B1+8 92-P

REPORT

ON

SOUTH CARIBOO, B.C.

RECONNAISSANCE

Kamloops - Clinton

MINING DIVISION

D. H. Helgesen

Vancouver, B.C.
February 29, 1968

REPORT ON

SOUTH CARIBOO, B.C.

RECONNAISSANCE

1967

Vancouver, B.C.
February 29, 1968

D. H. Helgesen

CONTENTS

LIST OF MAPS

REPORT ON

SOUTH CARIBOO, B.C.

KAMLOOPS - CLINTON MINING DIVISIONS

SUMMARY

During the 1967 field season from May 8th to October 20th, a crew consisting of the author and from 4 to 12 men were employed in reconnaissance prospecting. The program was a continuation of that conducted in 1965 and 1966, and was integrated with the development of Wesaku.

Sixty two claims were staked and 5157 stream sediment and B horizon soil samples were collected. Analyses were done in the Vancouver laboratory for molybdenum by leach method and copper by atomic absorption.

Further work is recommended only in the following areas:

Rayfield River

Rum Creek

Italia Lake

Bonaparte Lake

LOCATION

The general area includes most of the eastern two thirds of the Bonaparte River map area - NTS 92P (see figure 1).

Little Fort was the base of operations. A field office was established there and radio communication was maintained daily with all field parties, including the Wesaku Camp.

CLIMATE AND VEGETATION

Precipitation averages 10 inches per annum in the southwest corner of figure 1, and increases steadily to the north and east to about 20 inches at Clearwater. Snowfall follows the same pattern -

GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

92 P

CENOZOIC

QUATERNARY
RECENT

30 Blocky basalt flows

PLEISTOCENE AND RECENT

29 Till, gravel, clay, silt, alluvium (few if any bedrock exposures)

PLEISTOCENE OR RECENT

28 Basaltic cinder cone (incorporates cobbles of older rocks)

TERTIARY OR QUATERNARY
PLIOCENE OR PLEISTOCENE

27 27a, basaltic arenite, conglomerate, breccia, rubble; basaltic flows, locally pillowed; 27b, extinct basaltic volcanoes; basaltic flows and cinder deposits

TERTIARY
MIOCENE AND/OR PLIOCENE

26 Plateau lava; olivine basalt, basalt andesite, related ash and breccia beds; basaltic arenite; minor necks and plugs

MIOCENE

25 Shale, sandstone, tuff, diatomite, conglomerate, breccia

EOCENE
KAMLOOPS GROUP (23 and 24)

24 SKULL HILL FORMATION: dacite, trachyte, basalt, andesite, rhyolite, related breccias

23 CHU CHUA FORMATION: conglomerate, sandy shale, arkose, coal

EOCENE (?)

22 Andesite, dacite, felsite; related tuff and breccia; greywacke, shale; minor lignite and conglomerate

CRETACEOUS (?)

21 21a, biotite quartz monzonite and granodiorite; minor pegmatite, aplite, biotite-hornblende quartz monzonite; 21b, hornblende diorite; 21c, quartz diorite, diorite, granodiorite (may include some older rocks); 21d, aplite and leuco-quartz monzonite

LOWER CRETACEOUS
JACKASS MOUNTAIN GROUP

20 Greywacke, shale, siltstone; minor arkose and lenses of pebble conglomerate

JURASSIC (?)

19 Shale, grit

18 Chert pebble conglomerate, greywacke

MIDDLE JURASSIC (?)

17 Biotite granite, quartz diorite, hornblende granodiorite (phase of 14)

MESOZOIC

JURASSIC
LOWER AND (?) MIDDLE JURASSIC

16 Porphyritic augite andesite breccia, conglomerate and flows; minor andesite, arenite, flows; 16a, isolated areas of augite and hornblende andesite (may be all or partly intrusive)

LOWER JURASSIC

15 Andesitic arenite, siltstone, grit and breccia; local granite bearing conglomerate; minor argillite and flows; includes minor amounts of 12, 11, and (?) 2

TRIASSIC OR JURASSIC
UPPER TRIASSIC OR LOWER JURASSIC

14 Hornblende-biotite quartz diorite and granodiorite, minor hornblende diorite, monzonite, gabbro, hornblendite

13 13a, fine- to medium-grained, pink to brown and grey syenite and monzonite; 13b, medium-grained, creamy-buff, locally coarsely porphyritic (K-feldspar) syenite and monzonite (13b may be equivalent in age to 14 or 17)

TRIASSIC
UPPER TRIASSIC
NICOLA GROUP (11 and 12)

12 Augite andesite flows and breccia, tuff, argillite, greywacke, grey limestone; includes minor 2, 10, and 11

11 Black shale, argillite, phyllite, siltstone, black limestone

Fig. 5

TRIASSIC AND/OR EARLIER
UPPER TRIASSIC AND/OR EARLIER

10 FENNELL FORMATION: pillow lavas, greenstone, foliated greenstone, greenschist, argillite, chert, minor amphibolite, limestone, breccia

9 9a, quartzite, quartz-phyllite, quartz-granule conglomerate, argillite, phyllite, calcareous phyllite, marble, greenschist, greenstone; 9b, dark grey and black argillite, siltstone, phyllite, minor limestone

8 Serpentinite and serpentinized peridotite

PERMIAN
UPPER PERMIAN
CACHE CREEK GROUP (IN PART)

7 MARBLE CANYON FORMATION: massive limestone, limestone breccia and chert; minor argillite, tuff, andesitic and basaltic flows

UPPER (?) PERMIAN
CACHE CREEK GROUP (IN PART)

6 Argillite, basaltic flows, tuff, chert, limestone

Fig. 4

LOWER PERMIAN
CACHE CREEK GROUP (IN PART)

5 Basic volcanic flows, tuff, ribbon chert, limestone, argillite (may be equivalent in part to 6)

PERMIAN (?)
PAVILION GROUP (3, 4)

4 Tuff, chert, argillite, limestone, greywacke, andesitic and basaltic flows (may be equivalent in whole or in part to 5 or 6)

3 Chert, argillite, siltstone; minor tuff and limestone (may be equivalent in whole or in part to 2)

PENNSYLVANIAN AND PERMIAN
LOWER PENNSYLVANIAN TO LOWER PERMIAN
CACHE CREEK GROUP (IN PART)

2 Volcanic arenite, greenstone, argillite, phyllite; minor quartz-mica schist, limestone, basaltic and andesitic flows, amphibolite and conglomerate; includes small bodies of 16a

