

DOLMAGE CAMPBELL & ASSOCIATES LTD.

CONSULTING GEOLOGICAL & MINING ENGINEERS

1000 GUINNESS TOWER

VANCOUVER 1, B.C.

GEOCHEMICAL AND GEOLOGICAL  
REPORT

on

RAVEN MINERAL CLAIMS

Nos. 1-10 and 17-21

Claim Sheet No. 94C/12W

AIKEN LAKE AREA

Omineca Mining Division, B. C.

125°56' W. Long., 56°30' N. Lat.

94 C / 5 # 12 W

Owner of Claims:

Union Miniere Explorations and Mining Corporation Limited.

Supervision and Report by:

L.T. Jory, Ph.D., P. Eng.

Work completed between Aug. 21, 1970 and Aug. 11, 1971.

September 2, 1971.

3197

Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT  
NO. 3197 MAP

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INTRODUCTION

A stream sediment geochemical anomaly in copper, discovered as the result of ground follow-up of airborne magnetic data led to the staking of the Raven claim group in August, 1970. The claim group presently comprises Raven claim nos. 1 to 10, incl. and 17 to 21, incl. Subsequent to the staking, a geochemical soil sampling survey was carried out. In 1971, the central portion of the claim group was mapped geologically.

The exploration work was performed by Dolmage Campbell and Associates Limited on behalf of the property owner, Union Miniere Explorations and Mining Corporation Ltd. The work was under the direction of the writer. Mr. R. G. McCandless was Project Geologist in the field.

This report discusses the exploration data and gives recommendations for future work.

LOCATION AND ACCESSIBILITY

The Raven claim group is located nine miles northwest of Aiken Lake which is the closest to the claims that a fixed-wing aircraft can presently be landed. (Drawing 1) Aiken Lake can be reached by unimproved road, approximately 250 miles in length, from the town of Fort St. James. The northern portion of this road was completed for public use, by the British Columbia Department of Mines and Petroleum Resources, only in the early summer of 1971. At present, the road is being extended north of Aiken Lake, up Lay Creek, and will pass within four miles of the property. The exploration for and exploitation of mineral deposits in the area will be aided very materially by this new surface access route.

TOPOGRAPHY

The claims lie in the elevation range of 5000 to 5500 feet above sea-level and approximately 1500 feet above the broad, glaciated valley of Lay Creek. Nearby peaks rise to over 7500 feet in elevation. The claims are situated on open, rolling ground between two large cirques.

Forest cover is dense in the main valleys but virtually absent in the area of the claims.

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NO. 3197 MAP #1

Johanson  
Lake

RAVEN CLAIM GROUP

56°30' N  
125°00' W

Aiken  
Lake

Tulizzi  
Lake

Meslianko  
River

Uslika  
Lake

56°00' N  
126°00' W

Omineca  
River

*20/09/91*

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UMEX  
MONTREAL, CANADA

UMEGREN JOINT VENTURE - SWANNELL PROJECT

LOCATION MAP

RAVEN CLAIM GROUP

94-C/5,12

SCALE 1 Inch = 8 Miles

SEPTEMBER 1971

FIG

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SUMMARY AND RECOMMENDATIONS

A program of geochemical soil sampling and geological mapping was carried out in the summers of 1970 and 1971 on the Raven claim group in the Omineca Mining Division of B. C. The claims, staked in August of 1970, are located 9 air miles northwest of Aiken Lake and 150 air miles north of Fort St. James. By the summer of 1972, a mining development road under construction by the B. C. Department of Mines and Petroleum Resources will pass within four miles of the property.

The claims are underlain by rusty weathering andesites of the Takla group of Upper Triassic age. The andesites are intruded by erratically distributed diorite dykes which are probably related to the Hogem batholith. Both the andesites and the diorite are strongly fractured and mineralized with pyrite in concentrations locally exceeding 20%. Copper in sub-economic concentrations accompanies the pyrite in the leached zone. A geochemical soil anomaly in copper extends over a length of about 4000 feet and a width of 200 to 300 feet.

It is recommended that the work be filed for assessment to hold the claims for one year while the results of other exploration work in the area are analysed. Consideration will be given to carrying out a limited diamond drilling program on the property since neither trenching nor geophysical surveying could be expected to yield useful results.

Respectfully submitted,  
DOLMAGE CAMPBELL & ASSOCIATES



Lisle T. Jory, Ph.D., P. Eng.

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GEOLOGY

REGIONAL SETTING

The general geology of the area is shown on the Geological Survey of Canada, Aiken Lake map sheet (No. 1030A, 1954, 1 inch to 4 miles).

The claims are contained within a four mile wide, northwesterly trending belt of Takla group volcanic rocks of Upper Triassic age. On the west, the volcanic belt is interrupted by small, outlying, intermediate intrusive bodies associated with the large Hogem batholith. On the east it is in fault contact along Lay Creek with Paleozoic age rocks.

LOCAL GEOLOGY

On a more local scale, a central, rusty weathering zone of andesitic and intrusive rocks about 2000 feet wide is bounded on each side by more typical grey-green weathering andesites. The general attitude of the andesites appears to be a northwest strike with a steep southwest dip but no flow structures were observed within the claims.

