STATEMENT OF EXPENSES

Thunder Creek Property Geological Report

Salaries:
C. B. Campbell B.Sc. Project Geologist
July 30th - August 3rd, 4 days @ $75.00/day.....$300.00

J. Pomeroy, Geologist
July 30th - August 2nd, 3.5 days @ $40.00/day.....$140.00

Field Camp maintenance, 6 man days
@ $10.00 per day.....$ 60.00

Helicopter transport - 2 hours, 45 minutes
@ $250.00 per hour.....$687.50

Assaying.....$ 87.50

Drafting, printing etc.....$ 90.00

Consulting fees.....$200.00

TOTAL $1565.00

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PREFACE TO
GEOLOGICAL REPORT OF THE PROPERTY OF
THUNDER CREEK MINES LTD. N.P.L.
Bridge River Area, Lillooet Mining Div. B. C. 92 J / 14 W

The writer first examined the Russnor and Mel Claims of Thunder Creek Mines Ltd. N.P.L. in January, 1970. Due to snow conditions at the time, only the adit area was accessible for sampling, but this yielded sufficiently interesting values in Copper and Molybdenum to justify recommending an exploration work program to include in the initial stages, line cutting, geological mapping, and some soil sampling.

In September, 1971, C. B. Campbell, B.Sc., Project Geologist and J. Pomeroy, Field Geologist both of Cerro Mining Corporation carried out four days of field mapping and some preliminary soil sampling on the property. This work was supervised by D. K. Mustard, B.Sc., P. Eng. The following report and geological map was the result of this field work.

The writer has discussed the conclusions reached in the report with both Campbell and Mustard, and concurs that additional soil sampling and geological mapping is justified on the property as a preliminary to the more comprehensive exploration program.

J. P. ELWELL, P. Eng.
Consulting Mining Engineer

C O N T E N T S

I L L U S T R A T I O N

INTRODUCTION

From July 31st, to August 2nd, 1971, a geological examination was carried out by a party of two men on the Thunder Creek Property near Bridge River. During this time the ground in the vicinity of the adit was examined. A brief soil sampling survey was conducted but time limitations prevented completion of the desired coverage. Work was carried out by C.B. Campbell, B.Sc., and J. Pomeroy, Dip.Geol. Tech. under the Supervision of D.K. Mustard, B.Sc., P. Eng.

