

# 4812

93L/5E,6W

93L/5E,6W

Scallon Property  
Mineralized Outcrops - South Slope of  
Scallon Valley  
Maharaja Minerals Ltd. Tom

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT

NO. **4812** MAP.....

REVISED GEOLOGICAL ASSESSMENT REPORT

ON

SCALLON PROPERTY

FOR: MAHARAJA MINERALS LTD., ( N.P.L. )

1102 - 207 W. HASTINGS ST., VANCOUVER, B. C.

OWNER: MAHARAJA MINERALS LTD., ( N.P.L. )

LOCATION:           LATITUDE:     54° 28' N

LONGITUDE:    127° 28' W

N. T. S.        93-L

BY:            R. CULLEN  
                R. BISS

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REVISED GEOLOGICAL REPORT  
ON  
TOM - T.K. CLAIMS - SCALLON CREEK AREA  
1974

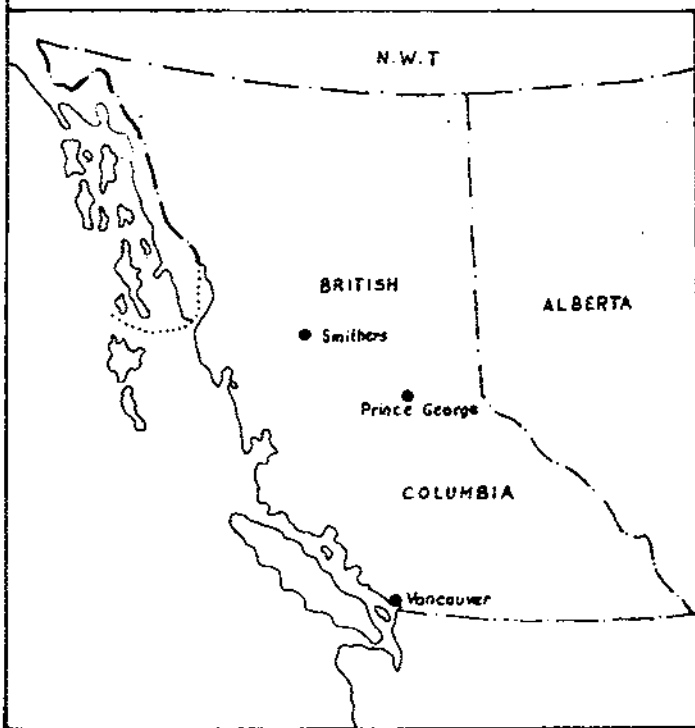
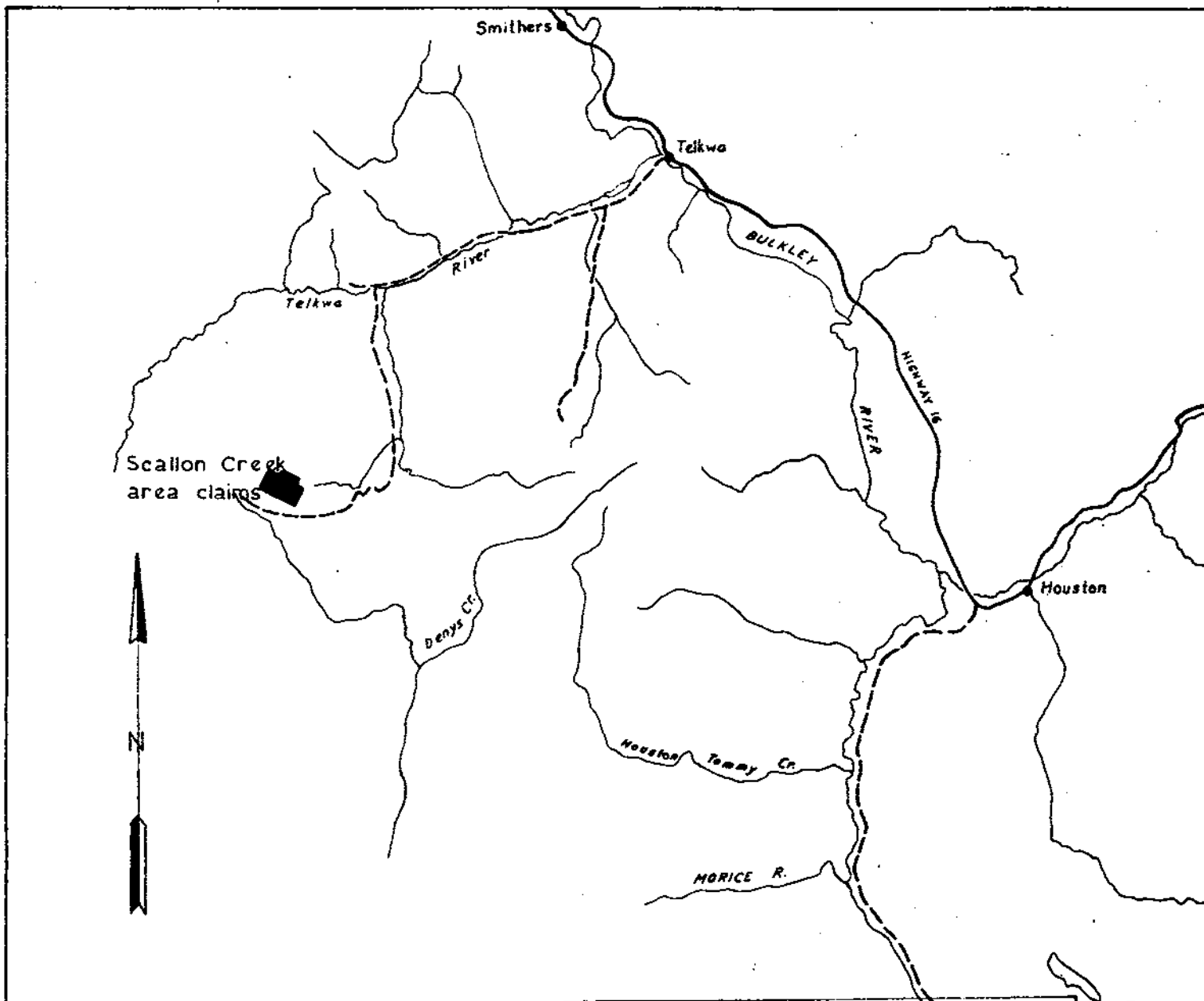
INTRODUCTION:

The Tom 1 - 18 and TK 19 - 24 mineral claims herein referred to as the "Scallon Property" are located about twenty-five miles south-west of the village of Telkwa, B. C., on the southern slope of Scallon Creek valley.

Copper mineralization was first reported in this general area in 1905. Some exploration work was done by Cominco in 1928 and Norcan Mines in 1966, but no mention of this specific showing was ever made.

The present claims were originally staked by J. A. Rutherford in 1969. In 1972 they were transferred to Maharaja Minerals Ltd., (N.P.L.). Between 1969 and 1972 some work was carried out on building an access trail and trenching.

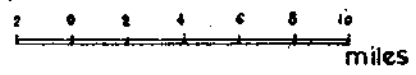
The topographical survey, reconnaissance geological mapping and sampling were organized during October, 1973. The program was completed under the direction of Mr. J. McAndrew, P. Eng.



Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. **4812** MAP **#1**

MAHARAJA MINERALS LTD (NPL)  
 OMINECA MINING DIVISION

MINERAL CLAIM LOCATION MAP



I. LOCATION AND ACCESS.

Scallon property is located at latitude  $54^{\circ} 28'$  N and longitude  $127^{\circ} 28'$  W. (See attached map).

The names and the record numbers of the claims are as follows:

<u>Name:</u>	<u>Record Numbers</u>
Tom 1 to 14	79426 - 79439
Tom 15 to 18	102677 - 102680
Tom 19 to 24	116206 - 116211

The property can be reached by four-wheel drive vehicle provided slide areas are cleared by bulldozer.

## II. GENERAL GEOLOGY AND PHYSIOGRAPHY:

The general area is underlain by the "Hazelton Group" of rocks which are Cretaceous and Jurassic in age. This group consists of bedded volcanic rocks, red and greenish andesites, rhyolites, tuffs and breccias.

The eruption masses are often impregnated by pyrite. The altered rocks have characteristic bright rusty yellow color. Associated faulting can cause significant vertical movement. The faults were intruded by granite, granodiorite, diorite and porphyry dikes which appear to have an important relationship to the mineralization. The mineralized occurrences are seen to be in close proximity to these dikes or they accompany them.

The mineralization consists of chalcopyrite, bornite, chalcocite, pyrite, some molybdenite, specularite and magnetite accompanied by garnet and epidote.

The secondary enrichment of copper mineralization in the form of malachite and azurite is characteristically green and blue in color.

The "Scallon Property" is located at about the 5700 foot elevation. The surveyed area has an alpine erosional feature with cirques and small lakes. Outcrop exposure is in excess of 50 percent.

## III. PURPOSE OF THE SURVEY AND THE RESULTS:

The purpose of the work was to carry out a geological survey of the mineralized outcrops on the property. The survey was done by means of transit resection and stadia.

