# 5498

1974 GEOLOGICAL & GEOCHEMICAL

ASSESSMENT REPORT

ON THE

92N/10W

"K" CLAIM GROUP ("K" 1-30)

LOCATED 20 MILES S50 W FROM TATLA LAKE, B. C.

IN THE

CLINTON MINING DIVISION

APPROXIMATELY

3.2 MILES N60 W OF MIDDLE LAKE

AT COORDINATES 51°37 N LAT. 124°54'W LONG.

OWNED BY

CITIES SERVICE MINERALS CORPORATION

REPORTED BY

GUILLERMO SALAZAR S. M.A.

AND

J. WAYNE MURTON, P. ENG.

Department of

Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 547 8 MA

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#### CONCLUSIONS & RECOMMENDATIONS

A coincident Cu-Mo rock geochemical anomaly about 1800 feet in diameter centered about 400° north of the Initial Post for claims

K-15 and K-16 with values greater than 300 ppm Cu and 10 ppm Mo and very weak silver values was found in an environment of suspected strong leaching of copper sulphides.

This anomaly is located in the northwest edge of a hornblende quartz monzonite stock of complex tectonic history and is partly surrounded by a hook-like plug of granodiorite porphyry that grades into the former phase of the stock to the east. The granodiorite porphyry also grades into a texture destructive quartz eyed-sericite porphry rock as one gets closer to the anomalous area.

Two major fault systems, one trending N  $0^{\circ}$ -20°W and dipping  $65^{\circ}$ -70°W and the second trending N70°W and dipping  $65^{\circ}$ N join at the head of the main valley. These fault systems are expressed in the field as either dacitic dykes or indurated gouge zones of large but variable widths. The N70°W fault system may be younger and have a right lateral displacement if the dyke near sample site 4TJO361R proves to be the continuation of the N  $0^{\circ}$ -20°W fault system. A broad zone of secondary biotite appears to be related to the N  $0^{\circ}$ -20°W fault system.

An iron sulphide zone composed of pyrite and/or pyrrhotite covers the north eastern half of the "main anomaly".

Three 5-600 foot diamond drill holes are recommended to test the "main anomaly".

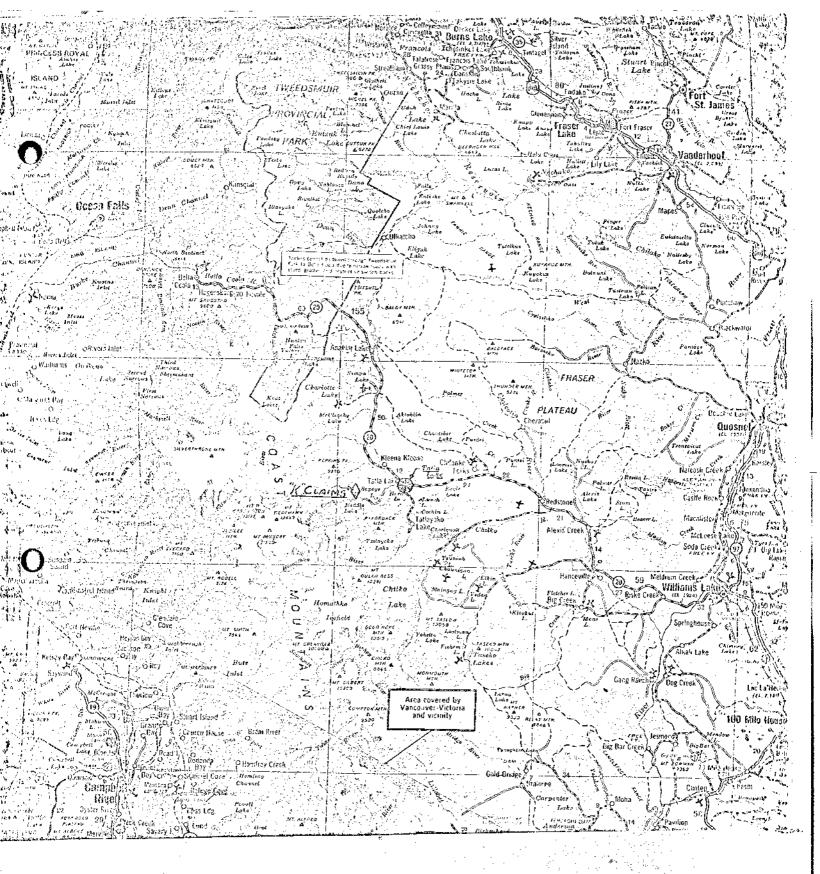


FIGURE No.1: Location Map of the "K" Claims.

SCALE:  $1^n = 34$  miles (approx.)