The mapped geology is shown in Drawing 2 and discussed below. Mapping control was by chain or pace and compass from geochemical sample points.

Volcanic rocks: The two outcrops to the west of the western creek on Drawing 2 are bluish weathering andesites. The remaining volcanic rocks are andesites, possibly in part dacites, exhibiting varying degrees of brownish to rusty weathering. They also vary in texture from fine-to medium-grained; some flows are porphyritic with hornblende phenocrysts locally to two centimeters long. The hornblende content is generally between 15 and 30% of the rock. No quartz was seen. In some areas, the andesites appear to be recrystallized and gradational with the diorite.

- 5 -

Diorite: Shown on Drawing 2 are dyke-like bodies of medium grey, medium grained, massive diorite. It is commonly buff to brownish or even rusty weathering. The few contacts with the andesite which were seen are sharp and very erratic, as though fracture controlled, over a matter of a few inches or a few feet.

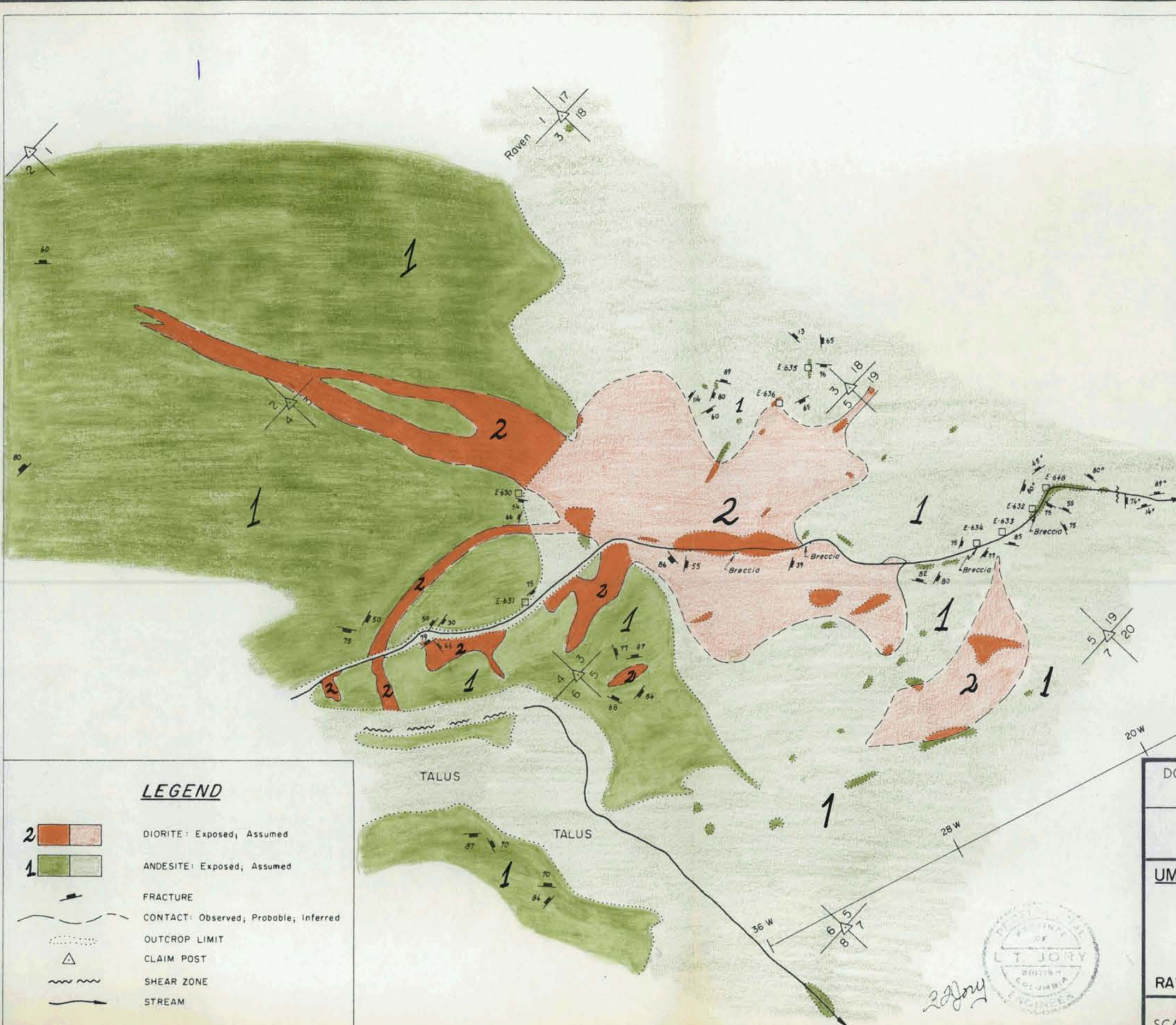
Structure: Several small shear zones were mapped within the claims and tectonic breccia is exposed in a number of places along the main creek. However, the most prominent structural feature is close fracturing which affects particularly the andesites. Although a statistical analysis of the fractures has not been made, it appears that they are randomly oriented. Shearing and fracturing of the rocks was initiated prior to, or possibly concurrent with, the intrusion of the diorite but final tectonic movements occurred after crystallization of the diorite.

