

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

WHITEHORSE, Y.T. 667-4415

6TH FLOOR, TWO BENTALL CENTRE, VANCOUVER, B.C. 688-2568

POST OFFICE BOX 4127
WHITEHORSE, Y.T.

GEOLOGY AND GEOCHEMISTRY

ALP 3-73 CLAIMS
(Y61109-Y61166 and Y 66034-Y66046)

115H/9

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

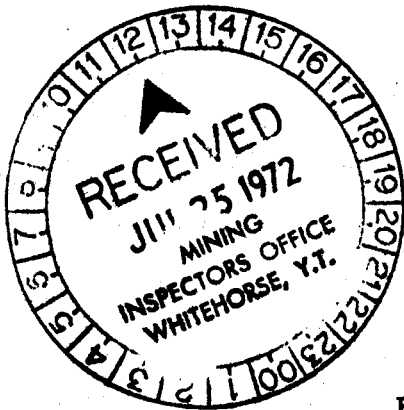
\$ 14,429.74

W. M. Milner (for)
Resident Geologist or
Resident Mining Engineer

Considered as representation work under
Section 53 (4) Yukon Quartz Mining Act.

WHITEHORSE MINING DISTRICT

[Signature]
Commissioner of Yukon Territory



R.J. Cathro, P.Eng.

July 15, 1972

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SUMMARY AND CONCLUSIONS

The Alp claims were staked in an area with 90 per cent overburden cover surrounding the Macks Copper showing, a magnetite-diopside skarn with low copper values. Detailed mapping suggests the claims are mainly underlain by volcanics and no carbonate rocks, which host the showing, or other types of significant mineralization were found. Soil sampling located one moderate anomaly which appears to be caused by minor copper veinlets or high background near small pyritic zones which cut the volcanics.

No further work is recommended.

INTRODUCTION

This report covers geological mapping and geochemical surveys carried out during May and June, 1972 on the Alp claims by Archer, Cathro & Associates Ltd.

LOCATION AND ACCESS

The Alp claims are situated at 61°37'N, 136°11'W in NTS mapsheet 115H/9, about ten air miles southwest of Twin Lakes, at Mile 72 on the Whitehorse-Carmacks Highway. In 1965, a winter road was built to the property which is currently passable by truck only as far as the east bank of Nordenskiöld River, about six air miles east of the Alp claim group.

HISTORY AND PREVIOUS WORK

This property was apparently first discovered by H.J. Kline in 1904 and staked as the Ranch, Eaglenest, etc claims. Kline's claim either adjoined or were restaked by claims owned

