

330

REPORT  
on the  
GEOCHEMICAL SURVEY  
of the  
BRITMONT MINES PROPERTY  
MERRITT, B. C.

Fred J. Hensworth

December, 1960.

315-850 W Hastings St.,  
Vancouver 1, B.C.

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Department of  
Mines and Petroleum Resources  
ASSESSMENT REPORT

NO. 330 MAP.....

REPORT  
on the  
GEOCHEMICAL SURVEY  
of the  
BRITMONT MINES PROPERTY  
MERRITT, B.C.

INTRODUCTION

A geochemical survey was carried out on the Britmont Mines property at Merritt during the 1960 field season. Samples of soil were tested for copper by the rubeanic acid quantitative colorimetric method. The project was part of an exploration programme aimed at finding bodies of copper mineralization.

This report will describe the field procedure of sampling, the laboratory technique of analysis and will attempt to interpret the results obtained. A certain amount of data on the local conditions and geology will be included due to the necessity of integrating the geochemical results with the structural conditions. For additional information about the topography, geology and previous exploration the reader is referred to the writer's Summary Report of Britmont Mines Ltd. dated December 1959, which gives particulars of the magnetometer, electromagnetic and self-potential surveys conducted over sections of the claims, and also describes the results of diamond drilling.

This report on the soil survey and the accompanying maps are submitted in compliance with the Mineral Act claiming geochemical work for assessment credit on the groups of claims outlined in the text.

### LOCATION

The Britmont property is situated in the Nicola Mining Division, ten miles northwest of Merritt, B.C. The geographical position is latitude N50°10', longitude W121°00'. It lies on the south slope of Promontory Mountain, and is about two miles southwest of the Craigmont Copper Mine.

The claims are reached by means of the Promontory Mountain Lookout road which branches off Highway No. 8, at a point seven miles west of Merritt. The Lookout road runs through the centre portion of the claims. Various logging and forestry roads branch out making access to any particular portion of the property relatively easy.

### PROPERTY

The geochemical survey covered 110 mineral claims and fractions with a total area of about 3,600 acres. The survey is being recorded as assessment work for one year on 100 claims, divided into five groups of 20 claims each.

LIST OF CLAIMS

<u>Name</u>	<u>Tag No.</u>	<u>Record No.</u>	<u>Expiry Dates</u>
<u>Hank Group</u>			
Hank No. 2	317657	6394	March 23, 1962
Hank No. 3	318003	6395	March 23, 1962
Hank Nos. 4-10	318004-10	6396-6402	March 26, 1962
Hank No. 27	316087	6419	March 26, 1962
Hank Nos. 33-36	316033-36	6425-28	March 26, 1962
P.C.M. Nos. 35-40	308085-90	5362-67	Dec. 23, 1961
<u>Domino Group</u>			
Domino Nos. 1&2	316017-18	5368-69	Dec. 23, 1961
Domino Nos. 4-14	316020-30	5370-80	Dec. 23, 1961
Freda No. 2 Fr.	320492	8171	May 16, 1962
Freda No. 3 Fr.	320475	8172	May 16, 1962
Freda No. 5	320477	8173	May 16, 1962
Hank Nos. 29-32	316089-92	6421-24	March 26, 1962
<u>Freda Group</u>			
Freda No. 6	320478	8174	May 16, 1962
Freda Nos. 7&8	320469-70	8175-76	May 16, 1962
Hank No. 1	317531	6393	March 26, 1962
Hank No. 11	317658	6403	March 26, 1962
Hank Nos. 12-14	317660-62	6404-06	March 26, 1962
Hank No. 15	317665	6407	March 26, 1962
Hank No. 16	317664	6408	March 26, 1962
Hank Nos. 17-26	316077-86	6409-18	March 26, 1962
<u>P.C.M. Group</u>			
P.C.M. No. 7	316099	5334	Dec. 23, 1961
P.C.M. Nos. 17-21	316001-05	5344-48	Dec. 23, 1961
P.C.M. No. 23	316007	5350	Dec. 23, 1961
P.C.M. Nos. 25-32	308055-62	5352-59	Dec. 23, 1961
P.C.M. Nos. 33&34	308083-84	5360-61	Dec. 23, 1961
Delphi No. 1 Fr.	317738	7303	April 16, 1962
Delphi No. 2 Fr.	317737	7304	April 16, 1962
Delphi No. 4 Fr.	320488	7854	May 5, 1962
<u>Cap Group</u>			
Cap Nos. 1-3	265692-94	5316-18	Dec. 23, 1961
Jill Nos. 1&2 Frs.	335357-58	9017-18	July 15, 1962
P.C.M. Nos. 1-6	316093-98	5328-33	Dec. 23, 1961
P.C.M. No. 8	316100	5335	Dec. 23, 1961
P.C.M. Nos. 9&10	308069-70	5336-37	Dec. 23, 1961
P.C.M. No. 11	308049	5338	Dec. 23, 1961
P.C.M. No. 12	308072	5339	Dec. 23, 1961
P.C.M. No. 13	265700	5340	Dec. 23, 1961
P.C.M. No. 14	308074	5341	Dec. 23, 1961
P.C.M. No. 15	308050	5342	Dec. 23, 1961
P.C.M. No. 16	308076	5343	Dec. 23, 1961

All claims are owned outright by Britmont Mines Limited (N.P.L.). A map of the claims, showing the most recent grouping is contained in the envelope at the back of the report.