Alteration and Mineralization: Except for rusty weathering zones, the diorite is reasonably fresh throughout but may have some calcite or epidote on fractures. The andesites are locally quite epidotic but the most common alteration other than pyrite is chlorite which varies from slight to moderate in intensity.

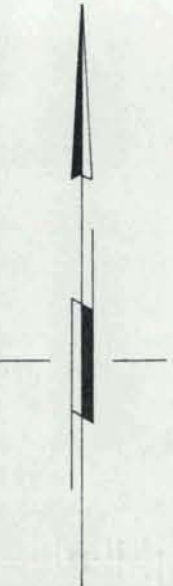
Pyrite occurs in most of the rocks mapped in concentrations, on fractures and in disseminations, greater than 20% but more commonly less than 10%. In portions of the diorite, it is virtually absent. Such concentrations of pyrite in gossanous zones of Takla rocks adjacent to Hogem intrusives are common. However, not all respond so well geochemically.

Chalcopyrite, associated with the pyrite, was observed in only very minor, sub-economic concentrations. No secondary copper minerals were seen but surface leaching is very evident.





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 NO. 3197 ..... MAP #2



**LEGEND**

- 2 DIORITE: Exposed, Assumed
- 1 ANDESITE: Exposed, Assumed
- FRACTURE
- CONTACT: Observed; Probable; Inferred
- OUTCROP LIMIT
- CLAIM POST
- SHEAR ZONE
- STREAM

TALUS

TALUS

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UMEX  
 MONTREAL, CANADA

UMEGREN JOINT VENTURE - SWANNELL PROJECT

**GEOLOGY**

RAVEN CLAIM GROUP 94-C/5,12

SCALE: 1 Inch = 400 Feet SEPTEMBER 1971 FIG.



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GEOCHEMISTRY

SAMPLING TECHNIQUES

A base line 3600 feet long and trending S62°W was established by chain and compass. Cross lines at 400 foot intervals were then run, also by chain and compass, and samples were collected at 200 foot intervals along these lines. A small mattock was used to dig a hole to the 'B' soil horizon from which the sample was collected. A total of 189 soil samples were collected.

The samples were packaged in standard high wet strength brown Kraft paper sample bags. The samples were sent to Chemex Labs Ltd. of North Vancouver, B. C. They were dried in a fire-proof, thermostatically-controlled, electrically heated oven for 24 hours at a temperature of 150° F, in the original sample bags. The samples were then screened through a 6 inch diameter No. 80 screen, consisting of a stainless steel mesh in a nylon frame. (The screen used is manufactured by Miners and Prospectors' Supply Inc. of California). Assaying was then carried out for copper, molybdenum, zinc, cobalt and nickel on the -80 mesh fraction, using the atomic absorption method after hot acid extraction. The latter two elements were assayed for because of a recorded cobalt showing a short distance to the west of the Raven claims.

RESULTS

The results of the geochemical soil survey are shown on Drawings 3 to 7, inclusive. Each element is contoured at the threshold value based on an analysis of frequency histograms.

Only the copper histogram shows more than one distinct population. The mean copper concentration is 140 ppm and the threshold about 270 ppm. Secondary peaks occur at 280, 400 and 600 ppm. Fifteen percent of the samples are anomalous. The main anomalous trend follows the creek but there is no indication in the field that this is a transported anomaly. Nine rock samples, each representing a 25 foot width across the gossanous zone, were analysed as rock geochemistry samples. They carried a comparable concentration of copper to that in the soils.

