

93A,B Summary Report  
G,H on Syndicate  
Keweenaw  
General Prospecting Programme  
Cariboo District - British Columbia  
1967

802114

R.U.K.

SUMMARY REPORT

ON

KWENNAW SYNDICATE

GENERAL PROSPECTING PROGRAMME

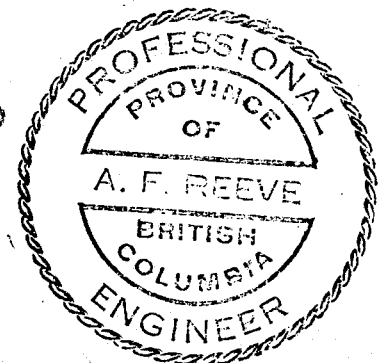
CARIBOO DISTRICT - BRITISH COLUMBIA

1967

by

CORDILLERAN ENGINEERING LIMITED

Vancouver, B. C.



Edited by:

A handwritten signature in dark ink, appearing to read "A. F. Reeve", written over the professional seal.

Albert F. Reeve, P. Eng.,  
Geological Engineer

Mapping & Field Data:

L.P. Duquette, Prospector

January 31, 1968

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## APPENDIX "A"

Descriptions of 61 prospects & mineral occurrences.  
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|   |                |
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APPENDIX "B"

Maps.

|  |               |
|--|---------------|
| Figure 1 General Location Map<br>(front)                   | 1" = 10 miles |
| Figure 2 Proposed Prospecting Programme<br>1968            | 1" = 10 miles |
| Figure 3 Prospecting & Geology Map,<br>1967                | 1" = 1 mile   |
| Figure 4 Geochemical Reconnaissance Map<br>1967            | 1" = 1 mile   |
| Figure 5 Geochemical Detail<br>Bells Lake Magnetic Anomaly | 1" = 1,320'   |



## INTRODUCTION

This report describes a primary exploration programme carried out in the Cariboo District of Central British Columbia by Keweenaw Syndicate in 1967. The members of Keweenaw Syndicate are:

Pacific Petroleum Ltd.  
Silver Standard Mines Ltd.  
Homestake Mineral Development Company

Cordilleran Engineering Limited (Managers)  
McLeese Syndicate (prospectors)

The programme consisted of direct prospecting, geological mapping, and geochemical sampling on a regional basis. A limited amount of exploration work was done on a property (the Q.F. Claim Group) acquired as a result of regional investigations.

The total operating cost was \$23,500.00.

Geological and geochemical maps showing the results of regional investigations are appended.

The results of exploration work on the Q.F. Claim Group have been presented under a separate cover.

## GENERAL DESCRIPTION OF THE PROSPECTING REGION

The prospecting region, as defined by the Kereenaw agreement, is a NW trending rectangle approximately 130 miles x 50 miles extending from about  $52^{\circ}$  N -  $121^{\circ}$  W northward to  $54^{\circ}$  N -  $123^{\circ}$  W. (see fig. 1)

The principal centres of population (shown on fig. 1) are Prince George (population 24,471), Quesnel (population 5,725) and Williams Lake (population 3,167) which lie along the Fraser River. These communities are served by airlines, rail and a good paved highway. The most central point is Quesnel which is 414 road miles NNE of Vancouver.

### Access

Overall road access to the region is good with networks of logging roads and trails extending from the main highway. Locally, however, there are areas of several hundred square miles accessible only by foot and packhorse. Except on a few large lakes there are not many landing sites for fixed wing float planes. Local transportation by helicopter is not possible in many areas because of extensive unbroken stands of thick timber and brush.

### General Geology

There are three major NW trending stratigraphic belts which occupy the region. They are from NE to SW -

1. Cnelesic meta-sedimentary rocks of Cambrian and/or Precambrian age.
2. Mesozoic volcanic and minor sedimentary rocks.
3. Late Paleozoic meta sediments and volcanics.

All of the above formations are cut by plutons of Jurassic to Cretaceous age and locally are overlain by Cenozoic till and lava flows. Pre Mesozoic strata are also cut by plutons of Paleozoic age.

The volcanic strata of unit 2 are of particular interest to the prospecting venture.

### Physiography

The physical "grain" or texture of the area is aligned in a NNW direction parallel to the geological trend. The area of direct interest, which is underlain by Mesozoic volcanic and intrusive rocks, is characterized by gently rolling, heavily timbered hills and broad valleys. The elevation of the principal drainage systems, the Quessnel and Fraser Rivers, ranges from about 2300' ASL at Likely

Physiography (cont'd.)

to 1400' ASL near Williams Lake. Remote from the major waterways, average elevations range from 3000' to 4500'. Maximum local relief is a few hundreds of feet. Secondary drainage is not well developed. Many of the smaller streams are boggy, sluggish and choked with organics.

In very sharp contrast, areas to the NE underlain by Cambrian and Precambrian metasediments have rugged relief and steep well defined drainage patterns. Elevations range from 3000' ASL to more than 7000' ASL.

Climate

The average snow-free season in the area of interest extends from Late May to Late October.

## PROSPECTING PROGRAMME

### Purpose

1. To prospect directly for copper and molybdenum occurrences.
2. To examine known copper occurrences and map the geological features with which they appear to be associated.
3. To carry out reconnaissance geochemical sampling in selected areas.

### Method:

The field work was carried out by a 2-man crew consisting of an experienced prospector and an assistant. Eight campsites were used in the area covered; six of these were accessible by 4-wheel drive truck; Camp #6 was occupied by helicopter, and #8 by packhorse.

At an early stage it was recognized that a certain stratigraphic assemblage, later described as the "purple volcanic sequence", and intrusive rocks of the type found at the Cariboo Belle copper property, were the important guides in exploring for copper mineralization.

Method (cont'd.)

Mapping and prospecting was carried out accordingly.

All geochemical samples were tested qualitatively for total heavy metals in the field. Samples giving positive TDM results were analyzed quantitatively for copper. In some cases molybdenum, zinc, vanadium and manganese were also determined quantitatively. All samples have been stored and records kept of their locations and types.

The following cautions with respect to sampling procedures were observed in particular.

1. Organic material was avoided as much as possible.
2. Where drainage was poorly developed, stream sediment sampling intervals were reduced.
3. Sampling traverses over areas obviously covered by heavy drift and/or recent lavas were avoided.
4. Representative samples were obtained by selecting material from several points at the sample location.
5. All soil samples were taken from the B<sub>1</sub> horizon where possible.

### SUMMARY OF GEOLOGICAL APPROACH

The following were important considerations in choosing the region and carrying out the programme:

1. A large number of copper occurrences were known to exist in the region.
2. The general geological environment, Mesozoic intrusive and volcanic rocks, has been productive in other parts of the province (i.e. Kamloops, Merritt, Princeton, Babine Lake, etc.)
3. Recent work done by Cariboo Belle Mines Ltd. in the area, indicated that intrusive rocks are favourable hosts for low grade copper molybdenum "porphyry-type" deposits.
4. Numerous reports of native copper in placer gravels and the presence of a ferruginous volcanic sequence suggested the possibility of important \* Keweenaw Type copper deposits.
5. Large lowgrade copper deposits of the types sought are inaccessible to direct air-geophysical methods.

---

\* Copper in the Keweenaw district of Northern Michigan occurs as large strata-form deposits of native copper and chalcocite in purplish red volcanic flows and conglomerates.

6. It is known that other groups have recently prospected here on a regional basis (Helicon Exploration & Corenax Exploration). However, two aspects of the region's physical character suggest that current large scale saturation methods would require more than the likely amount of control to be effective.

- A. Outcrop occurs in small sparsely distributed patches and the countryside is covered by extensive unbroken stands of thick brush and timber. Under these conditions direct prospecting away from roads and trails becomes very difficult and discouraging. The effectiveness of helicopter support is greatly reduced also.
- B. There are extensive areas covered by several tens of feet of glacial drift. Secondary drainage is not well developed in many areas, so that the physical and chemical dispersion of copper in soil and stream sediments is locally restricted.

Under these circumstances careful, selective sampling and prospecting by one reliable, experienced field crew on the basis of research and local field conditions was considered to be more effective than larger scale methods employing several crews.



## SUMMARY OF RESULTS

### Geology

The results of geological mapping and reconnaissance are shown on Figure 3, Appendix B.

Three principal geological features are important because of their association with copper deposits in the region:

- A. Mesozoic purple volcanic rocks in the Likely and Horsefly areas.
  - B. Plutonic rocks which intrude A, particularly those composed of monzonite and syenite.
  - C. The Paleozoic intrusive metasedimentary volcanic complex north of Granite Mountain.
- A. The purple volcanic sequence (P.V.S.) includes the rocks described in Unit 12, G.S.C. Map #3-1961. It occupies a NW trending belt with a maximum width of 11 miles, pinches in rapidly north of the Quesnel River and is covered by Cenozoic lavas south of Horsefly.

This unit is named for its purplish brown colour, which it receives from fine pulverent hematite. In massive flow rocks the iron oxide appears

### Geology (cont'd.)

to be occluded in the principal rock-forming minerals, however in fragmental types discrete grains of red hematite can usually be seen.

The sequence has been subdivided as follows:

- 3A - Massive flows of purplish andesite and basalt.
- 3AA - Massive flows of pinkish coloured andesite.
- 5 - Limey and non-limey tuffs commonly having crystalline fragments of augite. Some non-purple types are included.
- 6 - Conglomerate - with rounded cobbles and pebbles composed almost entirely of purple volcanic rocks.

Minor limestone and argillite bands are also present in the sequence.

Native copper was found as fine disseminations in purple flow rock at several locations near Morehead Lake and Horsefly, however none of these occurrences appear to be worth considering economically. Copper sulphide mineralization was found in all other members of the sequence including limestone.

The limestone band which extends from the south side of Morehead Lake north-westward across the Quesnel River is of particular interest. However further prospecting is limited by heavy drift cover.

Geology (cont'd.)

B. Plutonic rocks which intrude the purple volcanic sequence are estimated to be of Cretaceous and Jurassic origin. They are described by B.C. Department of Mines, 1933, as being part of the "central" batholith of British Columbia. (see figure 6 following). They are of variable composition from intermediate to felsic and all should be considered as potential associates of copper mineralization. However, there are a group of these extrusives which are of particular interest (4A). They are located near Bootjack Lake, Quesnel Forks, and on the Quesnel River north of Morehead Lake, and have the following general features:

1. They are complex, having several phases of emplacement including a late dike phase.
2. They are quartz poor.
3. The usual composition is syenite-monzonite and occasionally diorite.
4. There are contact metasomatic alteration halos, sometimes carrying magnetite.
5. The mineralized intrusive rock is usually well fractured and heavily pyritized.

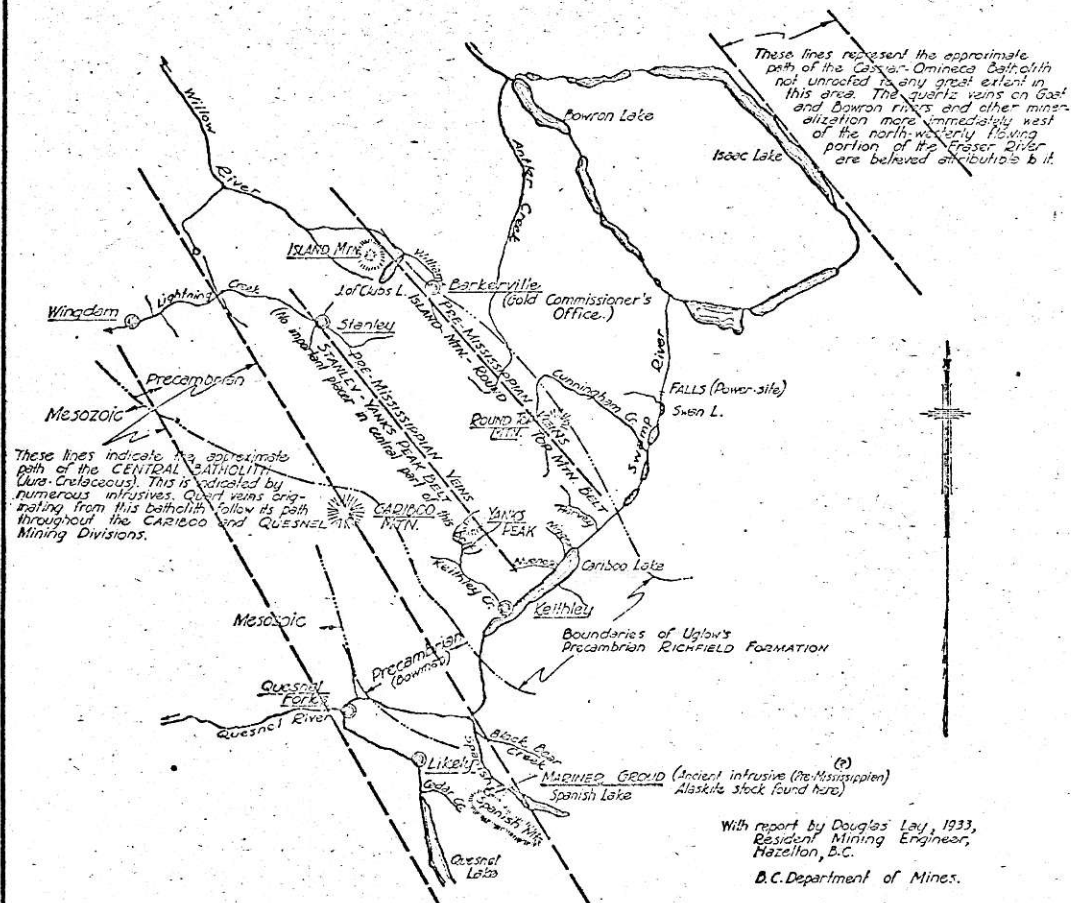
Copper occurrences Nos. 21, 41 and 51, Appendix A, are close associates of this intrusive type.

# THE CARIBOO DISTRICT.

Scale 0 2 4 6 8 10 20 Miles.

So far as has been ascertained to date -  
Pre-Mississippian quartz veins that contain noteworthy gold values exemplify (1) direct igneous rather than areol distribution, and are distributed in one or other of the two belts shown on the map. Some evidence exists of a third belt trending NW through Spanish Mountain. (2) Occur only in the RICHFIELD FORMATION.

Placer: With few exceptions the richer placer creeks (1) Erode the RICHFIELD FORMATION (2) cut across either of the PRE-MISSISSIPPIAN belts shown on the map. (3) Flow north, north-west or north-east. Exception are: Cedar Creek in Mesozoic rocks, and Keithley Creek flowing south-east.



## BATHOLITHS CROSSING THE NORTH-EASTERN MINERAL SURVEY DISTRICT.

**COAST RANGE BATHOLITH:** Passes along the western boundary of the District. Important satellites occur to the east as at Hudson Bay and Rocher Debois mountains.

**CENTRAL BATHOLITH:** Outcrops at the following places: NW arm of Tule lake, South end of Cabins lake, Sinku mountain, Fraser lake, Nixon and Terry creeks, Ashau lake, Mosquito creek (a tributary of Lightning creek), Cariboo mountain, North Fork Quesnel river, and Boss mountain.

**CASSIAR-OMINECA BATHOLITH:** Outcrops at the following places: McConnell creek, head of Meslinke river, Manson area, Mount Milligan, McLeod river, and Giscome.

Note: The aureoles of these batholiths are paths of promise for the prospector, and satellites or individual intrusions of batholithic rock between the batholiths are places of potential promise.

A.M.P.

FIGURE G - B.C. Dept of Mines - 1933

### Geology (cont'd.)

- C. The Palaeozoic intrusive metasedimentary volcanic complex north of Granite Mountain appears to be a copper environment with good prospecting potential. (see inset map figures 3 and 4, Appendix B)

The plutonic rocks are gneissic to sub-gneissic diorites and quartz diorites.

Chloritic schists, sometimes carbonatized, and skarns are associated with the intrusive contacts. Three important copper prospects (Nos. 58, 59 & 60, Appendix A) are located near Granite Mountain in this type of geological setting. Northwestward along the regional strike the geology is unmapped and little prospecting has been done.

### Geochemistry

The results of geochemical reconnaissance are shown on figure 4, Appendix B. Each sample location is coloured according to the cold extractable total heavy metals content.

A strong copper anomaly was obtained near Queanell Forks. (QF group). Subsequent trenching exposed

### Geochemistry (con't)

intrusive rocks weakly mineralized with copper. The mineral occurrences does not presently appear to be economically important. However, the effectiveness of selective geochemical reconnaissance was demonstrated.

A number of other THM anomalies were obtained, however these were discarded on the basis of follow-up sampling and prospecting. One such anomaly is located at the southern extremity of the region south of Bells Lake. This is illustrated on figure 5, Appendix B. High THM values were apparently caused by accumulation of zinc in a boggy manganimiferous environment in the stream where the sediment samples were collected.

### Prospecting and Property Examinations

All of the mineral occurrences examined and discovered are described among the 61 locations in Appendix A. None of the available prospects are recommended for acquisition.

One prospect, which is not described in Appendix A, is a copper showing located at House Mountain about 10 miles NW of Guesnel. Purple volcanic flow rocks are extensively mineralized with low grade chalcopyrite. It is possible that the property will become available.

Prospecting and Property Examinations (cont'd.)

during the coming year. In this event acquisition would be worth considering.

Conclusions

1. The purple volcanic sequence and associated intrusive rocks in the Likely - Horsefly area are strong associates of copper mineralization. Additional work is required to complete mapping and prospecting these rocks, particularly between Antoine Lake and Bootjack Lake, and north of the Quessnel River. The possibility of finding copper deposits very similar to the Keweenaw type seems fairly remote; however, the prospecting potential for copper in general remains favourable.
2. The results of work done on the Q.F. group demonstrates that selective geochemical reconnaissance is effective in this region.
3. Work done in the vicinity of Granite Mountain, late in 1967, strongly suggests that further prospecting should be done in the unmapped area to the north.
4. Rough reconnaissance work is required in the northern part of the region so that the prospecting programme can be advanced in that direction.