#### GENERAL DESCRIPTION OF AREA

The eastern limit of the claims lies on the bluffs overlooking Dry Lake and following along the contact with the Kingsvale group of rocks. To the south is the Nicola Valley. The western limit is below Indian Reserve No. 9, on the southwestern slope of Promontory Hills. Several thousand feet to the north of the Hank claims is the Forestry Lookout on Promontory Mountain.

Elevation of the claims is between 3,000 and 4,000 feet. The hills are generally rounded and not rugged in character. A number of long gullies with a south south-east direction traverse the property.

A field camp was established at the old Atomic Sawmill site where a well supplied good water during the dry summer season.

The area is fairly arid. Annual precipitation averages about 12 inches. In semi-arid districts such as Merritt, soil samples may be taken at shallow depths as the metal anomalies will be distributed fairly uniformly throughout the various soil horizons. The composition of the soil samples will depend on the composition of the underlying rock horizons and on the capillary rise of the ground waters.

Most of the property is covered with a mantle of unstratified glacial till. The silt, sand, gravel and boulders that constitute this overburden are of indeterminate thickness. Of the eight diamond drill holes put down on this property, four were started on rock outcrops and the others showed thicknesses of overburden of 6, 8, 12 and 20 feet. Referring to locating orebodies under loose materials of extraneous origin, I.I. Ginzburg in his book, Principles of Geochemical Prospecting states: "Bodies of this type may be located by geochemical prospecting methods provided they are not deeper than 10 metres below the surface".

Forest growth consists of widely-spaced pine and fir trees forming open park-like areas. Logging is proceeding at the present time and some of the merchantable timber has been removed leaving behind a strewn mass of broken logs and brush piles.

### GEOLOGY

Reference should be made to the geological plan of the Britmont claim area which may be found in the report envelope. The general geology shown is taken from the Preliminary Geological Map of Promontory Hills by Drs. M. Carr and R. Lee of the B.C. Department of Mines. The following explanatory notes relate to the rock types shown on the map.

#### Kingsvale Group

Kingsvale group rocks consist of rhyolite, andesite, basalt, breccias, and agglomerates with basalts predominating. These rocks outcrop on the extreme eastern part of the Britmont property. They are not known to contain any metallic sulphide mineralization.

#### Spences Bridge Group

The rocks of the Spences Bridge group consist of dense red and purple feldspar-porphyry lavas. They are believed to be lower Cretaceous in age, and are considered to be unfavorable host rocks for mineral. The contact between Spences Bridge and Nicola rocks occurs on the extreme western portions of the Britmont claims.

#### Igneous Rocks

The granite, diorite, and granitized rocks which outcrop on the southeast portion of the property are highly altered with the alteration consisting of chloritization of the mafic minerals and sericitization of the feldspars.

The diorites on the Domino claims appear to be related to the Guichon Batholith which lies a short distance to the north.

### Nicola Series

This series consist of andesites, breccia, tuffs, porphyries, and limestone. The Nicola rocks are considered to be geologically favorable hosts for mineralization. The Craigmont mine, which is situated two miles to the northeast, along the contact of the Guichon granites and Nicola rocks, has developed large orebodies of copper replacing beds of liny tuffs. Reserves are estimated at about 20 million tons grading about 2 percent copper.

The Nicola rocks occupy the central and western portions of the claims.

The main trend of all the volcanic and sedimentary rocks in the claims area is northeast and east. Attitudes taken on the stratified rocks show strikes of northeast and varying dips mostly steeply to the northwest or vertical. Occasional dips to the south suggest minor folding.

### GEOCHEMICAL SURVEY

#### Survey of Grid

Two baselines were used as a basis for positioning all soil samples. One baseline started at the east edge of Cap No. 8 mineral claim and ran 16,000 feet due west. The second baseline started at the southeast corner of Indian Reserve No. 9 and was run 6,000 feet east and 2,600 feet west. The baselines were surveyed by transit and chain with stations marked off at 200-foot intervals. From each station picket lines were run north and south to the property boundaries, using a Brunton compass. Soil samples were taken every 100 feet along these lines and at the position of each sample was driven a small wooden stake bearing the coordinates of the point marked with lumberman's crayon. With this method it is possible to return to the exact point at which any sample was taken and assures the true positioning of all important indications. Stations were designated 42W/15N, meaning 4,200 feet west along the baseline and 1,500 feet north.