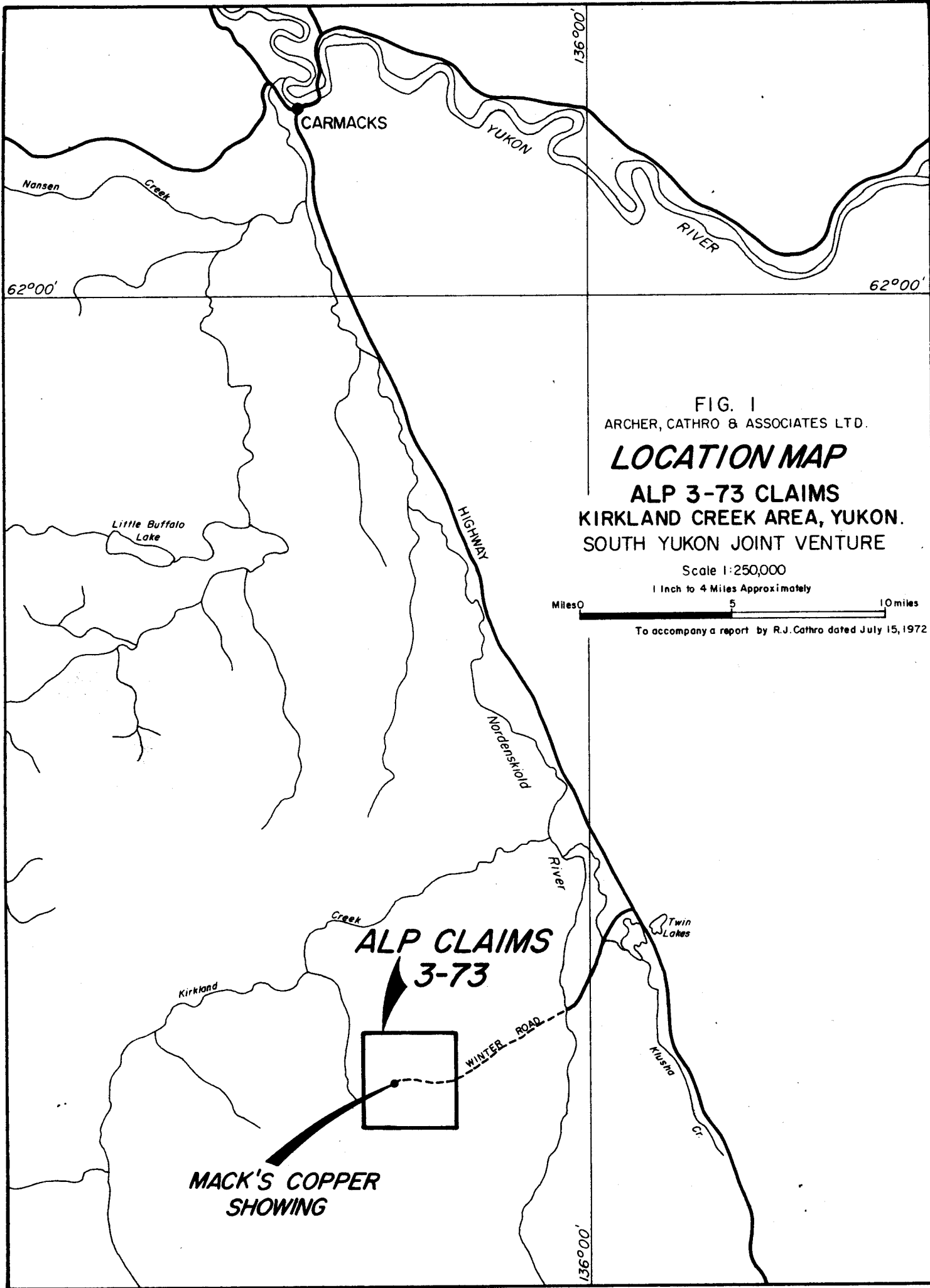


FIG. 1
ARCHER, CATHRO & ASSOCIATES LTD.
LOCATION MAP
ALP 3-73 CLAIMS
KIRKLAND CREEK AREA, YUKON.
SOUTH YUKON JOINT VENTURE

Scale 1:250,000
1 Inch to 4 Miles Approximately

Miles 0 5 10 miles

To accompany a report by R.J. Cathro dated July 15, 1972

by the Mack brothers, after whom the deposit has been named. When D.D. Cairnes visited the showing for the G.S.C. in 1908, a 38 foot adit and several surface trenches had already been completed. Many of the early claims were surveyed and taken to lease about 1910 and six of these are still in good standing.

The property seems to have been idle until 1946, when J. A. Smith staked the Coppermine claims (56300) around the leased claims. These were restaked in June, 1960 as the Macs, etc. group (74966) by Gordon Dickson, who optioned them to Newmont Mining Corporation later that year. In September, 1964, Arctic Mining and Exploration Ltd. restaked the area adjacent to the leased claims as the SAAN group (90499) and conducted a magnetometer survey in October. In early 1965, Arctic built a winter road and drilled four core holes which aggregated about 860 feet. In 1966, Alice Lake Mines Ltd. performed a geochemical survey and limited bulldozer trenching. All claims around the six leases lapsed and were restaked in 1971 by A. Arsenault and associates as the Alp group. These claims were optioned by Archer, Cathro & Associates Ltd. in May 1972.

GEOLOGY

Regional

The Mack's copper occurrence is situated along the margin of the Whitehorse Trough (the northern end of the Intermontane Tectonic Belt), near the contact between old volcanics (probably

Triassic) and Mesozoic and early Tertiary granitic rocks of the Coast Crystalline Belt. Other rock units in the area include early Paleozoic metasediments of the Yukon Group and Tertiary and Recent volcanics, the Carmacks Group and Selkirk Series respectively.