PROPOSED PROSPECTING PROGRAMME FOR 1968

The prospecting approach has been broken down into five areas according to access and targets. These areas are shown on figure 2, Appendix B.

Area 1 Geological mapping is incomplete in this area. It lies along the projected regional extension of rocks in the Granite Mountain area where important copper occurrences have been found. Access by packhorse.  
Time - 8 weeks.

Area 2 This area is underlain by favourable volcanic and intrusive rocks. During 1966 and 1967 much of it was covered by claims because of the Cariboo Bell rush. Much of the exploration done on these claims was low quality assessment work. In 1968 most of this ground should be open.  
Access - by truck and packhorse.  
Time - 5 weeks.

Area 3 Additional prospecting is required here to check the northwestward extension of the purple volcanic sequence.  
Access - fixed wing float plane to Maud Lake.  
Time - 2 weeks.



Area 4 Geological mapping is incomplete here. Prospecting and mapping will be done from Mouse Mountain southward. Purple volcanic rocks are mineralized with copper at Mouse Mountain.

Access - by truck

Time - 5 weeks.

Area 5 No work has been done for the Keweenaw project in this part of the region. Two weeks are required for field research and reconnaissance.

Q.F. claim group about 1-1/2 weeks will be allowed for work on the Q.F. claim group.

ESTIMATED COST OF 1968 PROGRAMME1. Salaries

|                   |                  |                 |          |
|-------------------|------------------|-----------------|----------|
| Prospector        | 8 mo. @ \$650.00 | \$ 5,200.00     |          |
| Assistant         | 5 mo. @ 450.00   | 2,250.00        |          |
| Employee benefits |                  | <u>1,000.00</u> | 8,450.00 |

2. Services

|  |               |          |
|--|---------------|----------|
| Office - bookkeeping, stenography,<br>copying, telephone | 600.00        |          |
| Drafting   | 500.00        |          |
| Geologist - Manager                                      | 2,200.00      |          |
| Legal  | <u>350.00</u> | 3,650.00 |

3. Transportation

|                                    |               |          |
|------------------------------------|---------------|----------|
| 4-wheel drive truck 6 mo. @ \$400  | 2,400.00      |          |
| Packhorses                         | 750.00        |          |
| Air support - Beaver 6 hrs. @ \$80 | 480.00        |          |
| Auto mileage, 3,000 mi. @ \$.15    | 450.00        |          |
| Air fares                          | <u>500.00</u> | 4,580.00 |

4. Supplies & Equipment

|  |                 |          |
|--|-----------------|----------|
| Food & hardware for camps                  | 1,200.00        |          |
| Magnetometer, 2 mo. @ \$150                | 300.00          |          |
| Maps, air photos, & office supplies        | 200.00          |          |
| Geochemical supplies, analyses &<br>assays | <u>1,000.00</u> | 2,700.00 |

5. Miscellaneous

|  |               |          |
|--|---------------|----------|
| Meals & hotel accommodation                    | 600.00        |          |
| Recording fees (assessment work<br>and claims) | 500.00        |          |
| Miscellaneous expenses                         | <u>200.00</u> | 1,300.00 |

|                                     |          |
|-------------------------------------|----------|
| 6. Allowance for work on Q.F. Group | 2,000.00 |
|-------------------------------------|----------|

|                                     |          |
|-------------------------------------|----------|
| 7. Allowance for purchase of claims | 1,000.00 |
|-------------------------------------|----------|

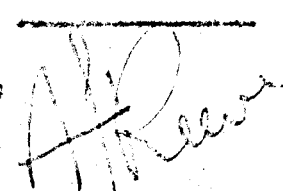
|                  |                 |
|------------------|-----------------|
| 8. Contingencies | <u>1,800.00</u> |
|------------------|-----------------|

|                       |              |
|-----------------------|--------------|
| Total estimated cost: | \$ 25,480.00 |
|-----------------------|--------------|

Respectfully submitted  
CORDILLERAN ENGINEERING LIMITED

January 30, 1968

A.F. Reeve



APPENDIX C

DESCRIPTIONS OF PROSPECTS & MINERAL OCCURRENCES

DESCRIPTION OF PROSPECTS AND MINERAL OCCURRENCES

The following are brief descriptions of sixty-one locations where mineral occurrences have been examined or reported, and where exploration work has been done. Fifteen of these descriptions are accompanied by field sketches and geology maps. The location numbers are keyed to the regional geology and geochemical maps (figures 3 and 4, Appendix B) and are arranged roughly from south to north.

Copper occurrences in volcanic and intrusive rocks are of principal interest to the project. A few lead - silver - gold showings which occur in the eastern part of the map area are described as well.

Location references are given in scale miles.

No. 1 - Copper

Reference - B.C. Minister of Mines 1933, p.139  
B.C. Minister of Mines 1934, p.C-32  
B.C. Lode Metals Report 1966, p. 132

Location on Lomon Creek, 5-1/2 miles east of Horsefly.

Property 80 claims held by Helicon Explorations Ltd.

Chalcopyrite, pyrite pyrrhotite and magnetite are reported to occur in volcanic rocks adjacent to a diorite intrusive. This is described as being of contact metamorphic origin.

In 1965 Helicon did geological, geophysical and geochemical surveys, and 75,000 ft.<sup>2</sup> of stripping.

No. 2 - AsbestosReference - PrivateLocation - immediately south of the Horsefly  
River, 5 miles SW of Horsefly.

Asbestos is reported to occur in a serpentine zone. Limited bulldozer work in 1965 was not encouraging.

No. 3 - CopperReference - PrivateLocation - 5-1/2 miles SSE of Horsefly and  
1-1/2 miles SSE of Starlike LakeProperty - 240 claims held by Helicon Explorations  
Ltd.

Disseminated chalcopyrite is reported in  
granodiorite on the SE side of Heca Lake.

No. 4 - Native copper  
- see sketch following

Reference - B.C. Minister of Mines, 1904, p.260  
(Mogul mineral claim)

Examined - by L.P. Duquette and A.P. Reeve

Location - on Moffat Creek, 4 miles SSW of Horsefly.

Fine disseminations of native copper occur in dense purplish coloured volcanic basalt, which is partially epidotized, for a distance of about 300' along the creek, on the North Bank.

The average copper content is .05% or less.

Outcrops of purple augite andesite tuff, and intrusive (diorite?) occur to the east and south. A small amount of copper stain was also observed in the intrusive.

In general character this occurrence could be described as being of the "Keweenaw Type".

There are no mineral claims covering this showing but it has been prospected and explored previously.



HORSEFLY  
6 MILES →

Purple Volcanics  
Augite Andesite Tuff  
Reddish Brown Hematite  
(Acc. Magnetite)

(3A)

Purple Volcanics  
Massive Flow Rock  
Disseminated Native Cu.

Falls

MOFFAT CREEK

Highly Altered  
Fine Grained Intrusive  
(Feldspar Veinlets  $\frac{1}{8}$  to  $\frac{1}{4}$ )

# LEGEND

- (xx) Native Copper
- x Malachite & Azurite
- ~ Faulting
- ↗ Shear Zone

DRAWN BY: L. P. DUQUETTE

KEWEENAW SYNDICATE  
1967

NATIVE COPPER SHOWING

MOFFAT CREEK  
CARIBOO MINING DIVISION, B.C.

BY  
CORDILLERAN ENGINEERING LIMITED

SCALE: 1" TO 200'

DATE: DECEMBER, 1967



No. 5 - Copper

(see sketch following)

Examined - by L.P. Duquette

Location - on a small northward flowing creek which enters Beaver Creek 2 miles SW of Horsefly.

Weakly disseminated chalcopyrite occurs in dense purplish volcanic flow rock for a distance of 10 feet. Some epidotization was noted in the mineralized area. There is a noticeable similarity between this showing and No. 4 on Moffat Creek.

No work appears to have been done here.

---

No. 5A - Copper

An angular fragment of limey purple tuff stained with malachite and carrying fine disseminations of Native Copper was found about 2500' west of No. 5 on an abandoned logging road.



HORSEFLY  
2 1/2 MILES

(3A)

Purple Volcanics  
(Massive Flow Rock)

Disseminated  
Cu Py xx

PURPLE  
CREEK



Purple Volcanic Sequence  
(Andesite Andesite Tuff)  
Reddish Brown Hematite  
(Acc. Magnetite)

Highly Weathered  
P.V.S. Tuff

40°

Falls - 20'

# LEGEND

-  Attitude of Fracturing
-  Shearing

DRAWN BY: L.P. DUQUETTE

KEWEENAW SYNDICATE  
1967

PURPLE CREEK COPPER SHOWING

CARIBOO MINING DIVISION, B.C.

BY  
CORDILLERAN ENGINEERING LIMITED

SCALE: 1" TO 200'

DATE: DECEMBER, 1967

No. 6 - CopperExamined by - L.P. Duquette

Location - on gravel creek about one mile up stream  
from the Miocene - Horsefly Road.  
4-1/2 miles WSW of Horsefly.

Traces of Malachite stain were found in limey  
purplish tuff. The outcrop extends 200' along the  
creek and is decomposed by alteration and weathering.

No. 7 - Copper

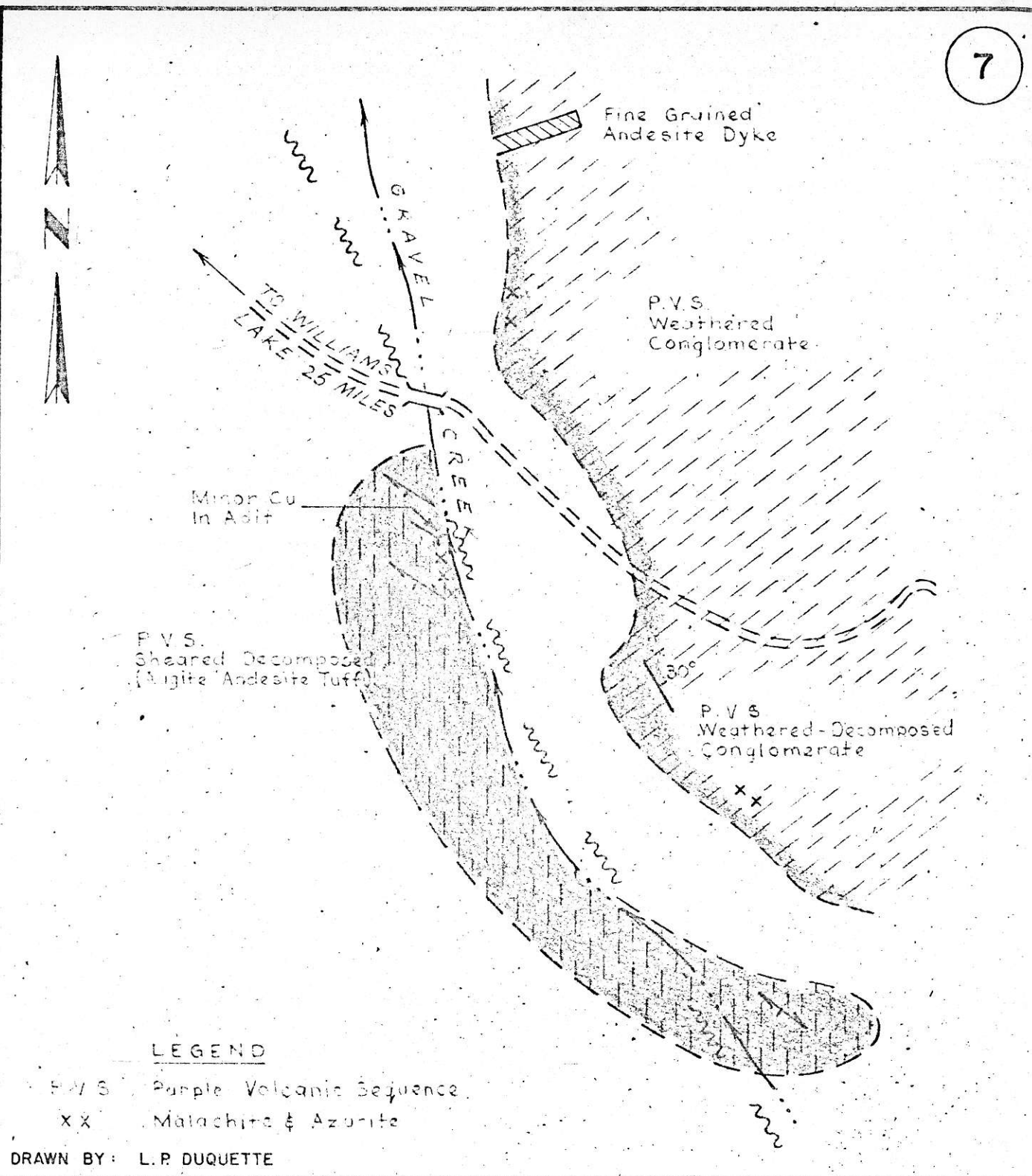
(see sketch following)

Examined by - L.P. Duquette and A.F. Reeve

Location - on gravel creek, 5 miles west of  
Horsefly immediately south of the  
Horsefly - Miocene Road.

A short adit occurs on a shear zone which  
strikes N 40° W. and dips 40° SW. Minor traces of  
chalcopyrite and malachite were found in fault gouge  
in the adit. A few scattered patches of malachite  
stain were found in the surrounding outcrops. The  
mineralized rocks are deeply weathered, decomposed  
conglomerate and augite andesite tuff of the purple  
volcanic sequence.

Some limited diamond drilling and bulldozer  
stripping has been done since 1960.



# KEWEENAW SYNDICATE

1967

## GRAVEL CREEK ADIT

CARIBOO MINING DIVISION, B.C.

BY

CORDILLERAN ENGINEERING LIMITED

SCALE: 1" TO 200'

DATE: DECEMBER, 1967

No. 8 - Copper (placer)Reference - B.C. Minister of Mines, 1927, p. C182Examined by - L.P. DuquetteLocation - One mile south of Beaver Creek on Captain Charlie Creek, 8 miles WNW of Horsefly.

Native copper and platinum are reported to have been recovered from Captain Charlie Creek. No copper was seen. The only outcrop found in the creek is composed of green grey augite tuff. It is well mineralized with pyrrhotite and pyrite. Considerable accessory magnetite probably accounts for the high (6,000 gamma +) air magnetic anomaly shown on Regional Magnetic Map #1532 G, Beaver Creek Sheet.

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No. 9 - Oil Shale (Vanadium)References - B.C. Minister of Mines, 1927, p. 181-2

- Vanadium occurrences in Canada  
G.S.C. paper 66-57 page 4 & 6.

Location - on Antoine Creek about 1,000' above Roberts Lake, 9 miles NW of Horsefly.

Outcrops of shale were sampled and analyzed for Vanadium with negative results.

No. 10 - Copper

Location - on Antoine Creek, 1 mile WSW of Antoine Lake.

A rounded fragment of purple volcanic rock is well mineralized with chalcopyrite.

The immediate area appears to be heavily drift covered.

---

No. 11 -

Location - 1 mile east of Shiko Lake, 7-1/2 miles north of Horsefly.

Property - 12 claims owned by Mr. Charlie Bonnelle of Horsefly, B.C.

Examined by - L.P. Duquette

Outcrops of fresh quartz-diorite contain fine disseminations of pyrrhotite and pyrite. These rocks lie 2 miles NW along the regional strike from location No. 12 where similar rocks are mineralized with copper.

Some additional prospecting would be worthwhile in this area.

No. 12 - Copper

Reference - B.C. Minister of Mines 1933, p. A139

Location - on an unnamed creek 1/2 mile east of  
the Hersofly River, 6-1/2 miles north  
of Hersofly.

Andesitic volcanic rocks are intimately  
intruded by tongues of felsic material and heavily  
mineralized with pyrite and pyrrhotite. Only traces  
of copper are reported. This location was not visited.

---

No. 13 - Copper

Reference - Private

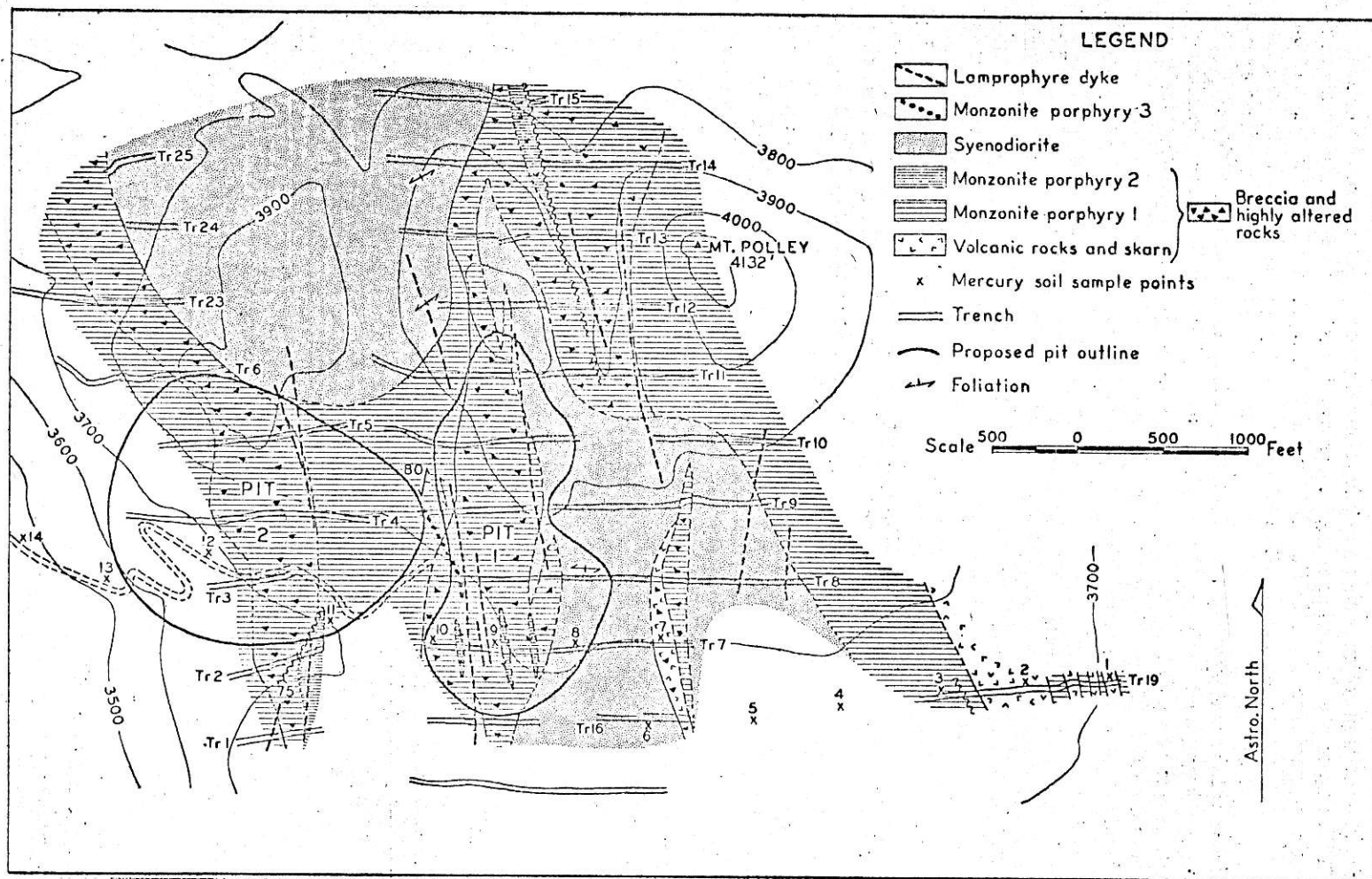
A bornite occurrence is reported on the  
south fork of Hazeltine Creek.