At the same time the reconnaissance geological mapping and chip sampling

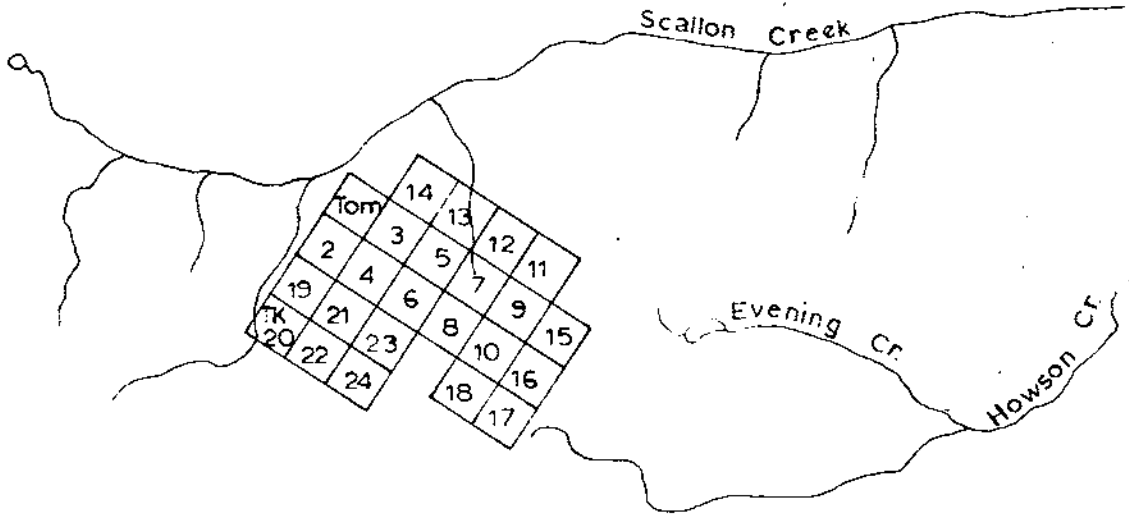
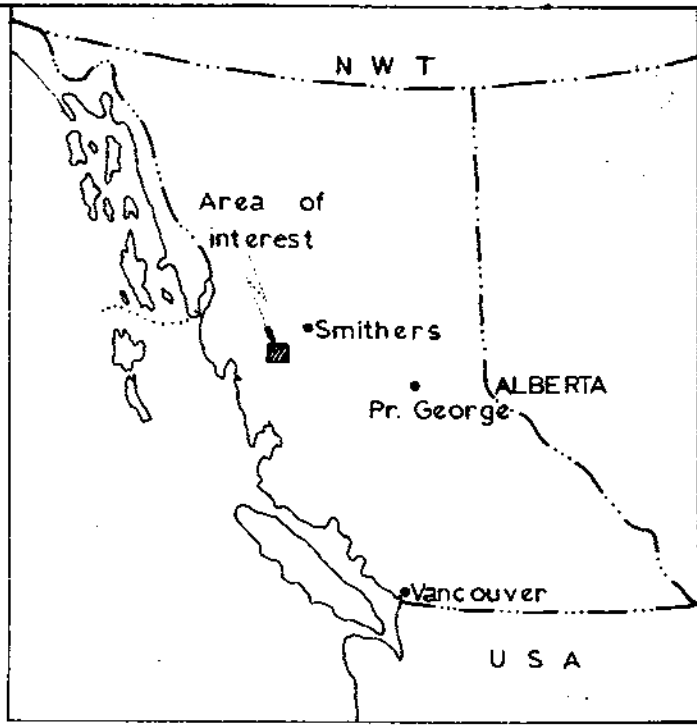
MAHARAJA MINERALS LTD (NPL)  
OMINECA MINING DIVISION

# MINERAL CLAIM LOCATION MAP

3000 0 6000 ft



Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. **4812** MAP **#2**





was carried out.

The survey located two distinct zones of mineralization:

- a) East Showing located on Tom 3 and 4. (see the claim map)
- b) West Showing located on Tom 1 and 2.

The mineralized observed occurrences here are always accompanied by intrusive greenish dikes with an easterly dip. They can be traced in shear zones too. The country rock is redish and maroon andesite. In the proximity of the shear zones the country rock is argillite, arkose, some limestone and sandstone.

The mineralization is in narrow irregular fissures or in the shear zones. It sometimes seems to be associated with quartz veins. Some calcite is present in the veins along with chalcopryrite, bornite, chalcocite, pyrite, specularite with secondary malachite and azurite. The mineralization in the veins occurs mainly as irregular lenses and pockets and appears to be confined to the veins. The strike of the veins is mainly north-south with an easterly dip between  $40^{\circ}$  and  $80^{\circ}$

The East showing consists of six mineralized outcrops as follows. (see the detailed map of East Showing):-

Outcrop A:

Outcrop A is a quartz stringer two inches in width in a zone of mineralization about one foot thick. Minor copper mineralization - malachite, azurite, chalcopryrite is present.

Outcrop B:

Outcrop B is a narrow fracture zone with a little malachite and azurite.

Outcrop C:

Outcrop C is a fracture zone of irregular strike with a thickness from  $\frac{1}{2}$  to  $1\frac{1}{2}$  feet. Its dip is  $70^{\circ}$  to east. The mineralization consists of chalcopyrite, bornite, malachite and azurite associated with some quartz and calcite.

Outcrop D:

Mineralization in outcrop D occurs in a shear zone about six feet wide. The fissures are filled with bornite, some chalcopyrite, malachite, azurite and quartz.

Outcrops I and J:

Outcrops I and J are two shear zones with a little chalcopyrite, azurite, malachite associated with quartz. They are about 6" wide and exposed for a distance of 30 feet.

The West Showing (see the detailed map in pocket) is very similar to the East Showing. Outcrops E, F, and G are quartz veins from 1 foot to 4 feet wide. Their strike is approximately north-south with an easterly dip from  $60^{\circ}$  to  $80^{\circ}$ . The visible mineralization is essentially chalcopyrite, some bornite, malachite, azurite with pyrite and quartz. Outcrop H is a fracture zone with some malachite and azurite.

The chip samples were taken across the mineralized zones. The assay results indicate good values of copper, silver and some gold, ranging from 2.80% Cu and 0.40 oz/t Ag to 16.90% Cu and 6.58 oz/t Ag.

IV RECOMMENDATION AND CONCLUSIONS:

The preliminary geological work indicates that the Scallon Property is an area favourable for vein type mineral deposits.

A comprehensive exploration program is required to fully determine the mineral potential of this group.

This work should include detailed geological mapping accompanied by chip sampling and further strip trenching by bulldozer along the strike length of known mineralized showings.

Geophysical and geochemical surveys would be useful in an attempt to locate other areas of copper mineralization and extend the known ones.