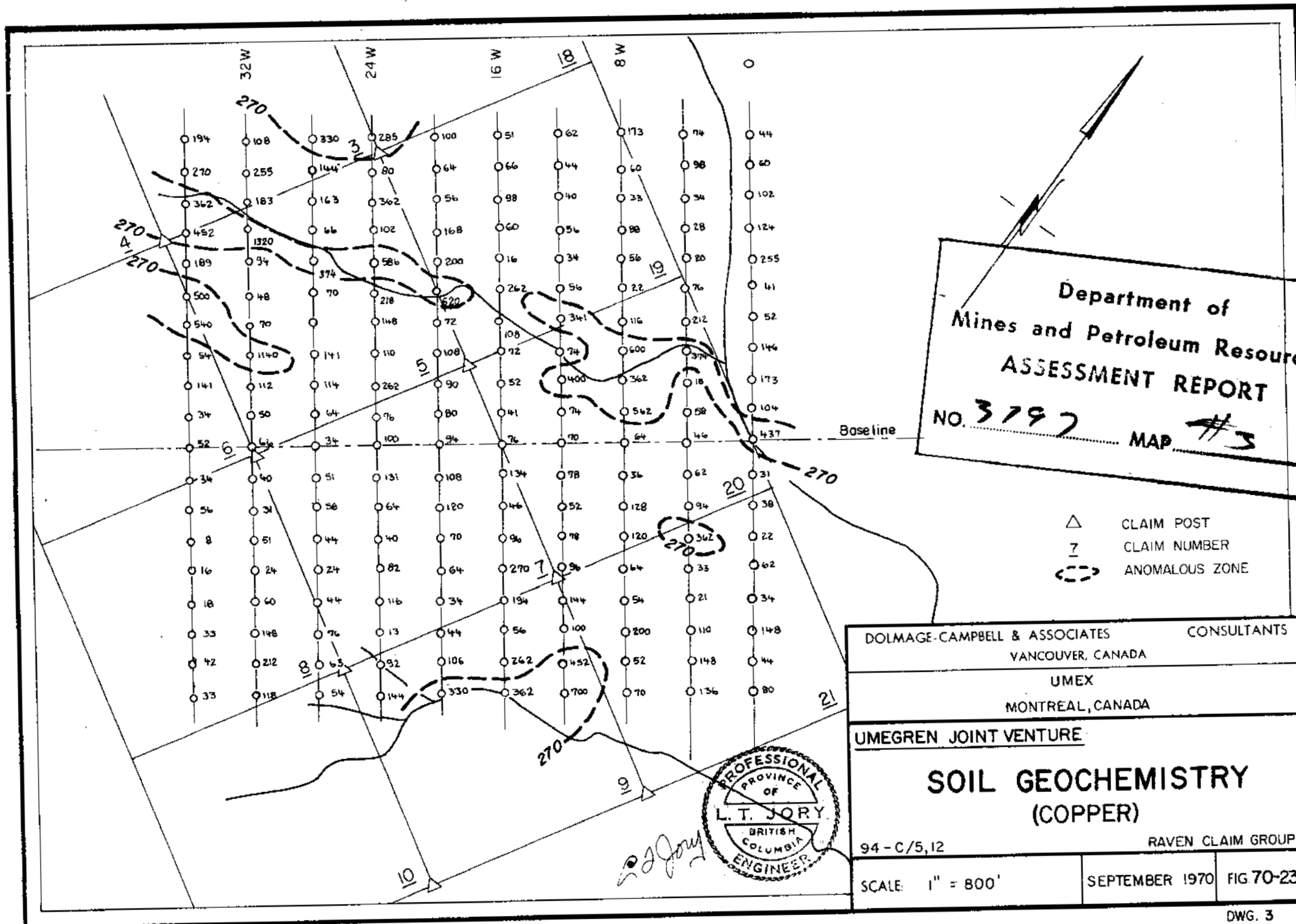
- 7 -

Molybdenum has a threshold of 15 ppm and only four samples exceed that value. However, the higher molybdenum background values do show some correspondence with the main copper anomaly.

Only nine samples exceed the threshold value of 140 ppm in zinc. There is no correspondence in distribution with main copper anomaly.

Cobalt has a sharp threshold at 70 ppm and only 4 samples exceed this value. There is, however, a general correspondence between cobalt values exceeding 40 ppm and the anomalous copper zones.

Nickel exceed the threshold value of 100 ppm in only one sample. It is possible that the threshold is actually 70 ppm in which case three samples, closely grouped, are anomalous.

