	Light green volcanic breccia; silica flooding and pyrite
57513	Subcrop; amygdaloidal andesite with disseminated magnetite; possible trace malachite
57514	Carbonate-altered volcanic breccia; silica has replaced calcite with quartz filling open spaces; trace pyrite and metallic blue mineral(?); subrounded float
57515	Carbonate altered volcanic; ankeritic weathering; outcrop
57516	Silica-flooded volcanic; rusty quartz; angular float
57517	Carbonate-altered volcanic; ankerite; silica; banded silica veinlets
57518	Carbonate-altered volcanic; siliceous
57519	Carbonate-altered volcanic; silicified and rusty (ankeritic)
57520	Amygdaloidal andesite; rust
57521	Sheared volcanic; quartz, pyrite and disseminated magnetite
57522	Fine-grained green volcanic; chalcopyrite(?)
57523	Light green volcanic breccia; rusty with silica flooding; pyrite