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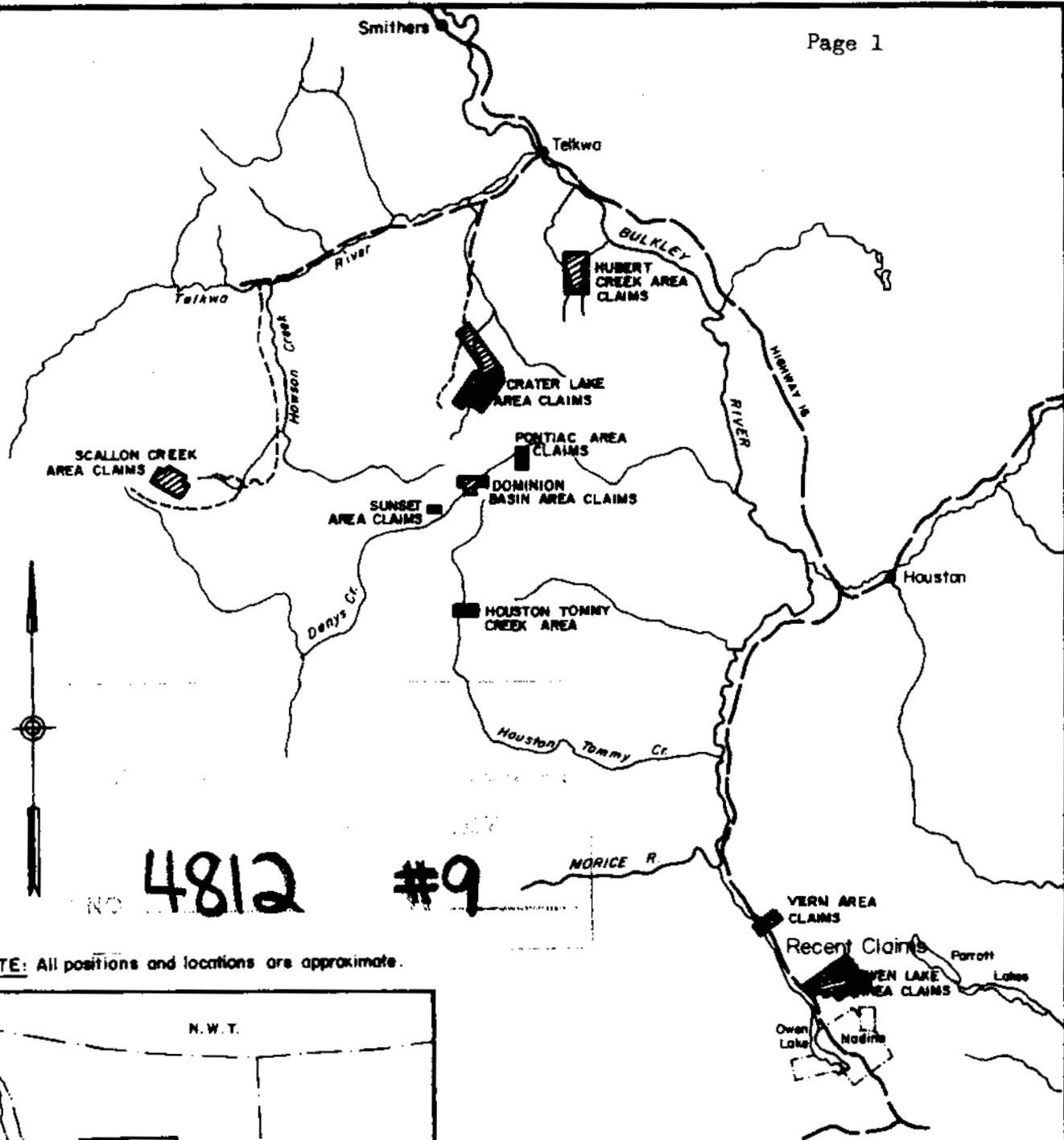
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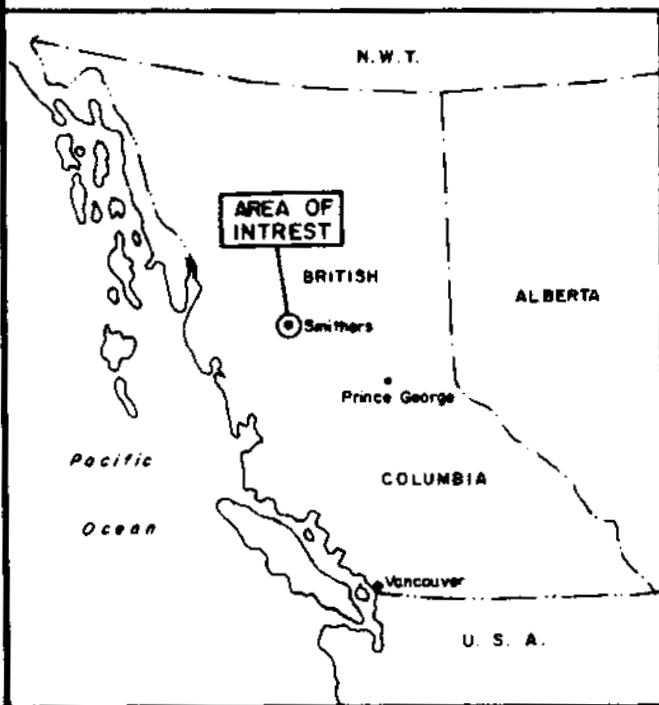
Map 3 .....	Scallon Property Showing Mineral Locations
Map 4 .....	Scallon - West Mineral Locations
Map 5 .....	Scallon - East Mineral Locations

LIST OF ANALYSES

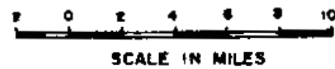
Assays - Scallon Property .....	C, CC, D, DD and G sample designation (other designations for Dominion property)
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NOTE: All positions and locations are approximate.



MAHARAJA MINERALS LTD. N.P.L.  
 OMINECA MINING DIVISION  
**MINERAL CLAIM LOCATION MAP**



OCTOBER, 1972

P.O. BOX 888  
POSTAL STATION A  
VANCOUVER 1, B.C.

FILE \_\_\_\_\_

YOUR FILE \_\_\_\_\_

# CUSTOMER MINING SERVICES LIMITED

1102 - 207 W. HASTINGS STREET, VANCOUVER 3, B.C.

TELEPHONE (604) 684-0811

September 25th, 1973.

Mr. James A. Rutherford,  
President,  
Customer Mining Services Ltd.,  
1102 - 207 Hastings Street,  
Vancouver 3,  
B.C.

Re: Scallon Property.  
Mineralised outcrops - South Slope of  
Scallon Valley.  
Maharaja Minerals Ltd.

Dear Mr. Rutherford,

As instructed I have now carried out locational survey work at the above property by means of transit resection and stadia, in order to outline and locate eight mineralised outcrops of mineralisation.

There are two distinct assemblages of mineral showings, each assemblage having four separate outcrops. For the purpose of this report, I have referred to their locations as:-

- (a) East location.
- (b) West location.

I have prepared drawings numbered 3, 4 and 5 and should be referred to.

EAST LOCATION:

The mineralisation occurs in dacite dykes. The surrounding country rock is a reddish andesite.

A outcrop - Dacite dyke is 5 to 6 feet in thickness. Mineralised vein widths are 2 inches with a total thickness of one foot. Bornite and chalcopyrite are evident.

B outcrop - Dacite dyke is 3 feet in thickness. Little mineralization.

C outcrop - Dacite dyke width is 10 feet. Veins of mineralization have a total thickness of 1.1/2 feet. Bornite and chalcopyrite are present.

....Contd.

WEST LOCATION:

The mineralization occurs in mineralized veins adjacent quartz veins.  
The surrounding country rock is greenish andesite.

E outcrop:- Mineralization is 4 feet in thickness.

F outcrop:- Little mineralized width.

G outcrop:- Mineralization is 4 feet in thickness.

H outcrop:- 1" Veinlets - small total thickness.

Bornite and chalcopyrite was seen in the West showings.

Please refer 1" = 20' plans Dwg. Numbers 4 and 5 for dips and dimensions.

SAMPLES:- Samples were taken at mineralized areas and are numbered in relation to survey locations as shown on Dwg. Numbers 4 and 5.

Respectfully submitted,

*R. Cullen* *R. Cullen*

R. Cullen  
Coordination Engineering Geologist  
Custom Mining Services Ltd.

MIN-EN LABORATORIES LTD.

705 WEST 15TH STREET  
NORTH VANCOUVER, B.C.  
Phone: 980-5814

Certificate of Assay

TO: Maharaja Minerals Ltd. PROJECT No. \_\_\_\_\_  
Box 533, Postal Station A DATE Oct 5/73  
Vancouver, B.C. File No. 543

SAMPLE No.	Cu %	Ag	Au
		oz/ton	oz/ton
S1	.061	.14	.002
S2	5.300	5.86	.006
S3	6.350	.89	.002
S4	9.450	13.12	.006
S7	23.700	43.15	.013
S11	17.100	24.20	.006
Sealton Group			
CC	7.500	4.35	.002
C	10.400	6.58	.004
DD	10.500	4.97	.002
D	7.200	3.14	.003
G	16.900	2.44	.003

MIN-EN Laboratories Ltd.

CERTIFIED BY *Gilbert V. Hermionille*



APPENDIX "A"EVIDENCE OF EXPENDITURE INCURRED

<u>NAME:</u>	<u>CATEGORY:</u>	<u>RATE:</u>	<u>DAYS PERIOD:</u>	<u>WAGE</u>
R. Cullen	Engineer	\$1300/mo	10	\$435.
R. Biss	Geologist	\$ 800/mo	10	\$267.
Okanagan Helicopters	Mobilization		4 hrs.	\$1048.
J. McAndrew	Consulting	\$150/day	2 days	\$ 300.
Man Maintenance		\$25/day/man	20 man days	\$ 500.
Overhead (Assays vehicles, office etc.)		50% of labor and maintenance		\$ 750.
			TOTAL	<u>\$ 3,300.</u>

I make this solemn declaration conscientiously believing it to be true,  
and knowing that it is of the same force and effect as if made under  
oath and by virtue of the "Canada Evidence Act."

Declared before me at the )  
of , in the )  
Province of British Columbia, this )  
day of , A. D. )

*John W. McAndrew*  
Dec. 28, 1973

CERTIFICATION OF RALPH CULLEN

1526 West 63rd. Vancouver, B. C. Phone: 261 - 5973

- 1) I, Ralph Cullen, do hereby certify that I attended the Barnsley Mining College, Barnsley, England, 1939 - 46.
- 2) I am not a registered Engineer in the Province of British Columbia or of any province.
- 3) I have been engaged in mining with the following companies in the past 30 years.

Granduc Operating Co. Ltd., Tide Lake, B. C.  
Western Miner Ltd., Campbell River, B. C.  
Campbell Red Lake Mines Ltd., Balmertown, Ontario  
Anglo Rouyn Mines Ltd., La Ronge, Saskatchewan.  
Wasamac Mines Ltd., Arntfield, P. Q.  
Mattagami Lake Mines Ltd., Matagami, P. Q.  
Rio Algom Mines Ltd., Nordic Mine, Elliot Lake, Ontario  
Falconbridge Nickel Mines Ltd., Falconbridge, Ontario  
Northern Rhodesian Copper Belt.  
Roan Antelope Copper Mines Ltd., Luanshya, Zambia  
Rhokana Corporation Ltd., Kitwe, Zambia  
South & West Yorkshire Coal Field, England.

- 4) I have no direct or indirect interest in this property.