### LOCATION & ACCESS

This claim group is located 20 miles S50 W from Tatla Lake
Post Office and 3.2 miles N57 W from the north end of Middle Lake, as
the crow flies. Access to the area was by helicopter (Bell 47 G3B1)
from Tatla Lake, but there is a road from Tatla Lake to Middle and
Twist Lakes that could be used to shorten the distances somewhat. This
road is privately owned from the north end of Middle Lake southwards,
and the ranchers at Twist and Middle Lakes would have to be contacted
before use could be made of it.

## CLAIM STATUS

A total of 30 claims with claim lines trending 309 Mag. North were staked and recorded by G. Salazar as agent for Cities Service Minerals Corporation. These claims were recorded at Clinton, B.C. Staking dates and other pertinent statistics are shown on the table below:

)	Claim No.	Tag No.	Staking Date	Record No.	Recording Date	Rental & Assessment Due Date	Remarks
<b>O</b>			•	32055A 56A 57 58 59 60 61 62 63 64	_		No. 2 Post was witnessed.  No. 2 Post was witnessed.
	25 26	75M 76M	51 31 11 33	79 80	97 13 Ff 11	" 9/76 " 9/75	
	27 28 29	77M 78M 79N	31 51 51 15 11 31	81 82 83	11 11 11 11 11 11	" 9/76 " 9/75 " 9/75	
	30	80M	f1 11	84	11 11	11 11	

Note: Assessment and rental due dates are those in effect after filing and acceptance of this report.

## SUMMARY OF WORK DONE IN 1974

- 1) Detail geological mapping and geochemical sampling was done by our Crew No. 1 (Neil Jorgensen and Tim Osterstock).
- 2) 195 samples (151 rock, 22 soil, 21 talus and 1 stream) were collected. Serial numbers are: 4TJ0360R to 4TJ0555R, excluding 4TJ0368R.
- 3) Crew was moved into the area on June 29, 1974 and left it on August 3, 1974, for a total of 31 working days, of which 10 were lost due to bad weather.
  - 4) A total of 31.2 hours of helicopter times was used.
- 5) One line of IP down the main valley bottom was run in August 16-18/74. The line was 2800° long and the results proved to be unreliable due to lack of good contacts in the very heavy bouldery talus covering the valley bottom.

### HISTORY

This area is underlain by one of the larger gossans found in the Tatla Lake area. The area was explored during the 1973 field season and reported under Drawing (15).

Last year's results indicated an area with coincident anomalous values in copper and molybdenum surrounded by a weak zinc anomaly.

Strongly silicified, sericitized and pyritized andesitic and dacitic volcanics and tuffs were reported. Most striking of all was rock sample 35303, located in the center of the anomalous area, that assayed 48 ppm Mo. and 1040 ppm (0.104%) Cu. Staking of the area as soon as possible was recommended based on this data if a cursory examination of the area corroborated the results. Snow and weather conditions did not allow us

to investigate the main anomalous area prior to staking, but a couple of short visits and helicopter hops to the ridges on the east side of the main area of interest revealed the presence of quartz eyed-sericite porphyry rocks, increasing our interest.

## REGIONAL GEOLOGY

The staked area is underlain by Hauterivian and younger and desitic and basaltic agglomerates and tuffs intruded by Cretaceous to Tertiary granodioritic to quartz monzonitic plugs of the Coast Crystalline Belt. The "main anomaly" is located in the northwestern corner of a complex granodioritic stock of about 6-7000' in diameter with quartz and feldspar phenocrysts and cut by numerous quartz and/or epidote veins and veinlets.

The area does not appear to be directly related to any of the major fault systems that traverse the region.

### LOCAL GEOLOGY

This section is restricted to the "main anomalous area" and its immediate vicinity.

## A) Petrology

The oldest rocks in the area are tuffs and agglomerates of andesitic to dacitic composition. Fragments are usually 0.2 to 0.5 inches in diameter, although blocks of up to a foot are reported. Grain size of the matrix varies from fine to coarse, and color of the rocks vary from black to green or white depending on the intensity of hydrothermal alteration and/or secondary leaching. These rocks are generally well fractured, and probably contain a certain amount of syngenetic pyrite and/or pyrrhotite.

A small area of very impure quartzites and greywackes outcrops to the east of the "main anomaly". It is described megascopically as... "fine to medium grained gray to green impure quartzite," but could be an ashy or sandy volcanic horizon or pocket.

As mentioned above, these volcanics are intruded by a granodioritic stock with an apparent complex plutonic history in its northwestern corner, which is where our "main anomaly" is. The stock in this
area is formed by two plugs that may join at depth and that appear to
form a hook around the "main anomaly" underneath the glacial debris covering the "main valley". The plug to the east of the "main valley"
appears to be older, larger, more complex and not as altered as the
one to the west. Also, the youngest (?) phase of the complex stock seems
to be equivalent in age, composition and texture to the plug located
to the west of the "main valley".