CAMBRIAN OR LATER
LOWER CAMBRIAN OR LATER
CARIBOO GROUP

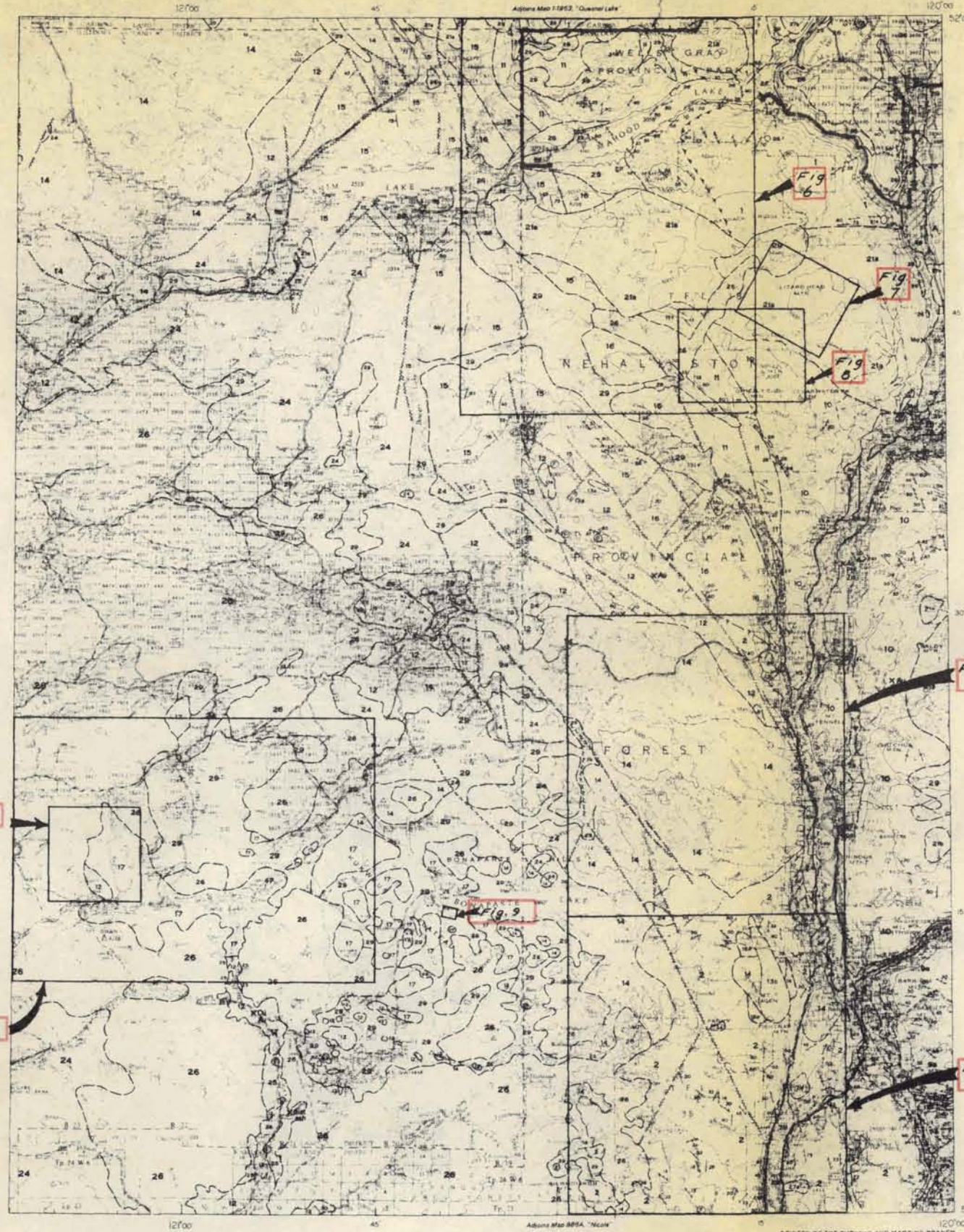
1 SNOWSHOE FORMATION: feldspathic quartz-mica schist, locally garnetiferous, micaceous quartzite, black siliceous phyllite, quartz-hornblende-mica schist, marble, chlorite schist, greenstone, amphibolite

PALAEOZOIC

SHUSWAP METAMORPHIC COMPLEX

A Micaceous quartzo-feldspathic gneiss, quartz-mica schist, amphibolite, micaceous quartzite, pegmatite

Geological boundary (approximate)
Bedding, tops not indicated (inclined, vertical)
Schistosity and cleavage (inclined, vertical)
Fault (approximate, assumed)
Thrust fault (approximate, assumed)
Anticline (defined, approximate)
Syncline (defined, approximate)



MAP 3-1966

GEOLOGY

BONAPARTE RIVER

BRITISH COLUMBIA

Scale 1:253,440
1 inch to 8 miles

Miles 4 0 4 8 12 Miles
Kilometres 6 0 6 12 18 Kilometres

LOCATION
AREAS PROSPECTED
1967

Road, all weather
Other roads
Cart track
Trail
Railway
Station and stop
Airport
Horizontal control point
District boundary
Indian reserve
Intermittent stream
Marsh
Dam

Two main highways, Nos. 5 and 97, cross the map-area and access to all parts is provided by secondary and logging roads. Outcrops are sparse but are sufficiently well distributed to permit interpretations of the geological relationships in most places. Several map-units (A, 20, 22, 27, 28, and 30) are of small extent and minor importance in this map-area and are not discussed in the notes.

The Snowshoe Formation (1) can be traced northward through the Quesnel Lake map-area[1,2] to the type locality[3]. The rocks are deformed into tightly appressed folds and have probably been subjected to more than one stage of deformation. The generally easterly dipping foliation is roughly parallel with the contact between the Snowshoe and Fennell Formations along which the older strata appear to overlie the younger. This contact dips eastward and is assumed to be a thrust fault.

Rocks assigned to the Cache Creek Group (2) near North Thompson River have not yielded determinable fossils but they are the direct extension of fossil bearing rocks in Nicola[4] and Vernon[5] map-areas. The rocks are foliated and were deformed first into tight folds with northerly and northeasterly trends and subsequently into more open folds with northwesterly trends. Volcanic arenite and argillite are the dominant lithologies; volcanic flows are rare. Most of the information on the Cache Creek Group (5-7) and Pavilion Group (3, 4) is derived from the work of H. P. Trettin[6] but new or different interpretations by the writers are a result of new information in this and adjoining areas. The Pavilion Group (3, 4) is in fault contact with adjoining rock units and its stratigraphic position is uncertain. Lithologic similarity to parts of the Cache Creek Group and an apparent stratigraphic position below a major carbonate unit to the west of this area suggest that the Pavilion Group is older than the Marble Canyon Formation (7). The Cache Creek Group (5-7) outcrops in two distinct belts that are believed to be in fault contact. The eastern belt (5) is dominantly volcanic with ribbon cherts, argillite and limestone at its base. Lower Permian fossils occur in thin limestone lenses. The western belt of the Cache Creek Group consists of two units, the Marble Canyon Formation (7) and an underlying volcanic and sedimentary unit (6). The Marble Canyon Formation is essentially a limestone unit but has a variable lithology and thickness. Fossils indicate late Permian age. Complex folding, thrust faulting, and transcurrent faulting related to several different tectonic events from Triassic to Tertiary time have created a structural complex within the Cache Creek and Pavilion Groups thus obscuring stratigraphic relationships.

Map-unit 9 includes rocks that may be of several ages. Quartzose rocks, part of map-unit 9, that are well exposed on and near Armour Mountain, may be correlative with the Snowshoe Formation (1). The remainder of map-unit 9 and its continuation eastward into the Adams Lake map-area[7] is believed to be equivalent to the Cache Creek Group (2). These rocks can be traced into the Eagle Bay Formation of the Mount Ida Group in Vernon map-area[5]. The rocks of map-unit 9 can be traced to the east and southeast into what has been mapped as the argillite unit of the Cache Creek Group and also into the Mara Formation of the Mount Ida Group in the northwest part of Vernon map-area[5]. Rocks of map-unit 9 are lithologically similar to those of map-unit 11 of possible Late Triassic age.

In the Fennell Formation (10) pillow structures in greenstone are well displayed in exposures along the sides of North Thompson Valley and on Clearwater Peak. Elsewhere these features are rare or absent. Sedimentary rocks of the formation are restricted mainly to the eastern part south of Clearwater Station where they are associated with intrusive and extrusive phases of the greenstone. Uglow[8] named and described the formation as mainly pillow lava with minor sediments and intrusive phases. Walker[9] called the unit the Fennell Batholith and considered the greenstone to be entirely intrusive. The writers concur with the opinion of Uglow. The Fennell Formation appears to be in fault contact with other pre-Tertiary stratified units with the exception of map-unit 11 in the valleys of Lemieux and Mann Creeks.