DATED at Vancouver, British Columbia, this            day  
of            , 197 .

SIGNED: \_\_\_\_\_  
Ralph Cullen.

CERTIFICATION OF RUDOLF BISS

#207 - 1120 Denman Street, Vancouver, B. C. Phone: 683-0664

- 1) I am a graduate of Technical University, Department of Mines of Kosice - Czechoslovakia.
- 2) I am a graduate of Ecole Nationale Superieure de Geologie et de Prospection Miniere - Nancy (France)
- 3) I am not a registered Professional Engineer in the Province of British Columbia or of any province.
- 4) I have been engaged in mining for two years in Czechoslovakia and for three years in France.
- 5) I have no direct, or indirect interest in the properties of Maharaja Minerals Ltd.

DATED at Vancouver, British Columbia, this *24* day of *December*, 1974.

SIGNED:

*Rudolf Biss*  
Rudolf Biss

B. CULLEN - MINING ENGINEERING EXPERIENCE

MAY 1972

July 1971 to present

Senior Mining Engineer - Granduc Operating Co. Ltd.,  
Tide Lake, B.C.

Report to Superintendent of Planning and Engineering

Major Duties

1. Research and study the feasibility and economics of alternate methods of mining. Make recommendations for change or innovation to present methods to the Superintendent of Planning and Engineering.
2. Supervise, direct and guide the department in planning and scheduling the methods and location of mining for the five year period from one to six years ahead of present mining.
3. Supervise, direct and guide the department in the preparation of detailed layouts, schedules and recommendations for the blocks of the mine to be mined, broken into six months periods, covering mining methods access, ventilation, drainage, pumping, haulage, location of facilities, such as underground crusher stations, sumps, and pumping stations. These to include costs.
4. Liaise constantly and closely with senior mine supervision and management, geology department, and short range planning department.
5. Attend long range mine planning meetings.
6. Make semi-monthly reports on achievement of the department to Superintendent of Planning and Engineering.

PROJECTS PERSONALLY COMPLETED (INCLUDE THE FOLLOWING):

1. Designed a conveyor decline and ramp service system, including all facilities, such as pump station, crusher station, ore and waste pass system. This system is located below present mining levels and will be the main services required for hoisting ore from the lower levels.
2. Designed a mechanized cut and fill stoping system in order to mine approximately 5,000,000 tons of ore in three ore bodies below present mining block.  
  
Submitted a fully comprehensive feasibility report, including the amount of preproduction development required, ventilation arrangements, capital and operating costs, productivity expected, equipment requirements, manpower requirements, backfill requirements are also included.
3. Designed an underground classified tailings repulping facility to supply back fill in slurry form, hydraulically to the cut and fill stoping system referred to in (2). A full cost report was submitted.
4. Studied the feasibility of a block cave method of mining two separate ore lenses in a suitable location of the mine.  
  
Detailed layouts and costs were submitted.
5. Set out an eight year period of stoping and illustrated by quarter years on a longitudinal section through the mine.  
  
This involved calculation of stope tonnages, productivity, and compiling the necessary statistics such as ore tonnages per strike foot over certain vertical intervals.

October 1969 to June 1971

Senior Mine Engineer - Western Mines Ltd.,  
Campbell River, B.C.

Reported to Assistant Manager and General Manager

Major Duties Included:-

1. Supervised an Engineering Department of six, who were engaged on the following:-
  1. Mine Surveying - Underground and open pit.
  2. Incentive bonus calculations and rate setting.
  3. Performance statistics
  4. Mine Planning - production schedules
  5. Ventilation control and quarterly ventilation surveys
2. Studied and approved all mine planning for future mining.
3. Carried out feasibility exercises on the open pit limits to maximum allowable waste to ore ratios.
4. Approved incentive bonus calculations for bi monthly payments.
5. Approved all quantity payments on a monthly basis to the company's open pit contractor.
6. Recommended any mining method change or innovation to management.
7. Attended weekly meetings with management.
8. Submitted a monthly engineering report to management.

PROJECTS PERSONALLY COMPLETED INCLUDE THE FOLLOWING

1. A feasibility study to determine the ultimate depth of the open pit in order to mine additional ore.  
A report was submitted to management.
2. The planning of a -15% decline from surface at the company's Myra Falls Mine, in order to provide lower levels below the existing levels.  
This involved geological interpretation and projection of ore zone material in order to have the heading in the footwall waste.
3. Designed and laid out a sub level cave system of mining for an upper ore zone at the Myra Falls Mine.
4. Various cut and fill mining layouts were planned and laid out for the Lynx Mine.
5. Calculated the mine ventilation characteristic curve for the Myra Falls mine in order to determine the permanent ventilation fan requirements.
6. Closely supervised and organised two major surface/underground correlation surveys of large extent, in order to set out two important bore hole raises.  
  
One correlation survey was at the Lynx Mine, and the other at Myra Falls Mine. Underground traversing and surface triangulation were involved.  
  
Both raises when bored broke through well within allowable limits of their target locations.
7. Closely supervised and organised the preparation of ventilation plans and sections, upon which to record periodic ventilation surveys.
8. Closely supervised the survey section and instituted new techniques for the cut and fill stoping tonnage surveys.

con't

R.H.  
R.H.

August 1968 to September 1969

Senior Mine Planning Engineer - Granduc Operating Co.  
Tide Lake, B.C.

Reported to Chief Engineer

Major Duties

1. Provided mine development layouts <sup>and mine planning</sup> in order to bring the mine into production, on a sub level cave mining method.
2. Scheduled the development and major facilities on a critical path method of scheduling, followed up by bar charts, with due regard to resources available.
3. Provided future mine development costs on a quarterly basis.
4. Attended meetings with mine operating supervision and management.
5. Provided feasibility studies on alternate methods.

September 1966 to July 1968

Chief Engineer - Campbell and Lake Mines Ltd., Balmertown, Ontario.

Reported to General Manager

Major Duties

1. In charge of an engineering staff of twelve.
2. Responsible for all current and long range mining layouts, surveying, sampling, bonus calculations, and the usual mine engineering office functions.
3. I was responsible for the ore reserve calculations, calculated on a quarterly basis.

The mining methods were 80% shrinkage and 20% cut and fill.

August 1965 to August 1966

Chief Engineer - Anglo Rouyn Mines Ltd.,  
La Ronge, Saskatchewan.

Reported to Assistant Manager

Major Duties

I was responsible for all mining engineering. An engineering staff of six reported to me.

1. I did considerable mine planning for the preproduction phase. The mine was brought into production using the longhole open stope and shrinkage methods of stoping.
2. I was also involved in the planning and setting out of a small two lift open pit.
3. Mining cost estimates yearly, quarterly, and monthly on a budget control basis were prepared by me.

June 1964 to July 1965

Chief Engineer - Wasamac Mines Ltd.,  
Arntfield, P. Q.

Reported to - Mine Manager

This mine was being prepared for production during my period with the company.

R.H.  
R.H.

Major Duties

1. I was responsible for mining engineering underground and surface. An engineering staff of six reported to me.
2. I was responsible for all surface construction engineering control, mine plant layouts and design work other than those designs prepared by the company consultant.
3. Material requirements, construction schedules were prepared by my department.
4. Underground development programs and planning were prepared by me.  
  
I carried out very detailed development and stoping schedules, total cost estimates work and profitability estimates.  
  
The work was done very accurately as the profitability margin was small, the grade of ore being only 0.14 oz. au. per ton.
5. I was the company's representative in all matters dealing with the company's surface engineering consultants and construction contractors.
6. I did all the necessary liaison work with the various government departments for approvals such as tailings impoundment dams etc.

1960 - 1964

Planning Engineer - Mattagami Lake Mines Ltd.  
Matagami, P.Q.

I reported to the Chief Engineer

In this capacity I was also the assistant chief engineer.

I came here in the shaft sinking stage and was responsible for all underground current layouts, mine planning, mining methods study, cost analysis of methods, and long range production schedules.

The mining method was longhole open stoping with delayed fill.

Playing an important part in helping to bring the mine into production, called for very detailed and thorough mine planning.

1956 - 1960

Planning Engineer - Rio Algom Mines Ltd.,  
Nordic Mine,  
Elliot Lake, Ontario

I reported to the Chief Engineer

In this capacity I was also Assistant Chief Engineer.

Two layout engineers reported to me, and in my capacity of Assistant Chief Engineer, I was in charge of the engineering department during the Chief Engineer's absence from the property.

DUTIES

1. I was responsible for all layouts and mine planning for the underground operation.
2. Monthly, quarterly and yearly production schedules were prepared by me.
3. An excellent system of budget control was in force and I prepared the underground operations monthly cost budget in conjunction with development and production.
4. Miscellaneous underground structural drawings, were prepared by me.
5. Special projects such as shaft plumbing for correlation surveys surface to mine levels, were organised and directed by me.

*R.H.*  
*R.H.*

1952-1956

Layout Engineer - Falconbridge Nickel Mines Ltd.,  
Falconbridge, Ontario

I reported to the Chief Engineer of Mines.