### Soil Sampling Method

At each station (100-foot intervals) a shallow hole was dug with a garden trowel. The hole was deep enough to get below the surface humus and generally at a depth of about six inches. About two tablespoons of soil were used, care being taken to sort out roots, rocks and coarse material. The soil sample was placed in a polyethylene bag, labelled, rolled up, and secured with an elastic band. Samples were carried back to camp in a small packsack where they were packed in cartons for shipment to the testing laboratory in Vancouver.

The samples were labelled with the station coordinates. In addition to entering this number in his notebook, the field operator designated each sample with a consecutive number and also noted topographic and geologic features.

Particular care was taken to guard against contamination of the samples. Surface contamination may be expected as an interference factor under the following conditions:-

- (a) In open terrain by wind-blown materials.
- (b) In swampy areas by occasional flows of water.
- (c) From blasting of prospect pits in the vicinity.
- (d) From copper sulphate residue from prior self-potential surveys.
- (e) From human activities such as the dumping of scrap.
- (f) From crop sprays, fertilizers, and animal excretia.

### Laboratory Analyses

The spot tests for copper by the rubeanic acid method were done in a laboratory set up in Vancouver. These tests could have been done in the field but this would lead to slower and less accurate work. Two women were employed as laboratory technicians.

The testing process consisted of shaking with a strong acetic acid solution in a small test tube and pouring the mud into a filter, the tip of which rested on a strip of reagent paper, impregnated with rubeanic acid (dithio-oxamide). When copper is present, a blue spot develops, the more copper, the darker blue the spot.

In order to run three samples simultaneously, a rack was constructed with three clothes pins to hold the folded 9 cm filter papers in the correct position. Strips of rubeanic acid paper  $\frac{1}{2}$  inch wide resting on strips of absorbent paper were fed through slots at the back of the rack. A test-tube rack marked with the correct sludge levels was helpful in maintaining a constant amount of liquid.

A  $\frac{1}{2}$  teaspoon of soil was measured from the sample into a test tube; one teaspoon of extracting solution was added. The test tube was corked and the mixture shaken for 20 seconds. The mixture was then poured into the filter, and allowed to stand for a few minutes. The filtrate forms a spot on the rubeanic paper, the intensity of the blue color being proportionate to the amount of copper present. The number of the sample was written in pencil on the rubeanic paper directly below the spot.

The extracting solution was made up by mixing together one part acetic acid, one part water and two parts of a 25 percent solution of sodium acetate.

It was found that care was essential in measuring out the exact quantities of soil and solution, as the same amounts of color will be spread in quite a different fashion according to the concentration of solution.

#### Standards and Grading

Certain standard tests were made at the University Laboratory from field samples to determine the number of gammas of copper which filtered through. Quantities were delivered by microburette from a solution of the concentration indicated on the acid paper strip. About 5% of the liquid passes through the reagent paper if the test has been done properly, up to 7% if too much liquid is added. Using  $\frac{1}{2}$  teaspoonful of soil (about 1 gram) and 1 milliliter buffer, about 0.05 ml filters through. Analyses gave the amount of copper extractible by acetic reagents in gammas, or micrograms per gram. Parts per million were obtained approximately by multiplying the number of gammas by 20.

Standards supplied by Dr. R.E. Delevault covered 0, 0.2, 0.5, 1.0, 2.0, 4.0, and 10.0 parts per million of copper. Spots obtained from the analyses of all the soil samples were compared individually with the set of standards and graded.

Grading results were as follows:

<u>No. of Samples</u>	<u>Parts per million</u>	<u>Remarks</u>
6	0	Negative
621	0.2	Near Negative
3,893	0.5	Normal Background
3,345	1.0	Traces
307	1.5	Heavy Trace
42	2.0)	
4	4.0)	Anomalous amounts
3	10.0)	
<u>8,221</u>		

Of the 8,221 soil samples tested, 4,520 are interpreted as background, or uniformly distributed amounts of copper normal to the soil; 3,345 showed 1.0 part per million or a trace of copper; 307 contained 1.5 parts per million or a heavy trace; and the remaining 49 samples were considered as anomalous.

### Mapping

The map, showing the results of the geochemical survey, on a scale of 400 feet to one inch, is folded in the envelope on the back cover. The small circles give the position of each sample and the circles are marked as shown on the legend to indicate the copper content.

It is the general practice to draw lines through points containing the same amount of metal (copper). These are called concentration isograds, and close spacing of the curves is expressive of a high-metal content. It is assumed that the concentration isograds represent a quantitative distribution of the metal, not only at the surface of the mapped area but also at some depth.

Lines have been drawn around circles representing anomalous amounts of copper in order to outline dispersion halos or dispersion trains.

