

GEOCHEMICAL REPORT
ON THE RIFF CLAIMS

RIFF 1 TO 23

1 MILE NORTHEAST OF ROCK CREEK, B.C.

LAT.: 49° 05'N., LONG.: 118° 59'

BY

DR. PETER J. HAMAN, P. ENG.

FOR

DEKALB MINING CORPORATION

CALGARY, ALBERTA

WORK DONE BETWEEN:

June 3, and July 25, 1970

2882

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2882 MAP

GEOCHEMICAL REPORT

ON THE

RIFF CLAIMS

Riff No. 1 - 23,

1 mile Northeast of Rock Creek, B. C.

Lat. $49^{\circ} 05'$ North, Long. $118^{\circ} 59'$ W.

by

Dr. Peter J. Haman, P. Eng.

For

DeKalb Mining Corporation,
Calgary, Alberta.

Work done between

June 3rd to July 25, 1970.

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Photomosaic, Scale approx. 1 inch = 1000 feet
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Lead, zinc, nickel, molybdenum, copper
Composite Geochemical Map
Detailed Geochemical Map, Scale: 1 inch = 100 feet
for copper and nickel

INTRODUCTION

On April 1st and 2nd, 1970, Mr. Koit Jurgens staked the Riff No. 1 - 21 claims on behalf of Mr. Ronald A. Buckley, Calgary, Alberta. The Riff No. 22 claim was located by Mr. Koit Jurgens on the 17th day of June 1970, and the Riff No. 23 was located by Mr. Thomas Roberts on the 26th day of June 1970; both on behalf of Mr. Ronald A. Buckley, Calgary, Alberta.

The ownership of the Riff claims was transferred by Bill of Sale recorded at Greenwood, B.C., on September 14, 1970 from Mr. Ronald A. Buckley to DeKalb Mining Corporation.

This report is submitted to file the Affidavit on Application for Certificate of Work on the Riff No. 1 - 23 claims.

THE RIFF CLAIMS

The Riff claims comprise a block of twenty-three mineral claims, situated immediately east of Kettle River, approximately one mile north-east of Rock Creek, B.C. The outline of the claims is shown on the accompanying mineral map (in pocket No. 1). The Riff No. 1 - 21 (Record No. 31824 - 31844) claims were recorded on April 6, 1970. Riff No. 22 (Record No. 32948) was recorded on the 19th of June 1970. Riff No. 23 (Record No. 33004) was recorded on the 26th of June 1970.

The Riff claims are to the north of the previously staked Venus 1 - 5 claims. The exact location of the Venus claims is not known since neither claim post, nor the claim lines were observed. The Riff claims join to the north with the Fir 1 - 8 claims which were staked at a later date.

History

The original inhabitation of the area was by native Indians of the Interior Salish division, Okanagan, and Lakes groups. The Lakes were a semi-nomadic group centered south of the International border, where they withdrew after European settlement. Their use of the Arrow Lakes region was mainly seasonal and apparently not exclusive. Kootenay, Shuswap, and Okanagan Indians also hunted there, and, in recent times have claimed the region as their own.

White settlers first entered the area during the gold rush at Rock Creek, in 1859, although it is reported that the botanist, David Douglas, had explored up the Kettle River as far as the present site of Grand Forks in 1826 during his trip down the Columbia. No permanent settlement was made, however, until late in the 1870's when Jim O'Connell took up residence, using the Kettle Valley as a wintering place for cattle.

Prospecting of the area started in 1859 when gold deposits were discovered in sand and gravels of Rock Creek, immediately southwest of the townsite of Rock Creek. Following this first gold rush prospectors scoured the grounds in the late '80's to the turn of the century.

Some of the early claims were staked approximately 1 mile north of the Riff claims. The Big Eddy claim is situated on the east bank of Kettle River, two miles above Rock Creek. Mineralization was observed in quartz veins in somewhat altered diorite. The quartz carries galena and pyrite scattered through it. A selected sample taken from a 120 foot tunnel assayed gold \$4.40/ton; silver 22 oz/ton.

The Riverside claim is situated directly south of Big Eddy. The ore body here appears to be silicification mineralization of a sheared zone in country rock, with dip 20° and strike N 25° W. The mineralization consists of galena, pyrite and some copper. Ten tons of sorted ore yielded gold: \$2.40/ton; silver 47 oz/ton. A quartz vein three inches thick on Ledge No. 2, carried arsenopyrite. Ledge No. 3 is a seam of decomposed quartz about six inches thick, varying in dip and strike and carrying galena and lead carbonate, from which an assay of 119 ounces of silver per ton is reported.

The Badger mineral claim is situated southeast of Riverside, and is 150 feet in elevation above the river. An eight inch quartz lead is cut off by a mineralized rock which is said to have yielded high assays in silver. The quartz carries some visible gold but no sample was taken for assaying.

(B. C. Minister of Mines Annual Report, 1900 - 1901, page 1146)

These claims were later part of the Imperial group which have been repeatedly worked. 815 tons of ore were mined between 1914 and 1949. The ore contained:

63 oz. gold (0.08 oz/ton)
8,562 oz. silver (10.5 oz/ton)
266 lbs. copper (0.33 oz/ton)
18,585 lbs. lead (23 lbs/ton)
23,732 lbs. zinc (29 oz/ton)

B. C. Minister of Mines Annual Report 1926, page A211: 1928 page C251:
1936 page D55: 1947 page A155.

The writer carried out a photogeological study during the winter 1969 - 70. The geological interpretations rendered the area favourable for mineral exploration and the claims were staked on behalf of Mr. Ronald A. Buckley, DeKalb Mining Corporation.

SOIL SAMPLING

A soil sampling program commenced on June 3, 1970, running the survey lines in N - S direction by using compass and chain. The line spacing and the distance between individual stations is approximately 250 feet. The samples were taken by auger, three feet long with a one inch wide thread. It was attempted to drill to maximum depth and the samples were obtained from the "B" horizon (brown soil) and the "C" horizon.

The samples were packaged in brown paper envelopes supplied by T.S.L. Laboratories Ltd.

PREPARATION OF THE BASE MAP

A photomosaic was constructed at an approximate scale of 1" = 1000 feet. The soil survey lines were plotted onto the mosaic. The western most line is called 0E and the lines to the east are consecutively numbered 25E, 50E, 75E, 100E etc. The lines are approximately spaced 250 feet apart. The northern most stations are called "0" South and are numbered towards south 25S, 50S, 75S, 100S etc. The writer has plotted the exact locations of several stations in the field by marking the station on aerial photographs with the aid of a pocket stereoscope. The position of other stations was reported by the crew. All surveyed stations were interpolated from the known locations.

The position of the Riff claim posts is shown on the photomosaic as square boxes.

GEOCHEMICAL ANALYSIS

The samples were sent to T.S.L. Laboratories Ltd., Vancouver, B. C. and analyzed for copper, lead, zinc, nickel and molybdenum. The samples were treated by hot aqua regia extraction and the metals determined by atomic absorption. The analysis was supervised by Mr. R. B. Fletcher, T.S.L. Laboratories Ltd.

The base map shows an area of detailed soil sampling (DSS) where the line spacing was reduced to 50 feet, and the samples taken in 50 foot intervals.

RESULTS OF THE GEOCHEMICAL ANALYSIS

The soil samples were analyzed for lead, zinc, nickel, copper, and molybdenum. The values are given in parts per million (ppm).

Lead

The background values of lead are approximately five ppm. The western part of the Riff claims shows values slightly above background. Three more pronounced anomalies occur at 225 E - 125 S, 100 E - 250 S, 175 E - 425 S. The latter anomaly is the most pronounced one with 89 ppm. The anomaly is located on a north sloping hill, near outcrops of Paleozoic andesite and tuff. The lead occurs in a northerly trending major fracture.