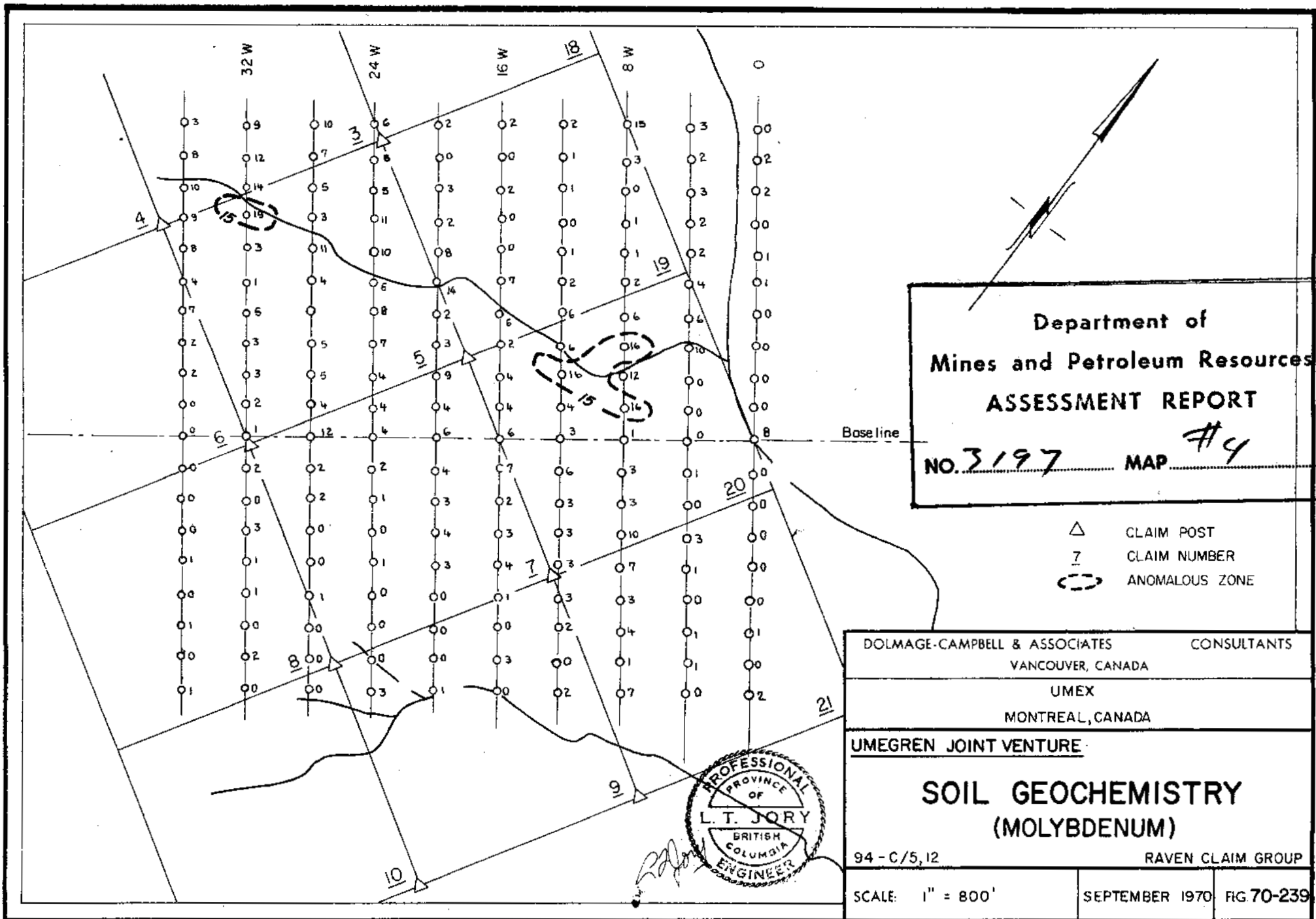


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NO. 3797 MAP #3

△ CLAIM POST  
Z CLAIM NUMBER  
○ ANOMALOUS ZONE

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UMEX  
MONTREAL, CANADA  
UMEGREN JOINT VENTURE  
**SOIL GEOCHEMISTRY  
(COPPER)**  
94-C/5,12 RAVEN CLAIM GROUP  
SCALE 1" = 800' SEPTEMBER 1970 FIG 70-238