## RESULTS OF THE SURVEY

The purpose of the geochemical survey was to pinpoint zones of potential copper mineralization. Four such zones are outlined on the map. Of these four, the two anomalous zones on the Hank No. 13 claim appear large enough to be of possible economic importance. All four merit further investigation. In addition there are some isolated groups of moderate metal highs around which check samples should be taken.

All the anomalous areas are in the southwestern section of the property, and are contained within one group (Freda Group) of 20 claims. In the most cases the soil is underlain by the favorable limy rocks of the Nicola Series.

The eastern portion of the property was sterile or barren of indications of copper mineralization. The results showed a normal background count with few isolated exceptions. An exception to the normal field, such as on P.C.M. No. 2 at 62W/88, were one lone sample graded 2 p.p.m., is interpreted as due to a piece of copper-bearing float or due to contamination by some outside factor.

The higher-than-normal copper content on line 98W/1-48 on P.C.M. No. 19 is due to copper carried down the hill from a surface showing near the Kinvig Ranch on P.C.M. No. 21. The showing consists of disseminated chalcopyrite, malachite and hematite, and was investigated previously by blasting and diamond drilling.

Geologically, the eastern portion of the property is less favorable, a few claims being underlain by the Kingsvale volcanics and the major part underlain by granites and granitized rocks.

Moving west into the favorable Nicola rocks, heavy traces of copper are in evidence on P.C.M. Nos. 34, 35, 36, 39 claims and on Hank No. 8. Similarly on Hank Nos. 4 & 5, dual samples show anomalous quantities in close proximity but with little or no copper indicated in the adjacent samples. On the Domino No. 2 at the north boundary of the claim near-anomalous results are shown, but this is very close to the claim boundary and cannot be investigated to the north as the ground is held by other parties.

### Hank 13 Anomalies

The two anomalies or halos in the middle of the Hank No. 13 claim have a total area of about five acres and a general east-west strike. They may eventually prove to be two parts of the one dispersion halo. No magnetic anomalies are known in the immediate area although it should be noted that lines 24E and 26E tended to converge as they advanced southward.

Undoubtedly the anomalous results on the Hank 13 claim indicate the presence of copper mineralization close by. The exact position is indeterminate as it will depend on many factors such as the pitch, the contact with the host rocks, tectonic fissures and local topography.

Further investigation of these two anomalous areas is considered mandatory. Stripping and trenching by bulldozer is recommended.

### Hank 19 Anomaly

The metal "highs" on this anomaly are mostly along one north-south line and the halo has a smaller area. This is more indicative of a dispersion train from glacial float. However, it possibly could be the expression of an eastern extension of the Hank 13 mineralization, and investigation will depend on the results of the proposed work on the larger halos.

### Freda 8 Anomaly

This anomaly consists of only two highs, surrounded by adjacent barren results. However, several old pits were noted nearby. The small dumps contain pieces of rock showing chalcopyrite and malachite. The geochemical results would indicate that the mineralization is very limited in extent but since this was the only place where geochemical highs corresponded with mineralization found in place, some further investigation is warranted.

Statement of Expenses on the Geochemical Survey  
of the 100 claims owned by Britmont Mines Limited,  
Merritt, B.C.

Labor (including 4% holiday pay)

Field Men

D. Foster - @\$410.00 per month from July 6-Sept. 17/60----	\$1,012.78
R. Parker - @\$310.00 per month from July 5-Sept. 17/60----	779.12
W.R. Tremblay - @\$410.00 per month from Aug.16- Nov. 4/60-	1,114.65
J. Parr - @\$250.00 per month from Aug. 16-Sept. 2/60-----	147.34
A.R. Peters - @\$310.00 per month from Sept. 1-Nov. 4/60---	680.67
W. Rowbottom - @\$330.00 per month from Aug. 23-31/60-----	101.25

Laboratory

J. Armstrong - @\$8.00 per day from Sept. 1-Oct. 31/60-----	357.76
D. Bell - @\$11.00 per day from July 1-Dec. 15/60-----	1,420.00

Draftsman - F.W. Reger - 10 days @\$24.00 per day----- 240.00

Geochemist - Dr. R.E. Delevault -

Field Work - 5 days @\$50.00 per day-----	285.00
Laboratory - 1 day @\$35.00 per day-----	

Mining Engineer - F.J. Hemsworth - 5½ Months @\$700.00  
per month from July 1-Dec. 15, 1960----- 3,850.00

Workmen's Compensation----- 186.79

Unemployment Insurance----- 64.59

Total Labor \$10,239.95

Supplies

Cave and Company - test tubes, filter paper, sodium acetate, acetic acid, and stoppers-----\$106.75

R.D. Cattermole Ltd. - Plastic Bags----- 81.65

Clarke & Stuart Ltd. - Notebooks, drafting tape and rubber bands----- 51.02

Total Supplies 239.42

Certified Correct

Total \$10,479.37

*F.J. Hemsworth*  
F.J. Hemsworth,  
December 15, 1960.