The Nicola Group (11 and 12) consists of rocks that exhibit a considerable alteration, especially along the contact of the batholith near Eakin Creek, and are apparently more deformed than the younger rocks of map-units 15 and 16. The relationships of the Nicola Group to the Cache Creek Group are not known but the two groups are most probably separated by an unconformity, as they are to the south[1]. Some Cache Creek Group strata are mapped with the Nicola Group in the region west of Lemieux Creek where both Permian and Triassic fossils were found.

The rocks of map-units 15 and 16 together with those of the Nicola Group can be traced northerly through Quesnel Lake[1,2] and Quesnel[10] map-areas into and beyond Prince George[11] map-area. Strata of map-unit 15 rest unconformably on the Nicola Group and the base is marked locally by thick conglomerate. Map-units 15 and 16 were probably deposited partly or entirely contemporaneously. The contact of map-unit 16 and the Cache Creek Group (2) near Lemieux Creek was not observed. Its location is uncertain and it may be a fault or unconformity.

Map-units 18 and 19 are lithologically similar to Jurassic rocks mapped to the south near Ashcroft[12].

The Kamloops Group as used herein consists of the Chu Chua and Skull Hill Formations (23, 24). The Chu Chua Formation is restricted to the North Thompson Valley and represents Eocene deposition in the ancestral valley. The Skull Hill Formation overlies the Chu Chua Formation conformably in the North Thompson Valley and older units unconformably beyond the valley. Breccias and tuffs predominate but related flows locally are more abundant. The flows and breccias are slightly deformed and dip at low angles in all directions. In the area of Loon Lake very broad, open folds may be recognized but for most of its area of outcrop the group occurs as numerous fault blocks tilted in various directions.

Miocene sediments (25) along Deadman River and northward represent lake deposits conformably below the plateau lavas; they are not extensive and are confined to basins or depressions in the pre-Miocene surface.

Plateau lavas (26) are undeformed and usually occupy low areas, valleys or depressions; apparent dips are probably original. In this map-area the unit is situated near the southeastern extremity of an extensive, dissected lava plateau[1,6,12].

The entire area was overridden by ice and glacial deposits (29) mantle bedrock to varying depths. In general glacial overburden is extensive but not deep. The ice moved in a general southerly and southeasterly direction but was controlled locally by major valleys and hills.

Ultramafic rocks and serpentinite (8) form two small bodies just to the south and southwest of Little Fort. The intrusive rocks of map-unit 14 are similar in general composition and probably also in age to the Guichon Batholith[6,12] to the south. Fragments of these rocks and of syenite (13) were found in the conglomerate of map-unit 15. A K-Ar age of 186 m.y. for biotite from the granite of map-unit 17 is younger than the assumed age of the more basic rocks of map-unit 14 but the two are closely related in space and may represent major phases injected during a long history of intrusion. The granite (17) was not found in contact with Lower Jurassic rocks (15, 16) hence the radiometric age cannot be geologically verified. Younger granitic intrusions (21) cut all but Tertiary rocks.

West and northwest from Little Fort the granitic and Mesozoic layered rocks are laced with a multiplicity of surface lineaments that are believed to represent faults and fractures. Some of the more prominent of these are shown as faults.

The occurrence of several ages of intrusive rocks, of Late Triassic and Early Jurassic volcanic and sedimentary assemblages, of extensive fracturing, and of copper and molybdenum mineralization provides a combination suggesting that the area underlain by Triassic, Jurassic, and intrusive rocks is one of considerable potential for mineral exploration. The paucity of outcrops should make the use of geophysical and geochemical methods particularly applicable. In many aspects the region is geologically comparable to copper producing areas to the south. Similar geological associations are to be found northwestward through Quesnel Lake[1,2], Quesnel[10], and Prince George[11] map-areas and beyond.

[1] Campbell, R. B.: Quesnel Lake, west half, British Columbia; Geol. Surv. Can., Map 3-1961.

[2] _____: Quesnel Lake, east half, British Columbia; Geol. Surv. Can., Map 1-1963.

[3] Holland, S. S.: Geology of the Yanks Peak - Roundtop Mountain area, Cariboo district, British Columbia; B.C. Dept. Mines, Bull. 34 (1954).

[4] Cockfield, W. E.: Geology and mineral deposits of Nicola map-area, British Columbia; Geol. Surv. Can., Mem. 249 (1948).

[5] Jones, A. G.: Vernon map-area, British Columbia; Geol. Surv. Can., Mem. 296 (1959).

[6] Trettin, H. P.: Geology of the Fraser River valley between Lillooet and Big Bar Creek, British Columbia; B.C. Dept. Mines, Bull. 44 (1961).

[7] Campbell, R. B.: Adams Lake, British Columbia; Geol. Surv. Can., Map 48-1963.

[8] Uglow, W. L.: Geology of the North Thompson Valley map-area, British Columbia; Geol. Surv. Can., Summ. Rept. 1921, Pt. A, pp. 72-106 (1922).

[9] Walker, J. F.: Clearwater River and Foghorn Creek map-area, Kamloops district, British Columbia; Geol. Surv. Can., Summ. Rept. 1930, Pt. A, pp. 125-133 (1931).

[10] Tipper, H. W.: Quesnel, British Columbia; Geol. Surv. Can., Map 12-1958.

[11] _____: Prince George, British Columbia; Geol. Surv. Can., Map 49-1960.

[12] _____: Taseko Lakes, British Columbia; Geol. Surv. Can.

from 40 to 100 inches. The snow free period is from 4 to 6 months.

The Young Lake, Rayfield River and Bonaparte areas are on the Fraser Plateau in the Clinton Mining Division. Vegetation is sparse, with lodgepole pine, blue douglas fir, birch and poplar predominating.

The other areas, located in the Quesnel and Shuswap Highland and Thompson Plateau, are more heavily timbered with merchantable stands of fir, spruce, pine and cedar.

HELICOPTER UTILIZATION

During the latter part of May, the Falconbridge FH 1100 helicopter was used extensively. The whole area shown in figure 1 was the subject of detailed air-borne reconnaissance by S. N. Charteris and D. H. Brown. Areas of interest and intrusive zones previously unmapped were followed up immediately by ground parties. No interesting mineralization was found.

Good use was made of the helicopter at this time to transport personnel into inaccessible areas, which otherwise could not have been prospected.

WEST LITTLE FORT - Figure 2

All major streams underlain by Triassic or Jurassic intrusives were sampled on 500 foot intervals. Several specific targets were outlined from the air for detailed follow up.

Results

All results were negative, although the background copper content of the sediments is higher than in the other intrusive zones sampled.

No further work is recommended.

WEST BARRIER - Figure 3

Coverage was identical to the West Little Fort area immediately to the north.

Results

Two copper anomalies were revealed.

The Triassic and Jurassic intrusives on the northwest slopes of Mt. Hagen contain anomalous amounts of copper as reflected in the sediments on upper Fishtrap Creek. Follow up prospecting failed to reveal the source of the anomaly. The area has been covered in detail by other companies.

Rum Creek, on the southern edge of the Bonaparte River sheet, drains an intrusive plug of unknown size. Whether the anomalous copper and molybdenum values are derived from the intrusives or the surrounding Cache Creek sediments is unknown. Detailed follow up was prevented by the forest closure.

Roads into the area are controlled by Central Interior Sawmills of Kamloops, from whom a road use permit must be obtained.

Recommendations

The extent of the Rum Creek intrusive, and source of the anomaly should be determined in 1968. If men are available, the upper Fishtrap area may warrant a detailed examination.

YOUNG LAKE AREA - Figure 4

During May a crew of four prospected and sampled the area underlain by Jurassic intrusives surrounding Young Lake.