Zinc

The regional background of zinc lies near 15 ppm. Most zinc anomalies occur in the western part of the Riff claims. The most pronounced anomaly is located at 50 E, 300 - 550 S. The anomaly covers relatively flat, open terrain with very thick overburden of Pleistocene material. The eastern part of the anomaly covers outcrops of intrusive diorite, probably a small stock of the Nelson Batholith. A zinc deposit near the contact of the intrusive appears to be plausible, though further exploration is greatly hindered by the excessive thickness of Pleistocene material in the Kettle Valley.

Nickel

The background of nickel is approximately 5 ppm. A number of nickel anomalies were discovered within the Riff claims.

1. Anomaly - Location near 500 E - 50 S. This anomaly, with values up to 700 ppm, is located on a relatively open hill. A number of outcroppings in the vicinity show andesite and red to brown quartzites. The nickel probably occurs as nickel silicate within the quartzites.

2. Anomaly - Location 450 E - 175 S. This anomaly has values up to 411 ppm of nickel. The anomaly is located on a generally gently west dipping slope. Outcroppings in the vicinity show gneisses of unknown age. Andesites, greenstones, conglomerates, and quartzites are rocks of the Anarchist group. The nickel probably occurs in quartzites and conglomerates as nickel silicates. There is also a possibility of nickel silicates occurring in talc and serpentine. A detailed soil sampling program indicated a northeasterly trending nickel anomaly between 450 and 480 E. The anomaly follows precisely a small valley and the nickel may be associated with talc or serpentine.

3. Anomaly - Location 500 E - 750 S. This anomaly has values of nickel up to 329 ppm. The anomaly is located on a generally westerly dipping slope. The outcroppings of bedrock in the vicinity show andesite and quartzites of the Anarchist group. The nickel probably occurs as nickel silicate in quartzites.

4. Anomaly - Location 125 E - 450 S. This anomaly is located on the north flank of a prominent hill which outlines the extent of a small stock of the Nelson Batholith. The nickel occurs in serpentine,

overlying the diorite, striking in a northerly direction and dipping approximately 70° to the east. The nickel probably occurs as nickel silicate in serpentine, together with talc, near the intrusive contact. 8 rock samples of serpentine were taken and assayed for nickel by T.S.L. Laboratories Ltd.,

1.	.07% Ni	5.	.10% Ni - soil sample = 415 ppm Ni
2.	.03% Ni	6.	.24% Ni
3.	.09% Ni	7.	.03% Ni
4.	.05% Ni	8.	.02% Ni

The sample with the highest value of nickel (Sample 6 = .24% Ni) was taken from an old trench in serpentinized ultrabasic rock, a few feet north of the diorite contact. The concentration of the nickel silicates was apparently caused by the intrusive, and the nickel deposit is probably small.

A number of isolated nickel anomalies are present throughout the map but will not be described in any detail. Summarizing, we may say that the nickel occurs in (1) serpentine-talc, and these deposits may be relatively small. (2) nickel silicates also occur in brown and red quartzites, conglomerates, and possibly dolomites within the Anarchist group. These deposits may carry approximately .25% nickel and appear to be widely spread, and relatively thick.

Molybdenum

The background of molybdenum is .5 ppm or less. A number of small anomalies are present, mainly in the eastern part of the Riff claims. The highest anomaly at 600 E - 150 S has 36 ppm and lies on a gently west dipping slope. The molybdenum anomalies probably occur mainly in fractures only.

Copper

The background of copper is approximately 5 ppm. Most of the copper anomalies lie in the northern, and southwestern part of the Riff claims. The highest copper values appear in a cluster of anomalies in the north-central part of the Riff claims, with values up to 160 ppm. The anomalies are located on the northerly and westerly sloping flank of a hill. Rock outcroppings in the vicinity of the high copper values show a large spread of andesite which is partly recrystallized, and may look similar to diorite in places. A detailed soil sampling program indicated an anomaly approximately 200 feet long in an E - W direction, and 50 feet wide. The anomaly crosses the topography expressed by ridges and gullies running in a northerly direction. Rock outcroppings in the vicinity of the anomaly show diorite, strongly recrystallized andesite grading to diorite, and quartz-phyllite. The copper apparently occurs in diorite near the intrusive contact.

A more isolated copper anomaly lies at 200 E - 150 S. On the east flank of a N - S trending ridge which carries outcroppings of andesite, greenstone, and conglomerates of the Anarchist group. It is possible that this anomaly is connected with the cluster of copper anomalies to the east. A considerable thickness of Pleistocene overburden may explain why no anomalous copper values were found.

The more isolated copper anomalies in the southwestern part of the Riff claims usually occur near fractures, with outcroppings of andesite and diorite in the vicinity.

Composite Geochemical Map

A composite geochemical map was prepared by printing the contours of all metals analyzed onto one sheet. The map clearly shows that the highest concentration of metals occurs in the north-central part of the Riff claims. Most of the anomalies have high nickel and copper values.

SUMMARY AND RECOMMENDATIONS

A regional soil sampling survey was carried out on the Riff claims. The stations are 250 feet apart and are plotted on geochemical maps at a scale: 1 inch to 500 feet.

A prominent geochemical anomaly is located in the north-central portion of the Riff claims, and carries nickel and copper. The nickel probably occurs as nickel silicate in either serpentine-talc, or in quartzites and conglomerates of the Anarchist group. These rocks are interpreted as a fossil laterite. The copper is present near andesites and greenstones of the Anarchist group, which are partly recrystallized and intruded by small stocks of the Nelson Batholith. The copper is probably concentrated near the contact zone of Nelson diorites with andesites.

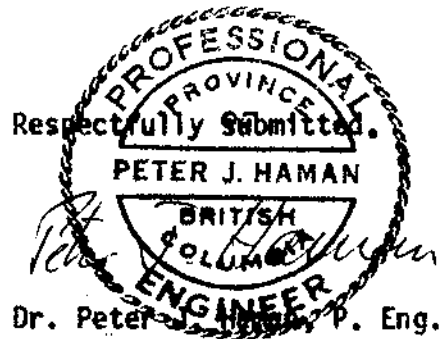
A second prominent nickel anomaly occurs in the west-central part of the Riff claims. The nickel is apparently concentrated as nickel silicate in serpentinized ultrabasic rocks near an intrusive contact. The highest concentration of nickel assayed .24% Ni.

A detailed soil sampling program together with geological mapping and structural analysis is recommended in the north-central part of the Riff claims, approximately between the lines 300 E - 500 E, 0 South - 250 S.

The west-central portion of the Riff claims appears to be favourable for nickel, copper and zinc. Further exploration in this area is, however, hindered by a considerable thickness of Pleistocene overburden. Geophysical exploration is probably of greater value than soil sampling. To explore the economic potential of contact mineralization some drilling is recommended near the location 50 E - 500 S, with drilling inclined towards the east to intersect the intrusive contact underneath the glacial overburden.