315-850 West Hastings St.,  
Vancouver 1, B.C.

CONCLUSION

The results must not be considered as definitely conclusive. Halos may be absent in some cases, such as where the surficial mantle is too thick or where the erosion has been too severe, notwithstanding the presence of ore at depth. Conversely, because some hopeful anomalies have been noted, these do not necessarily infer either large or economic orebodies. However, the survey was successful in providing additional data on which to recommend the abandonment of large sterile areas and to recommend places on which further work should be concentrated.

Respectfully submitted,

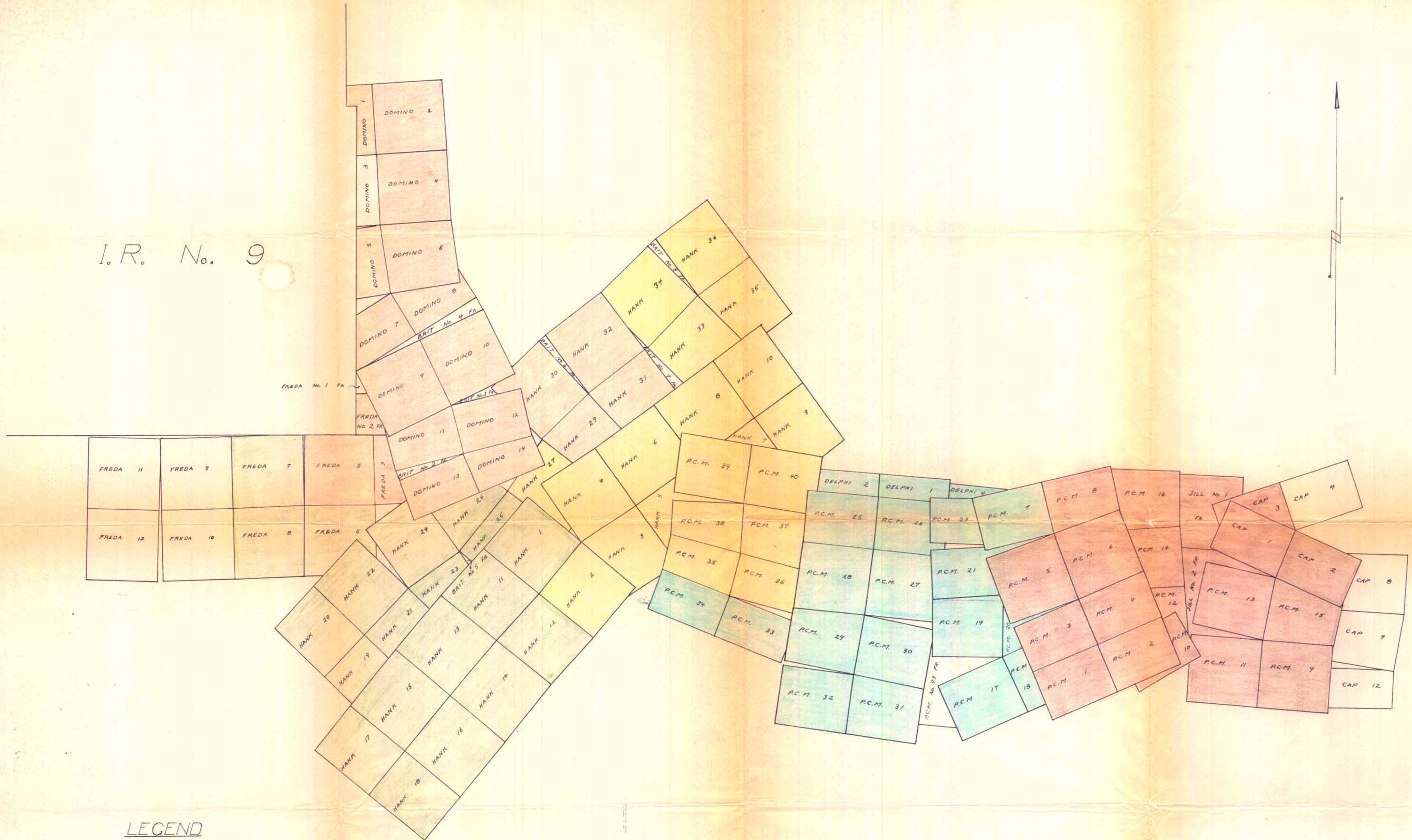


F.J. Hensworth, P.Eng.,  
Consulting Engineer.

December 15, 1960.



I.R. No. 9



LEGEND

- HANK GROUP ..... [yellow box]
- DOMINO GROUP ..... [orange box]
- FREDA GROUP ..... [light green box]
- P.C.M. GROUP ..... [green box]
- CAP GROUP ..... [red box]

CLAIM PLAN 330  
 BRITMONT MINES LTD.  
 MERRITT, B.C.