---

No. 14 - Copper

Reference - Private

Native copper in volcanic rocks is reported  
on Raft Creek, 8 miles south of Likely.





No. 22 - Native Copper

Reference - Private

Location - 1-1/2 miles south of Morehead Lake,  
9 miles west of Likely.

Property - 45 claims owned by Milestone Mines Ltd.

Native Copper is reported to occur in purple volcanic rocks near a limestone bed. Magnetic and geochemical surveys were done in 1967.

---

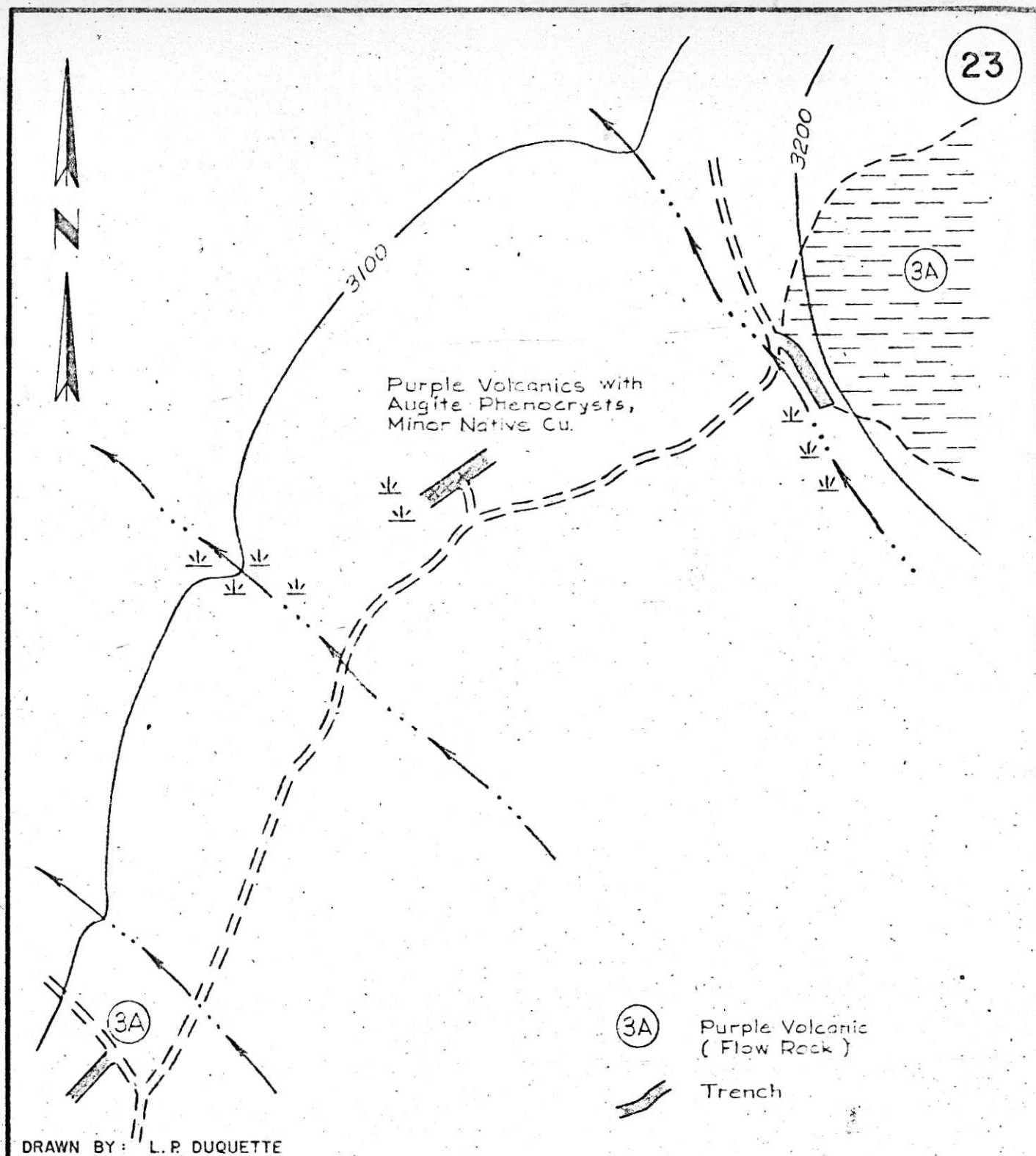
No. 23 - Native Copper

Location - About 2 miles SW of Morehead Lake

Examined by - L.P. Duquette

Bulldozer trenching was done on this prospect in 1966 by Chataway Exploration Ltd.

In one trench minor disseminations of Native Copper were found in a massive flow of purple volcanic rock. Elsewhere scattered malachite stains occur in sheared purple augite - andesite tuff. The rocks and mineralization are similar to mineral locations Nos. 4 and 5 near Horsefly.



# KEWEENAW SYNDICATE 1967

WARREN CREEK NATIVE COPPER

MOREHEAD LAKE  
CARIBOO MINING DIVISION, B.C.

BY  
CORDILLERAN ENGINEERING LIMITED

SCALE: 1" TO 500'

DATE: DECEMBER, 1967

No. 24 - Native Copper

(see sketch following)

Location - 3/4 miles south of Morehead Lake on  
the Likely Road.

Examined by - L.P. Duquette

Bulldozer trenching was done by Chataway Exploration 1965.

Native Copper was reported but only a little malachite and azurite stain was seen in weathered purple volcanic flow rocks.

---

No. 25 - Copper

Reference - Private

Malachite stains are reported to occur in the bottom of a gravel pit north of Little Lake, 6 miles west of Likely.

---

No. 26 -

Reference - B.C. Lode Metals Report 1966, p. 125

Location - Two miles SSW of Likely

Property - 109 claims owned by Giant Explorations Ltd.

Magnetic and geochemical surveys and bulldozer trenching was done in 1966 and 1967.



No. 27 - Copper, lead

Reference - B.C. Minister of Mines, 1923, P. A 131

Location - On Cedar Creek, 3-1/2 miles SSE of Likely  
and 1 mile east of Quenel Lake.

A number of shear zones one to eight feet in width occur in porphyritic andesite along the creek canyon walls. These zones strike about E - W and have a flat dip to the north. The shears are mineralized with arsenopyrite, galena, chalcopyrite and Fe sulphides. Selected specimen ore reported to carry up to 3 oz. Ag. and 3.2 oz. Au.

This prospect was not visited.

---

No. 28 - Gold

Location - 1-1/2 miles west of Spanish Lake and  
4 miles ESE of Likely.

Property - 10 claims owned by Mr. Cliff Lyne of Williams  
Lake.

Examined by - L.P. Duquette

No mineralization has been reported in place. However, a piece of white crystalline quartz float carrying traces of galena and coarse free gold was found. The owner reports an assay of \$1500. One outcrop of sheared argillite with a few barren quartz veins was observed.

No. 29 - Lead - silver

Reference - B.C. Minister of Mines 1926, p. A178

Location - On Blackbear Creek  
6 miles ENE of Likely

Property - Plutos Mines Ltd. was reported to be  
exploring this prospect in 1967.

Quartz veins enclosed in quartz sericite  
schist are mineralized with galena and pyrite. A  
selected sample of galena is reported to have assayed  
144 oz/ton Ag.

---

No. 30 - Lead - silver

Reference - B.C. Minister of Mines 1926, p. A 178

Location - Between Collins and Blackbear Creeks  
6 miles ESE of Likely

Property - Plutos Mines Ltd.

Flat lying veins of quartz occur in thinly bedded  
graphitic shale. A sample of galena is reported to have  
assayed 104 oz. Ag and .2 oz. Au/ton.

---

No. 31 -

Reference - B.C. Minister of Mines, 1926, p. A178

Location - On Blackbear Creek 5-1/2 miles ENE of Likely

Property - Plutos Mines Ltd.

A quartz vein at least 50' in width is reported  
in Blackbear Creek. It is sparsely mineralized with  
galena. A selected sample ran 43 oz. Ag/ton.

No. 32 - Gold

Reference - B.C. Minister of Mines, 1922, p. 79A & 80A

Traces of gold are reported in a quartz vein in Likely Gulch near its junction with Paquette Creek, 1 mile west of Likely.

---

No. 33 - Copper

Reference - B.C. Minister of Mines, 1936, P. C38

Location - On the south bank of the Quesnel River,  
1/2 mile west of Likely.

Property - 109 claim group owned by Giant Explorations Ltd.

Stripping and a short adit have partially exposed a lens of magnetite carrying pyrite and chalcopyrite,

---

No. 34 - Vermiculite

Reference - Private

Location - On the north bank of the Cariboo River,  
4 miles NE of Likely.

The "zone" is reported to be 90' wide and occurs in lower paleozoic metasedimentary rocks.

No. 35 - Gold - lead

xix.

Reference - Private

Location - 4 miles NE of Likely on the north side  
of the Cariboo River.

A NW striking quartz vein about 12 feet wide occurs in schistose argillite. Some irregular galena mineralization is reported and the best assay was .8 oz. Au./ton across 4 feet.

---

No. 36

Reference - B.C. Minister of Mines, 1926, p. A.178

Location - 3-1/2 miles N of Likely on the north  
side of the Cariboo River about 150' above  
the river.

A number of quartz veins carrying galena and pyrite in places, are interbedded with shale. A selected sample of galena is reported to have carried 29 oz. Ag/ton.

---

No. 37 - Silver, lead, zinc

Reference - B.C. Minister of Mines, 1926, p. A178

Location - On Rollies Creek 3/4 mile west of Cariboo  
Lake and 9 miles NNW of Likely @ 3100' ASL

Several quartz veins 2 to 3 ft. in width are mineralized with pyrite galena and sphalerite. A selected sample of sulphides is reported to have assayed 24 oz. Ag/ton.



No. 38 - Copper

Reference - B.C. Minister of Mines, 1933, p. A138

Location - On Rollie Creek, 2 miles west of Cariboo Lake.

A number of quartz veins in metasedimentary schists mineralized with pyrite and a little galena are reported. The same report mentions similar showings about 3 miles further down the creek, where a piece of pyritic country rock ran 1% copper.

---

No. 39 - Copper

Reference - Private

Location - On Westenhiser Creek 2 miles NE of Likely.

Property - 9 claims - Noranda Exploration Ltd.

Chalcopyrite is reported to occur in diorite

---

No. 40

Reference - B.C. Minister of Mines, 1933, p. A136

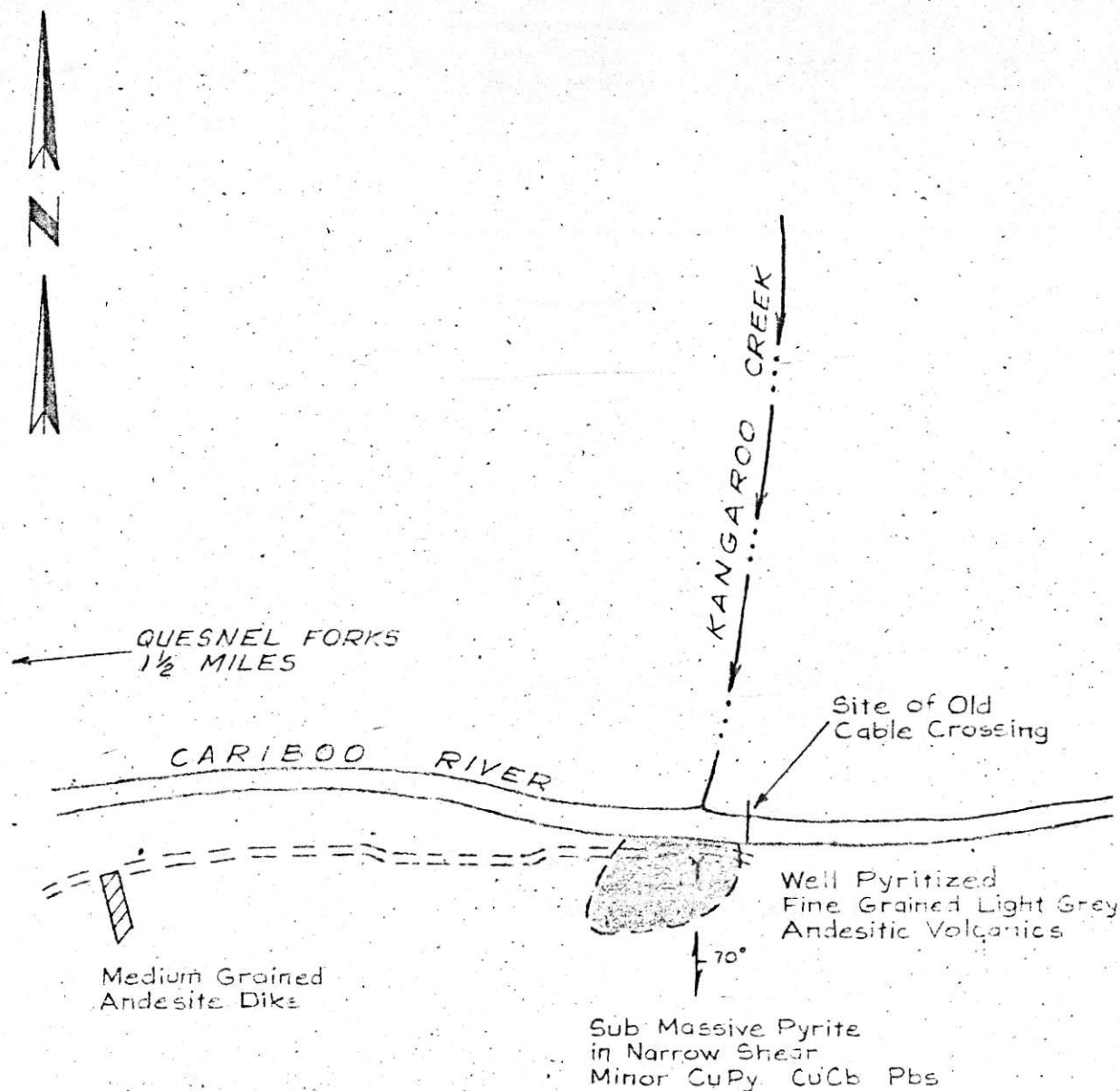
(See sketch following)

Location - On the south bank of the Cariboo River, opposite Kangaroo Creek, 1 mile NE of Quenel Forks.

Property - 2 claims owned by Mr. R. Jenkins of Likely

Examined by L.P. Duquette

The area is underlain by massive grey andesitic flow rocks which are fractured and pyritized. A 20' adit has been driven on a narrow (1') pyritic shear. Only traces of chalcopyrite and galena were seen. No significant gold values were obtained.



DRAWN BY: L.P. DUQUETTE

## KEWEENAW SYNDICATE

1967

DRAKE COPPER SHOWING

QUESNEL FORKS  
CARIBOO MINING DIVISION, B.C.

BY  
CORDILLERAN ENGINEERING LIMITED

SCALE: 1" TO 500'

DATE: DECEMBER, 1967

No. 41 - Lead - zinc

Reference - B.C. Minister of Mines, 1933, p. A136

Location - On the north bank of the Quesnel River,  
1 mile NE of Quesnel Forks.

A few small quartz veins carrying galena,  
sphalerite and pyrite occur in andesitic volcanic rocks.

---

No. 42

Reference - Private

Location - 1 mile SW of Quesnel Forks

Heavily pyritized volcanic rocks were found in  
trenches dug on claims formerly owned by Netherlands  
Overseas Corp., a logging company.

---

No. 43 - Copper

The Q.P. Claim Group has been described in  
detail under separate cover.

---

No. 44 - Copper

Reference - private

Location - On the west bank of the Quesnel River, 1-1/2  
miles upstream from Quesnel Forks.

Chalcopyrite is reported to occur in diorite.  
This particular part of the river is enclosed by steep  
cliffs over 200' in height and is only accessible at the  
extreme low water period.

No. 45 - Copper

xxii

Reference - Private

Location - 2 miles south of Quesnel Forks

Examined by - L.P. Duquette

Property - Claims owned by W. Ebery

Several trenches showing pyritized andesite and basalt were examined. A piece of float containing chalcoppyrite was reported by the owner.