SALARIES AND EXPENSES

1. Salaries and expenses for soil sampling crew at \$30.00 for each man per day	\$ 2,700.00
2. Sample analysis for T.S.L. Laboratories Limited	2,060.82
3. Professional services by Dr. Peter J. Haman, geological supervision, field mapping, supervision and report writing 20 days @ \$140.00 per day	2,800.00
4. Expenses for Field Office and accommodation at \$40.00 per day for 20 days	800.00
5. Rental of one Toyota 4-wheel drive, 1 Dune Buggy, 1 Volkswagen, gas, 20 days	679.00
Total	<u>\$ 9,039.82</u>



Expiry Date March 26, 1971

Dated January 18, 1971

R I F F C L A I M S

<u>Date</u>	<u>Names</u>	<u>No. of Men</u>	<u>Total Salary & Expenses</u>
June 3/70	D. Ward, T. Morris, J. McLeod, Al Kaus, G. Mayne, G. Shaw	6	\$ 180.00
June 4/70	D. Ward, T. Morris, J. McLeod, A. Kaus, G. Mayne, G. Shaw	6	180.00
June 5/70	D. Ward, T. Morris, J. McLeod, A. Kaus, G. Mayne, G. Shaw	6	180.00
June 6/70	D. Hammond, T. Morris, G. Shaw, D. Ward A. Kaus, G. Mayne, J. McLeod	7	210.00
June 7/70	D. Hammond, T. Morris, G. Shaw, D. Ward A. Kaus, J. McLeod, G. Mayne	7	210.00
June 8/70	D. Hammond, T. Morris, G. Shaw, G. Mayne D. Ward, A. Kaus, J. McLeod	7	210.00
June 9/70	D. Hammond, T. Morris, G. Shaw, D. Ward A. Kaus, J. McLeod, G. Mayne, R. Burke	8	240.00
June 10/70	D. Hammond, D. Ward, J. McLeod, T. Morris, G. Shaw, A. Kaus, G. Mayne, R. Burke	8	240.00
June 11/70	D. Hammond, D. Ward, J. McLeod, T. Morris G. Shaw, A. Kaus, G. Mayne, R. Burke	8	240.00
June 17/70	K. Jurgens, D. Iwasiuk, R. Snell	3	90.00
June 25/70	D. Iwasiuk, R. Snell	2	60.00
July 3/70	J. McLeod, T. Morris, D. Ward	3	90.00
July 4/70	J. McLeod, T. Morris, D. Ward	3	90.00
July 5/70	J. McLeod, T. Morris, D. Ward	3	90.00
July 6/70	J. McLeod, T. Morris, D. Ward	3	90.00
July 7/70	J. McLeod, T. Morris, D. Ward	3	90.00
July 8/70	J. McLeod, T. Morris, D. Ward	3	90.00
July 9/70	J. McLeod, T. Morris, D. Ward	3	90.00
July 25/70	J. McLeod	1	30.00

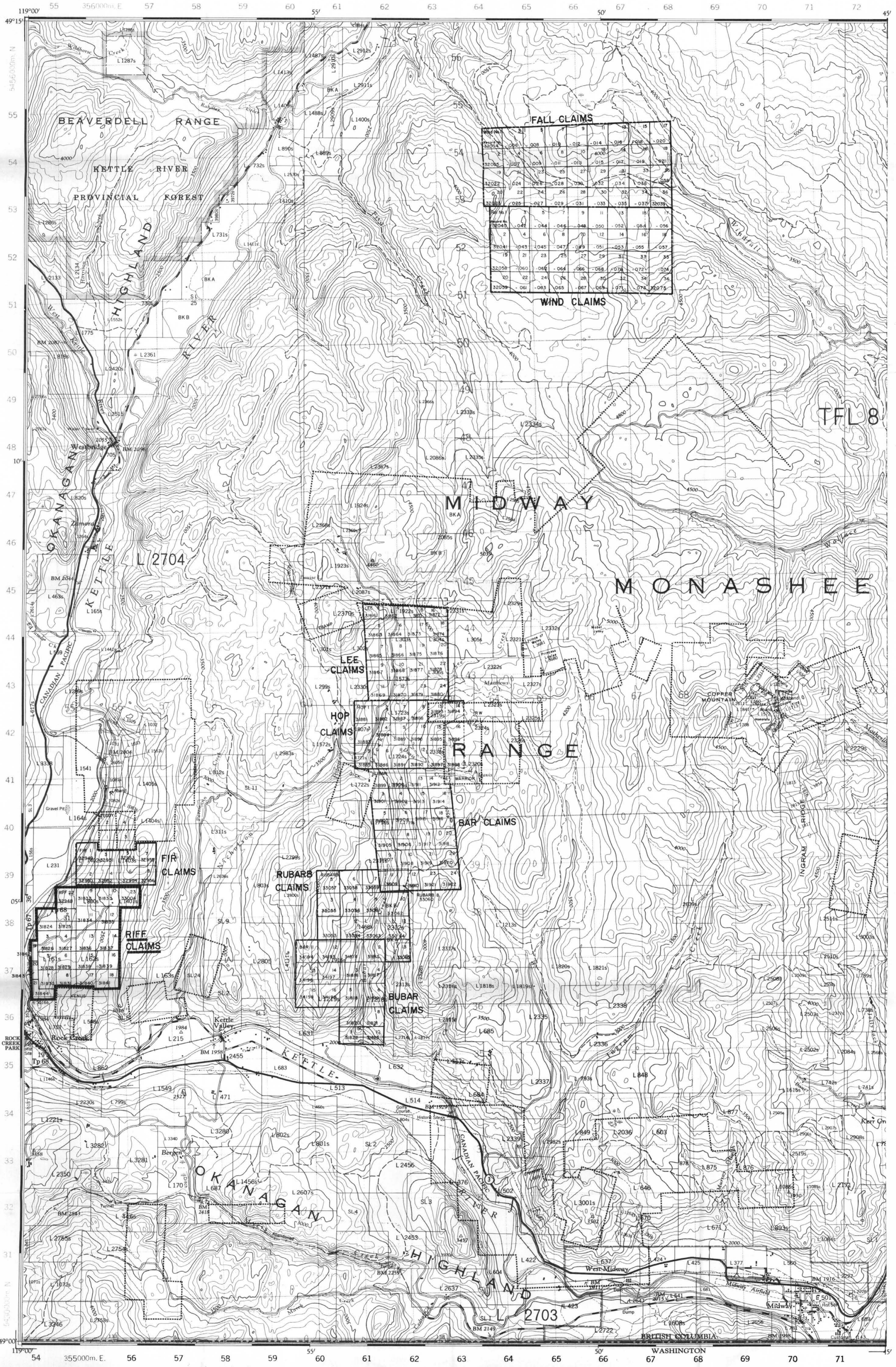
Total salaries and expenses: 90 days

\$ 2,700.00

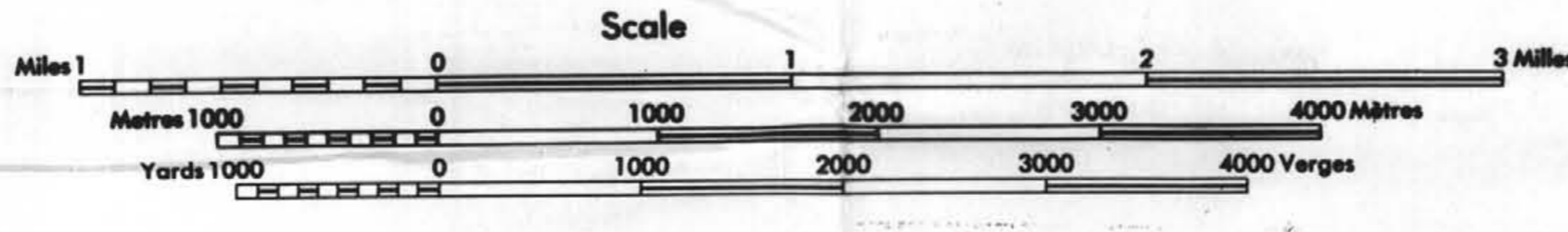
(The total salary and expenses is calculated by number of men times 30.00)

REFERENCES

	<u>Year</u>	<u>Page</u>
B. C. Minister of Mines Annual Reports:	1900-01	1146
	1926	A211
	1928	C251
	1936	D 55
	1947	A155
Little, H. W. (1957) Geological Map 6 - 1957, Kettle River (East Half) Scale: 1 inch to 4 miles.		
Monger, J. W. H. (1968) Paper 67-42 Early Tertiary Stratified Rocks, Greenwood Map area (82E/2) B. C. Geol. Surv. Canada.		