1. I was engaged with a group of planning engineers on all design layout work re: shaft sinking, loading pockets, crusher station etc., sufficient to bring the company's Fecunis Lake Mine and Longyack Mine into production.
2. After completion of the preproduction mine planning, I was transferred to the company's Longyack Mine in charge of Mine Engineering. I continued to report to the Chief Engineer of Mines.

1946-1952 - Northern Rhodesian Copper Belt

Roan Antelope Copper Mines Ltd.,  
Luanshya, Zambia

Rhokana Corporation Ltd.,  
Kitwe, Zambia

Experience included mine surveying, blasting layouts for long hole stoping, shaft plumbing.

1939-1946 - South and West Yorkshire Coal Field, England

I was employed here during my student days, and my experience included mine ventilation, mine surveying and general mine experience.

*R. H. Smith*  
*R. H. Smith*



CERTIFICATION OF JOHN M. McANDREW

#212, 14840 - 105 Avenue, Surrey, B. C. Phone: 588-8072

- 1 - Registered as a Professional Engineer by the Association of Professional Engineers of B. C.
- 2 - A fellow of the Geological Association of Canada.
- 3 - B. Sc. in Geology from the University of Alberta, Edmonton, Alberta: post graduate courses in surveying, McGill University, Montreal, Quebec.
- 4 - Prior to consulting the author spent seventeen years in exploration, property evaluation, mine geology, and production with the following companies.

Anaconda American Brass Limited - Copper, Molybdenum

Silver Titan Mines - Silver, Lead, Zinc.

Columbia Iron Mining Co. - Coal

Newmont Exploration Ltd. - Nickel, Copper

Iron Ore Company of Canada Ltd. - Direct Shipping Iron Ore.

N. W. Byrne Company - Gold

Quebec Cartier Mining Comp. Ltd. - Concentrating Iron Ore.

Eldorado Mining and Refining Co. - Uranium

International Nickel Co. - Nickel, Copper

- 5 - I have no direct or indirect interest in the properties covered by this report.
- 6 - I inspected a portion of the work while the program was being carried out. I have read this report and personally endorse the facts and concepts contained in the text.

Dated this 28 day of *December*, 1977, in Vancouver, B. C.

SIGNED:

*John M. McAndrew*  
John McAndrew. P. Eng.



D. L. COOKE AND ASSOCIATES LTD.

MINERAL EXPLORATION CONSULTANTS

TELEPHONE:  
BUS. 576-8148  
RES. 576-8170

16331 BELL ROAD  
SURREY, B. C.,  
CANADA  
V3S 1J9

PETROGRAPHIC REPORT  
ON FIVE THIN SECTIONS  
DOMINION EASIN, TELKWA AREA, B.C.  
OMINECA M.D.

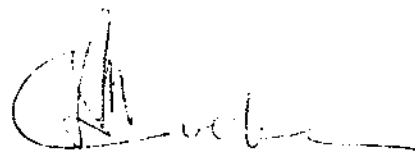
for

MIHARAJA MINERALS LTD. (N.P.L.)  
1109 - 207 WEST HASTINGS STREET  
VANCOUVER 3, B.C.

by

D. L. Cooke, Ph.D., P.Eng.  
Consulting Geologist

February 22, 1974.



D. L. COOKE AND ASSOCIATES LTD.

MINERAL EXPLORATION CONSULTANTS

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CANADA

INTRODUCTION

The specimens from the Dominion Basin property were examined in thin section on the instructions of Mr. J. Rutherford of Maharaja Minerals Ltd. The petrographic study was done to determine the nature and alteration of the host rocks, and if possible to determine the origin of the copper mineralization.

The primary minerals, alteration products, and textures in each thin section were identified optically, and volume percents of these minerals visually estimated. Petrographic report sheets, with rock descriptions and classifications, are presented for individual sections. These sheets form a part of this report.

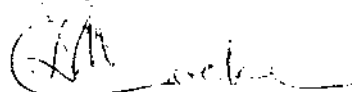
SUMMARY AND CONCLUSIONS

1. Copper mineralization, in the form of chalcopyrite and bornite, occurs in three distinct habits: blebs associated with skarn minerals, disseminations with hydrothermal alteration, and fillings in a network of quartz veins and stringers. The first two types are certainly associated with later igneous activity. Copper which occurs in quartz stringers may have been deposited from low temperature "epithermal" solutions. These could be either epigenetic hydrothermal or syngenetic to diagenetic or later deuteric solutions. The writer suspects a hydrothermal source

because there seems to have been solidification of the host rock (SC-9) prior to brecciation and introduction of quartz and sulphides.

2. With the exception of a coarse grained skarn specimen, the others are fine grained rocks exhibiting glassy groundmasses. They are either non-porphyrific or only microporphyrific in appearance.
3. The host rocks for copper are volcanic flows and flow breccias of either trachyte or andesite composition. In each instance, the rocks which contain abundant sericite alteration and/or silica (quartz) introduction, are the ones which carry sulphide mineralization. Magnetite and sometimes hematite, seem to be associated more with propylitic alteration (chlorite, epidote, carbonate). A fine dust of hematite and fine chlorite are also secondary after volcanic glass in the groundmass of the flows.
4. The rock type from which the mineralized skarn (sample D) originated has not been determined. The abundance of carbonate and epidote in this specimen is interpreted as derivation from a limey host. The presence of specularite rather than magnetite, and bornite in association with chalcopyrite indicates a higher temperature of formation, which may be expected in a contact skarn environment.

Respectfully submitted,  
D. L. COOKE & ASSOCIATES LTL.



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PETROGRAPHIC REPORT

NUMBER: S-A LOCALITY: DOMINION BASIN DATE: February 21, 1974

NAME AND CLASSIFICATION: AMYGDALOIDAL TRACHYTE

MEGASCOPIIC DESCRIPTION: The specimen seems to be a brown, aphanitic volcanic rock which contains irregular carbonate patches.

MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Plagioclase	30	Ang <sub>8-12</sub> . Twinned microphenocrysts of albite, up to 2 mm. long, occur throughout. Alteration to sericite is of negligible extent.
2. Chlorite	20	Secondary chlorite permeates the entire groundmass and is mixed with zeolite and/or altered glass occurring within amygdules.
3. Quartz	20	Quartz occurs within irregular fractures.
4. Carbonate	10	Carbonate is associated with quartz in irregular fractures and interstices of the groundmass.
5. Glass and Hematite	10	The groundmass consists of a fine grained isotropic mixture of glass and hematite, which also contains abundant chlorite.
6. Zeolite	5	Fine, radial growths within amygdules are a mixture of zeolite and chlorite.
7. Sericite	3	Secondary sericite is associated with the plagioclase.
8. Magnetite	2	Tiny magnetite grains appear to be scattered remnants within the hematite matrix.

TEXTURE: The plagioclase microphenocrysts are set in a hematite-impregnated groundmass of chlorite and glass. Amygdules occur in moderate amounts. Quartz and carbonate are confined to larger patches and to a network of irregular fractures.

CONCLUSION:

The specimen belongs to a trachyte flow which crystallized rapidly after extrusion. Irregular fracturing of an undetermined origin occurred subsequently, and these fractures were later filled with quartz and carbonate.

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PETROGRAPHIC REPORT

NUMBER: SC - 9

LOCALITY: SCALLON VEIN  
DOMINION BASIN

DATE: February 21, 1974

NAME AND CLASSIFICATION: SILICIFIED TUFF BRECCIA

MEGASCOPIIC DESCRIPTION: This is a malachite-stained, brown, aphanitic rock that is cemented by interconnected seams of white quartz.