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 NO. 3197 MAP #4

- △ CLAIM POST
- 7 CLAIM NUMBER
- ANOMALOUS ZONE

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 VANCOUVER, CANADA

UMEX  
 MONTREAL, CANADA

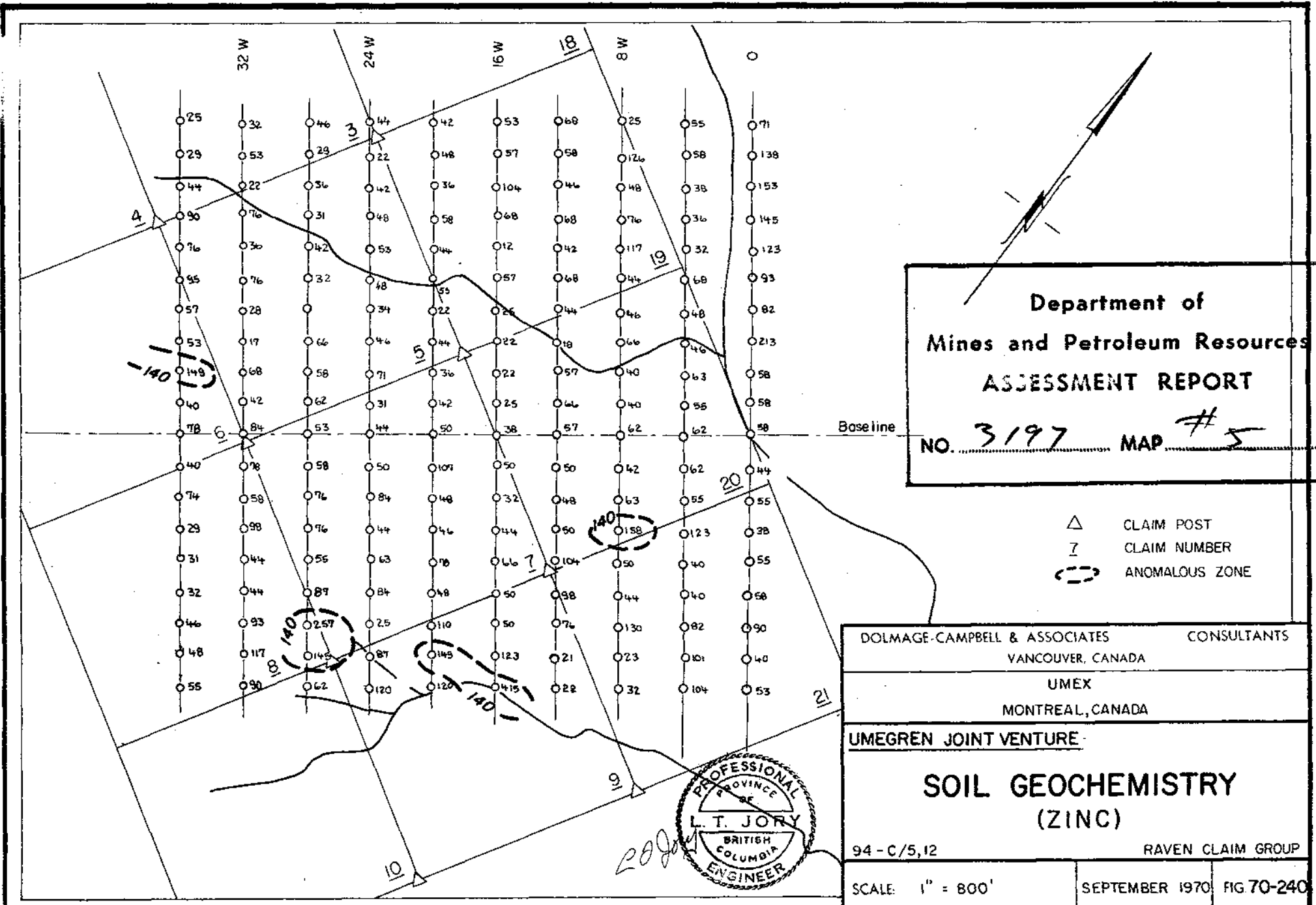
UMEGREN JOINT VENTURE

**SOIL GEOCHEMISTRY  
 (MOLYBDENUM)**

94 - C/5, 12 RAVEN CLAIM GROUP

SCALE: 1" = 800' SEPTEMBER 1970 FIG 70-239





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**ASSESSMENT REPORT**  
 NO. 3197 MAP # 5