Roads:	Routes:	more than 2 lanes	2 lanes
hard surface, all weather	pavé, toute saison	plus de 2 voies	2 voies
hard surface, all weather	pavé, toute saison	less than 2 lanes	moins de 2 voies
loose or stabilized surface, all weather	gravier aggloméré, toute saison	2 lanes or more	plus de 2 voies
loose surface, dry weather	de gravier, période sèche	2 lanes or plus	moins de 2 voies
cart tracks	de terre		
trail or portage	sentier ou portage		



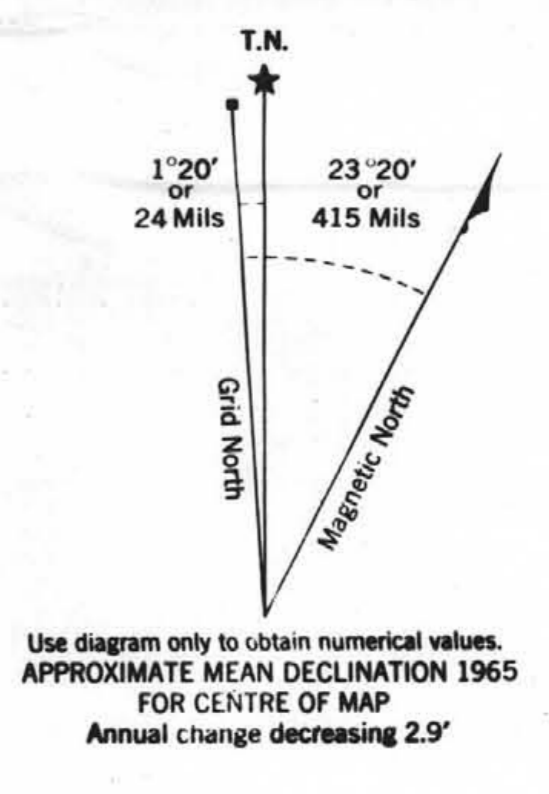
MINERAL MAP

82 E/2 W

Mineral Map to accompany geochemical, geophysical, and geological reports by Dr. P. J. Haman, P. Eng., on the Riff claims, Rock Creek area, Greenwood Mining Division.

Dated January 18, 1971
Signed Pete J. Haman

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ASSESSMENT REPORT
NO. 2882 MAP #1



Use diagram only to obtain numerical values.
APPROXIMATE MEAN DECLINATION 1965
FOR CENTRE OF MAP
Annual change decreasing 2.9'



RIFF CLAIMS

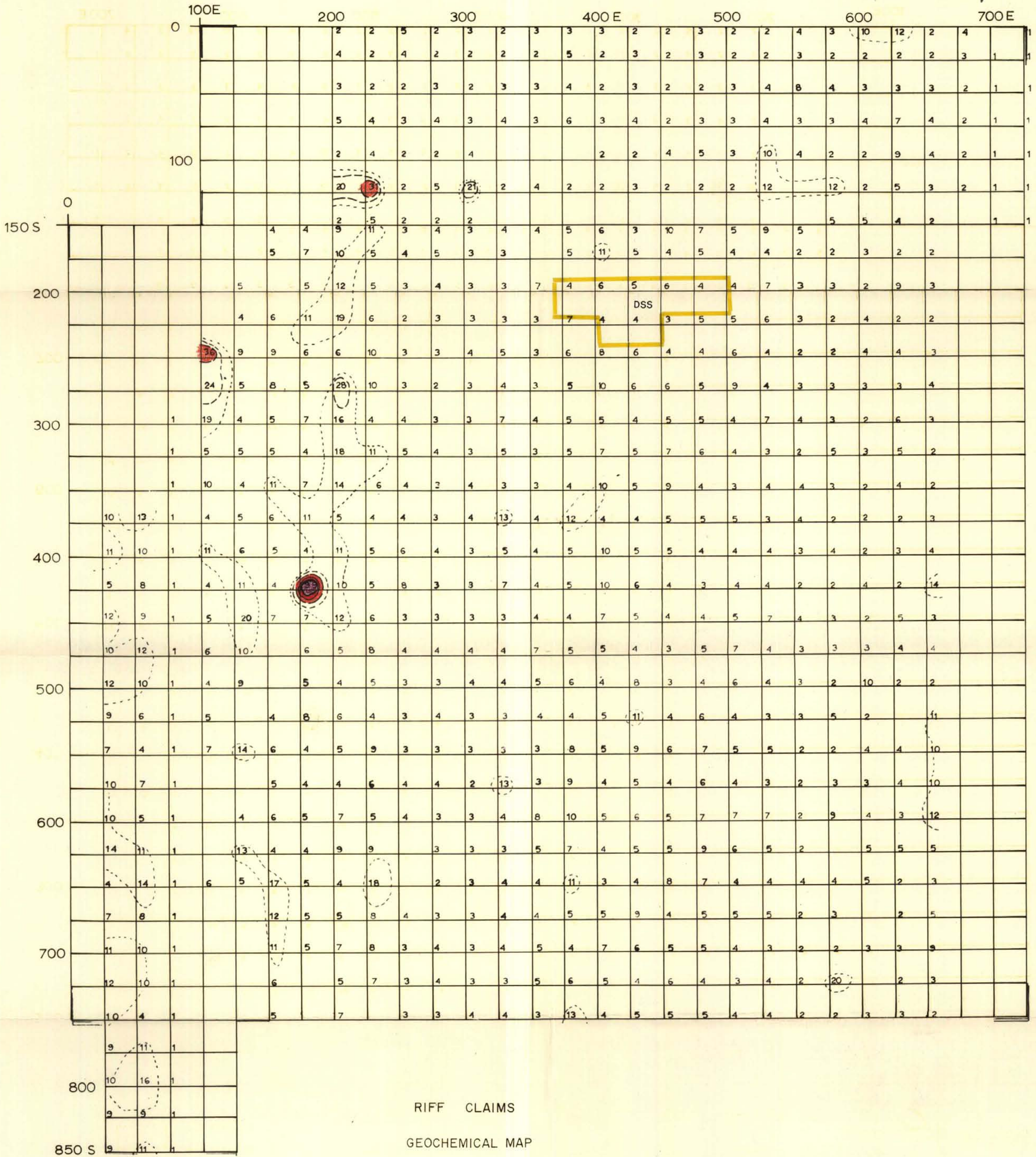
Approx. Scale : 1 inch to 1,000 feet

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 2882 MAP #2

Photo-Mosaic to accompany geological, geophysical and geochemical reports by Dr. P. J. Haman, P. Eng., on the Riff claims, Rock Creek area, B.C., Greenwood Mining Division.