The older (?) phase of the plug in the east side is a hornblende quartz monzonite, described megascopically as a medium to fine grained, granular, grey to green rock with strong magnetite content in the ground-mass and numerous quartz and/or epidote veinlets. The younger (?) phase is a quartz feldspar granodiorite porphyry, with quartz and/or feldspar phenocrysts to about 0.5", a medium to fine grained groundmass and, locally, with strong magnetite as well. This rock grades into a quartz eyed porphyry rock with texture destructive sericite and secondary clay alteration nearer the "main anomaly". Some magnetite phenocrysts and magnetite crystals with pyrite cores are reported in this quartz eyed-sericite porphyry. The plug to the west of the "main anomaly" is identical to this younger phase (megascopically).

Numerous dacitic and andesitic dykes, both fresh and altered, cut through the area and appear to be controlled by the major structural systems present in the area.

## B) Structure

Two major systems, one trending N 0°-20°W and dipping 65-70°W and theother trending N70°W and dipping 65°N appear to intersect just north of the "main anomaly", and are expressed as dacite dykes of up to 100° (true) width and/or highly indurated gouge zones of up to 20° (true) width. The system trending N70°W seems to be younger and may have a right lateral displacement if the dyke mapped just west of sample 4TJ0361R proves to be the continuation of the dyke zone just west of the "main anomaly".

Fracturing elsewhere is very intense, randomly oriented, and most of the leached out zones recognized are coincident with area where fracturing is most intense. A zone of very intense quartz-magnetite-biotite-Fe0x-pyrite stockwork veining is seen adjacent to the 'main anomaly'.

## C) Geochemistry

A total of 195 samples (151 rocks, 22 soils, 21 talus and 1 stream) were collected as part of this year's work in the area. These samples were assayed geochemically for molybdenum, copper, zinc and silver by Chemex Labs of Vancouver, B.C., using standard atomic absorption methods.

This year's values corroborated last year's survey, and stressed the importance of the 'main valley area, although no values as high as the ones encountered in last year's survey were found this year.

The ruggedness of the terrain did not allow us to treat this area in the usual manner of either cutting or flagging a grid of lines over the area and then taking samples at constant intervals. Instead, we had our crews tow a 200' chain collecting samples every 2-300 feet while mapping. As a result of this approach, all our time was spent where there was rock in outcrop, and very few samples were collected from the valley bottom. Also, a somewhat different method of outlining anomalies was used in this area because of the amount of rock samples In this case, only groups of samples that appear to outline an area or zone of similar or higher range of values was countoured regardless of the presence of a few erratic anomalous values (either high or low) within the area. As an example, Sample 35304, in the middle of the "main anomaly" is disregarded because all the other samples defining it have greater than 150 ppm's of copper; by the same token, sample 39299 is not of much interest to us because the molybdenum assays of the surrounding rocks are much smaller, making it a one sample anomaly.

The greater than 100 ppm Cu contour outlines an area about 2000' wide trending N35°E that is open, but very broken up, to the southwest, and that is closed off to the northeast at the western contact between the older (?) hornblende quartz monzonite and the other rocks on the west side of the east wall of the "main valley". The "main anomaly" is located in the northern third of this area, is about 1700 x 1000' elongated S55°E, and both the 150 ppm and the 200 ppm Cu contours cover the same area. The 300 ppm Cu contour is similar to the other two but shows a narrow break in the southern third that could be due to the fact that the samples in the valley bottom have been taken into consideration, although they may not reflect bedrock. The open end to the southwest is of less immediate importance because of the size of the

anomalies found to date.

Molybdenum appears to be more erratic than copper, and one or two sample anomalies are more common and their significance is more difficult to evaluate. The 6 ppm Mo contour outlines an area about 1500' wide trending N15°E that is open but very broken to the south, and closed off to the north, in the same area that the copper anomaly is closed off. The 10 ppm Mo contour is concentric with the 150 ppm Cu contour but somewhat larger to the north (where it also coveres the quartz stockwork area) and to the east and southeast. The 15 ppm Mo contour outlines very small areas on the edge of the 300 ppm Cu contour, and one of them is directly related to the quartz stockwork area.

The 100 ppm Zn contours portray coincident and peripheral relationships to the "main anomaly", but appears to be peripheral to the main intrusive body, although it seems to cut through the older (?) plug. The contours peripheral to the "main anomaly" are also peripheral to the hook of intrusive rocks proposed above, and the area coincident with the "main anomaly" appears to extend to the northeast beyond the high Cu-Mo contours.

The significance of this Cu-Mo anomalous area is enhanced by the fact that leaching of at least copper is expected to be highly efficient because of the abundance of pyrite and the presence of strongly leached out rocks in the vicinity of the "main anomaly".