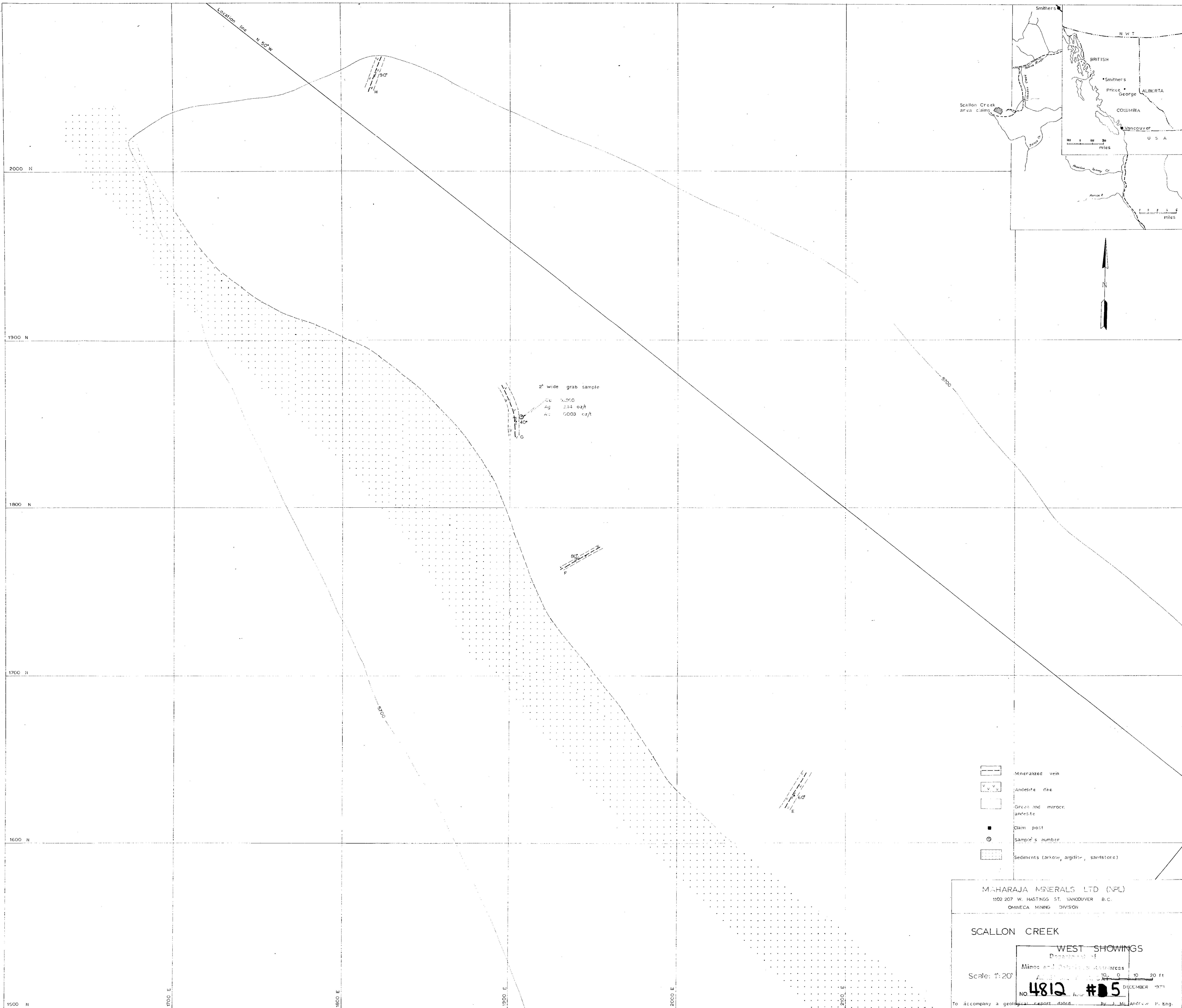
MICROSCOPIC DESCRIPTION:

Minerals	%	Remarks
1. Quartz	35	Clear equigranular as well as comb quartz comprises most of the white vein material. Grain size is variable.
2. Glass	25	The fine isotropic material, constituting the bulk of the groundmass, may be a mixture of volcanic glass and fine chlorite.
3. Chlorite	20	Tiny plagioclase laths within rock "fragments" are altered to a mixture of chlorite and sericite.
4. Sericite	14	These original feldspar laths are replaced primarily by sericite, and to a lesser extent by chlorite.
5. Hematite	2	The isotropic matrix material is permeated by a fine hematite dust. Hematite rims also surround chalcopyrite and pyrite grains.
6. Leucoxene	1-2	Leucoxene patches are scattered throughout.
7. Chalcopyrite	1-2	Discrete chalcopyrite grains are included in vein quartz fillings.
8. Malachite	1	Malachite occurs in secondary fractures throughout.
9. Pyrite	Tr.	Pyrite has the same habit as chalcopyrite.
10. Apatite	Tr.	Tiny apatite crystals occur in accessory amounts.

TEXTURE: Altered lithic fragments partially preserve a trachytoid texture caused by subparallel alignment of minute plagioclase laths. These fragments occur in a fine isotropic groundmass which is impregnated with hematite and tiny patches of chlorite.

CONCLUSION: A network of quartz and associated sulphides permeate the section.

A volcanic origin is evident in the presence of fragments of trachytic flow rock, cemented by glassy material. This tuff breccia was later shattered and healed by secondary quartz and sulphide mineralization. Moderate chlorite-sericite alteration is probably related to this episode of mineralization.



2' wide grab sample  
 Cu 6.25%  
 Ag 234 oz/t  
 Au 5000 oz/t

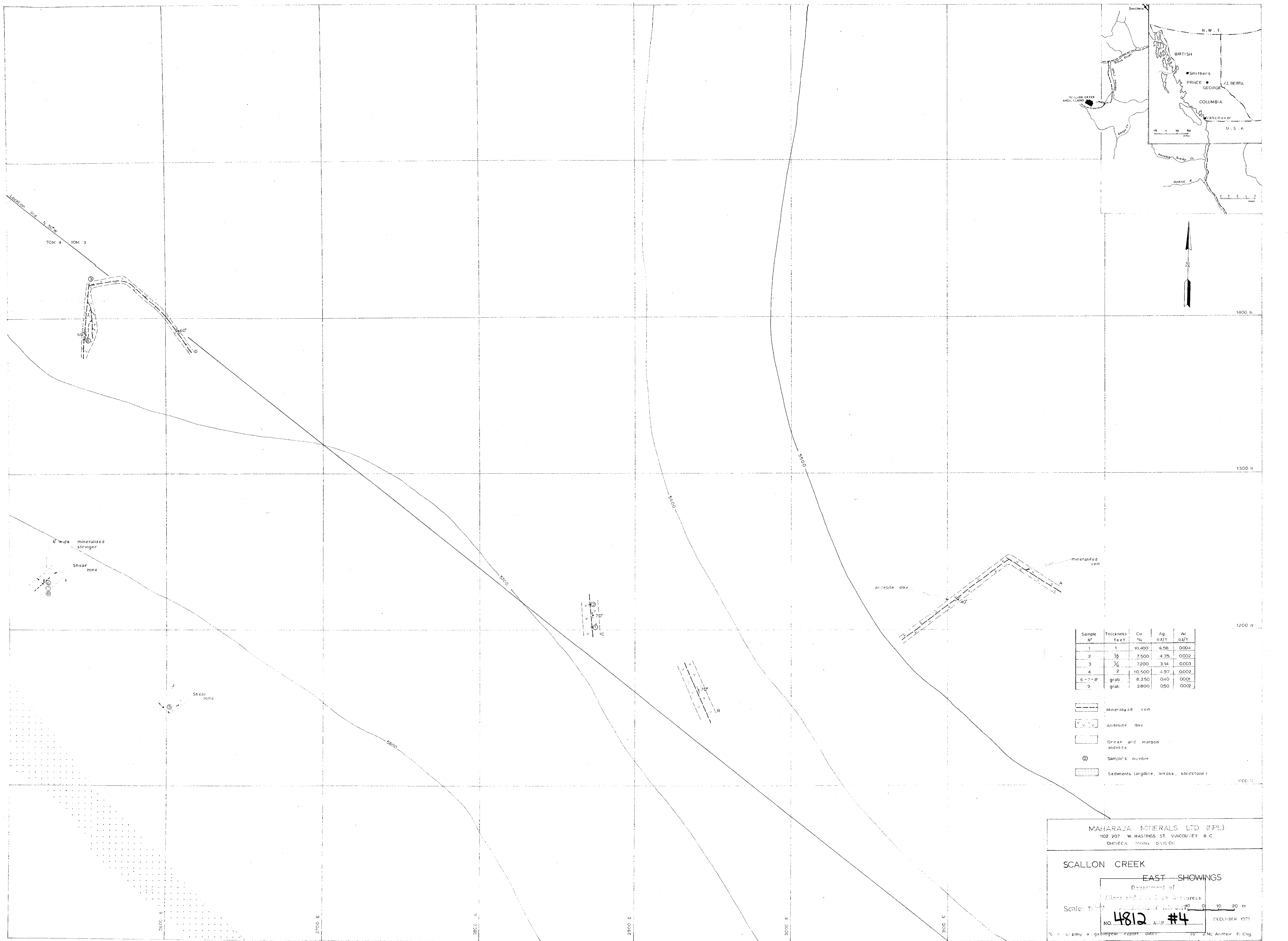
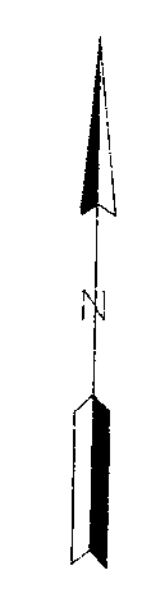
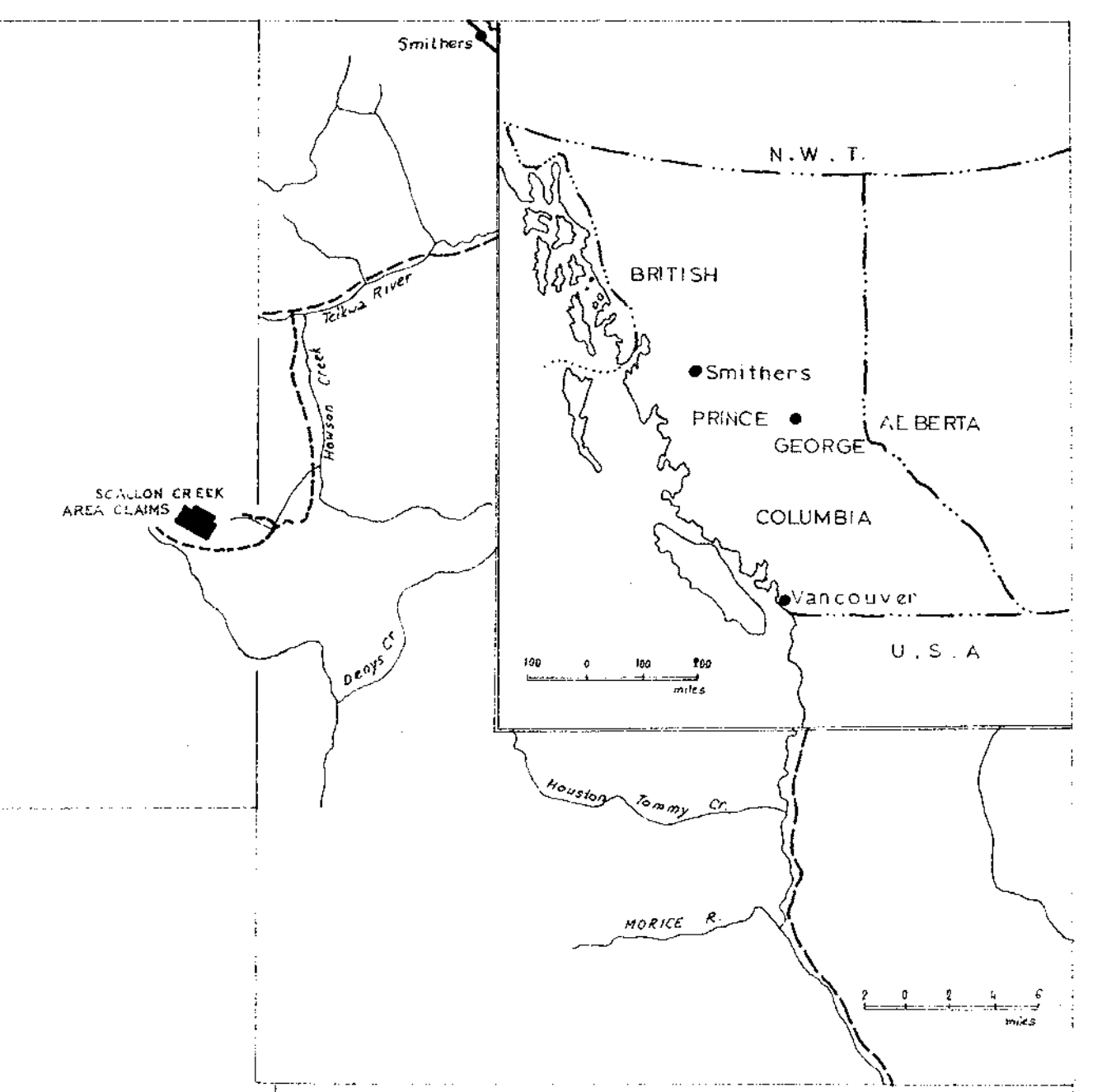
- Mineralized vein
- Andesite dike
- Green and maroon andesite
- Claim post
- Sample's number
- Sediments (arkose, argillite, sandstone)