Due to the aridity and resulting low drainage density in this region, soil traverses were run supplementary to sediment sampling. Particular attention was given to the shoreline of Young Lake where there were old reports of a molybdenum occurrence.

Results

No mineralization of interest was located except on the Rayfield River.

RAYFIELD RIVER (Figure 5 and 5a)

Regional reconnaissance revealed anomalous amounts of copper in Rayfield River sediments. Follow up prospecting located mineralization in the canyon walls at the prominent bend in the river. Dry gullies were sampled and soil traverses run on both sides of the canyon. The soil in the area is fairly alkaline.

Results

Extremely high copper values were encountered in soils near the cliff tops of both sides of the canyon, which at this point probably coincides with a northeast trending fault. A suspected northwest trending lineament intersects the canyon.

Mineralization

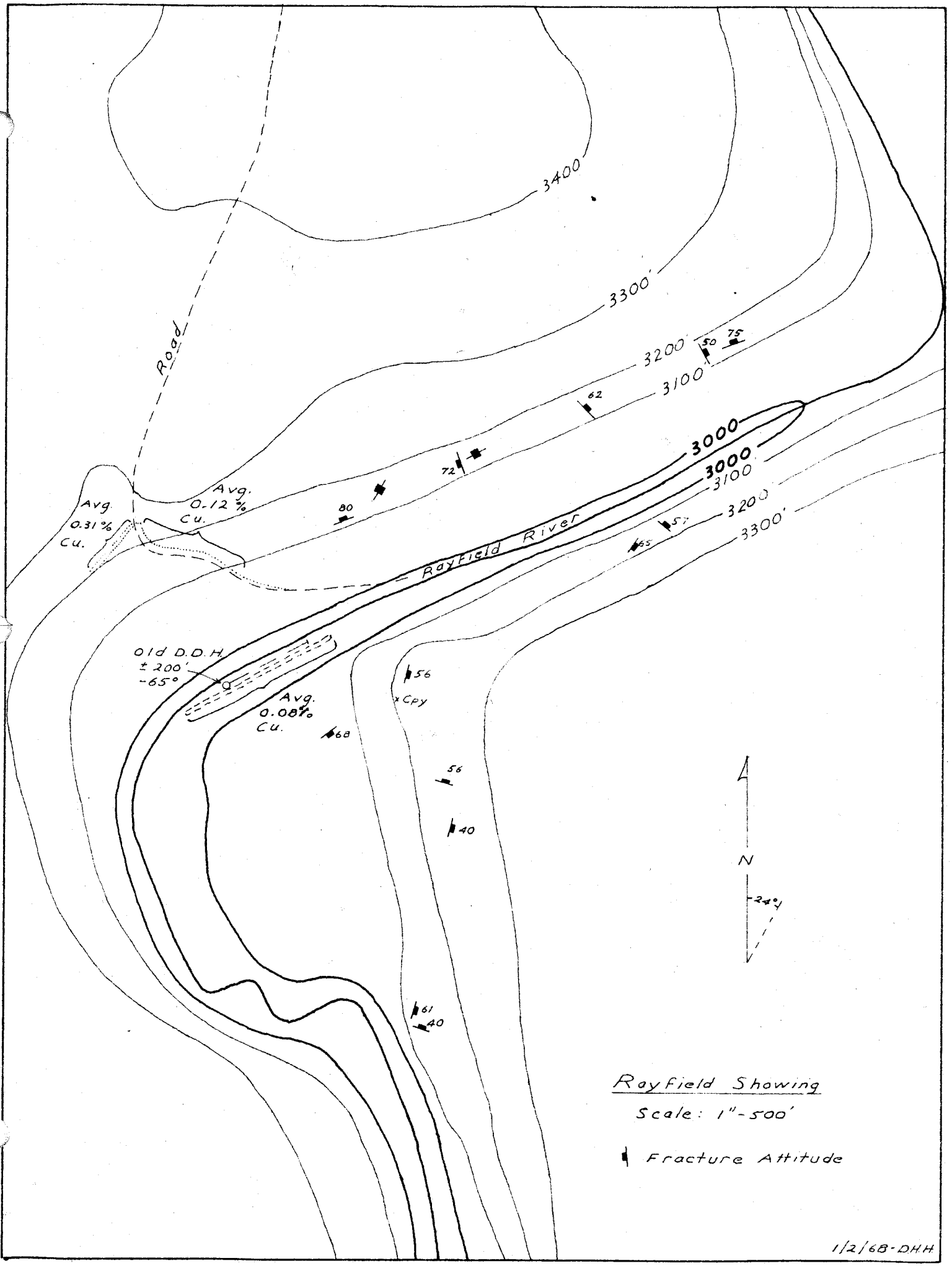
Chalcopyrite and minor bornite fill three fracture planes trending generally northwest, north and northeast in altered granodiorite. Malachite staining is common.

Grab samples of highly altered material in the road cuts average 0.21 Cu. over 300 feet. Samples in a 700' trench parallel to the river average .08% Cu.

The most encouraging soil anomaly has not been examined in detail.

Alteration

In the road cuts there is sericitic and argillic alteration with K feldspar developed in the rock and injected into veinlets up to 1 inch in width.


3400
3300'
3200
3100
3000
3000
3100
3200
3300'
Road
Rayfield River
Avg.
0.31 %
Cu.
Avg.
0.12 %
Cu.
Avg.
0.08%
Cu.
Old D.D.H.
± 200'
-65°
xCpy
80
72
62
50
75
51
65
56
68
56
40
61
40
N
24°
Rayfield Showing
Scale: 1"-500'
Fracture Attitude
1/2/68-DHH

Elsewhere unaltered outcrops are a medium to course grained quartz monzonite with 10-20% euhedral hornblende, 40-50% subhedral pink feldspar.

Farther south in the canyon outcrops of hornblende granodiorite occur.

Claim Status

It was thought that all claims in the area had lapsed. Kennco held the main mineralized zone in 1965 and drilled 1 hole (see fig. 5a), but did not retain the ground.

The Ray 1-62 claims were staked in October to cover the known mineralization and the intrusive-volcanic contact to the southwest. It now appears that a Mr. Dansey of Savona, B.C. holds the mineralized zone by location. An option agreement with him is now under negotiation.

Recommendations

The degree of argillic & sericitic alteration and favourable structure are features which enhance this showing and the surrounding area.

Should an option agreement be obtained, work should include:

(1) Detailed prospecting east of the canyon following up the geochemical anomalies.

(2) Prospecting both banks of the Rayfield north and south of known showing.

(3) A reconnaissance Ronka EM16 survey to delimit known and suspected structures.

(4) Should results be favourable, a self potential or induced polarization survey should be conducted.

Whether or not an option is obtained:

(1) The canyon south from the showing should be prospected in detail.

(2) The contact to the southwest should be prospected, as should the area of the assumed major lineament intersection to the northwest.

BONAPARTE LAKE - Figure 9

The 1966 Bonaparte program indicated isolated high copper values in soils near the southwest shoreline of Bonaparte Lake. More detailed samples were taken in September 1967.

Results

North - south lineal anomalous concentrations of copper were determined in the soils over an area of 1 square mile. This may be a drainage concentration. The granitic rocks outcropping uphill to the south are more heavily pyritized than elsewhere in the area. They, or the tertiary basalt, may contain sufficient copper to account for the anomaly. No outcrop was located in the area sampled.

Recommendations

Detailed prospecting by experienced personnel should reveal the source of the copper concentration. Two or three days should be allotted for this purpose.