SUMMARY

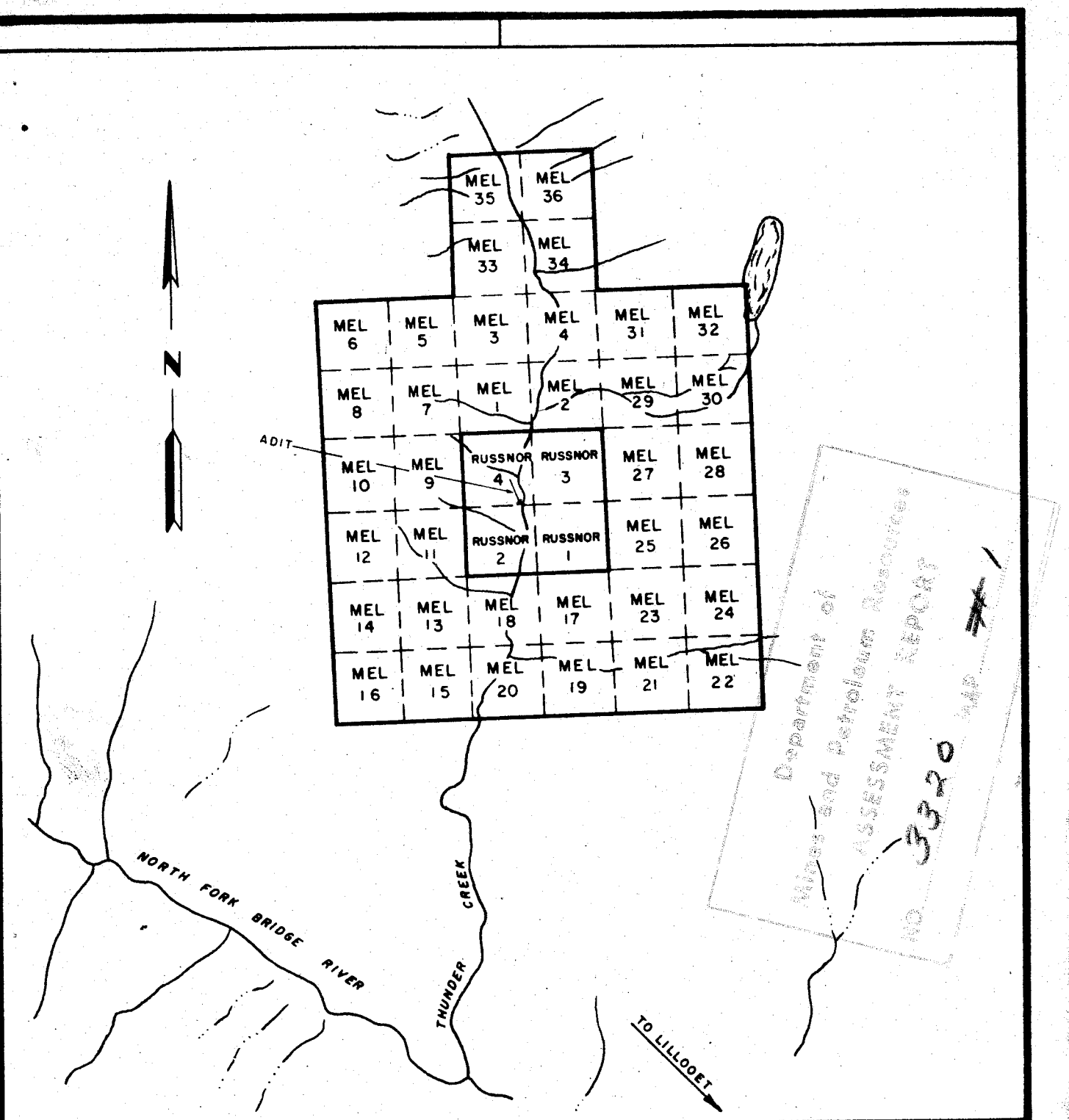
The property is underlain by a medium grained equigranular granite which is intruded by a leucocratic quartz porphyry. A sequence of flat lying interbedded sediments and basaltic flows forms a capping on the intrusives. Copper minerals occur in the well fractured quartz porphyry exposed in the adit. The porphyry was not seen elsewhere in the area examined. Minor copper occurrences were seen in fractures and shear zones in the granite.

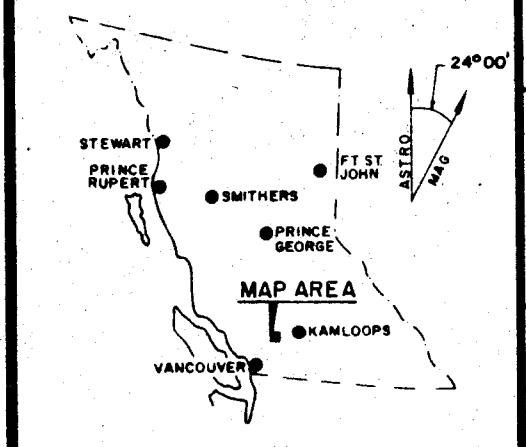
GEOLOGY

Detailed examinations were conducted over the following areas (see Geological Plan):

1) Red Creek
2) Along the lower parts of the bluffs to the west of Thunder Creek
3) The adit area.

Elevations are relative to an assumed datum of 5,000 feet at the camp.





THUNDER CREEK MINES LTD. (N.P.L.)