MAHARAJA MINERALS LTD (NPL)  
 1102 207 W. HASTINGS ST. VANCOUVER B.C.  
 OMECEA MINING DIVISION

SCALLON CREEK

WEST SHOWINGS  
 Department of  
 Mines and Technical Surveys  
 Scale: 1:20'  
 NO. 4812 #5  
 DECEMBER 1973  
 To accompany a geological report dated \_\_\_\_\_ by J. McJannet P. Eng.

4812 M5



Sample N°	Thickness feet	Cu %	Ag oz/t	Au oz/t
1	1	10.400	6.98	0.004
2	1/2	7.500	4.35	0.002
3	1/2	7.200	3.14	0.003
4	2	10.500	4.97	0.002
6-7-e	grab	8.250	0.40	0.001
9	grab	2.800	0.50	0.002

- Mineralized vein
- Andesite dike
- Green and maroon andesite
- Sample's number
- Sediments (argillite, arkose, sandstone)

MAHARAJA MINERALS LTD (P.L.)  
 102 207 W. HASTINGS ST. VANCOUVER B.C.  
 OMBICA MINING DIVISION

SCALLON CREEK  
 EAST SHOWINGS

Department of  
 Mines and Technical Surveys

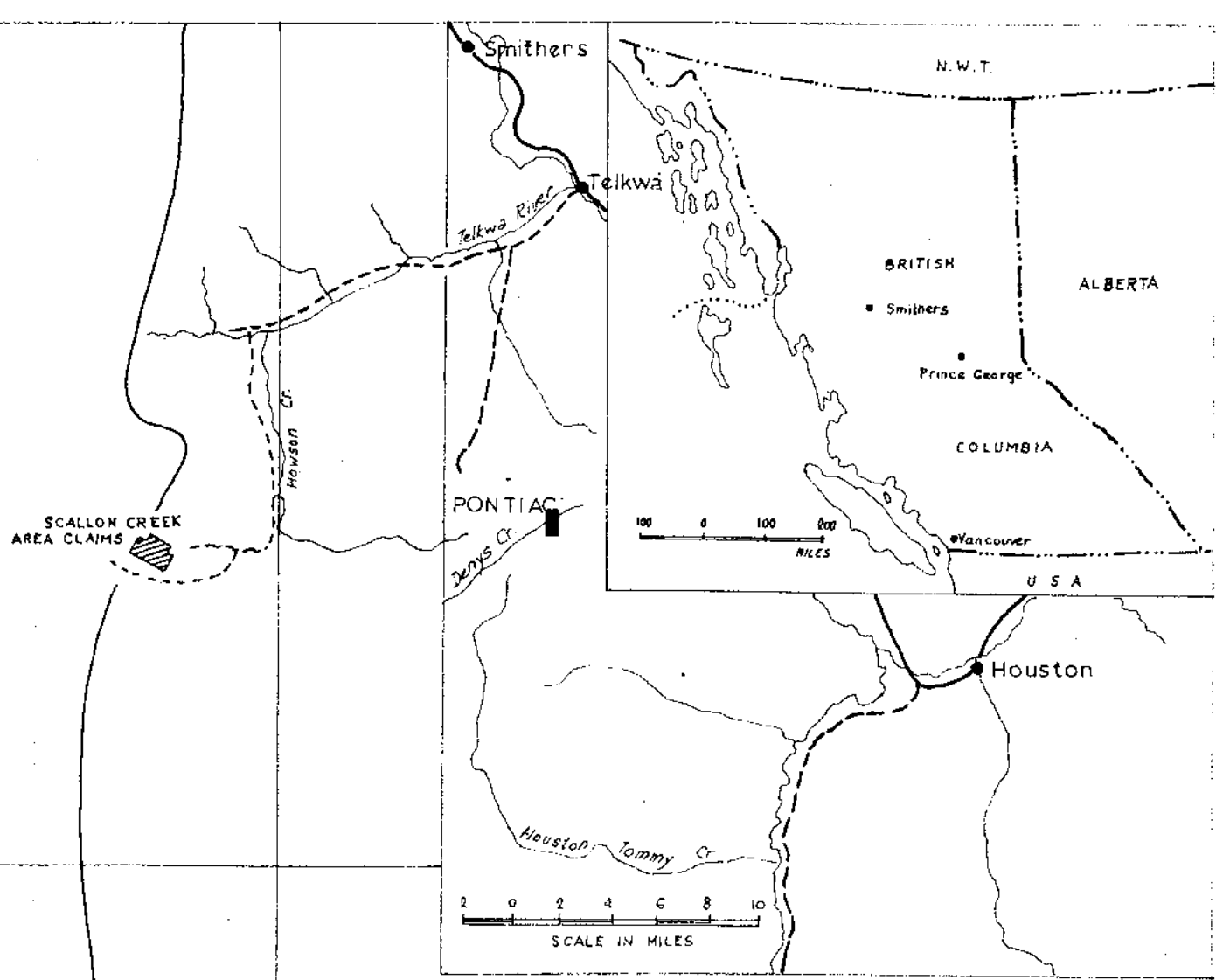
Scale: 1" = 1000' (1:1000)

NO. 4812 MAP #4 DECEMBER 1973

Company a geological report dated by J. McAndrew P. Eng.

**4812 M4**





- Mineralized vein
- Andesite (green and maroon)
- Claim post
- Schists (garniferous, arkose, siltstone)

Note:  
For details refer 1:20' maps

MAHARAJA MINERALS LTD (INCL)  
1102-207 W. HASTINGS ST. VANCOUVER B.C.  
OMEGA MINING DIVISION

SCALLON CREEK  
SHOWINGS NO. **4812** #3

Scale: 1:200

JANUARY 1974

To accompany a geological report dated \_\_\_\_\_ by J. McAndrew P. Eng.