- △ CLAIM POST
- 7 CLAIM NUMBER
- ⊖ ANOMALOUS ZONE

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 VANCOUVER, CANADA

UMEX  
 MONTREAL, CANADA

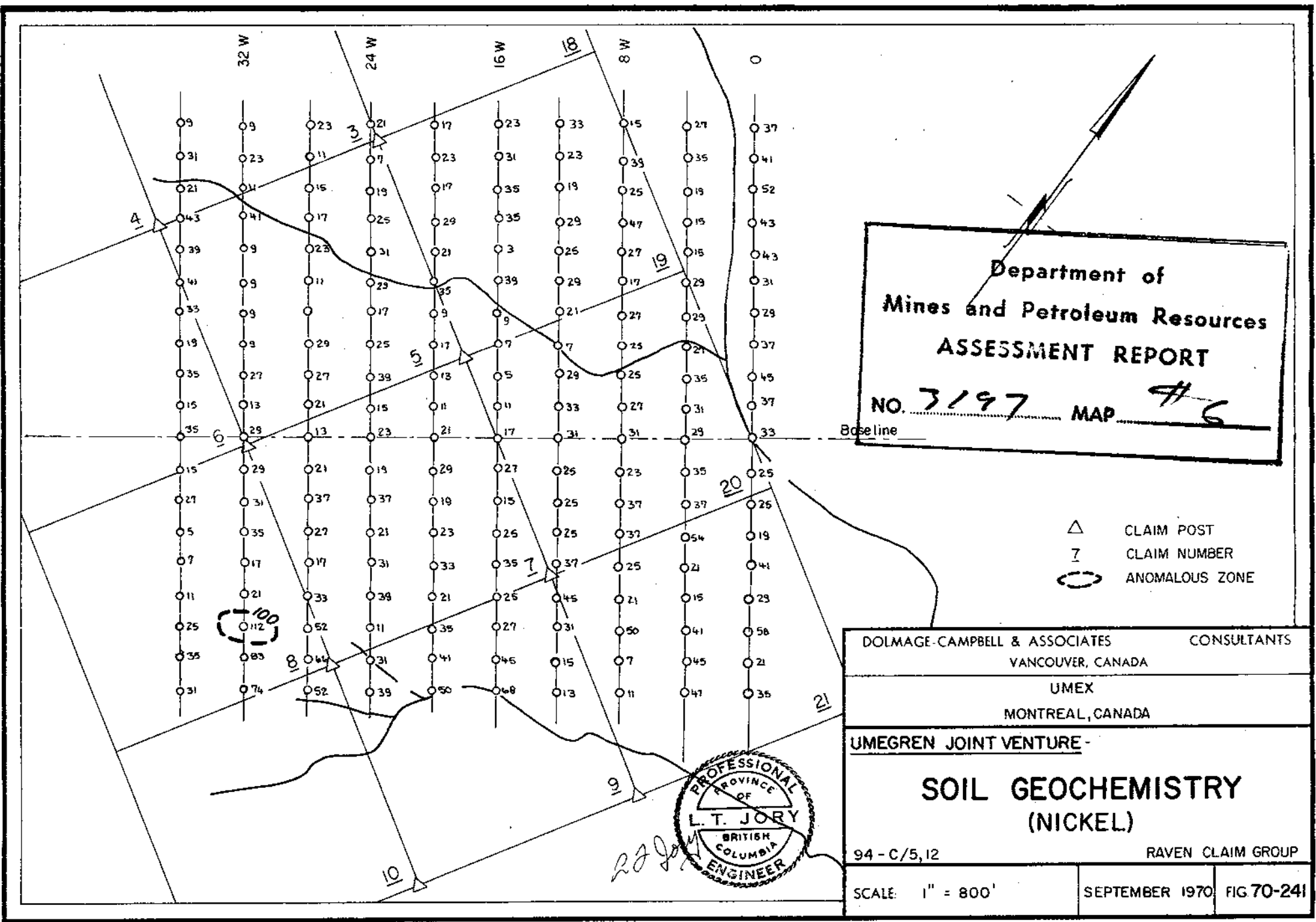
UMEGREN JOINT VENTURE

**SOIL GEOCHEMISTRY  
 (ZINC)**

94 - C/5, 12 RAVEN CLAIM GROUP

SCALE: 1" = 800' SEPTEMBER 1970 FIG 70-240

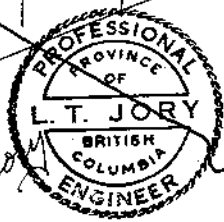


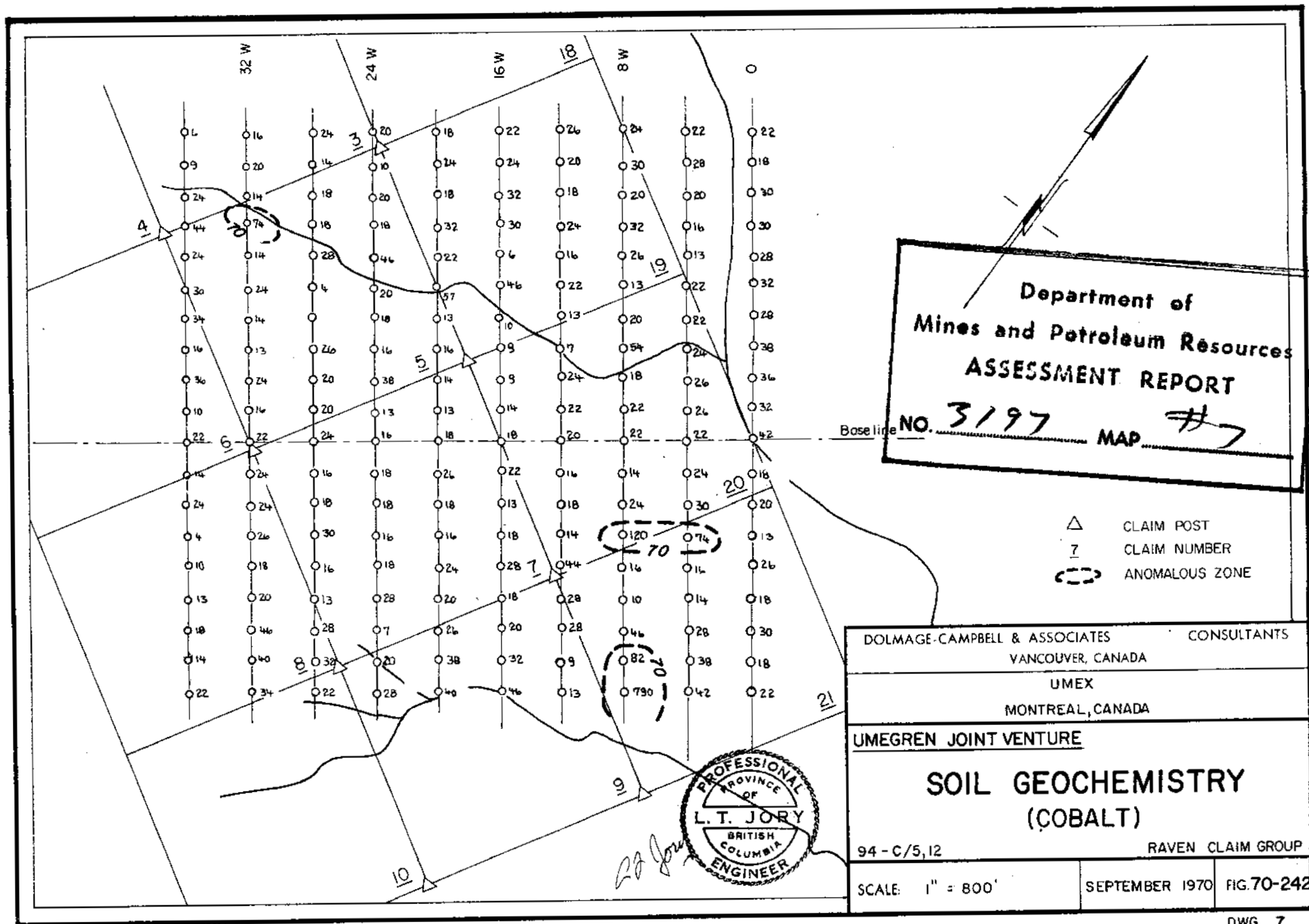


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**ASSESSMENT REPORT**  
 NO. 3197 MAP #6  
 Baseline