LOCATION MAP

MEL AND RUSSNOR CLAIM GROUPS

LILLOOET MINING DIVISION

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SCALE IN MILES

JANUARY 1970

Volcanic & Sedimentary Sequence

From 6,090 feet the following sequence of interbedded basaltic flows and sediments cap the intrustives:

Approx. 30' - Basal sedimentary unit - well bedded (1"-6"). Pebble conglomerate - shows graded bedding and cross-bedding (?)- the pebbles (of extrusive and intrusive origin) are sub-angular to rounded and range up to a maximum of one foot in diameter.

" 50' - Fine grained grey basalt flow - columnar jointing

" 50' - More massive basalt flow

" 40'- 50' - Buff coarse sandstone and conglomerate

"100' - 120' - Sequence of fine grained grey vesicular basalt flows - columnar joints.

A thin 6" obsidian band was seen at one locality. Two narrow (6") basalt dikes were seen cutting the granite at approximately 6,000' elevation.

On the next creek to the west of Red Creek small outcrops of vesicular basalt and sediments were seen. Polygonal horizontal jointing may indicate that here the basalt is a plug rather than a flow.

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Intrusives

1) Red Creek:

A medium grained grey equigranular granite is well exposed from 5,700' to 6,090'. Locally the rock contains small (approximately 3 mm) sub-rounded glassy quartz phenocrysts. Biotite content is approximately 20-25% by volume.

The granite is generally fresh but locally biotite is weakly chloritized. Within the fracture zones alteration is more strongly developed. Moderate K-feldspar and weak to strong sericitic alteration occurs along fractures and shears. Minor kaolinization where seen is confined to the near-surface of the rock and is probably due to weathering processes. A light orange-red gossan is present along the entire length of the creek and is strongest within the fracture zones. In the most fractured areas intense weathering and leaching has taken place leaving a red clayey friable material in situ.

In the lower reaches of the creek some weak black manganese oxide staining occurs on joint surfaces.

Jointing is well developed with an average of two joints per foot. The main sets trend 145°, dip steeply N.E. and S.W.; 115°, dip 70° S; 020°, dip steeply N.W. and S.E.

Fracture zones with some shearing were observed from 5,800' to 5,870', 5,915' to 5,935', 5,970' to 5,972'. Within these zones fracture density is 5-10 per foot. The zones trend 130°, dip 64°S and 050° to 070°, dip 40° to 80° S.

Magnetite occurs disseminated throughout the rock, averaging 0.5%, rarely up to 1.5% by colume.

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Minor chalcopyrite and malachite occur as fine fracture fillings and coatings, as blebs in fractures and occasionally as blebs in quartz veins. Nowhere did copper minerals occur in sufficient concentration to warrant sampling.

2) Traverse Along Base of Bluff to West of Thunder Creek

The bluffs consist of a homogeneous medium grained grey granite (biotite approximately 20%) which locally has a slightly finer grained texture. In places the weathered surfaces have a porphyritic appearance. Closer inspection shows this to be quartz grains, more resistant to weathering, standing out slightly from the rock surface.

The rock is well jointed with major sets similar in orientation to those in Red Creek.

The granite is fresh, but within fracture and shear zones weak to moderate chloritic, K-feldspar and sericitic alteration occur along fractures and shears. Minor epidote was seen in one locality on shear surfaces. The granite is cut at one locality by a fine grained light grey felsite dike (15' wide) striking 130° dipping vertically.

Chalcopyrite and malachite occur locally along fractures and shear planes and as fine grains and blebs in fractured and/or vuggy quartz veins.

One chip sample (40,029-CR-2) across 8 feet contained 0.15% copper.

3) Adit Area

Medium grained grey equigranular granite is intruded by a medium grained leucocratic quartz porphyry - the porphyry shows weak to strong alteration (pink K-feldspar, pale green kaolinization ?). The contact where seen strikes approximatley 150°, dips steeply S.W.

At the contact there is a narrow (approximately 15') irregular breccia zone consisting of rectangular fragments (3" x 1") of pinkish (K-feldspar altered ?) granitic in a fine grained dark grey matrix.

Outcrop on the east side of the creek was not visited.