**4812 #3**

*J. McAndrew*

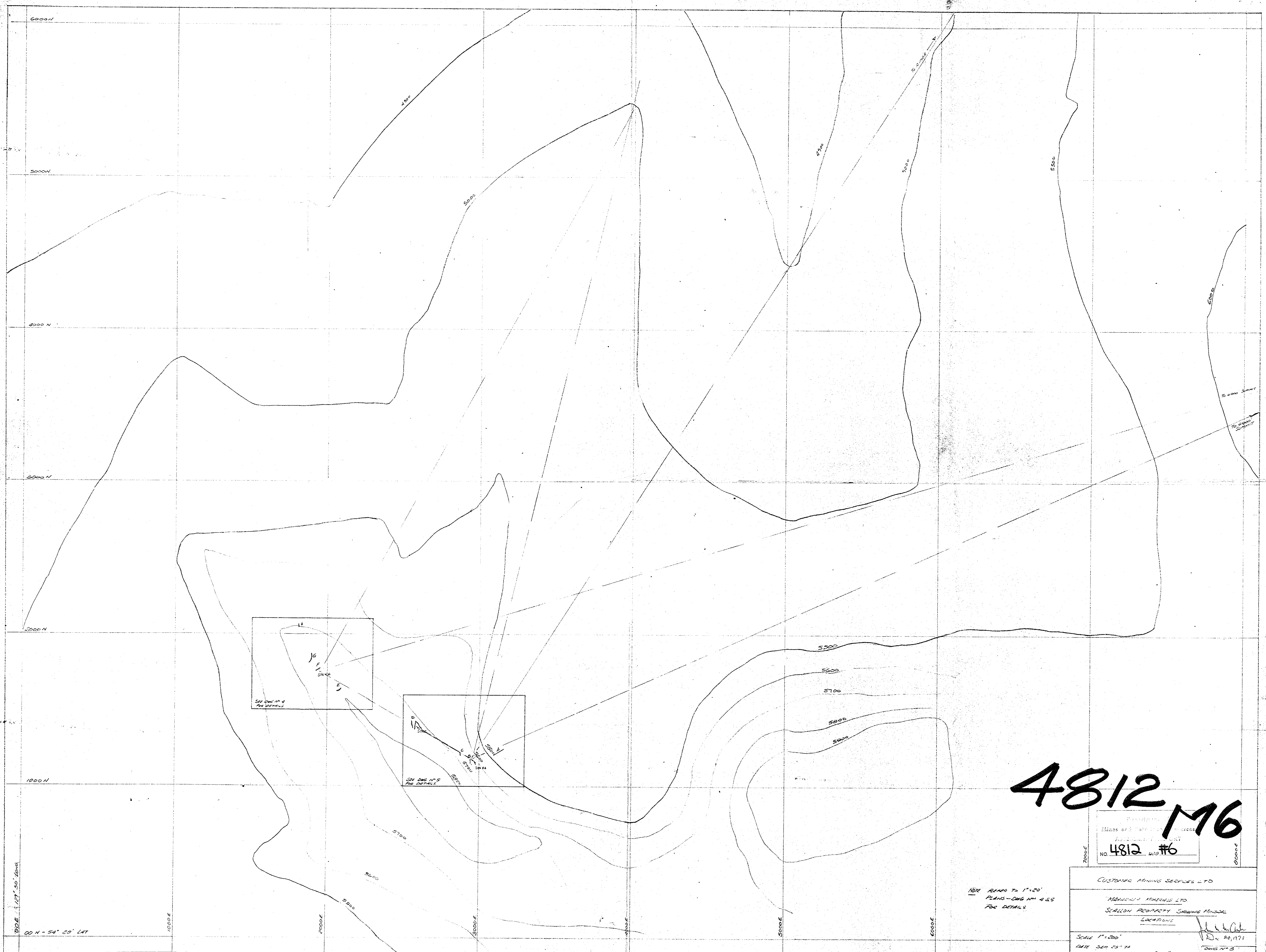


**4812 M7**

Department of Mines and Technical Surveys	
NO. 4812	MAP #7

CUSTOMER: MINNAC MINES LTD	
PROJECT: MINNAC MINES LTD SCOLLON - WEST BRIDGE PLANT	
SCALE: 1"=20'	DATE: SEP 23 73
SURVEYED & DRAWN BY: S. COLLON	

NOTE: SEE 1730  
1544 - GROUND PLAN  
DAG # 3



16  
15  
14  
SEE DWG. NO. 4  
FOR DETAILS

13  
12  
11  
10  
9  
8  
7  
6  
5  
4  
3  
2  
1  
SEE DWG. NO. 5  
FOR DETAILS

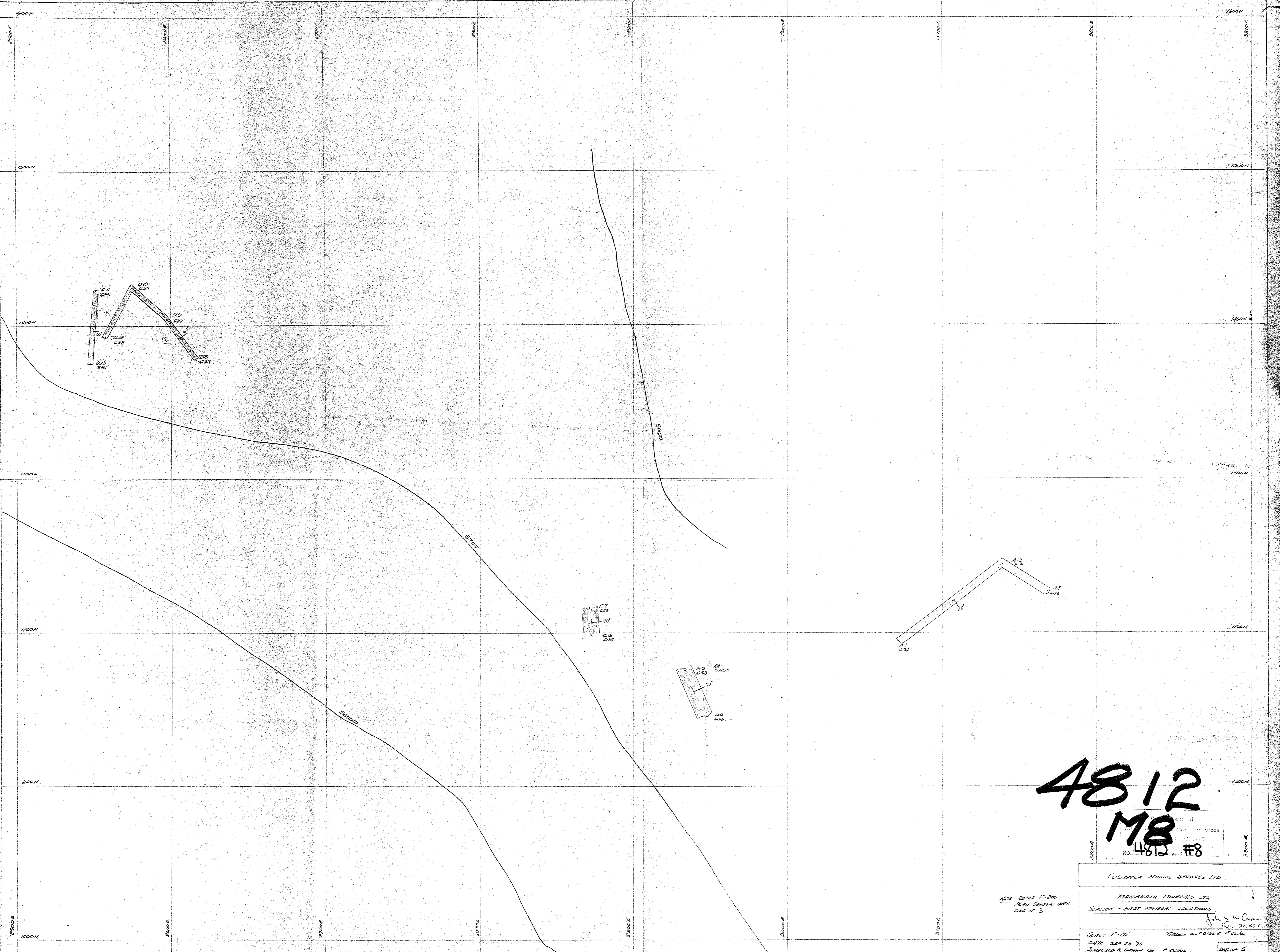
# 4812 M6

MINERAL RIGHTS  
ASSIGNMENT DEED  
NO. 4812 MAP #6

CUSTOMER MINING SERVICES LTD  
MINERAL RIGHTS LTD  
SCALON PROPERTY SHARING MINERAL  
LOCATIONS  
SCALE 1"=200'  
DATE SEP 23 '74  
DRAWN BY R. COLIN  
D. 20, 1173  
DWG. NO. 3

NOTE REFS TO 1"=20'  
PLANS-DWG. NO. 4 & 5  
FOR DETAILS

1000E  
1000W  
1000N  
5000N  
4000N  
3000N  
2000N  
1000N  
1000E  
2000E  
3000E  
4000E  
5000E  
6000E  
7000E  
8000E



4812  
M8

NO. 4812 DATE 28.9.73	
CUSTOMER MINING SERVICES LTD	
MAHARAJA MINERALS LTD SAILON - EAST MINERAL LOCATIONS.	
SCALE 1"=20' DATE SEP 23 73 SURVEYED & DRAWN BY P. C. RAU	FIG. 28.173 SHEET NO. 5

NOTE: SCALE 1"=20'  
PLAN GENERAL AREA  
DWG. NO. 3