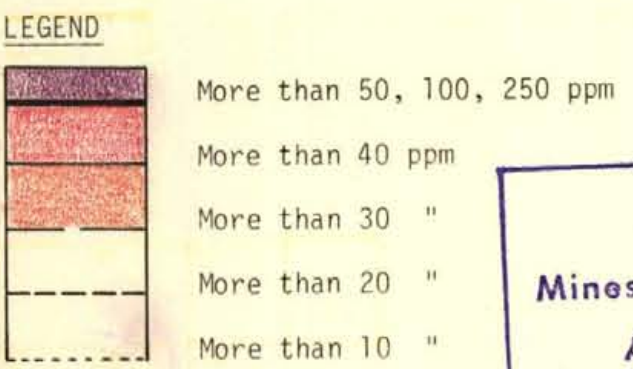
Dated January 18, 1971

Signed Pete J. Haman



RIFF CLAIMS
GEOCHEMICAL MAP

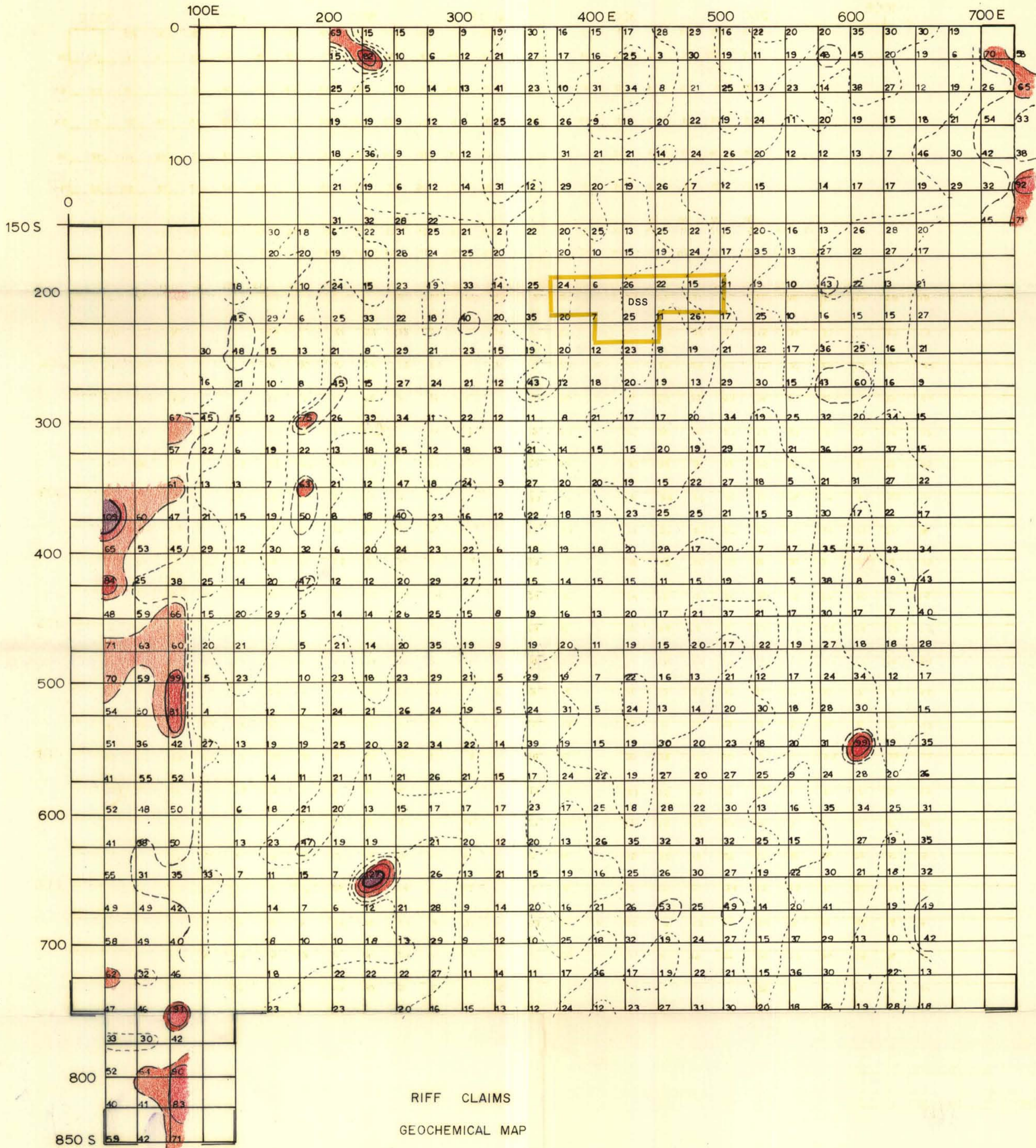
Scale: 1 inch to 500 feet
ppm Lead



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ASSESSMENT REPORT
NO. 2882 MAP #3

Geochemical Map to accompany geochemical report by
Dr. P. J. Haman, P. Eng., on the Riff claims, Rock
Creek area, B.C., Greenwood Mining Division.