All the rocks are well jointed and fractured - 60° dipping 82° S. and 140° - 155° dipping 65° - 85° S.W. Fracture density is 10-15 per foot.

Minor chalcopyrite and malachite occur along fractures in the breccia above the adit. Along the west side of the creek splashes of malachite ? were seen. Within the adit in the quartz porphyry, chalcopyrite, bornite, pyrite (and possible very minor molybdenite) occur as flakes and blebs in fractures and in vuggy quartz veins. Chip samples taken in 1970 assayed 0.80% Cu over 90 feet with the face in 2.35% Cu over five feet.

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GEOCHEMICAL SOIL SAMPLING

Soil samples were taken every 200 feet on lines 100 feet apart to the north of Red Creek. One line of samples was taken from the creek to above the camp. Time did not permit sampling of the total area south of Red Creek.

Samples were collected using large plastic spatulas and were stoked in standard kraft paper sample bags. Organic and coarse material was discarded from the sample.

A moderately well developed 'B' horizon was seen at all sample localities. The horizon was identified by a change in color from the blackish 'A' horizon above to a brownish-black/reddish-brown 'B' horizon below.

The methods of analysis are shown in Appendix 'A'.

The small number of samples taken do not allow normal statistical handling of the results to arrive at anomalous values. The range of values does, however, suggest that there may be local concentrations of molybdenum to the north of Red Creek. On the line from Red Creek to the camp, high copper values may indicate underlying copper minerals.

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SUMMARY & CONCLUSIONS

Interesting values in copper occur in a fractured quartz porphyry intruding a granite which itself may be intruding the Coast Range Complex. The porphyry is exposed at 4,000' on the banks of Thunder Creek. It was not seen intruding the quartz monzonite at higher levels. Copper minerals occur sporadically in the quartz monzonite. They may have been introduced at the same time as that in the porphyry and reached the higher levels only along strongly fractured zones. Anomalous values of copper and molybdenum occur in soil to the north and northwest of the adit. Soil sampling coverage should be extended to the south.

D.K. Mustard, B. Sc., P. Eng.

C.B. Campbell, B. Sc.

Vancouver Geochemical Laboratories Ltd.

1521 PEMBERTON AVENUE NORTH VANCOUVER, B.C., CANADA TELEPHONE: 604-988-2171

J. R WOODCOCK
CONWAY CHUN

TO: Cerro Mining Co. of Canada
#401 - 1111 West Georgia Street
Vancouver , B.C.
Attention : Mr. Campbell

FROM: Mr. Laurie Nicol, Supervisor Chemist
Vancouver Geochemical Laboratories Ltd.
1521 Pemberton Avenue
North Vancouver, B. C.

SUBJECT: Analytical procedure used to process acid soluble molybdenum in geochemical samples received from Cerro Mining Co. of Canada.

1. Sample Preparation

(a) Geochemical soil, silt and rock samples were received in the laboratory in wet-strength 3½ x 6½ Kraft paper bags.

(b) The wet samples were dried in a ventilated oven.

(c) The dried soil and silt samples were sifted, using an 80-mesh stainless steel sieve. The plus 80-mesh fraction was rejected and the minus 80-mesh fraction was transferred into a new bag for analysis later.

(d) The dried rock samples were crushed and pulverized to minus 80-mesh. The pulverized sample was then put in a new bag for later analysis.

2. Methods of Digestion

(a) ~~XXXXXXXXXXXXXXXX~~ 0.10 gram of the minus 80-mesh samples was used. Samples were weighed out by using a top-loading balance.

(b) Samples were heated in a sand bath with nitric and perchloric acids (15% to 85% by volume of the concentrated acids respectively).

Continued . . . .

2. Methods of Digestion (Continued)

(c) The digested samples were diluted with demineralized water to a fixed volume and shaken.