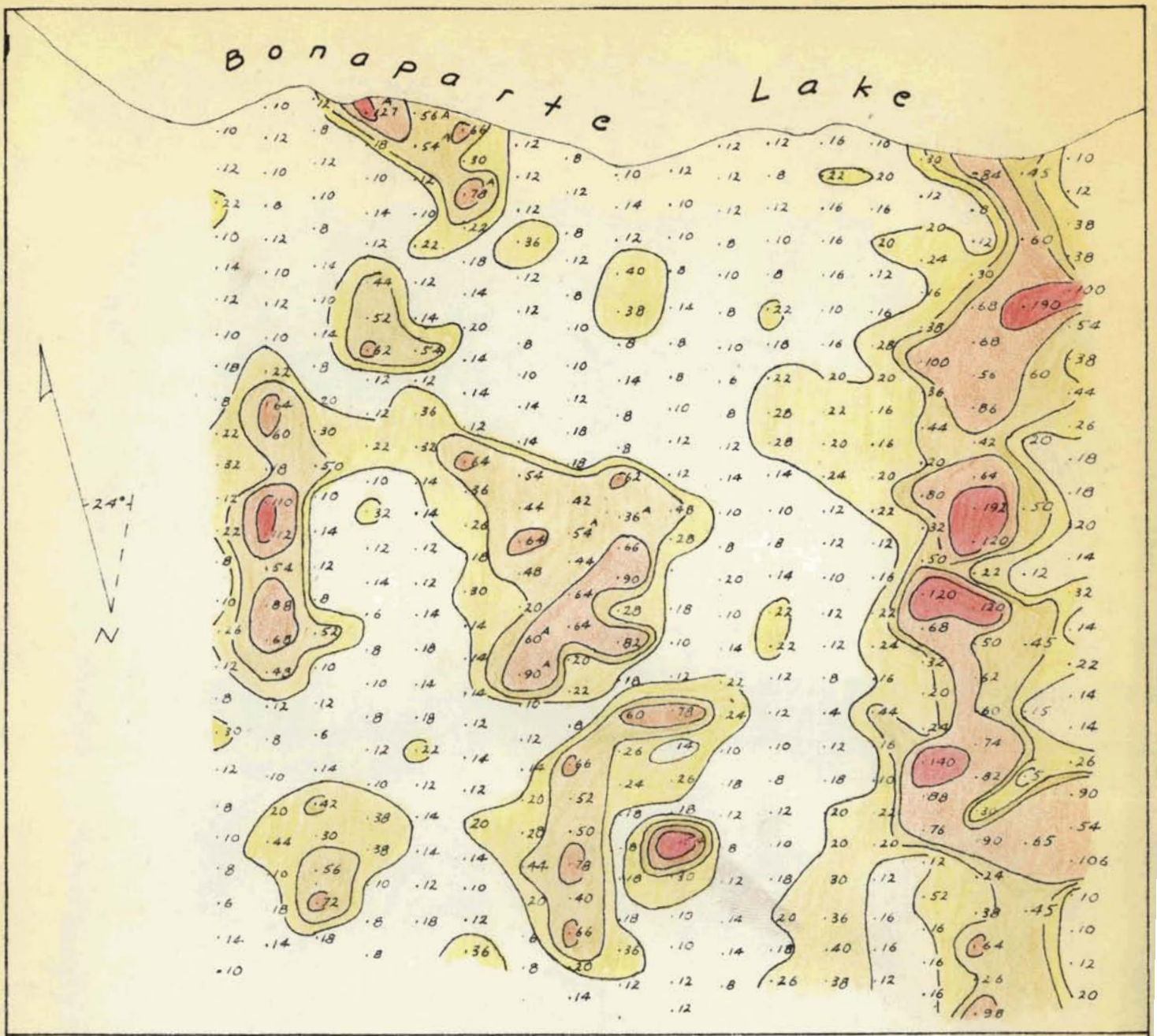
MAHOOD LAKE - Figure 6

The two Cretaceous intrusive plugs north of Mahood Lake were prospected and sampled by a 3 man crew. Transport was via helicopter, truck and canoe.

Most of the region is within Wells Grey Park. A park permit was obtained without difficulty.

Results

Nothing of interest was found.



Bonaparte Area

Showing hot extractable copper in soils.

	0 - 20
	20 - 40
	40 - 60
	60 - 100
	> 100

Values in p.p.m.

Scale: 1" - 900'

Date: 7 Feb 68

Drawn: D.H.H.

ITALIA LAKE - Figure 6

In conjunction with the above program, the streams draining the intrusives between Wesaku and Mahood Lake were sampled.

An attempt was also made to prospect and sample along lineaments located from air photographs and airborne reconnaissance.

Results

Encouraging results were obtained only in the area east of Italia Lake. A lineament which intersects the molybdenum anomaly passes near the Wesaku occurrence.

Recommendations

The source of this anomaly should be pinpointed in 1968.

ICE-MUD CLAIMS - Figure 7

Previous Work

A soil sample survey in 1966 revealed scattered high molybdenum values on the south east slop of Lizard Head Mountain. The 1967 program was designed to locate the source of the mineralization.

1967 Program

Close spaced sediment samples were collected from all streams in the area. In addition, all lineaments which could be traced on the ground were prospected and sampled.

Results

Detailed prospecting revealed no mineralized outcrop near the anomalies. Over the most intense anomaly, near Brookfield Creek, blasting revealed only weakly mineralized boulders of aplite and quartz monzonite. It is probable the molybdenum concentration is derived from this transported material. The nearest outcrop located, similar in type, is on Grizzly Mountain, well away from the claim group.

Recommendations

Results do not warrant further expenditure. The claims should be allowed to lapse.

GRIZZLY AND SURPRISE MOUNTAINS - Figure 8

It is postulated that this area may be the source of the mineralized boulder train located on the Ice-Mud claims.

Minor molybdenite was found in aplitic outcrop and quartz float on the northwest slop of Grizzly Mountain.

Detailed prospecting and sampling failed to indicate extensive mineralization.

No further work is recommended.