In the vicinity of the property, the main rock types are biotite quartz monzonite and andesite. The intrusive rocks are unfoliated, medium to coarse grained, occasionally porphyritic and virtually unaltered. The andesite, which is tentatively assigned to the Triassic and could be correlative with the Lewes River Group or Mush Lake Group, is weakly altered and characteristically dark green. This unit is believed to be the host for the Mack's Copper deposit.

Alp Claims

The showing and leased claims occur at an elevation of 4100 feet on the southerly and smallest of two gentle 700 foot hills. These form the south end of a broad, north-trending ridge immediately west of Nordenskiold River and south of Kirkland Creek. To the south, west and east, the property is bounded by flat valleys between 2000 and 3200 feet in elevation, which are blanketed by glacial till.

The Alp claims cover the two hills referred to above, lying between 3300 and 4300 feet in elevation. Outcrop is only common near the top of the hills and comprises less than ten per cent of the claim block. Elsewhere, bedrock is obscured by a thin but extensive cover of moss, soil and residual soil,

which hides occasional remnant patches of glacial till. The geology in the vicinity of the Mack's showing was mapped at a scale of 100 feet to an inch and tied in to the surveyed claim lines, old bulldozer trenches, drill holes and the adit. This is shown in Figure 2.

The mapping was then extended over the remainder of the property as a scale of 500 feet to an inch, as shown in Figure 3. Rough baselines were cut and picketed for grid soil sampling and several small outcrops were found during this work. The geochemical grid was used for survey control in positioning outcrops and bulldozer trenches.

The geology of the showing has been previously described by the G.S.C. (Summary Report, 1908, pp 29-30; Paper 66-31, pp44-46) and by A.C. Skerl, P.Eng. in a private report for Arctic Mining and Exploration Ltd., dated September, 1964. In summary, the showing consists of a magnetite-diopside skarn containing small amounts of chalcopyrite, which occurs in a thin carbonate horizon, presumed to be a minor member of the volcanic sequence.

A second, smaller showing, 700 feet west, which had been sampled by the G.S.C. in 1908, is also shown in Figure 2. Two small outcrops of unmineralized quartz monzonite, named the Antrim Stock, were located about 1500 feet northwest of the main showing and are shown on Figure 3. The stock is important as the source of the metasomatic alteration which produced the skarn mineralization.

Most of the Alp claims are probably underlain by dense, dark green volcanic rocks, as suggested by small, scattered outcrop in various parts of the property. This unit contains disseminated magnetite and local, minor disseminations and tiny veinlets of pyrite and chalcopyrite are common, particularly near the summit of the larger hill, in the northeast corner of the property. These weather to form isolated, small, limonite gossans.

The only other rock type present is a single outcrop of conglomerate on the main baseline on claim Alp 15. It consists of large rounded cobbles of vesicular volcanics, slightly smaller cobbles of dense, dark green volcanics and small pebbles of chert or quartz, tightly cemented by sandy material. It's age is uncertain and it is thought to be an erosional remnant of Jurassic Laberge group or Tertiary Carmacks Group.

No carbonate horizons were found other than the one which hosts the Mack's showing.

Geochemistry

Soil samples were collected at 200 foot intervals on lines 800 feet apart. The sample lines were located by pace and compass between the cut baselines. The lines were marked with fluorescent flagging and sample points were clearly labelled with the sample number. The samples were dug with a mattock from a B or mixed B + C soil horizon and collected

in pre-numbered Kraft envelopes. These were shipped air express to Chemex Labs Ltd., North Vancouver, B.C., where they were assayed for copper molybdenum and silver by atomic absorption spectrometry of a nitric-perchloric extraction of a minus 80 mesh fraction.

Sampling conditions are generally good although several swampy areas are present where only peat or black muck could be obtained. The B horizon is generally buff brown to grey brown in colour. A typical profile is several inches of moss or organic debris underlain by one to ten inches of rotted vegetation or peaty material above the B horizon. Old bulldozer trenches show that the B horizon varies from one to three feet in thickness, and is underlain by rubbly bedrock or glacial till.