SCALE: 1 INCH = 1000 FEET

Department of  
 Mines and Petroleum Resources  
 ASSESSMENT REPORT  
 NO. 330 MAP 1

*J.J. Newborth*  
DEC. 1960



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# GEOLOGICAL MAP

## BRITMONT MINES LTD

Merritt, B.C.

Scale: 1 INCH = 1000 FEET

VANCOUVER, B.C.

DECEMBER 1960

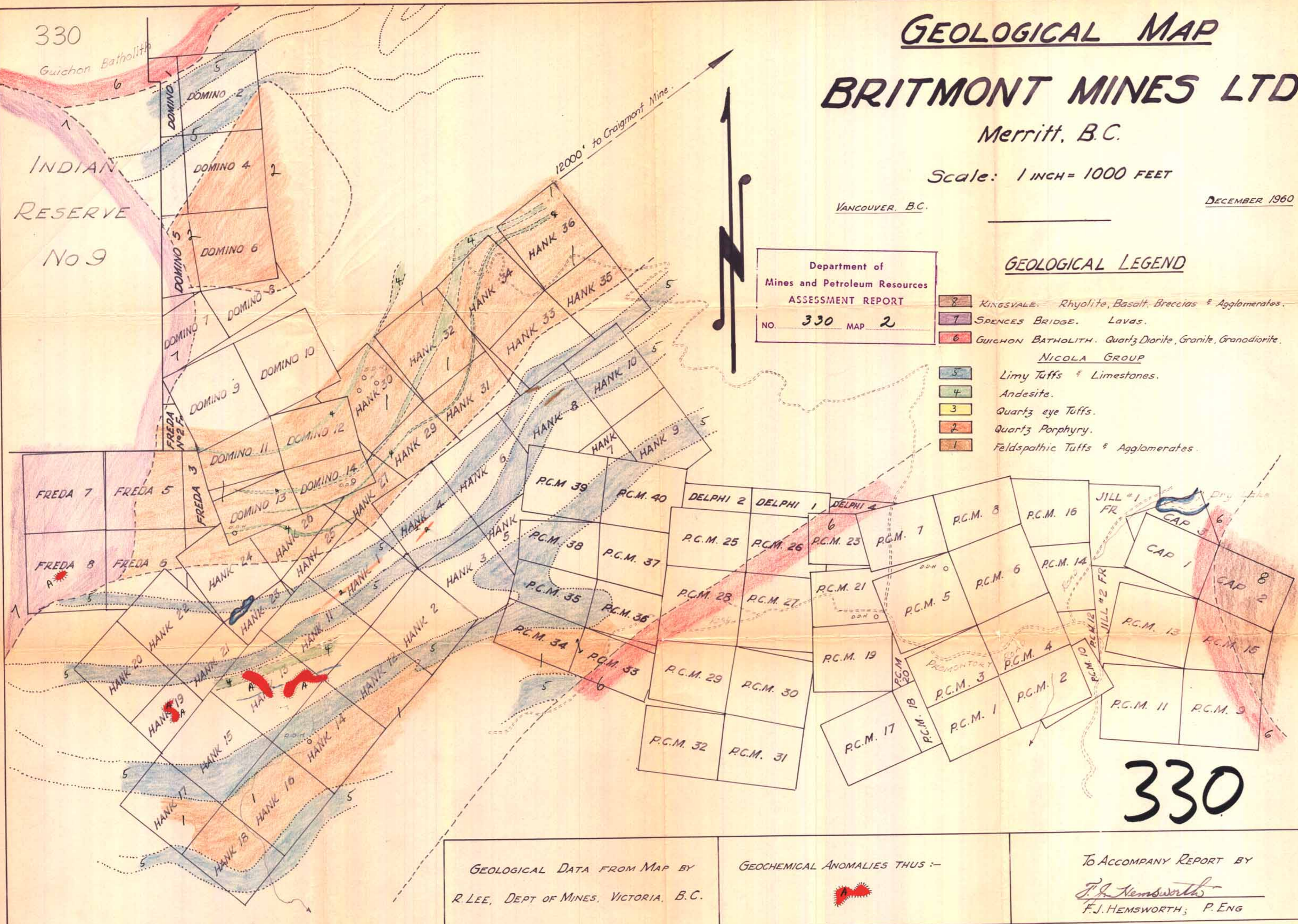
INDIAN RESERVE No 9

Department of Mines and Petroleum Resources  
ASSESSMENT REPORT


NO. 330 MAP 2

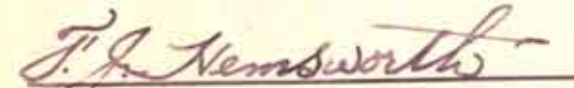
### GEOLOGICAL LEGEND

- 8 KINGSVALE. Rhyolite, Basalt, Breccias & Agglomerates.
- 7 SPENCES BRIDGE. Lavas.
- 6 GUICHON BATHOLITH. Quartz Diorite, Granite, Granodiorite.
- NICOLA GROUP
  - 5 Limy Tuffs & Limestones.
  - 4 Andesite.
  - 3 Quartz eye Tuffs.
  - 2 Quartz Porphyry.
  - 1 Feldspathic Tuffs & Agglomerates.