---

No. 46 -

Reference - D.C. Minister of Mines, 1936, p. C38

Location - On the south bank of the Quesnel River,  
2 miles west of Quesnel Forks.

A property called the Fox Group was staked here in 1936. No reports of mineral occurrences were found.

---

No. 47 -

Reference - Private

Location - 8 miles WNW of Likely and 1/2 mile south  
of the Quesnel River.

Copper stain was reported on the wall of a canyon in a small creek which flows northward into the Quesnel River, opposite Maud Creek.

---

No. 48 - Copper

Reference - Private

About 1 mile NE from the forks of Morehead and Little Creeks, native copper and chalcoppyrite were reported in placer workings.

No. 49 - Copper

References - Private

Location - On Morehead Creek, 3/4 mile upstream  
from the Quasnel River, 10 miles west  
of Likely.

Native copper has been reported in placer workings here for many years. During the 1940s a scrap metal dealer purchased several powder boxes of coarse copper that had been accumulated from placer concentrates.

---

No. 50 - Copper

Reference - Private

Location - On the west bank of Morehead Creek, 1/2  
mile above the Quasnel River, 10 miles  
west of Likely.

Placer miners report finding purple volcanic rocks mineralized with bornite when excavating a gravel bench. A "zone" 6 feet wide is described.

---

No. 51 - Copper

Reference - Private  
(see sketch following)

Location - At 2500' ASL, north of the old Texas ferry,  
10 miles WNW of Likely.

Property - 20' claims, owned by Mr. Lloyd Boyko of  
Likely.

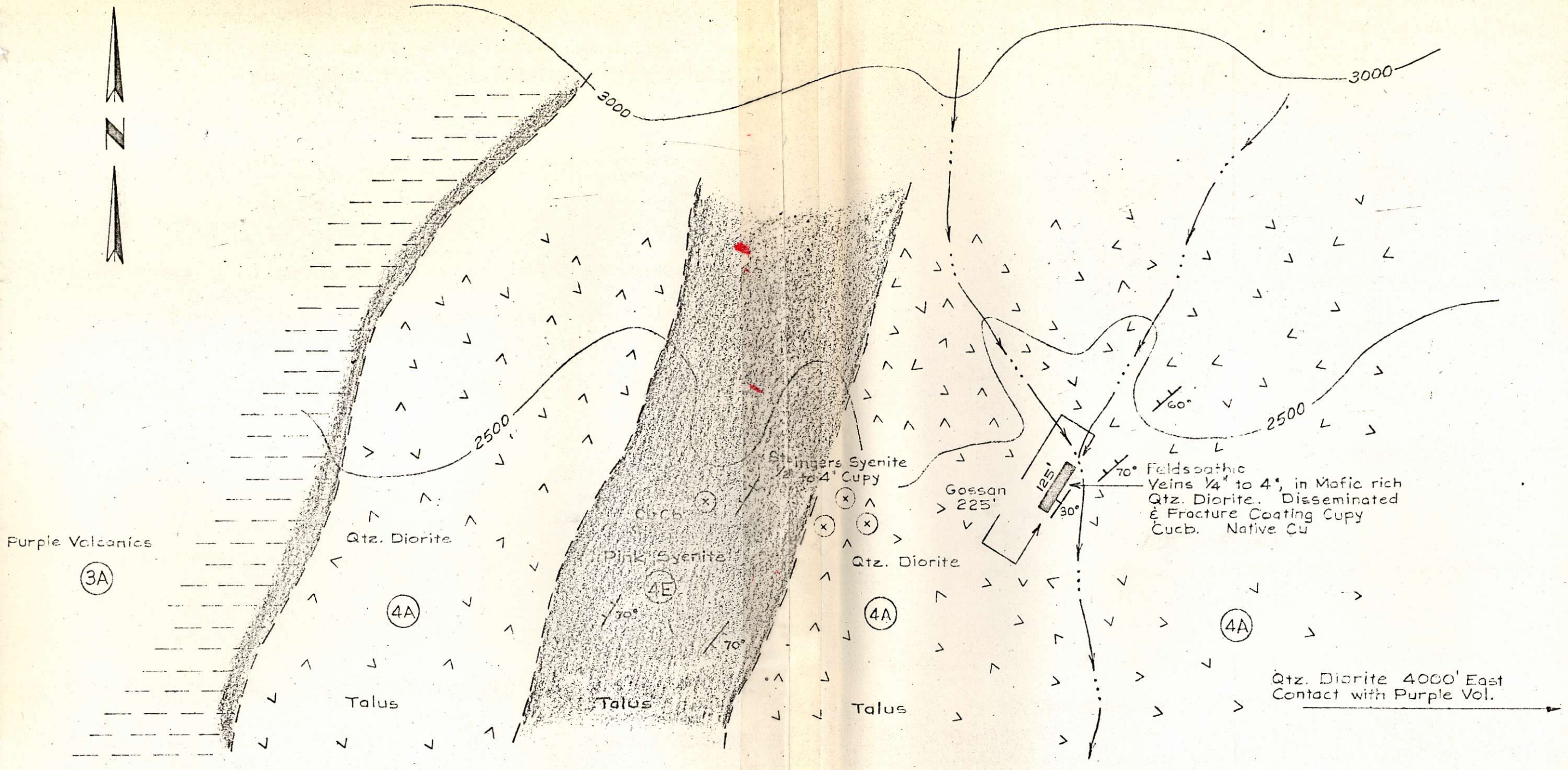
Examined by - L.P. Duquette

This is one of the more promising mineral  
occurrences seen during the season.

Medium grained grey diorite is fractured and  
mineralized with pyrite, chalcopyrite and native copper.  
The rock is rusty and decomposed. The mineralized zone  
is 15' thick and is exposed along strike for 125'.  
Veinlets of pink feldspar 1/2" to 1/8" in thickness are  
numerous.

The owner reports an assay of 1.75% Cu; this  
seems high. 1200' westward there is a pink syenite  
intrusive. A few veins which appear to cut the diorite  
near the syenite contact are mineralized with chalco-  
pyrite. This showing was examined by New Jersey Zinc  
in 1966 and Cariboo Belle in 1965.





LEGEND

- (3A) Purple Volcanics (Flow Rock)
- (4A) Qtz. Diorite
- (4E) Pink Syenite
- ↗ Attitude of Fracturing
- ↘ Attitude of Bedding

NOTE

Reported (Boyko)  
1.75% Cu across 125'

QUESNEL RIVER

DRAWN BY: L. P. DUQUETTE

KEWEENAW SYNDICATE  
1967

BOYKO COPPER SHOWING  
SITE OF OLD TEXAS FERRY  
QUESNEL RIVER  
CARIBOO MINING DIVISION, B.C.

BY  
CORDILLERAN ENGINEERING LIMITED

SCALE: 1" TO 400' APPROX.

DATE: DECEMBER, 1967



No. 52 - Copper

Reference - Private

(See sketch following)

Location - At 3000' ASL one mile north of Jackpine Lake, 12 miles west of Likely.

Property - Claim group owned by Ferris and Speed of Likely.

Examined by - L.P. Duquette and A.F. Reeve

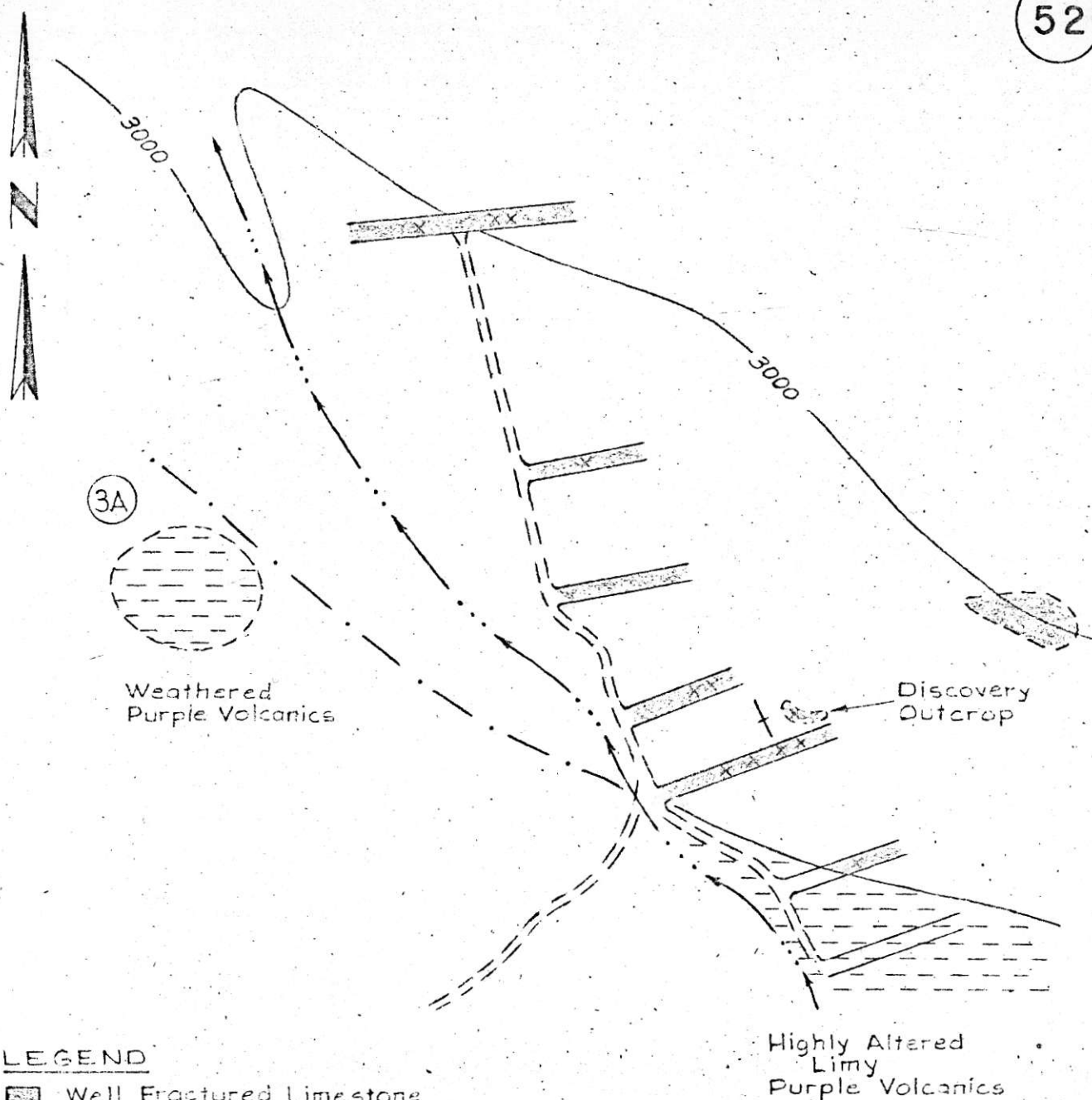
A band of limestone has been exposed by six bulldozer trenches for a distance of 1200' along strike and across a maximum width of 250'. This bed has a trend of WNW and is in contact with limey purple tuffs and breccias to the SW. Azurite and malachite were found coating fractured limestone in the trenches at a few locations.

Some chalcocite is reported by the owners but none was seen.

An extensive soil sampling survey was carried out with negative results.

The trenching was done in 1965 by Cariboo Belle Copper Mines Ltd.





## LEGEND

- Well Fractured Limestone
- Trenches
- Malachite & Azurite
- Attitude of Fracturing

DRAWN BY: L.P. DUQUETTE

## KEWEENAW SYNDICATE

1967

## FERRIS COPPER SHOWINGS

JACKPINE LAKE  
CARIBOO MINING DIVISION, B.C.

BY

CORDILLERAN ENGINEERING LIMITED

SCALE: 1" TO 200'

DATE: DECEMBER, 1967

No. 53

Reference - B.C. Minister of Mines, 1913, p. K 54

Location , - 1 mile west of Slide Mountain,  
6-1/2 miles NW of Morehead Lake.

Property - Noranda Mines Ltd.

Examined by - L.P. Duquette

A narrow band of limestone is enclosed by limey purple tuffs and breccias. The rocks here are much like those near Jackpine Lake (No. 52). Scattered patches of copper carbonates were seen in limestone in one trench.

An old 90' adit cutting copper mineralization is reported but was not found.

---

No. 54 - Copper

Reference - Private

Location - On Birrel (Twenty mile) Creek, 1/2 mile above the Quaesnel River, 8 miles NW of Morehead Lake.

Copper nuggets up to 2 lbs. are reported in placer workings.

No. 55

xxvii

Reference - Private  
(see sketch following)

Location - On Birrel (Twenty Mile) Creek near Forks  
Creek, 9 miles NW of Morehead Lake.

A piece of float mineralized with chalcopyrite was found near the contact of purple volcanic rocks and a pinkish grey granodiorite in the creek bottom. Stream sediment samples from the creek gave discouraging results. Some of the intrusive rocks are similar to those at the rusty group near Nyland Lake.

---

No. 56 - Molybdenite

Reference - Private  
(see sketch following)

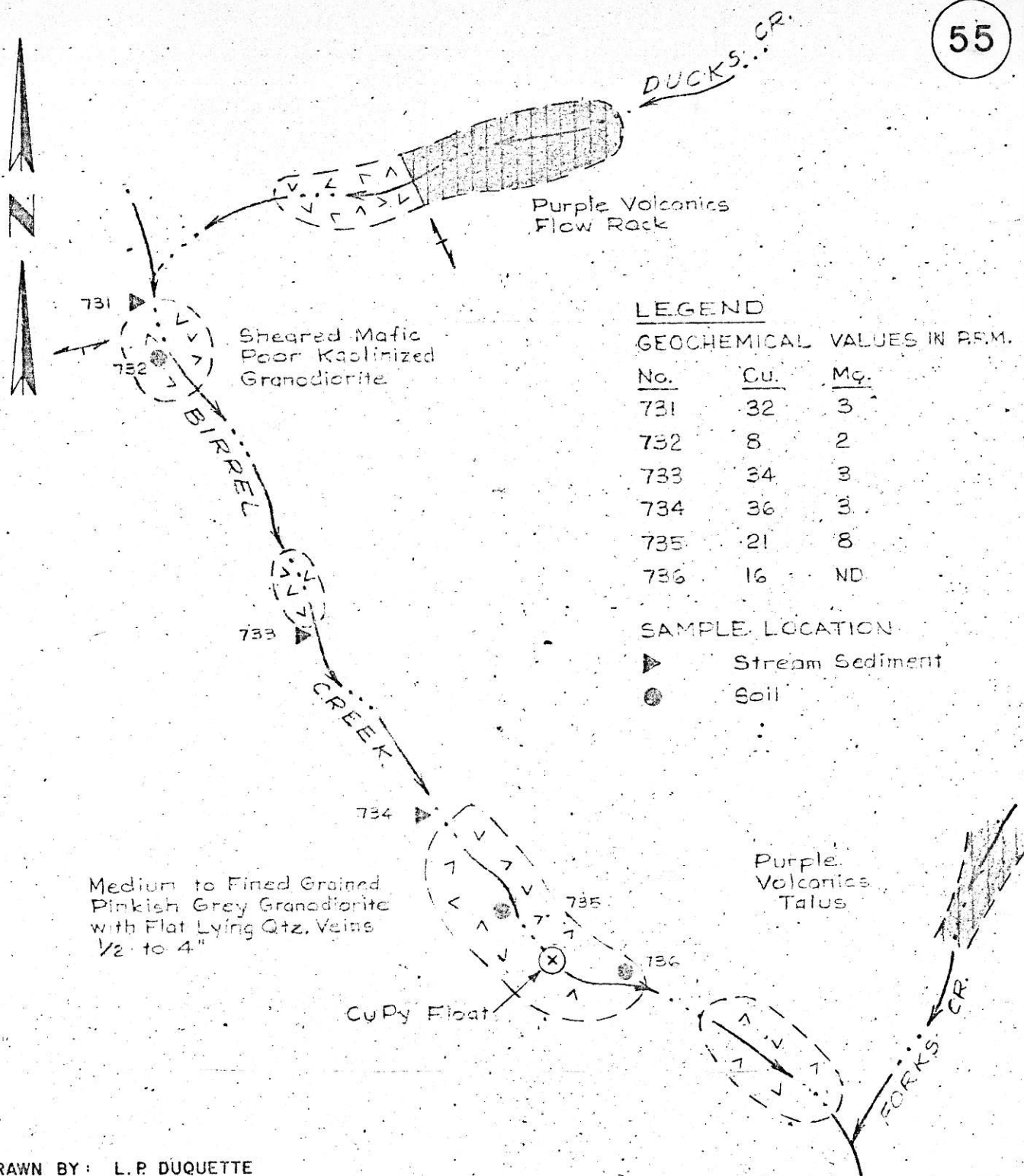
Location - 3 miles ESE of Nyland Lake, 20 miles NW of  
Likely.

Property - Claim group owned by E.N. Croteau of Quessnel.  
(optioned by Hogan Mines in 1966.)

Examined by L.P. Duquette

Work done on this property since 1965 includes five bulldozer trenches totalling 600' in length and 1500' of drilling.

The area is underlain by medium grained greyish hornblende granodiorite. The best mineralization occurs for 25' in a trench. The rock is silicified and mafic poor. A few small lenses and a 5" vein of greyish quartz are weakly mineralized with  $\text{MoS}_2$ . Elsewhere only scattered traces of  $\text{MoS}_2$  were found.