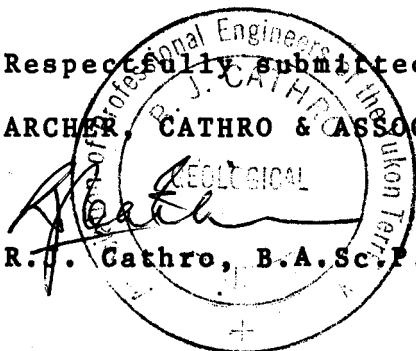
Figure 4 illustrates copper assays in ppm. Most samples assayed below the detection limit for molybdenum and silver, 1 ppm and 0.5 ppm, respectively. Only those which exceeded 1 ppm Mo and 1.0 ppm Ag have been plotted on Figure 4, and these assays are shown below the copper assays.

Copper background over the volcanic rocks ranges from 10 to 30 ppm. Threshold is about 30 ppm and values above 100 ppm can be considered anomalous. Other than a few isolated high assays which are surrounded by low values, the only area of geochemical interest is a moderate anomaly in the larger hill in the northeast corner of the grid. The best response is in area of shallow overburden, 1200 feet by 1600 feet, where outcrop exceeds 50 per cent. Copper assays range

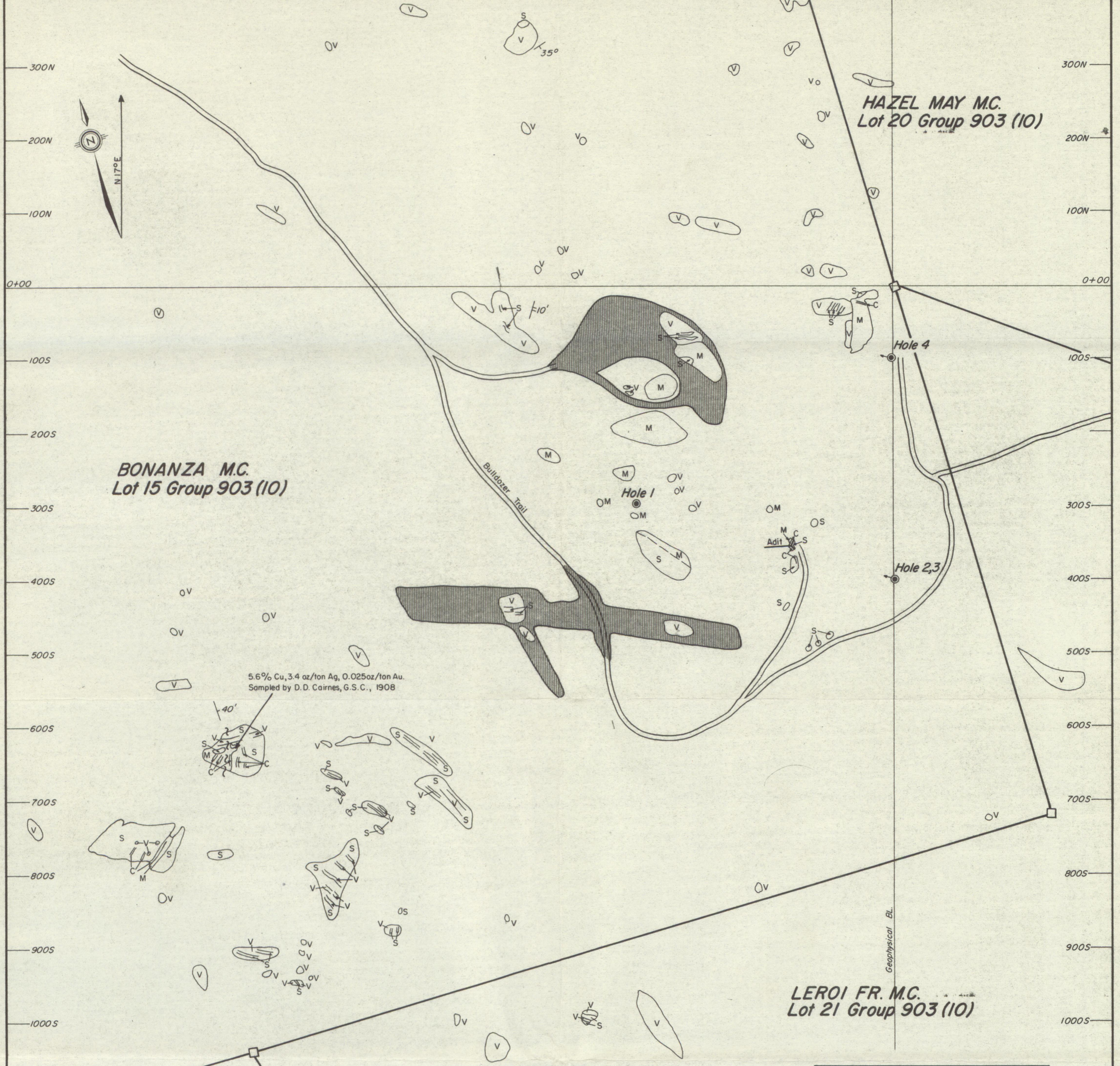
from 50 to 450 ppm, with some weak molybdenum and silver response. Random chip samples of the volcanics in this area show traces of chalcopyrite under the microscope and return rock geochem assays between 100 and 200 ppm copper, sufficient to explain the anomaly. One feature of interest is the occurrence of the occasional bleached, pyritized and weakly leached zones, sometimes up to 50 feet wide and 200 feet long. These appear to be altered volcanics, perhaps associated with faulting. Rock geochem from the zones gives the same background copper values as the unaltered volcanics. There is a possibility that these zones are the source of the copper and represent some uncapped feature of interest that could only be explored by deep diamond drilling.