GEOLOGICAL DATA FROM MAP BY  
R. LEE, DEPT OF MINES, VICTORIA, B.C.

GEOCHEMICAL ANOMALIES THUS :-  


TO ACCOMPANY REPORT BY  
  
F.J. HEMSWORTH, P. ENG

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**GEOCHEMICAL SURVEY**  
**BRITMONT MINES LTD**  
**MERRITT, B.C.**

Scale: 1 IN = 400 FT.

VANCOUVER, B.C. DECEMBER 1960.

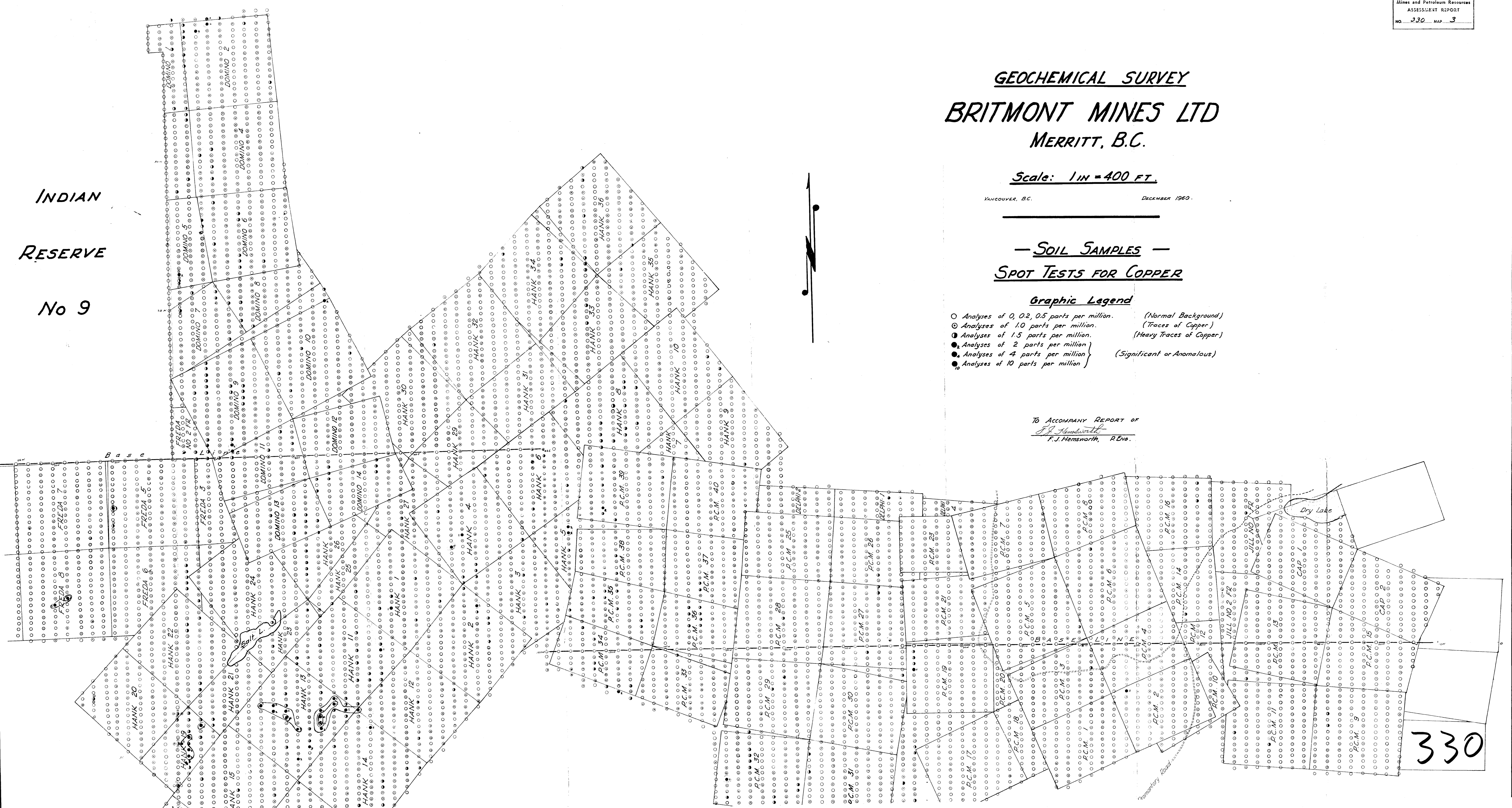
**— SOIL SAMPLES —**  
**SPOT TESTS FOR COPPER**