Dated January 18, 1971
Signed Peter J. Haman



RIFF CLAIMS
GEOCHEMICAL MAP

Scale: 1 inch to 500 feet
ppm Zinc

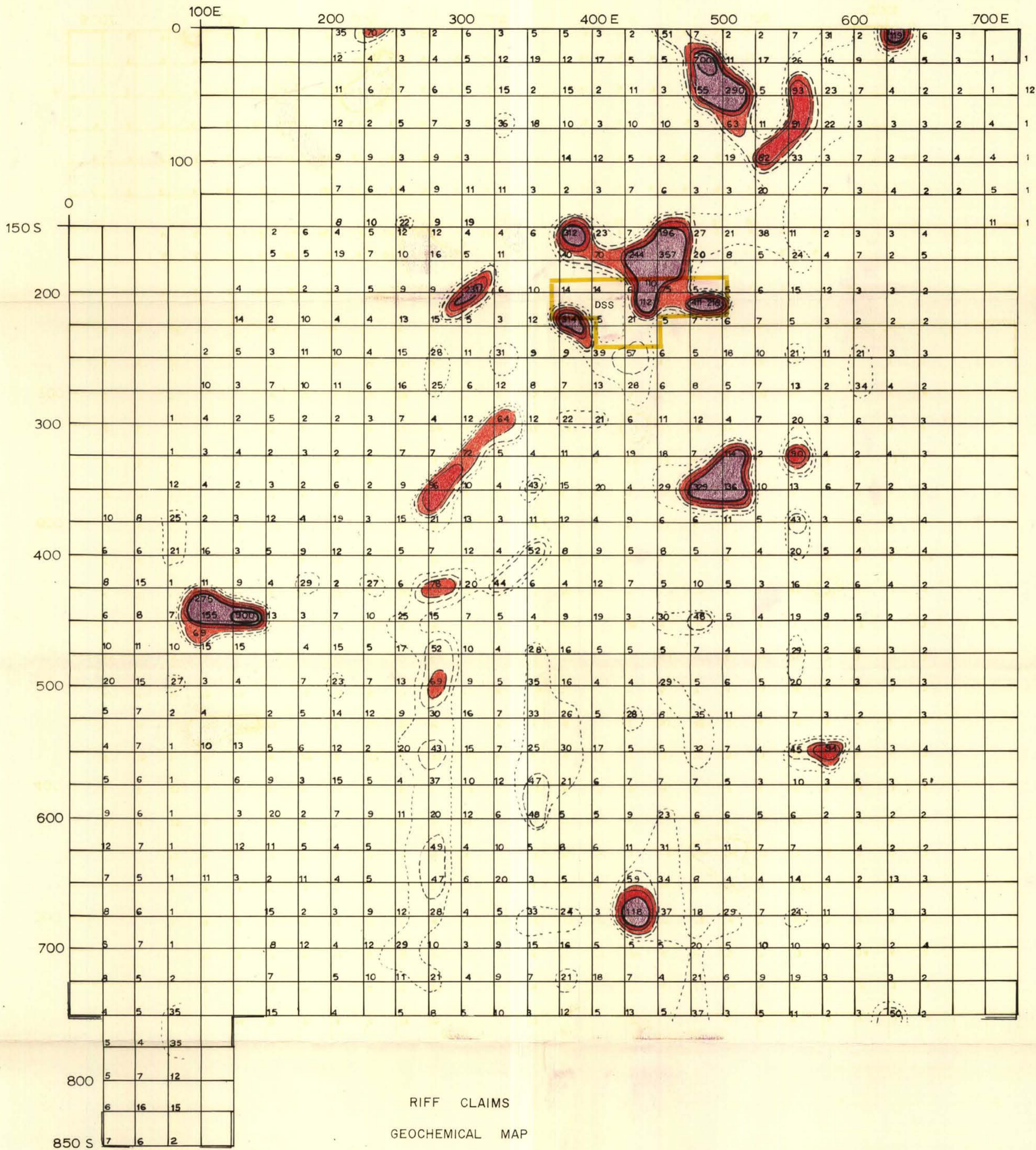
LEGEND

	More than 100, 500, 1000 etc. ppm
	More than 80 ppm
	More than 60 "
	More than 40 "
	More than 20 "

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2882 MAP #4

Geochemical Map to accompany geochemical report by
Dr. P. J. Haman, P. Eng., on the Riff claims, Rock
Creek area, B.C., Greenwood Mining Division.

Dated January 18, 1971
Signed Peter J. Haman



RIFF CLAIMS
GEOCHEMICAL MAP

Scale: 1 inch to 500 feet

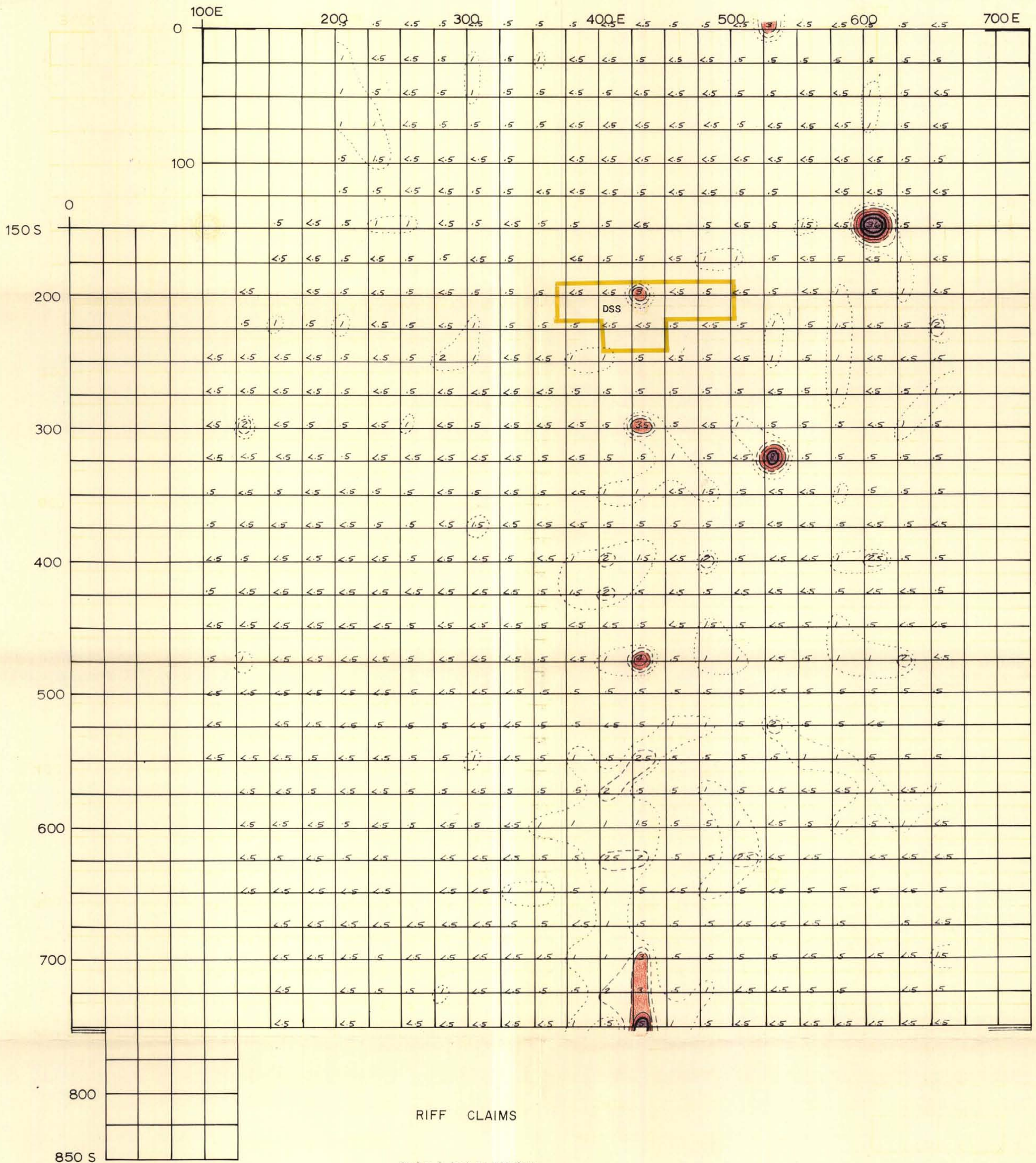
- LEGEND
- More than 100, 500, 1000 etc. ppm
 - More than 80 ppm
 - More than 60 "
 - More than 40 "
 - More than 20 "

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2882 MAP #5

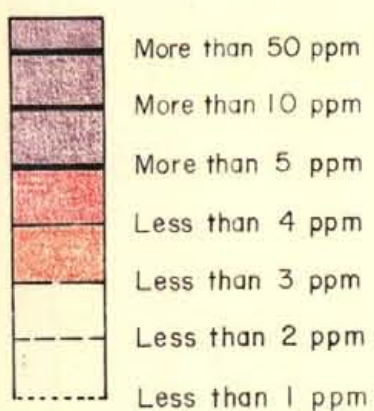
Geochemical Map to accompany geochemical report by
Dr. P. J. Haman, P. Eng., on the Riff claims,
Rock Creek area, B. C. Greenwood Mining Division