DRAWN BY: L.P. DUQUETTE

# KEWEENAW SYNDICATE 1967

## BIRREL CREEK TRAVERSE

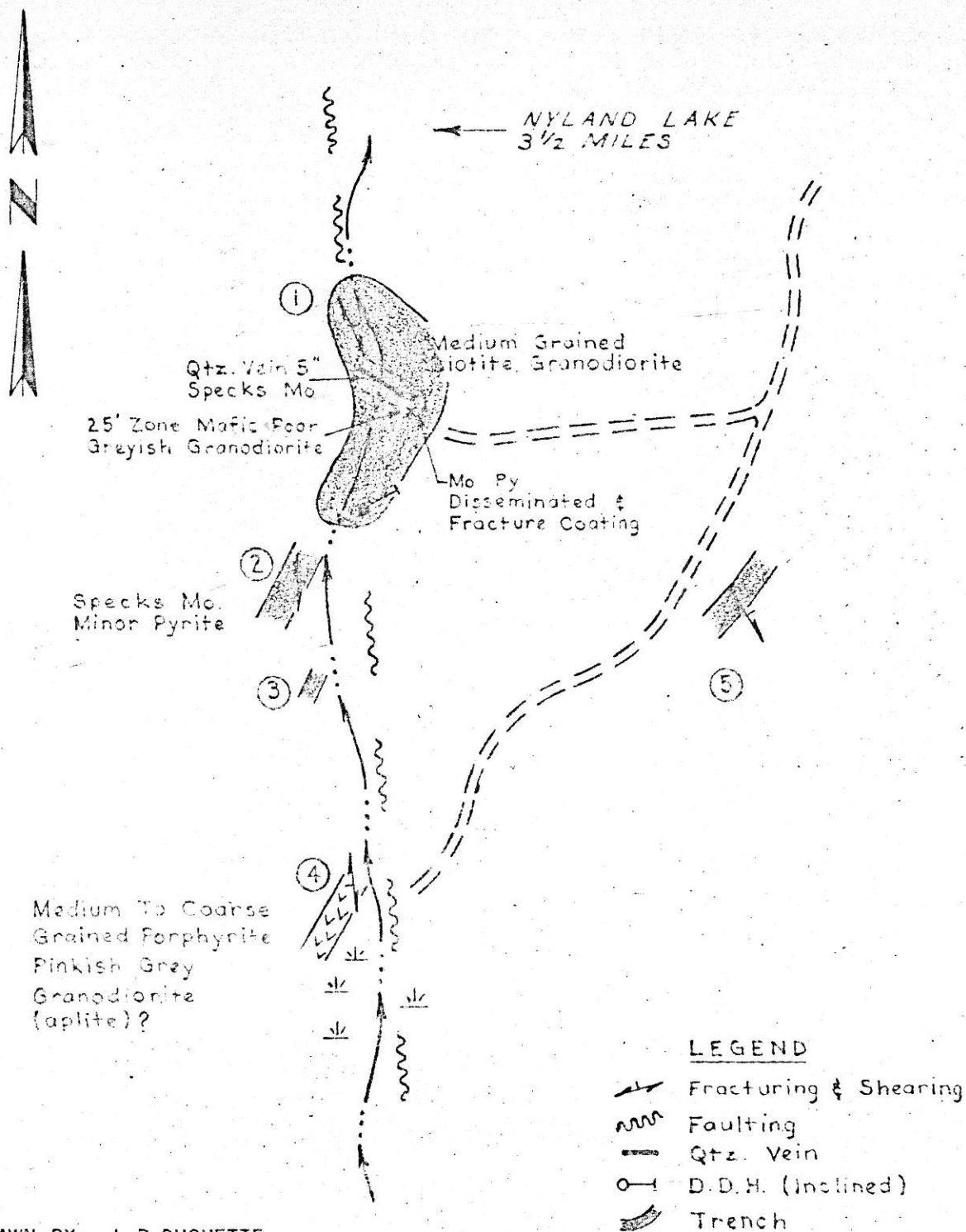
CARIBOO MINING DIVISION, B.C.

BY

CORDILLERAN ENGINEERING LIMITED

SCALE: 1" TO 1000'

DATE: DECEMBER, 1967



# KEWEENAW SYNDICATE

1967

## CROTTEAU MOLYBDENUM SHOWING RUSTY CLAIMS

NYLAND LAKE  
CARIBOO MINING DIVISION, B.C.

BY  
CORDILLERAN ENGINEERING LIMITED

No. 57 - Gold, silver, copper

xxviii

Reference - B.C. Minister of Mines, 1947, p. A123

Location - 2 miles east of the summit of Spanish Mountain and 3 miles north of Quaguel Lake.

In 1947 stripping, diamond drilling and tunneling was carried out by Max (El Toro B.C. Mines) Ltd. on this property.

The area is occupied by meta-argillites of the Cariboo sequence. Intrusive sills of felsite and rhyolite and extensive carbonatization are also reported to occur in the area. The apparent object of the exploration work was gold bearing quartz veins. The best assay reported was 4.43 oz. Au/ton and 2.3 oz. Ag/ton from a 6" vein. Some chalcopyrite in the veins is also mentioned.

---

No. 58 - Copper

Reference - B.C. Lode Metals Report 1966. p. 124.

B.C. Minister of Mines 1957, p. 17 & 18.  
(see sketch following No. 60)

Location - 2 miles west of Granite Mountain

Property - 80 claims owned by Duval Corp.

The mineralization and geology is similar to that described for 59 following. To the end of 1966 Duval had drilled 13 HQ holes and done geological and geophysical surveys. The property is located on the old Poliyama showings.

No. 59 - Copper

Reference - B.C. Lode Metals Report, 1966, p.123

B.C. Minister of Mines, 1957, p.17  
(see sketch following No. 60)

Location - 4 miles west of the summit of Granite Mountain  
and about 5 miles NE of McLeese Lake.

Property - About 180 claims owned by Gibraltar Mines Ltd.

Examined by - L.P. Duquette

The area is underlain by foliated diorite and granodiorite. The property includes the old Sunset adit. The mineralization consists of pyrite and chalcopyrite in chloritized and sericitized zones.

It is reported that drilling has indicated 27 million tons of .5% Cu. to the end of 1967.

---

No. 60 - Copper

Reference - B.C. Minister of Mines, 1957

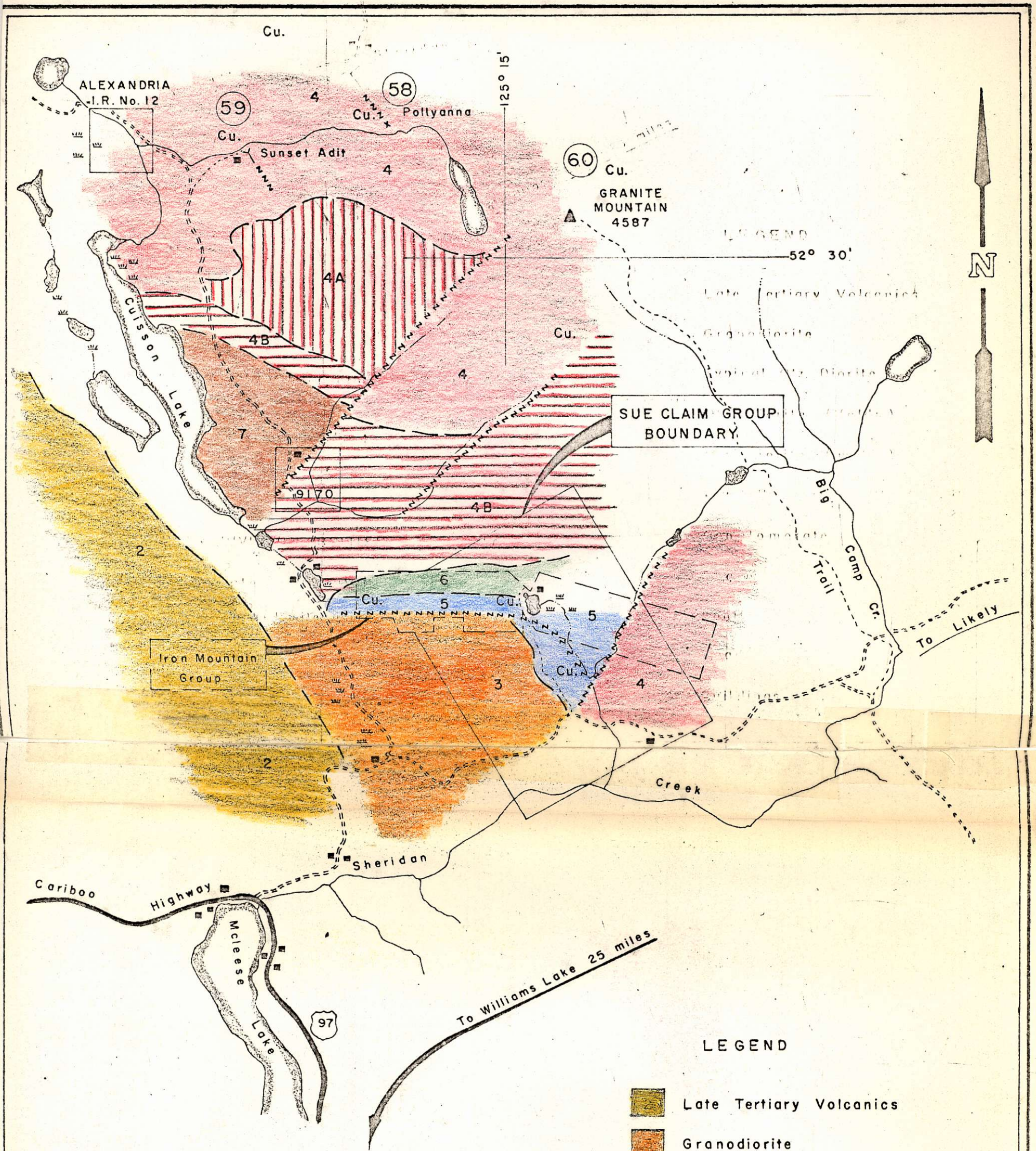
Location - Immediately SW of the summit of Granite Mountain.

Property - Claims owned by Keevil Mining Group.

No specific information is available on the type and extent of mineralization, however it is thought to be generally similar to other local occurrences.

(No. 58 and No. 59) About 7,000' of drilling was done here in 1967.





# MCLEESE LAKE PROSPECTING SYNDICATE

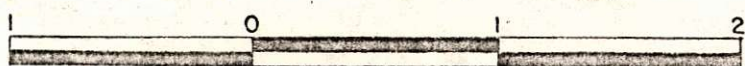
## Geology Sketch

### Cuisson Lake - Granite Mountain Area

CARIBOO MINING DIVISION BRITISH COLUMBIA

Scale 1:50,000

1.25 inches to 1 mile approximately



By L. P. Duquette

January 1968

## LEGEND

- Late Tertiary Volcanics
- Granodiorite
- Typical Qtz. Diorite
- Qtz. Diorite (felds)
- Qtz. Diorite (mafic)
- Crystalline Lms. & Qtz. Chlorite Schist
- Conglomerate
- Skarn
- Fault
- Road
- Buildings

58  
59  
60



No. 61

Location - About 6-1/2 miles north of Granite Mountain.

Chalcopyrite was found in a small lens of vein quartz enclosed in slightly gneissic quartz diorite.

---

No. 62 - Copper

An angular float fragment of green chloritized and carbonatized material containing disseminated chalcopyrite was found 8 miles north of Granite Mountain.

---

No. 63 - Copper

In the same general area as No. 62.  
A rounded boulder of fresh quartz diorite contains disseminated chalcopyrite.

---

APPENDIX D

H A P S

# PROPOSED PROSPECTING AREAS-1968

KEWEENAW SYNDICATE  
—1967—  
PROSPECTING REGION

McLeese Lake

INSET MAP

Granite Mt.

WILLIAMS LAKE

QUESNEL

Mouse Mt.

FRASER RIVER

CARIBOO HIGHWAY

PRINCE GEORGE

122°00'

BOUNDARY OF AGREEMENT AREA

GEOLOGY & GEOCHEMICAL  
PLAN 1"=1mi

Moud Lake

QF CLAIM GROUP

Likely

Polley Mt.

Quesnel Lake

Horsefly

53°00'

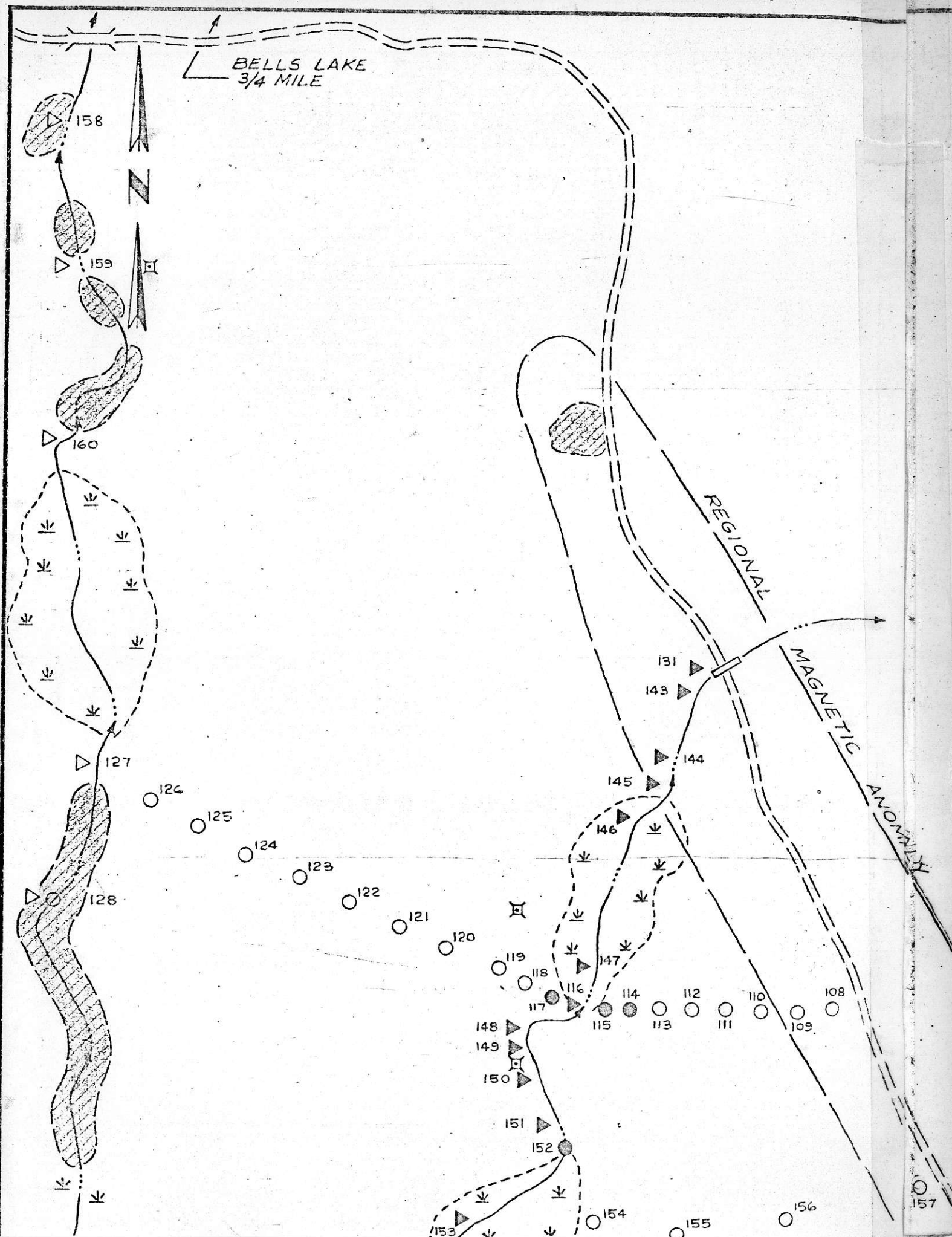
Scale 1"=10mi.  
0 5 10 15

N

FIGURE-2

Cordilleran Engineering Limited  
Jan-1968





# GEOCHEMICAL VALUES IN P.P.M.

| No. | Cu | Zn  | Mn.  |
|-----|----|-----|------|
| 114 | 15 | 51  | 133  |
| 115 | 11 | 41  | 218  |
| 116 | 17 | 74  | 3950 |
| 117 | 16 | 70  | 60   |
| 118 | 15 | 47  | 60   |
| 143 | 13 | 87  | 1000 |
| 144 | 26 | 104 | 1950 |
| 145 | 29 | 77  | 3110 |
| 146 | 20 | 62  | 2730 |
| 147 | 15 | 65  | 2330 |
| 148 | 22 | 64  | 1670 |
| 149 | 15 | 85  | 1950 |
| 150 | 15 | 73  | 910  |
| 151 | 18 | 54  | 360  |
| 152 | 29 | 89  | 155  |
| 153 | 30 | 47  | 305  |

## LEGEND

SAMPLE LOCATIONS

▷ Stream Sediment

○ Soil


 Late Tertiary Basalt & Lava

Figure 5

DRAWN BY: L.P. DUQUETTE

KEWEENAW SYNDICATE  
1967

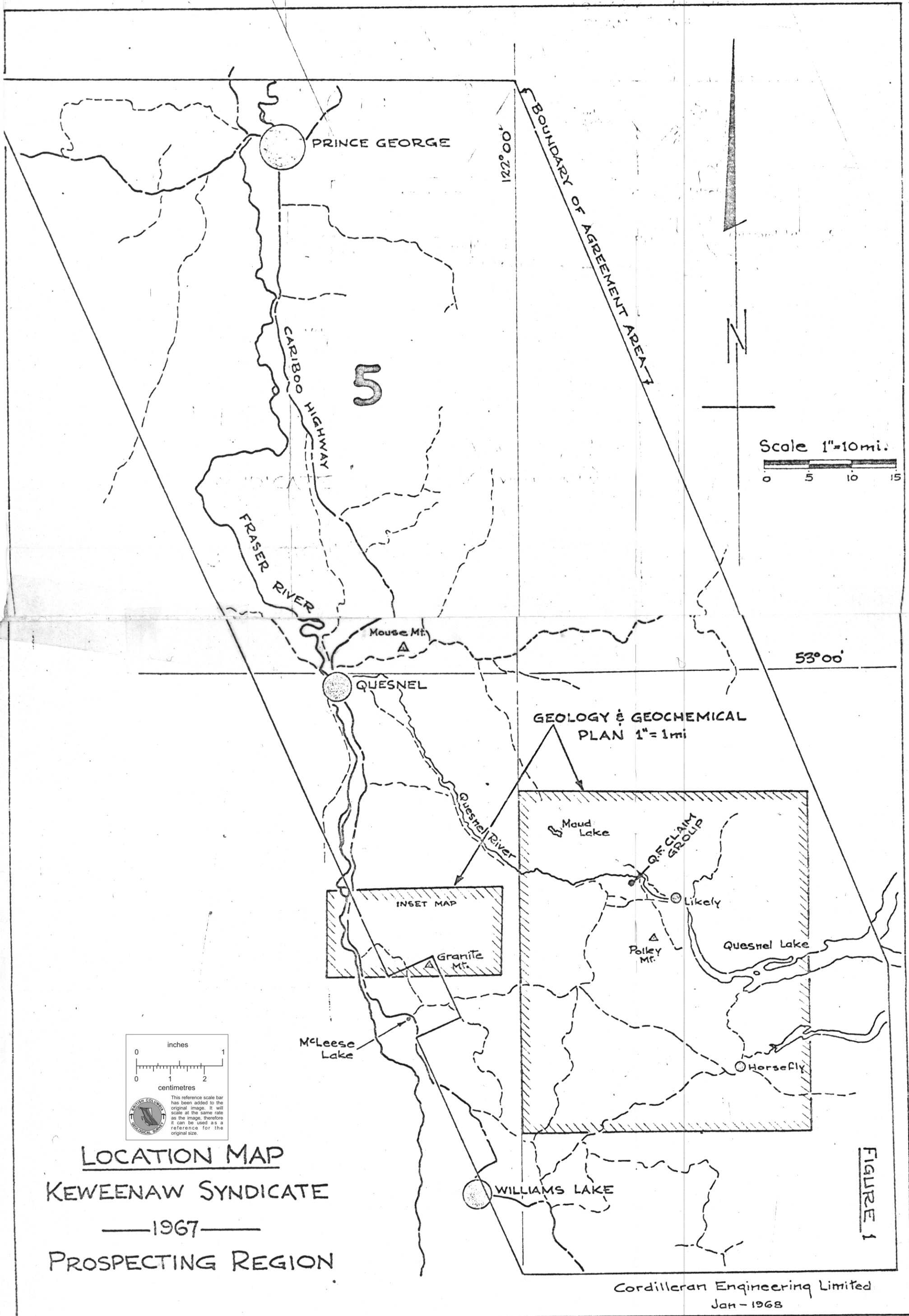
BELLS LAKE MAGNETOMETER ANOMALY

CARIBOO MINING DIVISION, B.C.