- △ CLAIM POST
- 7 CLAIM NUMBER
- ANOMALOUS ZONE

|   |                           |
|---|---------------------------|
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| VANCOUVER, CANADA                         |                           |
| UMEX                                      |                           |
| MONTREAL, CANADA                          |                           |
| UMEGREN JOINT VENTURE -                   |                           |
| <b>SOIL GEOCHEMISTRY<br/>(NICKEL)</b>     |                           |
| 94 - C/5,12                               | RAVEN CLAIM GROUP         |
| SCALE: 1" = 800'                          | SEPTEMBER 1970 FIG 70-24I |





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NO. 3197 MAP #7

- △ CLAIM POST
- 7 CLAIM NUMBER
- ANOMALOUS ZONE

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VANCOUVER, CANADA

UMEX  
MONTREAL, CANADA

UMEGREN JOINT VENTURE

**SOIL GEOCHEMISTRY  
(COBALT)**

94 - C/5,12 RAVEN CLAIM GROUP

SCALE: 1" = 800' SEPTEMBER 1970 FIG. 70-242





DOMINION OF CANADA:  
PROVINCE OF BRITISH COLUMBIA.  
TO WIT:

In the Matter of  
The Raven Claim Group

I, Lisle T. Jory

of 1000 - 1055 West Hastings Street, Vancouver 1, B. C.

in the Province of British Columbia, do solemnly declare that

Expenditures for work performed on the Raven Claim Group between August 21, 1970 and August 11, 1971 are as follows:

|  |                  |
|--|------------------|
| Wages - 17 man days @ \$30.10 (ave)              | \$511.70         |
| Camp Maintenance, food, fuel, etc. @ \$10.00/m/d | \$170.00         |
| Assays (5 Element) & freight 174 Samples         | \$505.00         |
| Transportation Helicopters 1970 - 7½ hr @ \$140. | \$1050.00        |
| 1971 - 3½ hr @ \$135.                            | \$472.50         |
| Typing, Secretarial, Drafting                    | \$ 60.00         |
| Supervision & Report                             | \$465.00         |
| Total  | <u>\$3234.20</u> |

And 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 City  
of Vancouver, in the  
Province of British Columbia, this 2  
day of September 1971, A.D.

*Lisle T. Jory*

*John J. J. J.*  
A Commissioner for taking Affidavits within British Columbia or  
A Notary Public in and for the Province of British Columbia.

Sub-Mining Recorder

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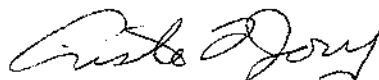
CONCLUSIONS

A geochemical soil survey on the Raven claims has outlined a copper anomaly approximately 4000 feet long and 200 to 300 feet wide. No economic concentrations of copper minerals have been seen but the zone may well be leached for a depth of 100 feet or more. Because of this, it is not anticipated that trenching would yield useful information.

The possibility exists that the observed copper mineralization represents a halo over a larger mineralized zone in or adjacent to the diorite at depth. Because of the large concentrations of pyrite, geophysical surveys would not clarify this question.

A microscopic study will be undertaken. It is recommended that the work completed be filed to hold the claims for one year while the results of other exploration work in the area are analysed. Consideration will then be given to carrying out a limited diamond drilling program on the Raven claims.

Respectfully submitted,  
DOLMAGE CAMPBELL & ASSOCIATES



Lisle T. Jory, Ph.D., P. Eng.

APPENDIX 2Statement of Labour Costs

| <u>Name</u>               | <u>Dates</u>   | <u>No. of Days</u>            | <u>Daily Rate*</u> | <u>Total Cost</u> |
|---------------------------|--|-------------------------------|--------------------|-------------------|
| Colin Pratt               | Aug. 21-24/70  | 4                             | \$22.12            | \$88.48           |
| Michael Blanch-<br>flower | Aug. 21-23/70  | 3                             | \$18.80            | \$56.40           |
| Richard Ball              | Aug. 23-24/70  | 2                             | \$19.90            | \$39.80           |
| Wayne Waters              | July 21/71   | 1                             | \$30.97            | \$30.97           |
| Joseph Tenta              | July 21/71   | 1                             | \$21.00            | \$21.00           |
| John Wilson               | Aug. 8 <sup>1</sup> / <sub>2</sub> , 9, 10, 11 <sup>1</sup> / <sub>2</sub> /71 | 3                             | \$29.85            | \$89.55           |
| John McCandless           | Aug. 8 <sup>1</sup> / <sub>2</sub> /71   | <sup>1</sup> / <sub>2</sub>   | \$21.00            | \$10.50           |
| Robert McCandless         | July 22, Aug. 10, 11 <sup>1</sup> / <sub>2</sub> /71                           | 2 <sup>1</sup> / <sub>2</sub> | \$70.00            | <u>\$175.00</u>   |
|                           |  |                               |                    | \$511.70          |

\* Note: Daily rates include 15% labour overhead for holiday pay, employers contribution to Canada Pension Plan, etc.