Dated January 18, 1971

Signed Peter J. Haman



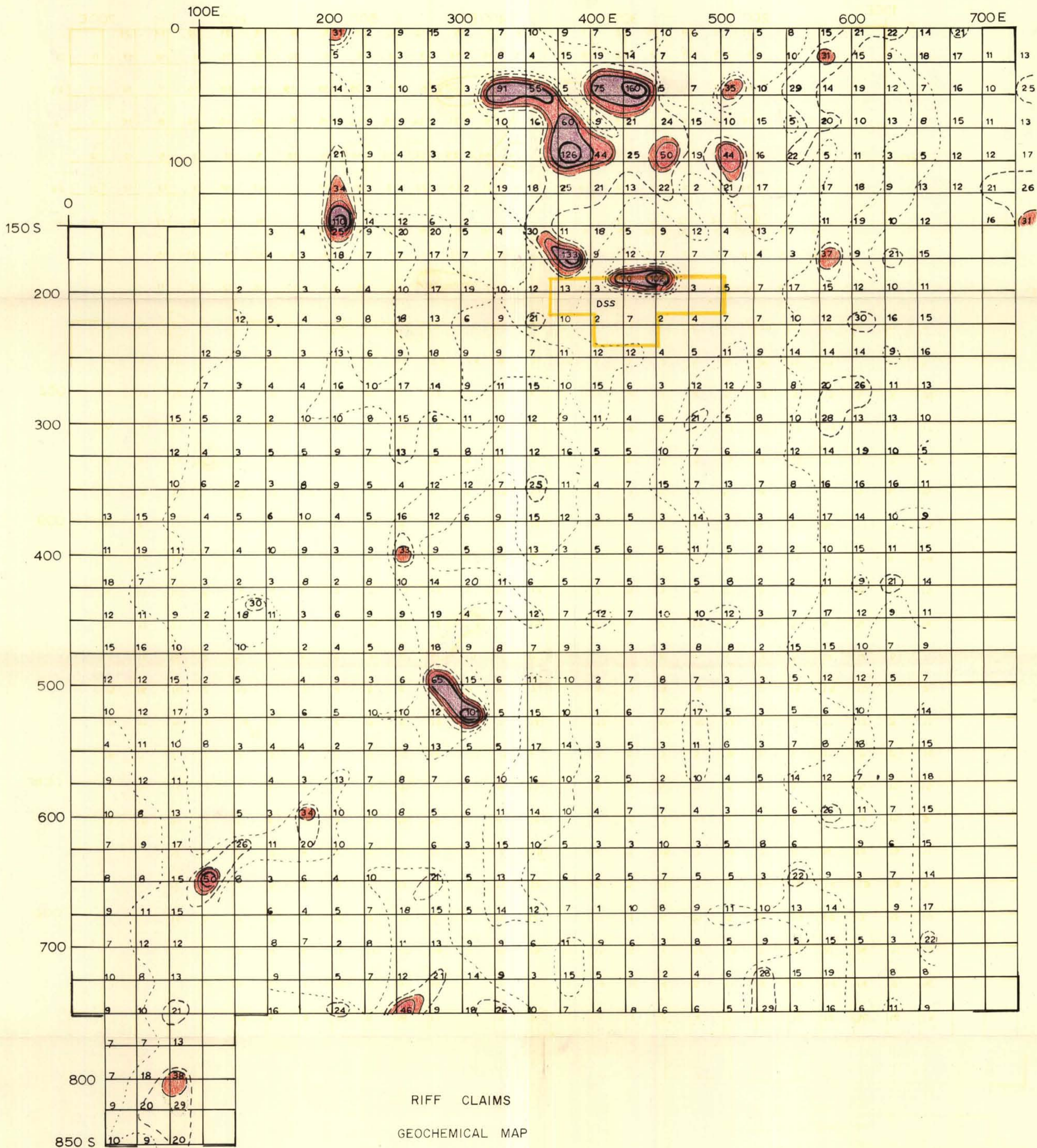
LEGEND



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 ASSESSMENT REPORT
 NO. 2882 MAP #6

Geochemical Map to accompany geochemical report by Dr. P. J. Haman, P. Eng., on the Riff claims, Rock Creek area, B.C., Greenwood Mining Division.

Dated January 18, 1971
 Signed Pete J. Haman



RIFF CLAIMS

GEOCHEMICAL MAP

Scale: 1 inch to 500 feet

ppm Copper

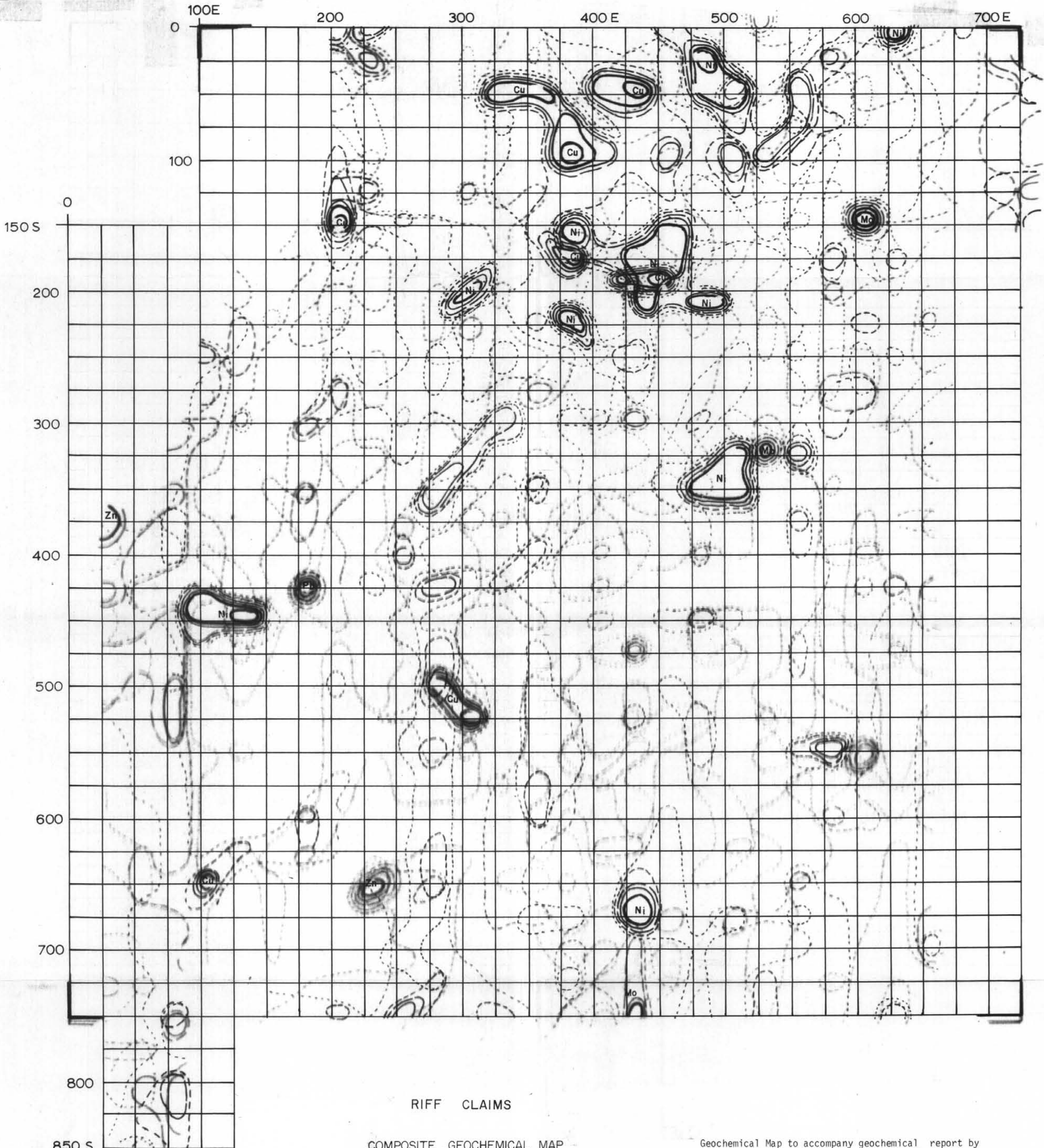
LEGEND

- More than 50, 100, 250 ppm
- More than 40 ppm
- More than 30 "
- More than 20 "
- More than 10

Department of
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 ASSESSMENT REPORT
 NO. 2882 MAP #7

Geochemical Map to accompany geochemical report by
 Dr. P. J. Haman, P. Eng. on the Riff claims, Rock
 Creek area, B. C., Greenwood Mining Division