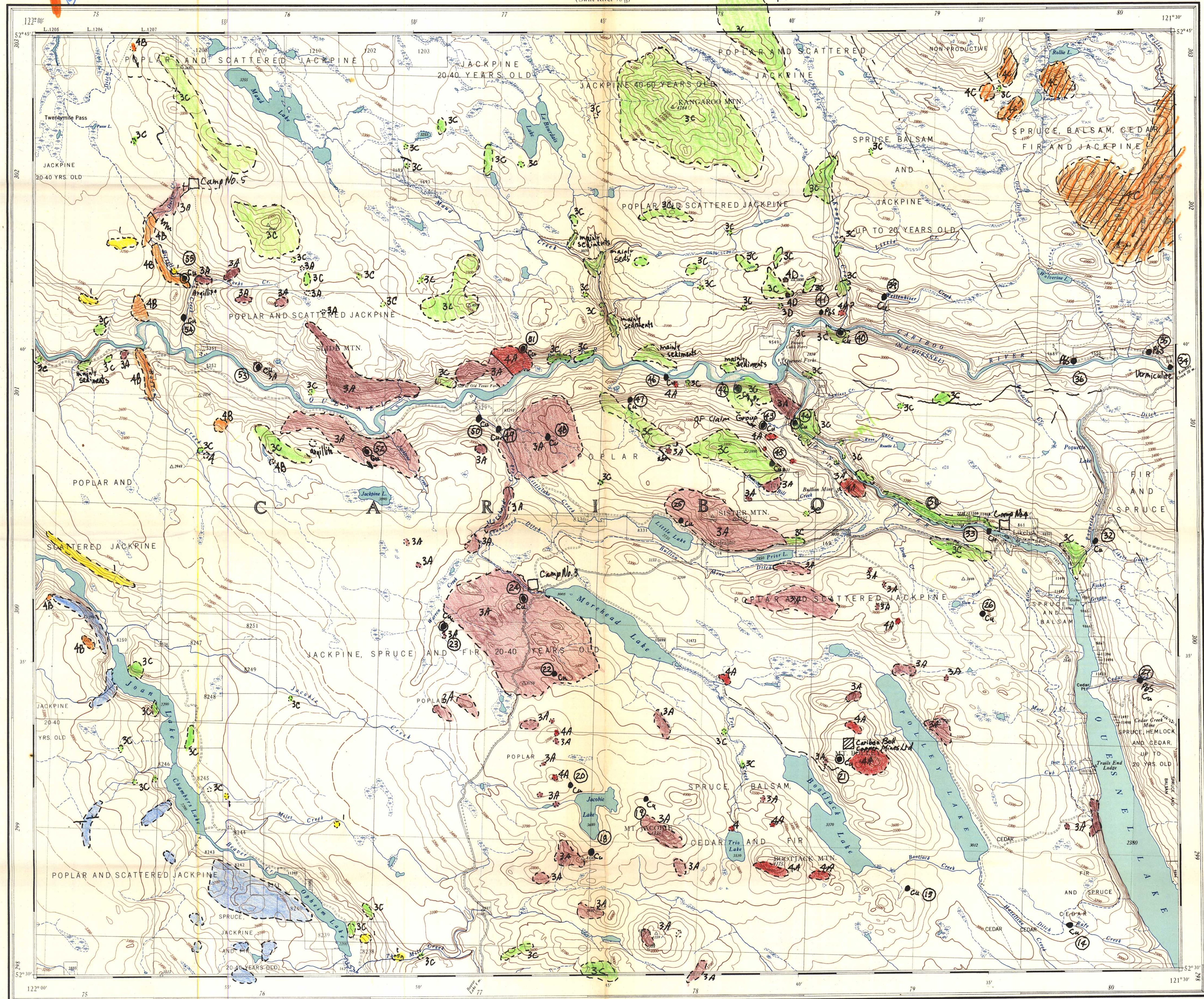
BY  
CORDILLERAN ENGINEERING LIMITED

SCALE: 1" TO 1320'

DATE: DECEMBER, 1967





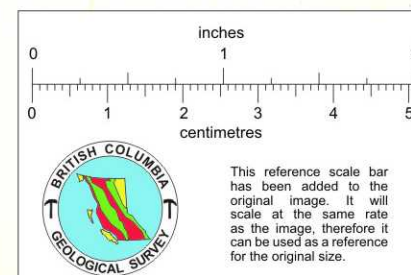


PRODUCED IN CO-OPERATION WITH THE DEPARTMENT OF LANDS AND FORESTS, PROVINCE OF BRITISH COLUMBIA

The magnetic declination for 1949 is approximately 26° east of true north and is based on observations made at magnetic stations adjacent to the area. The declination is decreasing 4 minutes annually.

REFERENCE

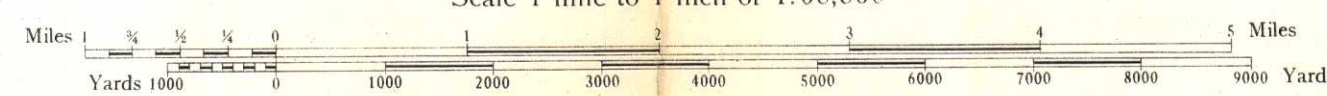
- |                           |                       |
|---------------------------|-----------------------|
| Road: well travelled      | Non-perennial stream  |
| slightly travelled        | Building              |
| Telephone line            | Post office           |
| Surveyed line             | Lot number            |
| Pack trail or path        | Triangulation station |
| Ditch                     | Camera station        |
| Marsh, bog or open muskeg | Height in feet        |
| Shrub, sand or gravel     |                       |
| Wheat                     |                       |
| Contours                  |                       |
- The area included in this sheet is generally wooded. For details regarding woods see Forest Cover edition.



# HYDRAULIC

## BRITISH COLUMBIA

Scale 1 mile to 1 inch or 1:63,360



Datum is mean sea level. Contour interval 100 feet

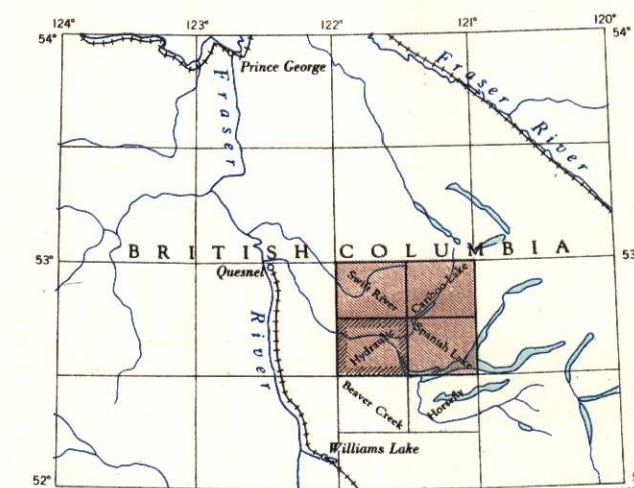
NOTE: The grid squares provide a ready method of referring to or locating features. They are four miles to a side and subdivided into quarters by dotted lines. The east and west sides of the squares are not true north and south lines, but have a deflection to the east varying from 1° 50' on the east side of the map to 1° 35' on the west side. Any square is identified by the numbers along the outer border, for example: Likely will be found in the northeast quarter of square 79 300.

Price 25 cents

Copies may be obtained from the Map Distribution Office, Department of Mines and Resources, Ottawa, or from the Surveyor General, Department of Lands and Forests, Victoria, B.C.

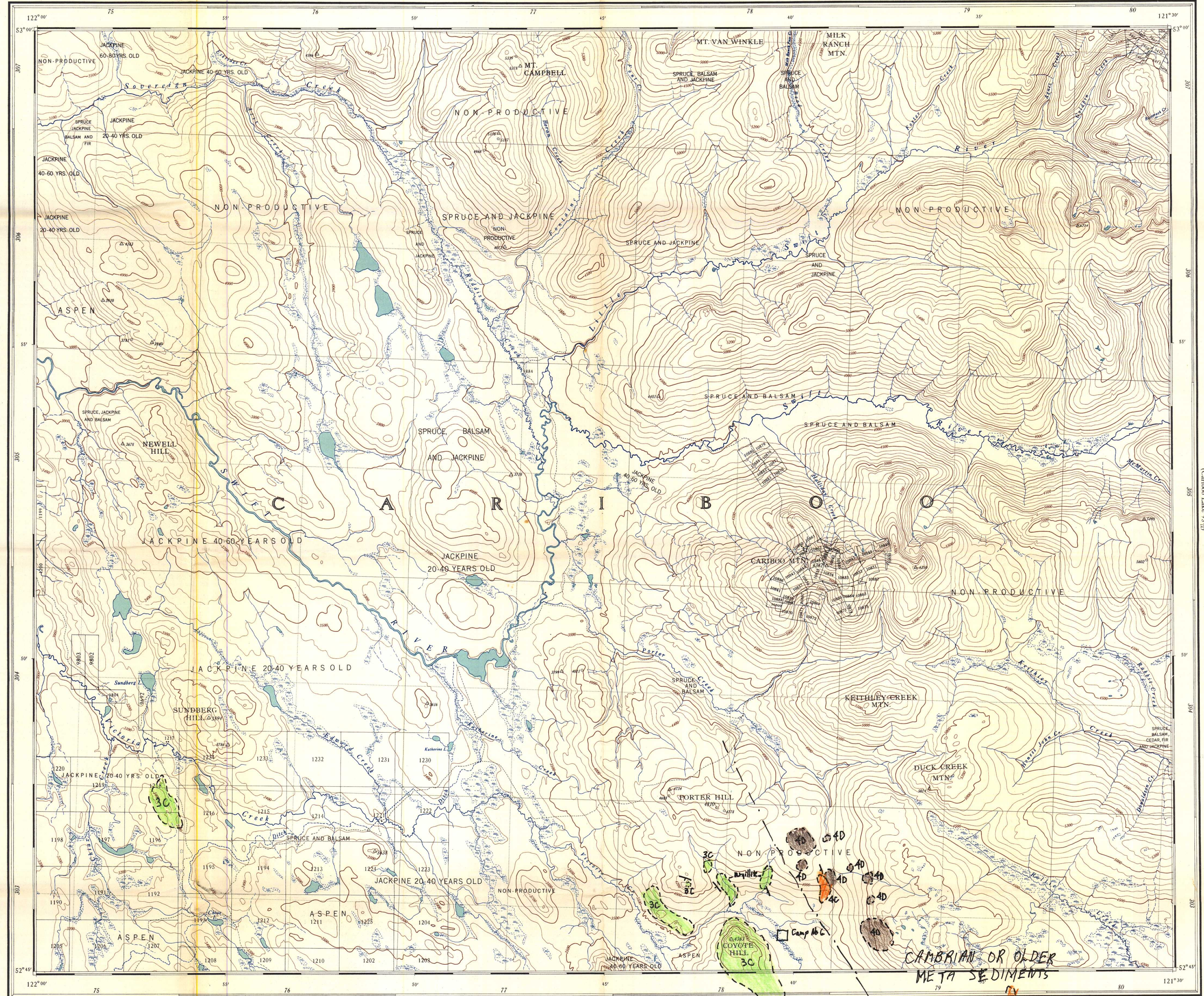
FOREST COVER EDITION

- REFERENCE
- Mature timber
- Immature timber
- Logged and burned areas
- Scrub



NOTE: On the above index the sheets published are shown tinted brown.



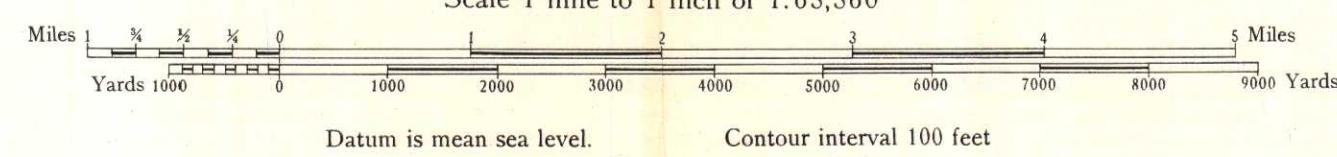


PRODUCED IN CO-OPERATION WITH THE DEPARTMENT OF LANDS AND FORESTS, PROVINCE OF BRITISH COLUMBIA.

The magnetic declination for 1949 is approximately 26° east of true north and is based on observations made at magnetic stations adjacent to the area. The declination is decreasing 4 minutes annually.

REFERENCE

|                           |                       |
|---------------------------|-----------------------|
| Surveyed line             | Building              |
| Pack trail or path        | Lot number            |
| Ditch                     | Triangulation station |
| Marsh, bog or open muskeg | Camera station        |
| Contours                  | Height in feet        |
| Non-perennial stream      |                       |



SWIFT RIVER  
BRITISH COLUMBIA

Scale 1 mile to 1 inch or 1:63,360

NOTE: The grid squares provide a ready method of referring to or locating features. They are four miles to a side and subdivided into quarters by dotted lines. The east and west sides of the squares are not true north and south lines, but have a deflection to the east varying from 1° 59' on the east side of the map to 1° 35' on the west side. Any square is identified by the numbers along the outer border, for example: Katherine Lake will be found in the southwest quarter of square 17-304.

Price 25 cents

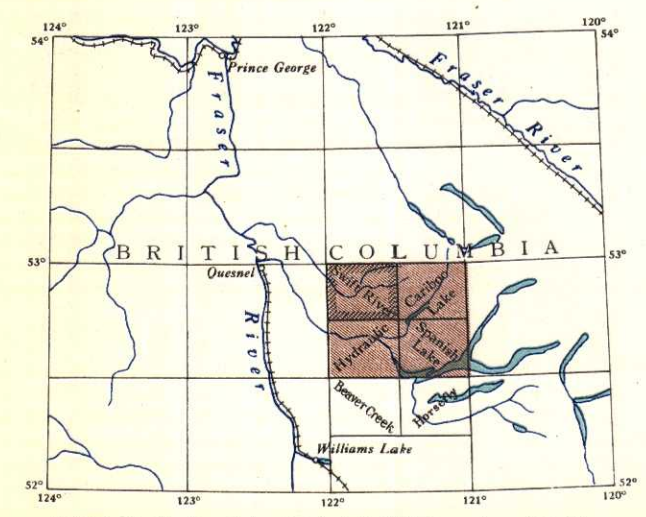
Copies may be obtained from the Map Distribution Office, Department of Mines and Resources, Ottawa, 1949; Compiled by the Department of Lands and Forests, British Columbia, from their surveys and from aerial photographs by the Royal Canadian Air Force.

Drawn and printed by the office of the Surveyor General 1930. Reprinted with corrections at the Survey and Mapping Bureau, Ottawa, 1949. Compiled by the Department of Lands and Forests, British Columbia, from their surveys and from aerial photographs by the Royal Canadian Air Force.