D. H. Helgesen

Vancouver, B.C.
February 29, 1968

MAP REF. NO.: NTS 92·P·1

FIG. 3

N

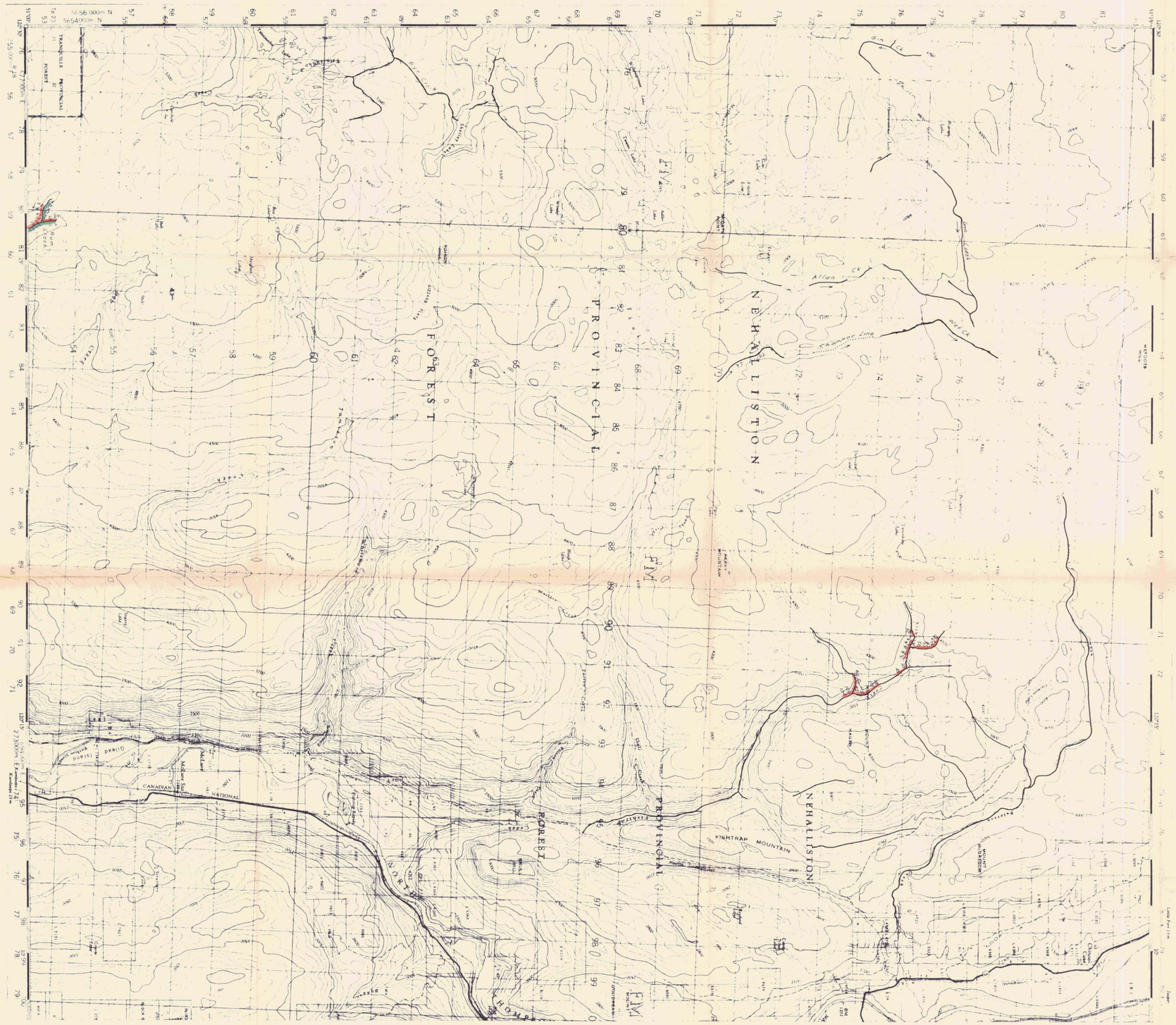
LEGEND

Stream sampled

Soil traverse

> 40 p p m Cu.

> 4 " Mo.



SCALE: 1 INCH TO 50,000"

COMPANY . . FALCONBRIDGE NICKEL MINES LTD.

PROPERTY . . WEST BARRIERE AREA

LOCATION . . SOUTH CARIBOO

WORKING PLACE . .

TYPE OF MAP . . GEOCHEMICAL

BASED ON . . 1967 FIELD WORK

DATE . . 29 DEC 67

DRAWN BY . . D.H.H.

DATE OF WORK . . MAY – OCT 67

MAP REF. NO.: N.T.S. 92·P·6

FIG. 5

N

LEGEND

TOPOGRAPHY

100 FOOT Contour Interval

Swamp

GEOLOGY

—— —— Contact – approximate

26 TERTIARY - Plateau lava

17 MIDDLE JURASSIC – Biotite granite, quartz diorite, hornblende granodiorite.

12 UPPER TRIASSIC – Nicola group - volcanics

——— Probable major lineament

——— " minor "

~~~~ Fault

CLAIM GROUPS

— · — Includes Falconbridge claims

— — " " fractional claims

GEOCHEMISTRY

0 – 50 p p m

50 – 200 "

200 – 1000 "

1000 "

0 2000' 4000' 6000' 8000'

SCALE: 1 INCH TO

COMPANY . . FALCONBRIDGE NICKEL MINES LTD.

PROPERTY . . RAYFIELD RIVER

LOCATION . . SOUTH CARIBOO

WORKING PLACE . . GEOLOGICAL

TYPE OF MAP . . GEOCHEMICAL showing hot extractable Cu in soils and stream sediments

BASED ON . . PACE & COMPASS SURVEY

DATE . . 15 JAN 68

DRAWN BY . . D H H

DATE OF WORK . . MAY – OCT 67
~~~~

MAP REF. NO.: NTS 92·P·2,3,6&7

FIG 4

LEGEND

Stream sampled

Soil traverse

SCALE: 1 INCH TO 50,000"

COMPANY . . FALCONBRIDGE NICKEL MINES LTD.

PROPERTY . . YOUNG LAKE AREA

LOCATION . . SOUTH CARIBOO

WORKING PLACE . .

TYPE OF MAP . . GEOCHEMICAL

BASED ON . . 1967 FIELD WORK

DATE . . 29 DEC 67

DRAWN BY . . D.H.H.

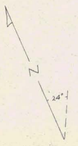
DATE OF WORK . . MAY–OCT 67

BOIL-742-F.N.M.

MAP REF. NO.: 92-P-98 16

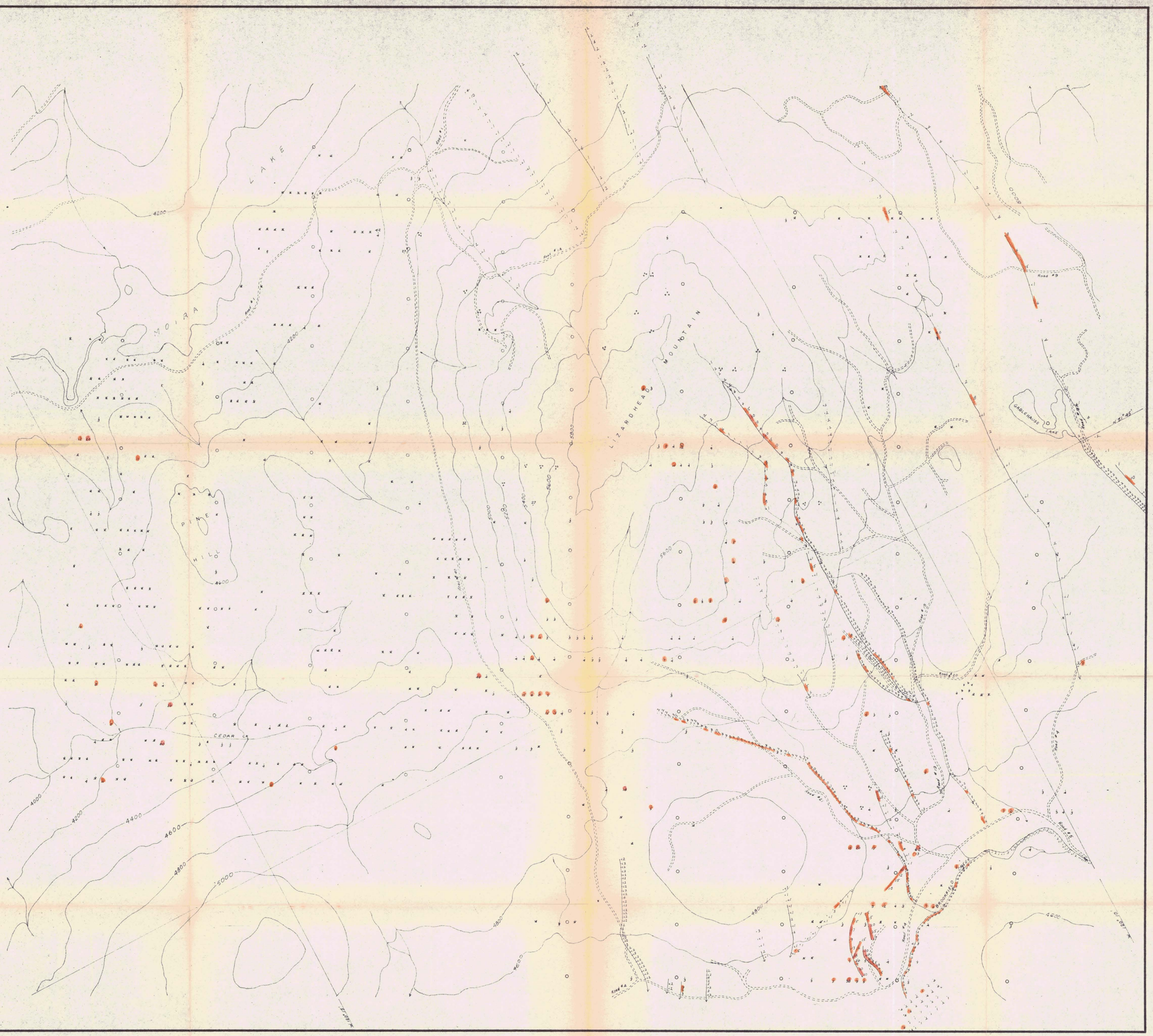
FIG. S.C.-3-66

FIG. 78-67



LEGEND.