A small area of molybdenum response, with low copper and silver assays, is associated with the single conglomerate outcrop. Molybdenum assays range from 3 to 39 ppm. This is attributed to high molybdenum background in the conglomerate, although the only rock sample taken assayed only 8 ppm copper and below detection limits in molybdenum and silver.

Respectfully submitted,
ARCHER, CATHRO & ASSOCIATES LTD.
R. J. Cathro, B.A.Sc., P.Eng.



RJC:st



HAZEL MAY M.C.
Lot 20 Group 903 (10)

BONANZA M.C.
Lot 15 Group 903 (10)

LEROI FR. M.C.
Lot 21 Group 903 (10)

STARFRAC M.C.
Lot 30 Group 903 (10)

5.6% Cu, 3.4 oz/ton Ag, 0.025oz/ton Au.
Sampled by D.D. Cairnes, G.S.C., 1908

Summary of 1965 Drilling by
Arctic Mining & Expl. Co. Ltd. from GSC paper 66-31, pp 45-46

HOLE	DIP	BEARING	DEPTH
1	90	-	165
2	45	N80W	285
3	70	N80W	200
4	30	N80W	209

GEOLOGY

Early Mesozoic (?) **V** METAVOLCANICS (formerly Mt. Nansen Group)-dark green, moderately metamorphosed, usually contains disseminated magnetite and is locally cut by tiny veinlets of pyrite and chalcopyrite.

S SKARN & LIMESTONE - possibly correlative with the metavolcanic unit, although calcite veining could be the source of the carbonate. Main skarn minerals are red-brown garnet, diopside, calcite, epidote.

MINERALIZATION

M MAGNETITE - massive to heavily disseminated, often contains vesicles partially filled with calcite, quartz, hematite and pyrite.

C CHALCOPYRITE, MALACHITE, AZURITE - veinlets and disseminations associated with magnetite and skarn minerals.

LEGEND

- ADIT
- BULLDOZER TRAIL
- ▨ TRENCH

ADIT SAMPLE PLAN - Scale 1" = 10'