FOREST COVER EDITION

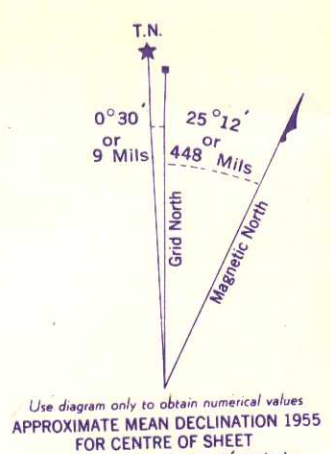
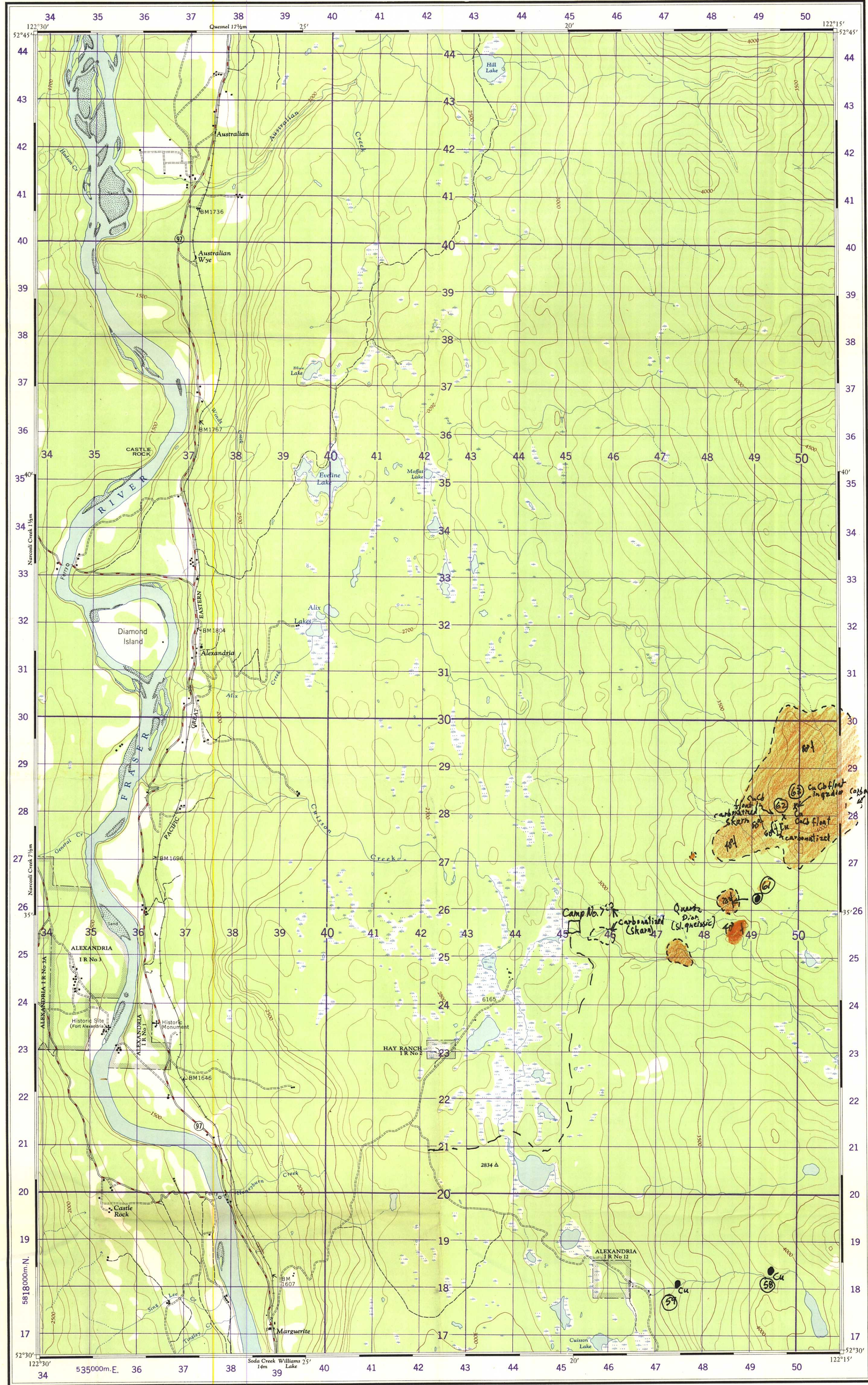
REFERENCE

|                         |
|-------------------------|
| Mature timber           |
| Immature timber         |
| Logged and burned areas |
| Scrub                   |
| Barren surface          |



NOTE: On the above index the sheets published are shown in black.





Surveyed and compiled by the Department of Lands and Forests, British Columbia. Produced by the Surveys and Mapping Branch, Department of Mines and Technical Surveys, Ottawa, 1955. Printed by the Army Survey Establishment, R.C.E., Department of National Defence, 1955.

# ALEXANDRIA

KAMLOOPS DISTRICT  
BRITISH COLUMBIA

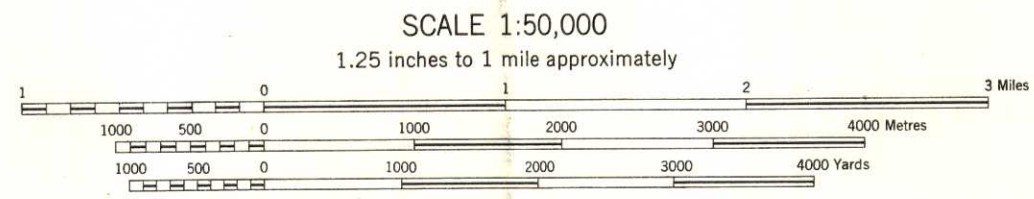
MAGNETIC DECLINATION 25° 42' EAST  
AT CENTRE OF MAP 1955  
Annual magnetic change 4' westerly

TO GIVE GRID REFERENCE ON THIS SHEET FIGURES, IGNORE THE SMALLER FIGURES PRINTED AROUND THE MARGIN OF THE MAP. THESE ARE FOR FINDING THE FULL COORDINATES. USE ONLY THE LARGER FIGURES PRINTED IN THE MARGIN OR ON THE FACE OF THE MAP. No. 535.

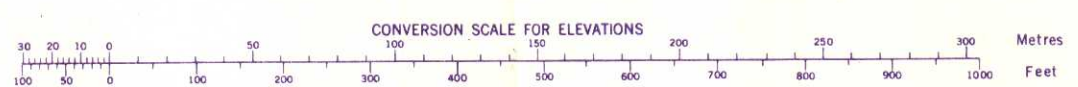
| POINT   |   | HORIZONTAL CONTROL POINT  |   |
|---|---|---|---|
| FOR STANDARD MILITARY GRID REFERENCE  |   |   |   |
| East  | North   | East  | North   |
| Take West edge of square in which point lies, and read the figure printed opposite this line on East or West margin or on the line itself on the face of the map. (Equivalent south to Eastward.) | Take South edge of square in which point lies, and read the figure printed opposite this line on North or South margin or on the line itself on the face of the map. (Equivalent north to Northward.) | Take West edge of square in which point lies, and read the figure printed opposite this line on East or West margin or on the line itself on the face of the map. (Equivalent south to Eastward.) | Take South edge of square in which point lies, and read the figure printed opposite this line on North or South margin or on the line itself on the face of the map. (Equivalent north to Northward.) |
| 43  | 20  | 6   | 6   |
| 436   | 206   | 436   | 206   |
| STANDARD MILITARY GRID REFERENCE 436206 (To nearest 100 Metres)   |   |   |   |
| Nearest similar grid reference: 100,000 Metres (Approximately 63 Miles)   |   |   |   |

## REFERENCE

|                                     |                   |
|-------------------------------------|-------------------|
| Roads:                              |                   |
| hard surface, all weather           | more than 2 lanes |
| hard surface, all weather           | less than 2 lanes |
| loose surface, all weather          | 2 lanes or more   |
| loose surface, dry weather          | less than 2 lanes |
| cart track; trail                   |                   |
| Railway: normal gauge, single track |                   |
| Boundaries:                         |                   |
| provincial (monument)               |                   |
| county or district                  |                   |
| township or parish                  |                   |
| Power transmission line             |                   |

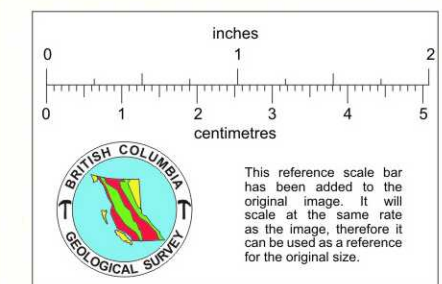


CONTOUR INTERVAL 100 FEET  
Elevations in Feet above Mean Sea Level  
North American Datum 1927



## REFERENCE

|                          |  |
|--------------------------|--|
| Telephone line           |  |
| Building                 |  |
| School                   |  |
| Post Office              |  |
| Church; Cemetery         |  |
| Horizontal control point |  |
| Streams:                 |  |
| intermittent or dry      |  |
| indefinite               |  |
| Marsh or Swamp           |  |
| Contours                 |  |
| Forest                   |  |













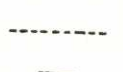





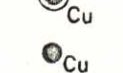


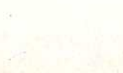


|                  |              |         |
|------------------|--------------|---------|
| 93 B/15          | 93 B/16      | 93 A/13 |
| QUEENSLAND RIVER | SWIFT RIVER  |         |
| 93 B/10          | 93 B/9       | 93 A/12 |
| ALEXANDRIA       | HYDRAULIC    |         |
| 93 B/7           | 93 B/8       | 93 A/5  |
| SODA CREEK       | BEAVER CREEK |         |

ALEXANDRIA  
93 B/9 WEST HALF



## SYMBOLS

|   |                           |   |                                   |
|---|---------------------------|---|-----------------------------------|
|  | LAKE                      |  | ATTITUDE OF SHEARING & FRACTURING |
|  | SWAMP                     |  | ATTITUDE OF BEDDING               |
|  | CREEK                     |  | TRENCH                            |
|  | MNT. PEAK                 |  | OUTCROP                           |
|  | CAMP SITE                 |  | GEOLOGICAL BOUNDARY ASSUMED       |
|  | ROAD (WELL TRAVELLED)     |  | GEOLOGICAL BOUNDARY DEFINED       |
|  | ROAD (SLIGHTLY TRAVELLED) |  | SMALL OUTCROP                     |
|  | TRAILS                    |  | LIMESTONE                         |
|  | COMMUNITIES               |  | PyPr PYRITE & PYRRHOTITE          |
| LOCATION OF KNOWN MINERAL OCCURRENCE  |                           |   |                                   |
|  | EXAMINED                  |   |                                   |
|  | REPORTED                  |   |                                   |
|  | NUMBER                    |   |                                   |
|  | BENCH MARK                |   |                                   |

## LEGEND

### CENOZOIC

 TERTIARY VOLCANICS & MINOR SEDIMENTARY ROCKS.

UNCONFORMITY


### MESOZOIC

PURPLE VOLCANIC SEQUENCE (CHARACTERIZED BY THE PRESENCE OF REDDISH BROWN & PURPLISH HEMATITE.)

 MASSIVE FLOWS, FURRUGINOUS BASALTS & ANDESITE.

 MASSIVE FLOWS, PINKISH COLOURED ANDESITE

 TUFF, LIMY WITH CRYSTALLINE FRAGMENTS OF AUGITE AND FELDSPAR, SOME PURPLISH FURRUGINOUS TYPES NON-LIMY.


 CONGLOMERATE, PEBBLES AND COBBLES COMPOSED ENTIRELY OF VOLCANIC ROCKS, PREDOMINANTLY PURPLE TYPES.

UNCONFORMITY

 PREDOMINANTLY GREENISH COLOURED ANDESITIC VOLCANIC ROCKS AND MINOR SEDIMENTS.

UNCONFORMITY

### PALEOZOIC

 (PERMIAN CACHE CREEK) LIMESTONE, SANDSTONE, ARGILLITE, CONGLOMERATE.

INTRUSIVE CONTACT


### MESOZOIC

 SYENITE - MONZONITE, (CARIBOO-BELL TYPE.)

 GRANITE, GRANODIORITE & DIORITE

### PALEOZOIC

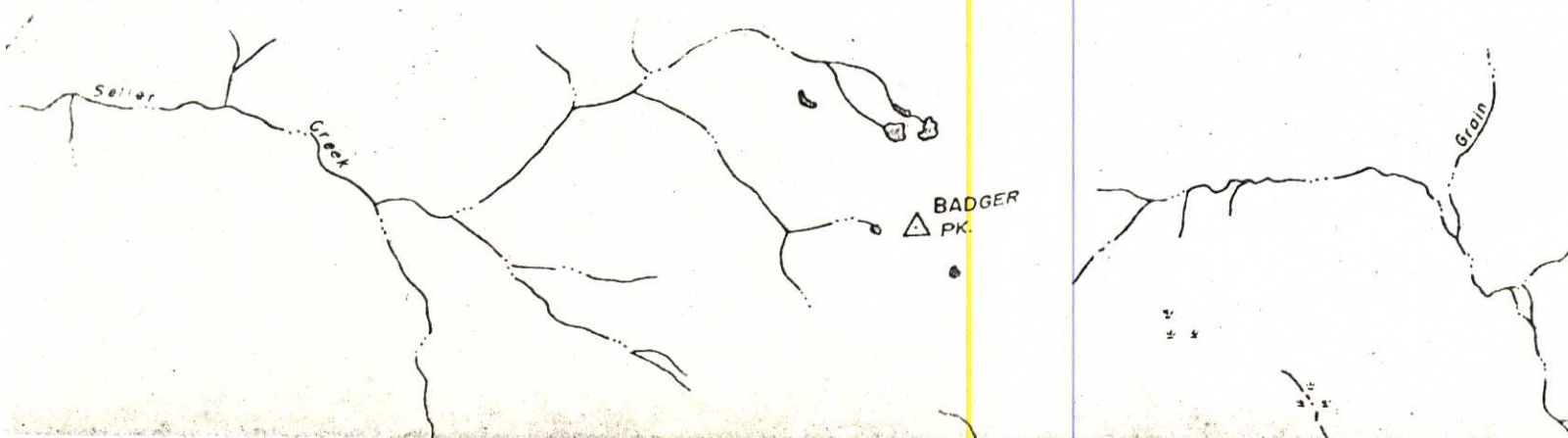
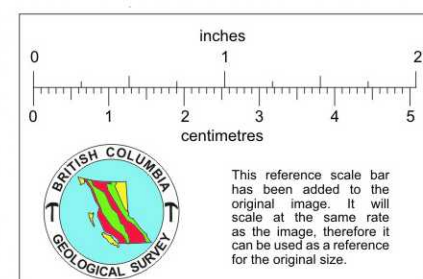
 GNEISSIC BIOTITE GRANITE & GRANODIORITE

 ULTRAMAFIC ROCKS, PYROXENITE, SERPENTENITE

## NOTES

### SOURCES OF GEOLOGICAL INFORMATION

1. FIELD MAPPING & PROSPECTING BY L.P. DUQUETTE, 1967
2. GEOLOGICAL MAP No. 3-1961 GEOLOGICAL SURVEY OF CANADA 1 inch = 4 miles
3. GEOLOGICAL MAP No. 12-1959 GEOLOGICAL SURVEY OF CANADA 1 inch = 4 miles
4. GEOLOGICAL MAP No. 294A (PROVISIONAL EDITION 1933 WALKER & COCKFIELD QUESNEL FORKS SHEET.) 1 inch = 1 mile
5. B.C. MINISTER OF MINES ANNUAL REPORTS.







PRODUCED IN CO-OPERATION WITH THE DEPARTMENT OF LANDS AND FORESTS, PROVINCE OF BRITISH COLUMBIA

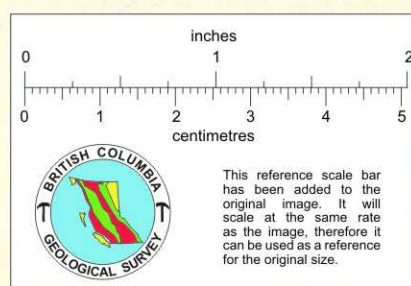
The magnetic declination for 1949 is approximately 26° east of true north and is based on observations made at magnetic stations adjacent to the area. The declination is decreasing 4 minutes annually.

REFERENCE

- |                           |                                |
|---------------------------|--------------------------------|
| Road: well travelled      | Non-perennial stream           |
| slightly travelled        | Building                       |
| Telephone line along road | Lot number                     |
| Surveyed line             | Surveyed timber license number |
| Pack trail or path        | Triangulation station          |
| Ditch                     | Camera station                 |
| Marsh, bog or open muskeg | Height in feet                 |
| Shoal, sand or gravel     |                                |
| Contours                  |                                |

Miles 1 2 3 4 5 6 7 8 9 10  
Yards 1000 2000 3000 4000 5000 6000 7000 8000 9000

Datum is mean sea level. Contour interval 100 feet



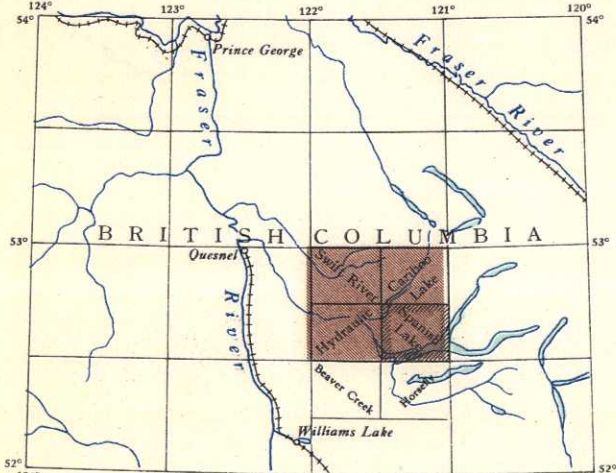
NOTE: The grid squares provide a ready method of referring to or locating features. They are four miles to a side and subdivided into quarters by dotted lines. The east and west sides of the squares are not true north and south lines, but have a declination to the east varying from 2° 23' on the east side of the map to 1° 58' on the west side. Any square is identified by the numbers along the outer border, for example: Henry Lake will be found in the northeast corner of square 85-29K.