3. Method of Analysis

Molybdenum analyses were determined by using a Technicon Atomic Absorption Spectrophotometer Model AA4 with a molybdenum hollow cathode lamp. The digested samples were aspirated directly into a nitrous oxide acetylene flame. The results were read out on a Photovolt Varicord Model 43 chart recorder. The molybdenum values, in parts per million, were calculated by comparing a set of molybdenum standards.

4. The analyses were supervised or determined by Mr. Conway Chun, or Mr. Laurie Nicol and their laboratory staff.

L.J. Nicol

VANCOUVER GEOCHEMICAL LABORATORIES LTD.

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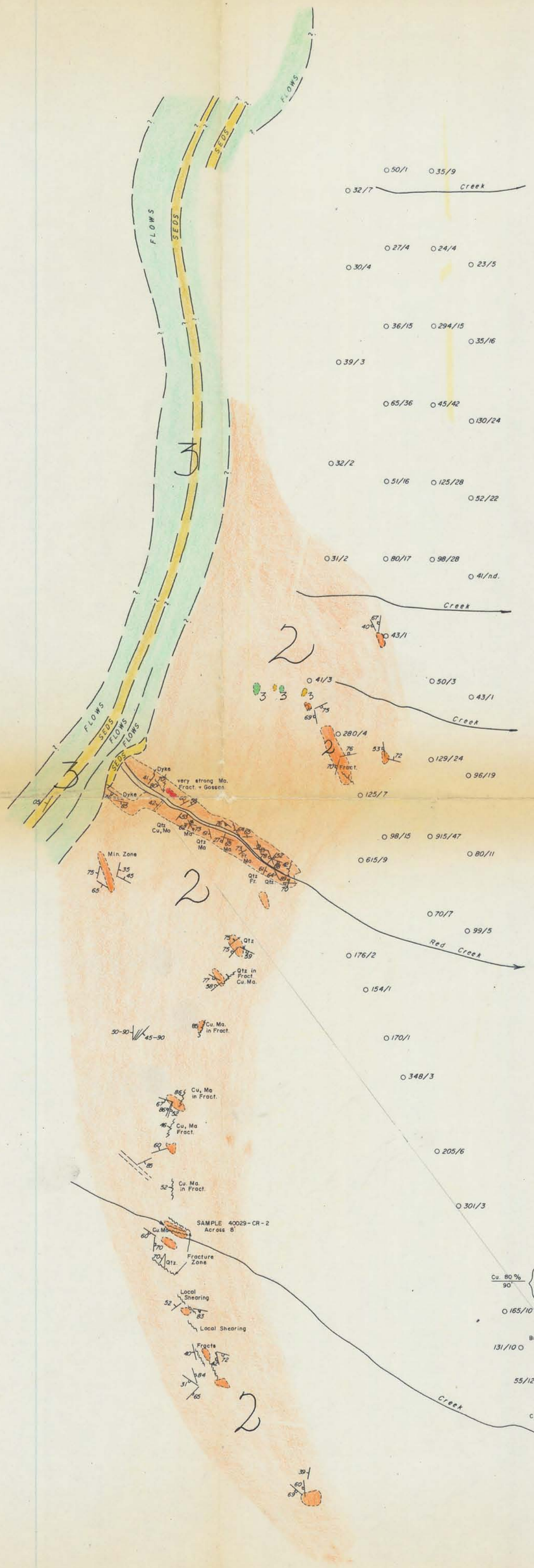

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LEGEND

- 3 — SEDIMENTARY AND VOLCANIC SEQUENCE
- 2 — GRANITE / MONZONITE
- 1 — QUARTZ PORPHYRY
- o 50/3 — SOIL SAMPLE RESULTS (Cu, Mo)

NOTE:
MAPPING BY C. B. CAMPBELL B.Sc. SEPT. 1971

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THUNDER CREEK MINES LTD. (NPL)

GEOLOGY OF PART OF RUSSNOR AND MEL CLAIMS

THUNDER CREEK

LILLOOET MINING DIVISION, BRITISH COLUMBIA

200 0 200 400
SCALE IN FEET

J. P. ELWELL P. Eng. OCTOBER, 1971