- Swamp
- Claim posts (approximate position)
- Outcrop
- No. above dot = Cu (p.p.m.)
- No. below dot = Mo (p.p.m.)
- Sediment sample
- Soil " — lineament
- 0 — 4 p p m Mo.
- 4 — 15 " "
- > 16 " "



SCALE: 1 INCH TO 1000 FT.

FIG. S.C.-3-66

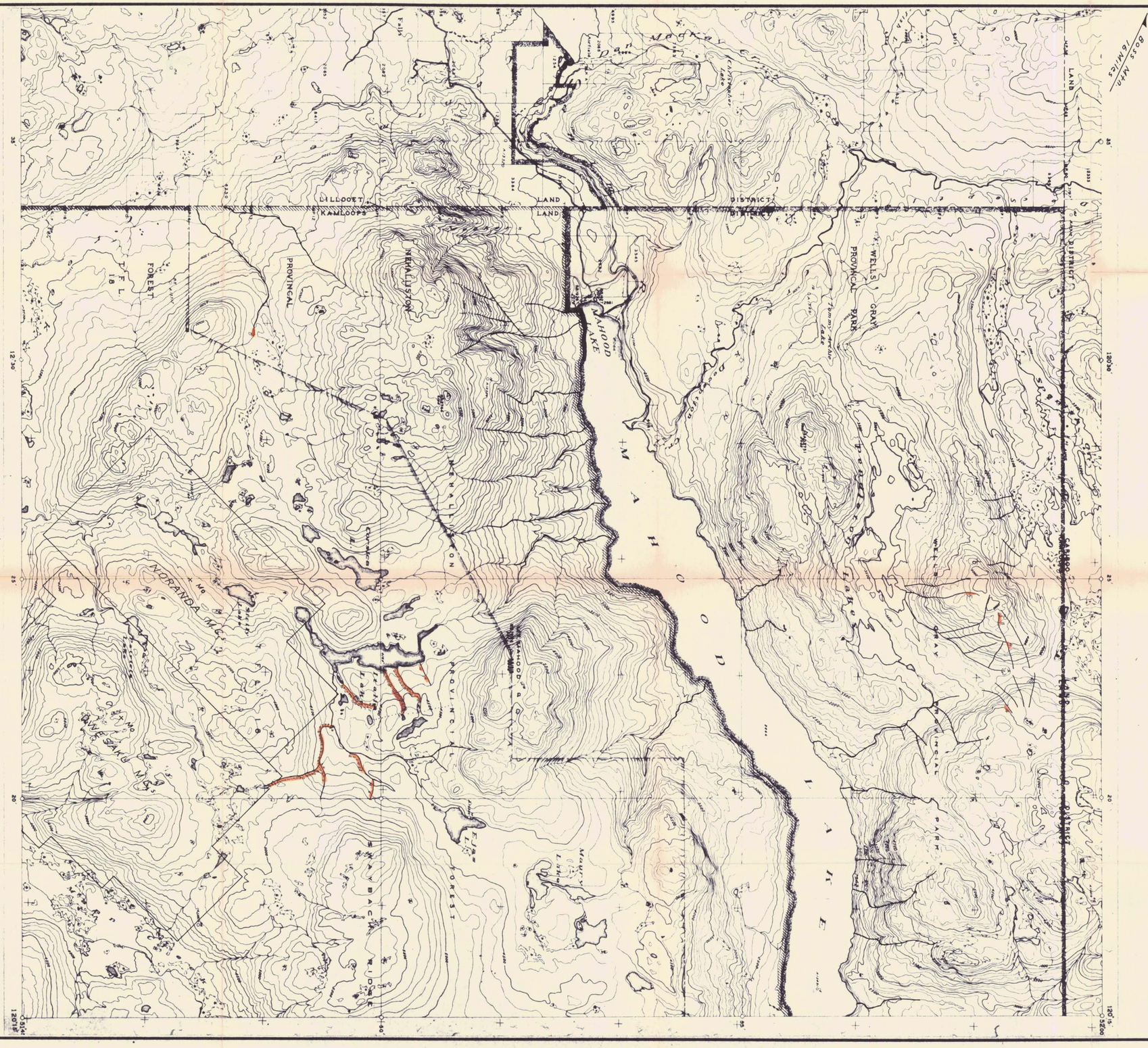
COMPANY . . FALCONBRIDGE NICKEL MINES LTD.
PROPERTY . . ICE & MUD CLAIMS
LOCATION . . SOUTH CARIBOO 92-P

WORKING PLACE . . CLEARWATER, B.C.
TYPE OF MAP . . GEOCHEMICAL PLAN
BASED ON . . SOIL SAMPLES

DATE . . 12/2/66
DRAWN BY . . MSL DHH
DATE OF WORK . . 1966 1967

MAP REF. NO.: N.T.S. 92 · P · 9,10,15 & 16

FIG. 6



LEGEND

- Stream sampled
- Soil traverse
- 4 — 15 p p m Mo.
- 16 " "

SCALE: 1 INCH TO 50,000"

COMPANY . . FALCONBRIDGE NICKEL MINES LTD.

PROPERTY . . MAHOOD LAKE AREA

LOCATION . . SOUTH CARIBOO

WORKING PLACE . .