Price 25 cents

FOREST COVER EDITION

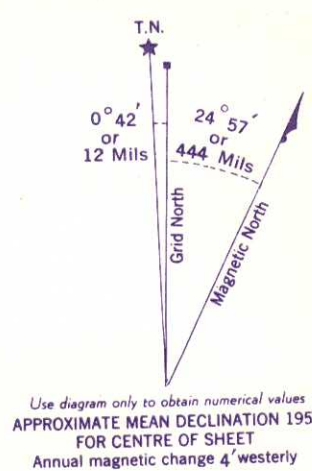
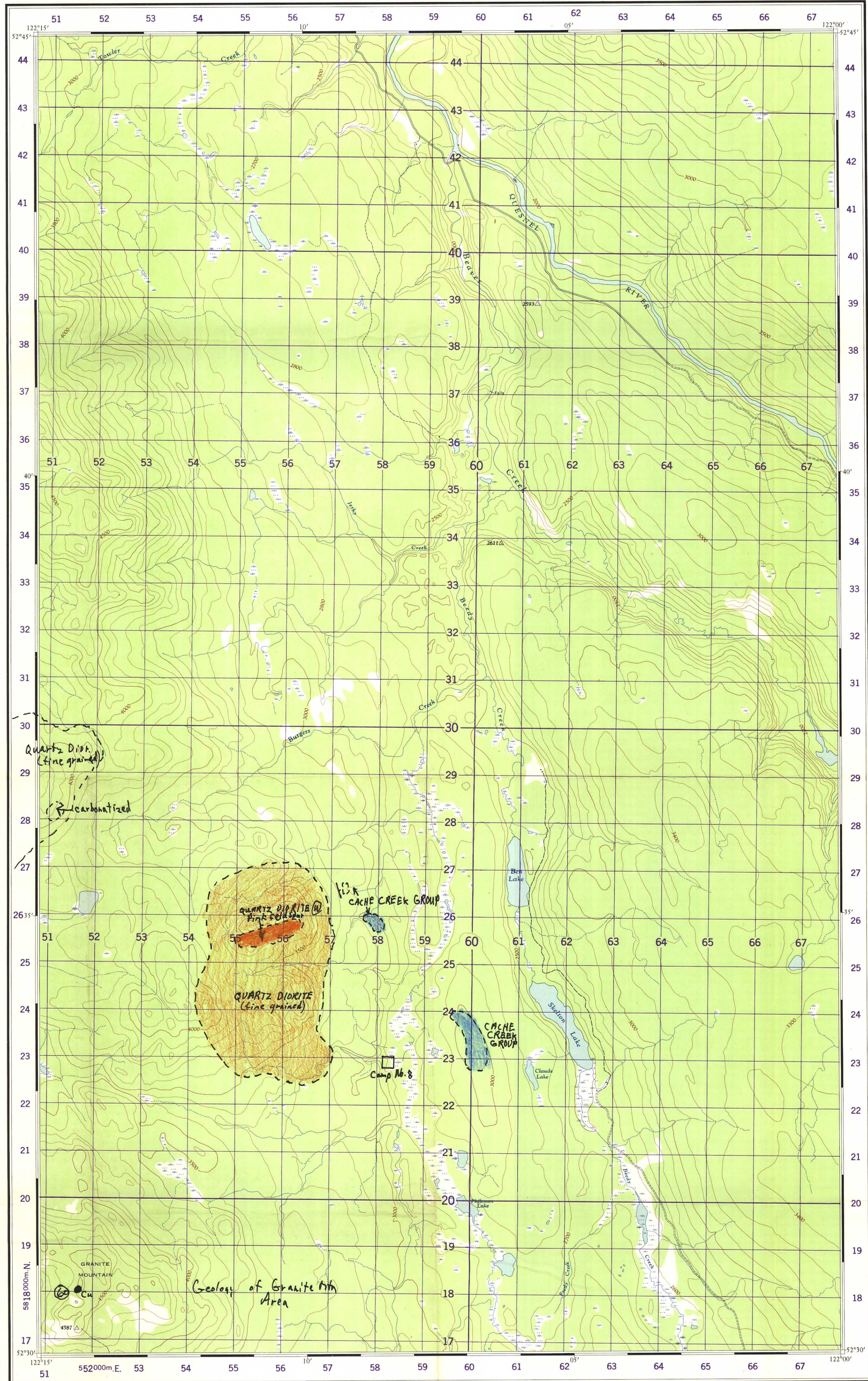
REFERENCE

- |                         |            |
|-------------------------|------------|
| Mature timber           |            |
| Immature timber         |            |
| Logged and burned areas |            |
| Shrub                   |            |
| Barren surface          | UNCOLOURED |



NOTE: On the above index the sheets published are shown listed brown.



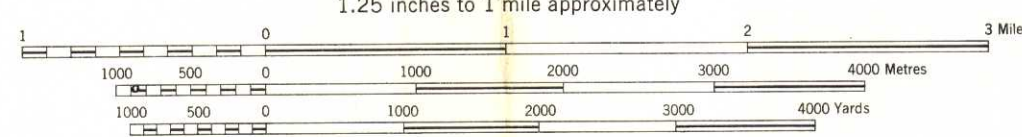


Use diagram only to obtain numerical values  
APPROXIMATE MEAN DECLINATION 1955  
FOR CENTRE OF SHEET  
Annual magnetic change 4' westerly

Surveyed and compiled by the Department of  
Lands and Forests, British Columbia.  
Produced by the Surveys and Mapping Branch,  
Department of Mines and Technical Surveys,  
Ottawa, 1955.  
Printed by the Army Survey Establishment,  
R.C.E., Department of National Defence, 1955.

# ALEXANDRIA KAMLOOPS DISTRICT BRITISH COLUMBIA

SCALE 1:50,000  
1.25 inches to 1 mile approximately

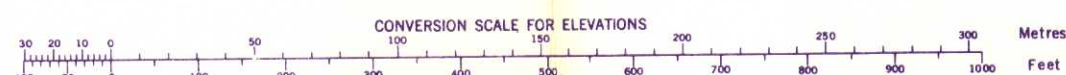


CONTOUR INTERVAL 100 FEET  
Elevations in Feet above Mean Sea Level  
North American Datum 1927

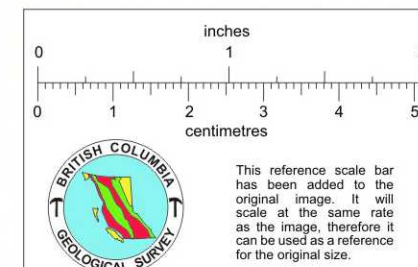
- REFERENCE
- Telephone line
  - Horizontal control point
  - Building
  - School; Post Office
  - Church; Cemetery
  - Streams:
    - intermittent or dry
    - indefinite
    - Marsh or Swamp
  - Contours
  - Forest

| TO GIVE GRID REFERENCE ON THIS SHEET<br>FIGURES, IGNORE THE SMALLER FIGURES PRINTED IN THE MARGIN OR<br>ON THE FACE OF THE MAP. Use 52  |   |      |       |
|---|---|------|-------|
| POINT HORIZONTAL CONTROL POINT  |   |      |       |
| FOR STANDARD MILITARY GRID REFERENCE  |   |      |       |
| East  | North   | East | North |
| Take West edge of square<br>in which point lies, and read<br>the figure printed opposite<br>this line on North or South<br>margin or on the line itself<br>on the face of the map.<br>Estimate tenths Eastward. | Take South edge of square<br>in which point lies, and read<br>the figure printed opposite<br>this line on East or West<br>margin or on the line itself<br>on the face of the map.<br>Estimate tenths Northward. | 60   | 33    |
| 606   | 606   | 606  | 339   |
| STANDARD MILITARY GRID REFERENCE 606339 (To nearest 100 Metres)   |   |      |       |
| Nearest similar grid reference 100,000 Metres (Approximately 63 Miles)  |   |      |       |

ONE THOUSAND METRE  
UNIVERSAL TRANSVERSE MERCATOR GRID  
ZONE 10



MAGNETIC DECLINATION 25°39' EAST  
AT CENTRE OF MAP 1955  
Annual magnetic change 4' westerly



|                  |              |         |
|------------------|--------------|---------|
| 93 B/15          | 93 B/16      | 121°30' |
| QUEENSLAND RIVER | SWIFT RIVER  |         |
| 93 B/10          | 93 B/9       | 93 A/12 |
| ALEXANDRIA       | HYDRAULIC    |         |
| 93 B/7           | SODA CREEK   | 93 A/5  |
|                  | BEAVER CREEK |         |
| 123°00'          | 123°00'      | 121°30' |

ALEXANDRIA  
93 B/9 EAST HALF



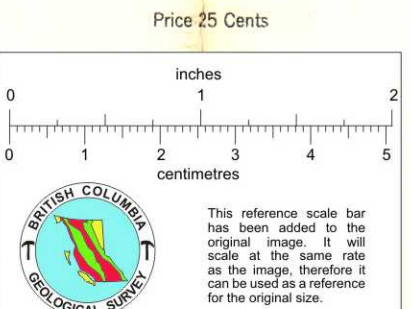
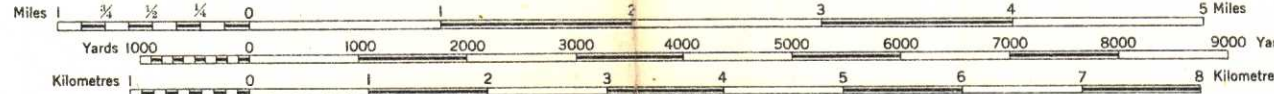


Published 1952  
Surveyed and compiled by the Department of Lands and Forests,  
British Columbia, from their surveys and from aerial photographs  
by the Royal Canadian Air Force.  
Drawn and Printed at the Survey and Mapping Branch, Ottawa.  
Magnetic declination 25° 44' East at centre of sheet, 1950. The  
declination of the compass needle is decreasing 4 minutes annu-  
ally.  
Copies may be obtained from the Map Distribution Office, De-  
partment of Mines and Technical Surveys, Ottawa, and from the  
Department of Lands and Forests, Victoria, B.C.

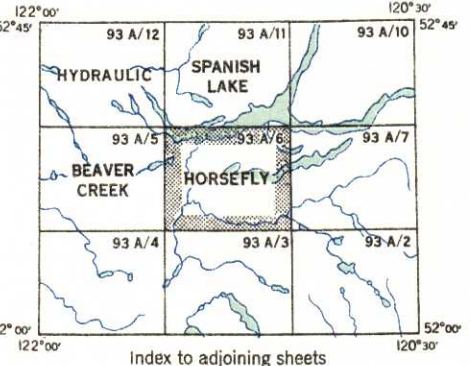
| REFERENCE                 |       |
|---------------------------|-------|
| Road, well travelled      | ————— |
| Road, slightly travelled  | ..... |
| Trail                     | ..... |
| Telephone line along road | ..... |
| Surveyed line             | ..... |
| Lot number                | ..... |
| Triangulation station     | ..... |
| Camera station            | ..... |
| Building                  | ..... |
| School                    | ..... |

**HORSEFLY**  
BRITISH COLUMBIA

Scale: 1:63,360 or 1 inch = 1 mile

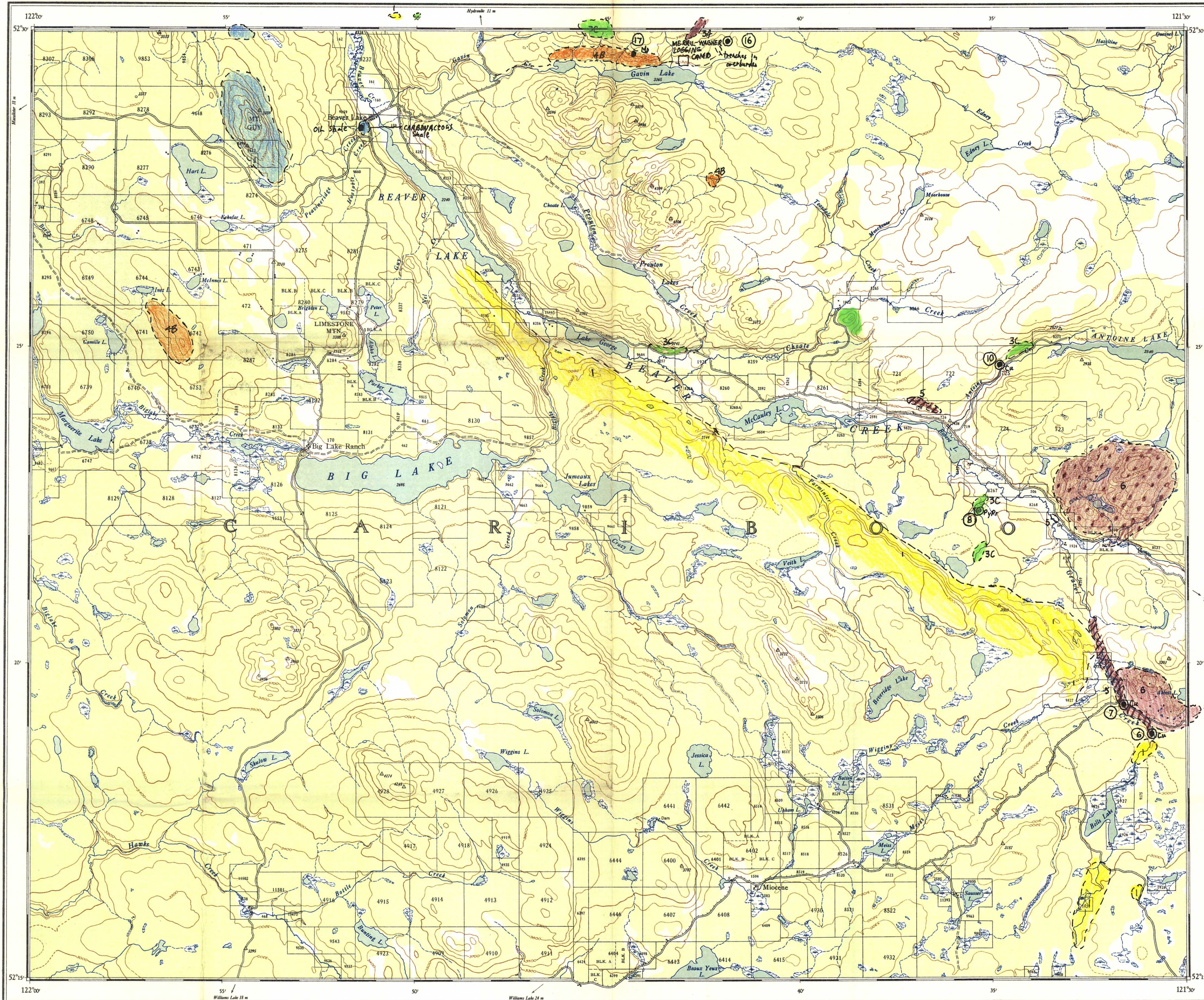


| REFERENCE                           |       |
|-------------------------------------|-------|
| Post office                         | ..... |
| Height in feet above mean sea-level | ..... |
| Stream                              | ..... |
| Stream, intermittent                | ..... |
| Falls                               | ..... |
| Sand bar                            | ..... |
| Marsh                               | ..... |
| Ditch                               | ..... |
| Contours, interval 100 feet         | ..... |
| Woods area                          | ..... |



HORSEFLY B.C.  
SHEET 93 1/6  
FIRST EDITION





Published 1952

Surveyed and compiled by the Department of Lands and Forests,  
British Columbia, from their surveys and from aerial photographs  
by the Royal Canadian Air Force.

Drawn and Printed at the Survey and Mapping Branch, Ottawa.

Magnetic declination 25°30' East at centre of sheet, 1950. The  
declination of the compass needle is decreasing 4 minutes annually.

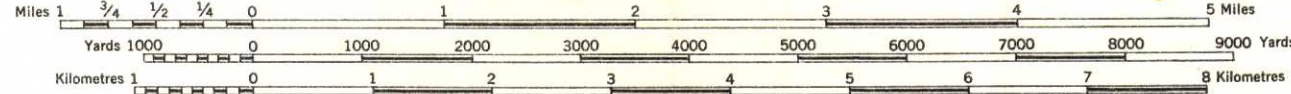
Copies may be obtained from the Map Distribution Office,  
Department of Mines and Technical Surveys, Ottawa, and from the  
Department of Lands and Forests, Victoria, B.C.

## REFERENCE

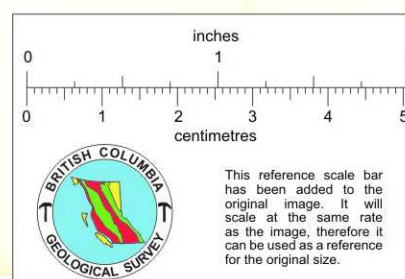
- Road, well travelled .....  
Road, slightly travelled .....  
Trail .....  
Telephone line along road .....  
Surveyed line .....  
Lot number .....  
Triangulation station .....  
Camera station .....  
Building .....

BEAVER CREEK  
BRITISH COLUMBIA

Scale: 1:63,360 or 1 inch = 1 mile

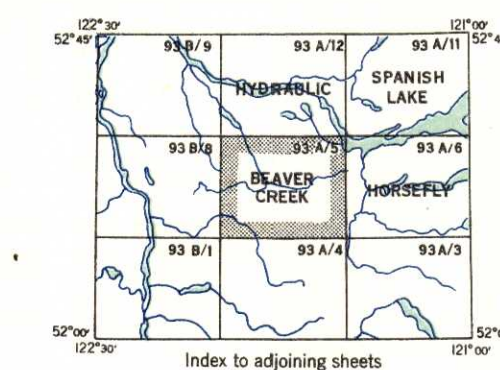


Price 25 Cents



## REFERENCE

- School .....  
Post office .....  
Height in feet above mean sea-level .....  
Stream .....  
Stream, intermittent .....  
Sand bar .....  
Marsh .....  
Contours, interval 100 feet .....  
Wooded area .....



BEAVER CREEK, B.C.  
SHEET 93 A/5  
FIRST EDITION