**Graphic Legend**

- Analyses of 0, 0.2, 0.5 parts per million. (Normal Background)
- Analyses of 1.0 parts per million. (Traces of Copper)
- Analyses of 1.5 parts per million. (Heavy Traces of Copper)
- Analyses of 2 parts per million } (Significant or Anomalous)
- Analyses of 4 parts per million }
- Analyses of 10 parts per million }

To ACCOMPANY REPORT OF  
*F.J. Hemsworth*  
F. J. Hemsworth, P. Eng.

INDIAN  
RESERVE  
No 9



330



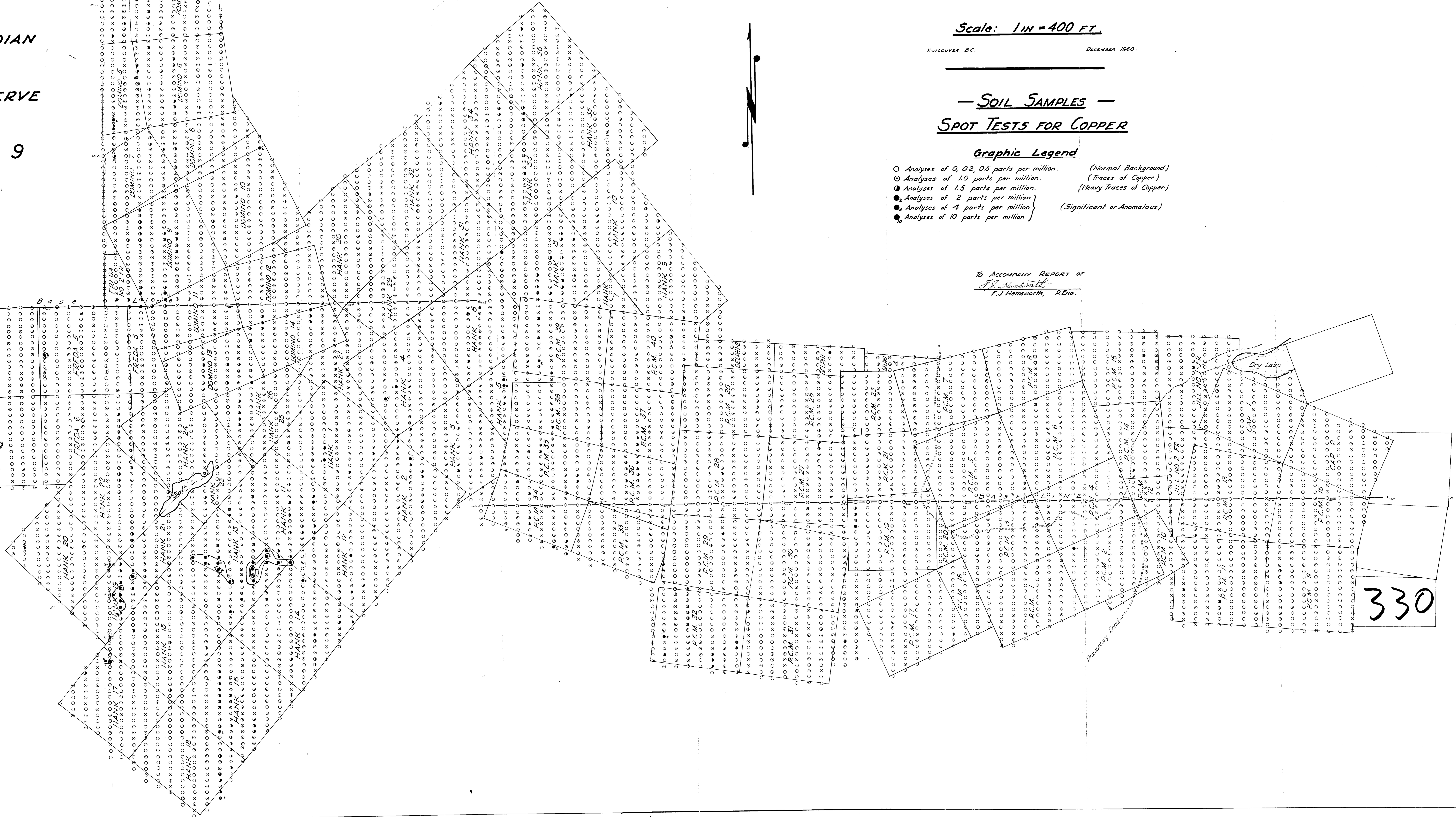
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  - Analyses of 4 parts per million
  - Analyses of 10 parts per million
- (Significant or Anomalous)

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