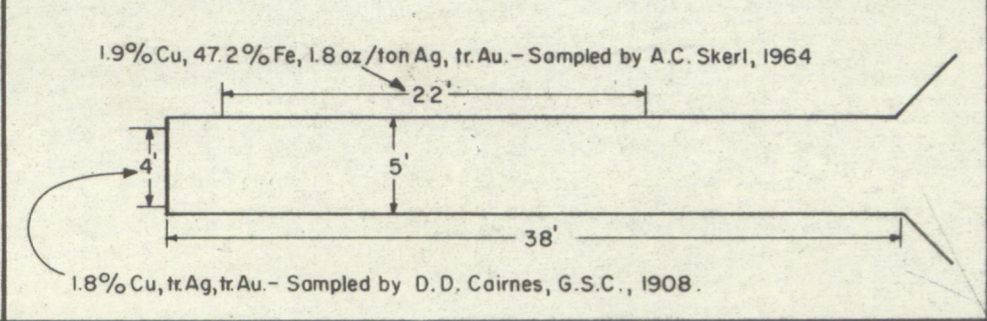
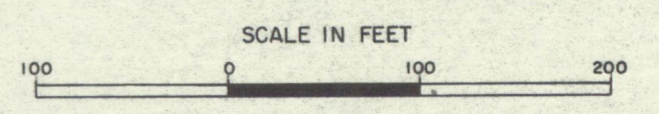
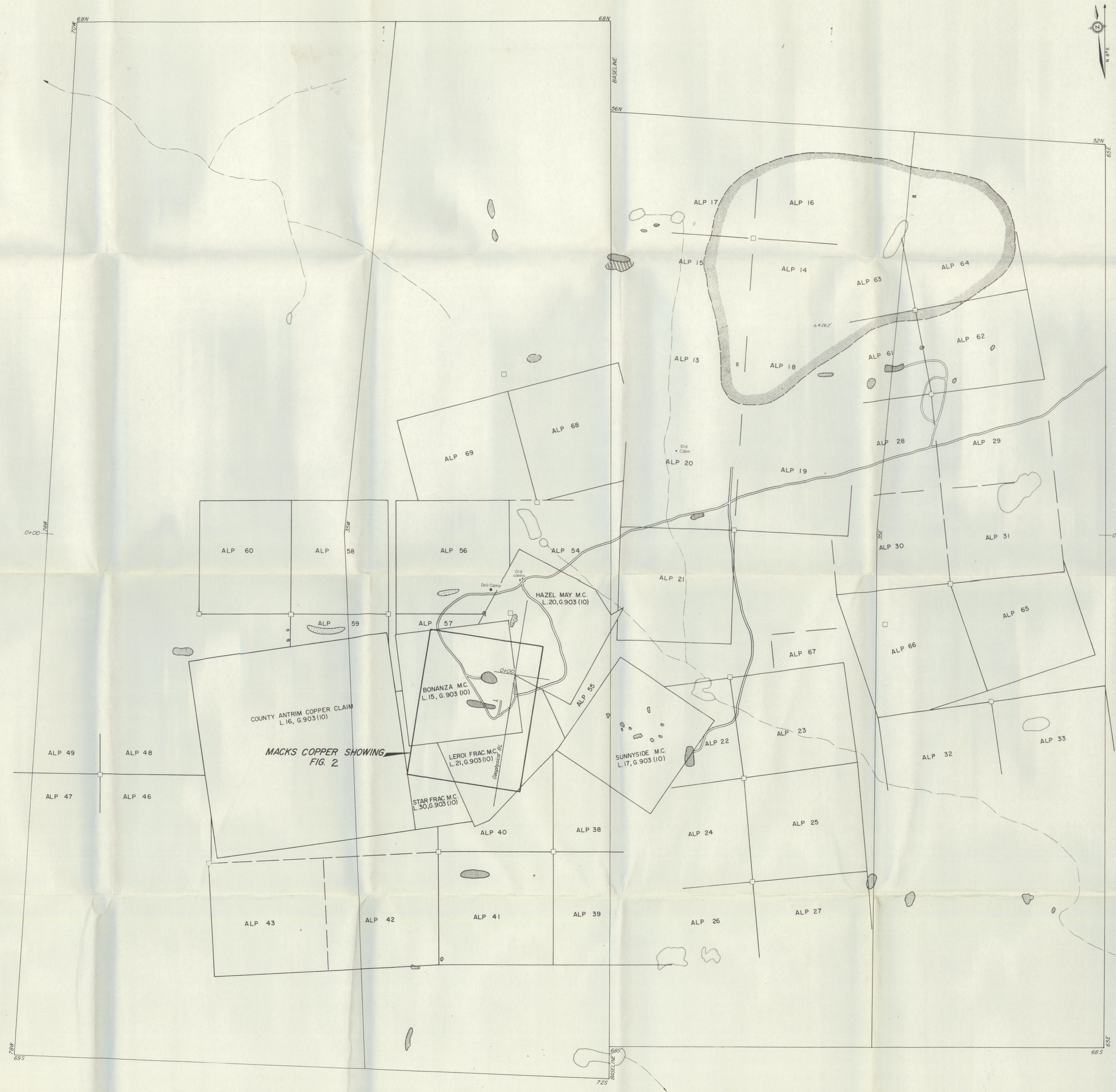