Dated January 18, 1971
 Signed Peter J. Haman



RIFF CLAIMS

COMPOSITE GEOCHEMICAL MAP

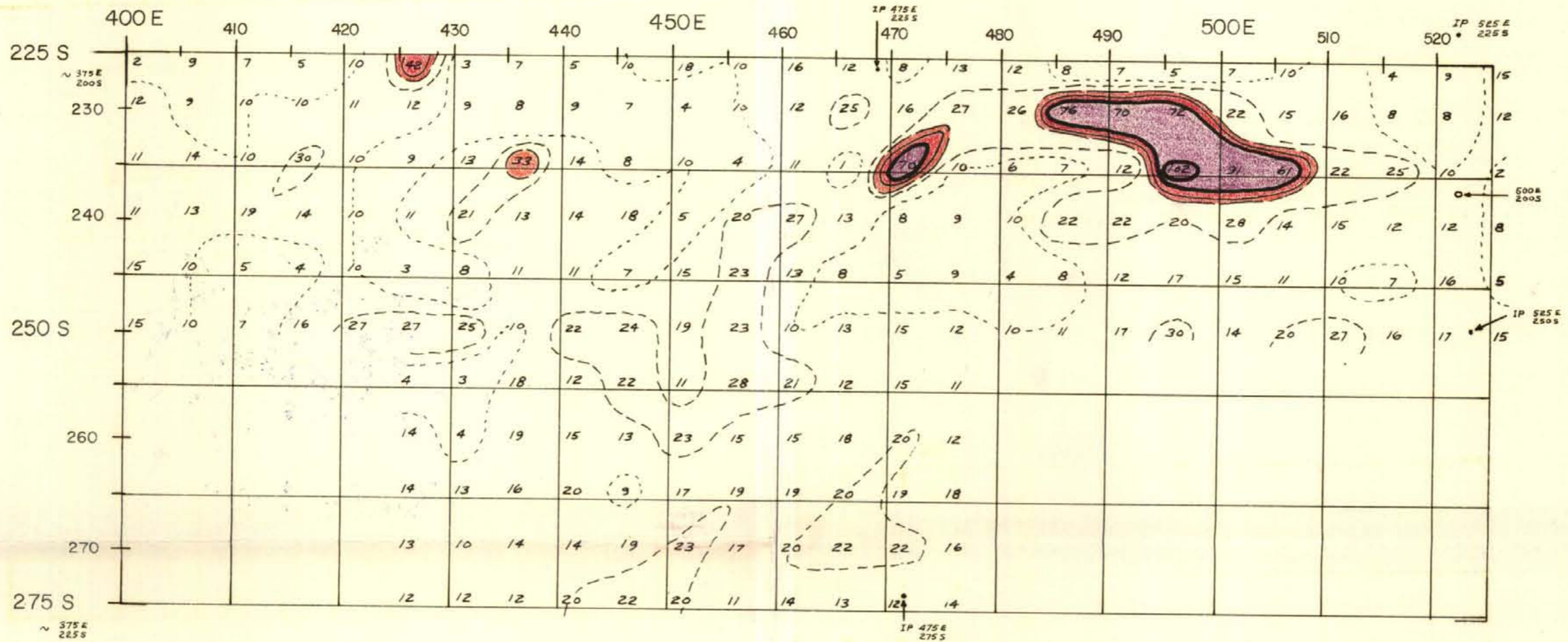
Scale: 1 inch to 500 feet

Geochemical Map to accompany geochemical report by Dr. P. J. Haman, P. Eng., on the Riff claims, Rock Creek area, B.C., Greenwood Mining Division.

Dated January 18, 1971

Signed Peter J. Haman

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 ASSESSMENT REPORT
 NO. 2882 MAP #8



RIFF CLAIMS

Scale: 1 inch to 100 feet

LEGEND



More than 50, 100, 250 ppm

More than 40 ppm

More than 30 "

More than 20 "

More than 10 "

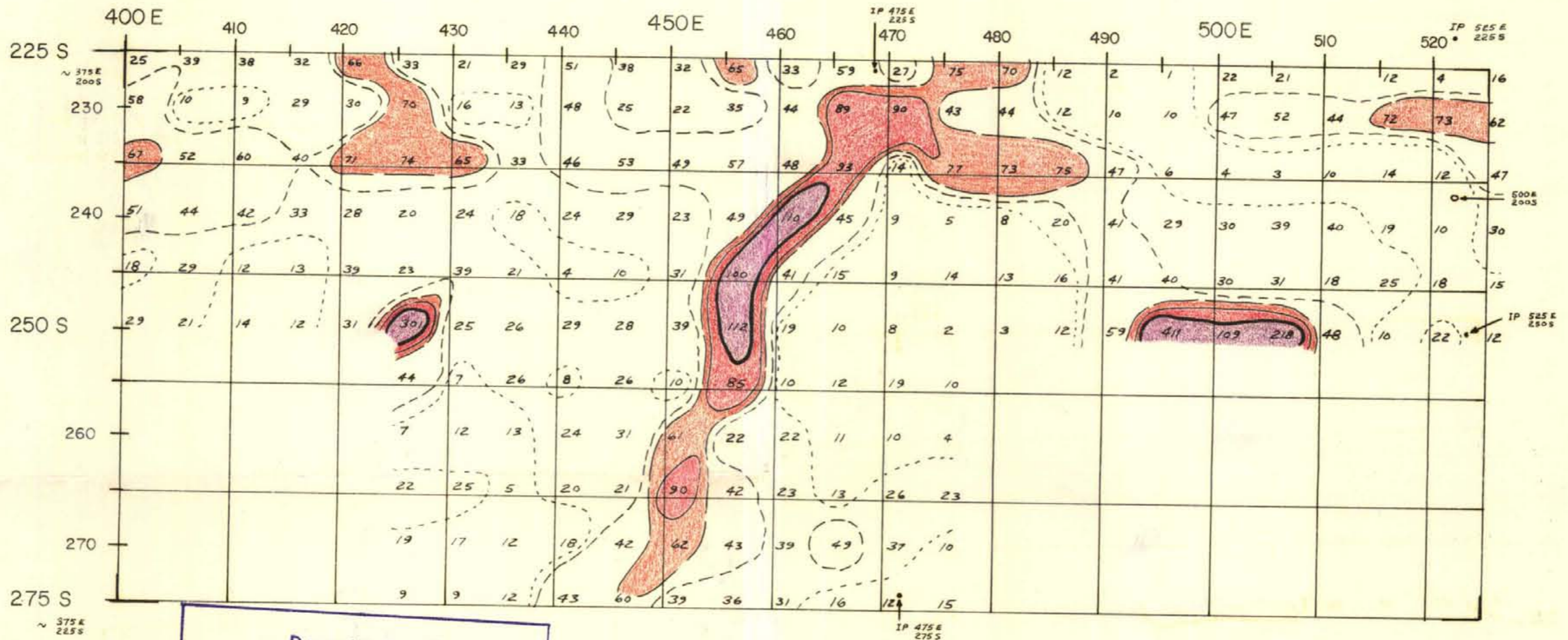
ppm Copper

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. 2882 MAP #9

Geochemical Map to accompany geochemical report by
 Dr. P. J. Haman, P. Eng., on the Riff claims,
 Rock Creek area, B.C., Greenwood Mining Division

Dated January 18, 1971

Signed Peter J. Haman



Department of
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ASSESSMENT REPORT
 NO. 2882 MAP #10

LEGEND

- More than 100, 500, 1000 etc. ppm
- More than 80 ppm
- More than 60 ppm
- More than 40 ppm
- More than 20 "

RIFF CLAIMS

Scale: 1 inch to 100 feet

ppm Nickel

Geochemical Map to accompany Geochemical Report by
 Dr. P. J. Haman, P. Eng., on the Riff claims, Rock
 Creek area, B.C., Greenwood Mining Division

Dated January 18, 1971

Signed Peter J. Haman