TYPE OF MAP . . GEOCHEMICAL

BASED ON . . 1967 FIELD WORK

DATE . . 29 DEC 67

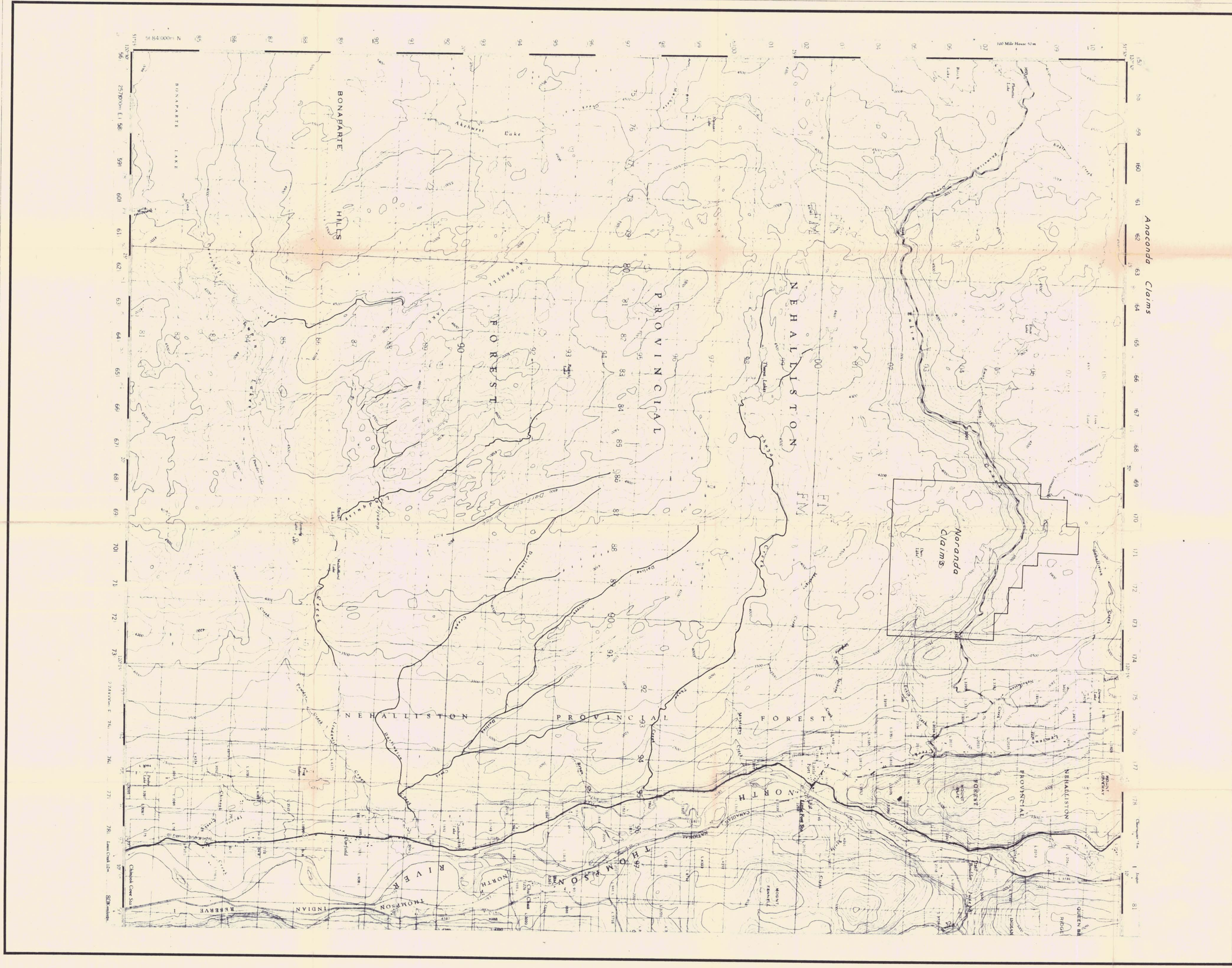
DRAWN BY . . D.H.H.

DATE OF WORK . . MAY - OCT '67

BCIL - 742 - F.N.M.

MAP REF. NO.: N.T.S. 92-P-8

FIG. 2



LEGEND

Stream sampled

SCALE: 1 INCH TO 50,000"

COMPANY . . FALCONBRIDGE NICKEL MINES LTD.

PROPERTY . . WEST LITTLE FORT AREA

LOCATION . . SOUTH CARIBOO

WORKING PLACE . .

TYPE OF MAP . . GEOCHEMICAL

BASED ON . . 1967 FIELD WORK

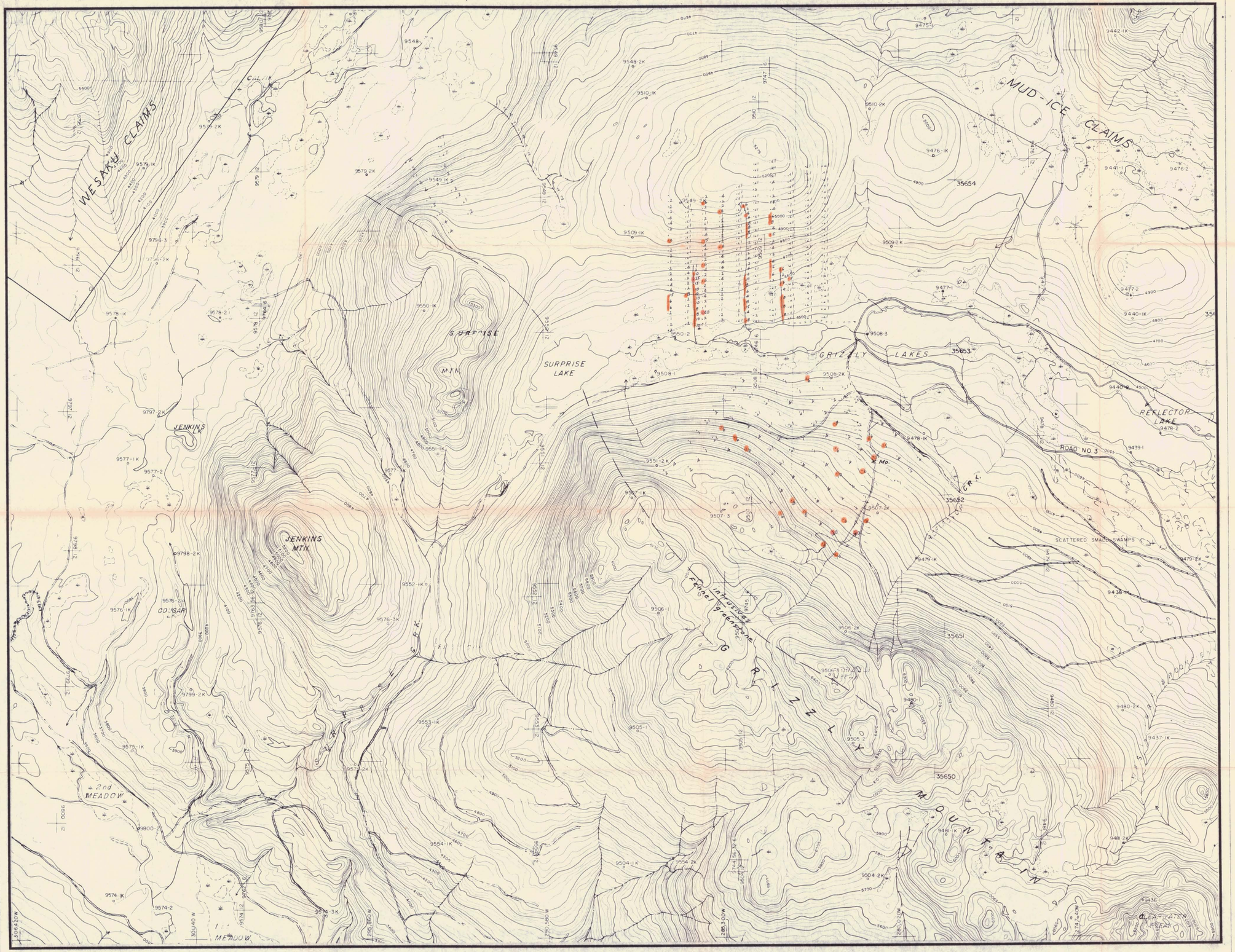
DATE . . 29 DEC 67

DRAWN BY . . D.H.H.

DATE OF WORK . . MAY - JUNE '67

MAP REF. NO.: 92 · P · 9 & 16

Fig. 8



LEGEND

- 0 – 4 ppm
- 5 – 15 "
- > 16 "

SCALE: 1 INCH TO 1320'

COMPANY . . FALCONBRIDGE NICKEL MINES LTD.

PROPERTY . . GRIZZLY – SURPRISE MOUNTAINS

LOCATION . . SOUTH CARIBOO

WORKING PLACE . .

TYPE OF MAP . . GEOCHEMICAL showing hot extractable Mo in soils and stream sediments.

BASED ON . .

DATE . . 25 JAN 68

DRAWN BY . . D.H.H.

DATE OF WORK . . JUN – AUG 67

BCIL-742 - F.M.H.