FIG. 2
ARCHER, CATHRO & ASSOCIATES LTD. ENGINEERS
GEOLOGY
MACKS COPPER SHOWING
SOUTH YUKON JOINT VENTURE



To accompany a report on the ALP 2-73 claims by R.J. Cathro dated July 15, 1972



GEOLOGY

- CONGLOMERATE - could be related to Jurassic Loberge Group or Tertiary Comacks Series, consists of rounded, poorly sorted pebbles & cobbles of chert & vesicular volcanics cemented by crumbly sandstone, large vesicular boulders occasionally present.
- ANTRIM STOCK - biotite-hornblende quartz monzonite to granite, weakly fractured, unaltered & unfoliated.
- METAVOLCANICS - (Family Mt. Nansen Group) - dark green moderately metamorphosed, usually contains disseminated magnetite and locally contains disseminations and tiny venters of pyrite and chalcocite.

LEGEND

- Outcrop
- Areas containing numerous small outcrops of similar rock
- Adit
- Old hand pits
- Bulldozer trenches
- Bulldozer trails
- Claim posts

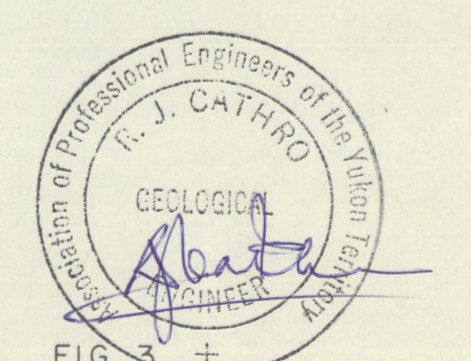
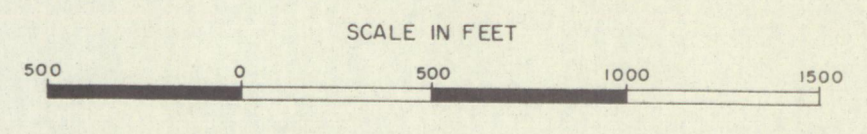


FIG. 2
 ARCHER, CATHRO & ASSOCIATES LTD.
GEOLOGY
 ALP 3-73 CLAIMS
 KIRKLAND CREEK AREA, YUKON,
 SOUTH YUKON JOINT VENTURE



To microcopy a report by R.J. Cathro dated July 15, 1972



GEOCHEM.
 30 Copper
 (6,75) Assays in ppm
 (Molybdenum, Silver)
 Molybdenum and silver are only plotted when
 they exceed 2ppm and 1ppm respectively.

LEGEND
 — Soil
 * Silt
 ▲ Rock
 ——— Road
 ——— Old hand pits
 ——— Boulder trenches
 ——— Boulder trails
 □ Crown posts

MACKS COPPER SHOWING
 FIG.

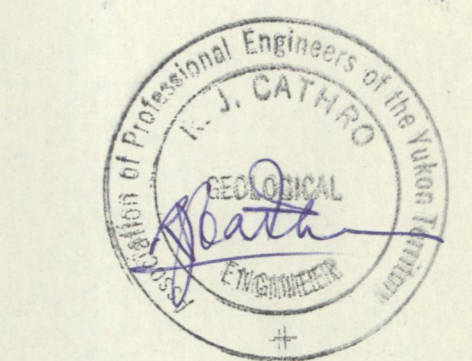


FIG 4
 ARCHER, CATHRO & ASSOCIATES LTD.
SOIL GEOCHEMISTRY
 ALP 3-73 CLAIMS
 KIRKLAND CREEK AREA, YUKON.
 SOUTH YUKON JOINT VENTURE