## D) Hydrothermal Alteration

Biotite, epidote, sericite, magnetite, pyrite and pyrrhotite appear to show some zoning characteristics in the area, and are as follows:

Epidote is widespread on the foot wall side of the N 0°-20°W fault system and almost non existent to the west of it. There appears to be a higher concentration of epidote near the junction of the two fault systems and to the northeast of the "main anomaly" but no suggestion of an epidote zone is recognized at the present.

The area in between the N70°W fault system and the "main anomaly" going as far west as the fault systems junction at the head of the valley carries more than the average amount of pyrite (greater than 5%) as well as significant amounts of pyrrhotite. Another smaller area with high pyrite content is coincident with the southeastern edge of the anomaly, giving the distribution of the areas with a higher than average amount of iron sulphides, a cane shape with its handle wrapped around the eastern side of the "main anomaly".

Two areas with moderate to strong magnetite were also recognized. One of them coincides with the stockwork of quartz-magnetite-biotite-sulphides veinlets just west of the main anomaly. The second zone is much larger in size and corresponds closely with the outline of the older (?) hornblende quartz monzonite plug. Most of the magnetite in this plug is associated with chlorite, and both appear to be replacing hornblende and other mafics.

Secondary biotite was recognized megascopically along the footwall of the N 0°-20°W fault system in a zone that appears to narrow down from 1200' to 500' wide as one goes southward. Most of this biotite occurs as fracture filling and is strongest in the stockwork area. A zone of no or little secondary biotite within this zone and just west of the stockwork was also recognized.

Strong hydrothermal sericite is observed to the west and southeast of the "main anomaly" in quartz eyed-sericite granodiorite porphyry rocks.

# E) Geophysics

One 2800 feet long IP line was run down the valley bottom to try testing the area underneath the loose gravel and boulders. Unfortunately, results were inconclusive due to poor contacts in the loose rubble.

G. Salazar S., M.A.

J.W. Murton, B.Sc., P. Eng.

#### STATEMENT OF EXPENDITURES = 1974

1) Camp Costs, 2 men, 31 days @ \$15.00/man day	\$ 930.00
2) Helicopter time: 31.2 brs. @\$135/hr	4,212.00
3) Salary -	
a) Supervision: G. Salazar S., 3 days @\$80,	lay 240.00
b) Crew:	
Senior: N. Jorgensen, 31 days @\$50/day Junior: M. Rondeau, 31 days @\$37/day	1,550.00 1,240.00
4) Assaying for Mo, Cu, Zn and Ag -	
151 rocks @\$2.80/sample - \$422.80	
44 Talus, soil & stream @ \$2.16/sample • \$ 95.04	5 <b>17.8</b> 4
رح) Geophysical Work -	34,00
One IP line, 1 day @\$200.00/day	200.00
67 Drafting 3-8 hour days @\$5.00/hour	120,00
7) Data Analysis and Report Preparation, C.Salazar 5 days at \$80/day	S. 400.00
8) Supervision: J. W. Murton, P.Eng. 1 day @\$100/	day 100.00
9) Miscellaneous, 10% of total above	951.00
Total	\$10,461.04 VVVVVVVVV
	<i>50</i> /5
c. sa	lazar S., M.A.

Declared before me this 27 day of unl, 1975, inthe City of Vancouver, B.C.

SUB - MINING RECORDER

J.W. Murton, B.Sc., P. Eng.

## CERTIFICATION

I. J. W. Murton, of North Vancouver, British Columbia, do hereby certify that:

I am a member of the Association of Professional Engineers of the Province of British Columbia, registered in 1972, No. 8324.

I am a graduate of the University of Manitoba with a B.Sc. in Geology.

I have been a practising Engineer and Geologist since 1960 in Manitoba, Saskatchewan, British Columbia, South Western U.S.A. and Alaska.

Vancouver, B. C. April 22, 1975

J. W. Murton, P. Eng.

# $\underline{C} \, \underline{E} \, \underline{R} \, \underline{T} \, \underline{I} \, \underline{F} \, \underline{I} \, \underline{C} \, \underline{A} \, \underline{T} \, \underline{I} \, \underline{O} \, \underline{N}$

I, Guillermo Salazar S., of the City of Vancouver, in the Province of British Columbia, hereby certify that:

- 1) I am a graduate of the Universidad Nacional de Ingenieria, Lima, Peru, with a Bachelor of Science and a Profesional Engineering degrees in combined honours Mining Engineering and Mining Geology.
- I have a Master of Science degree in Economic Geology from Harvard University received in 1969.
- 3) I have been a practising Engineer and Geologist since 1968 in New Mexico, Montana and British Columbia.

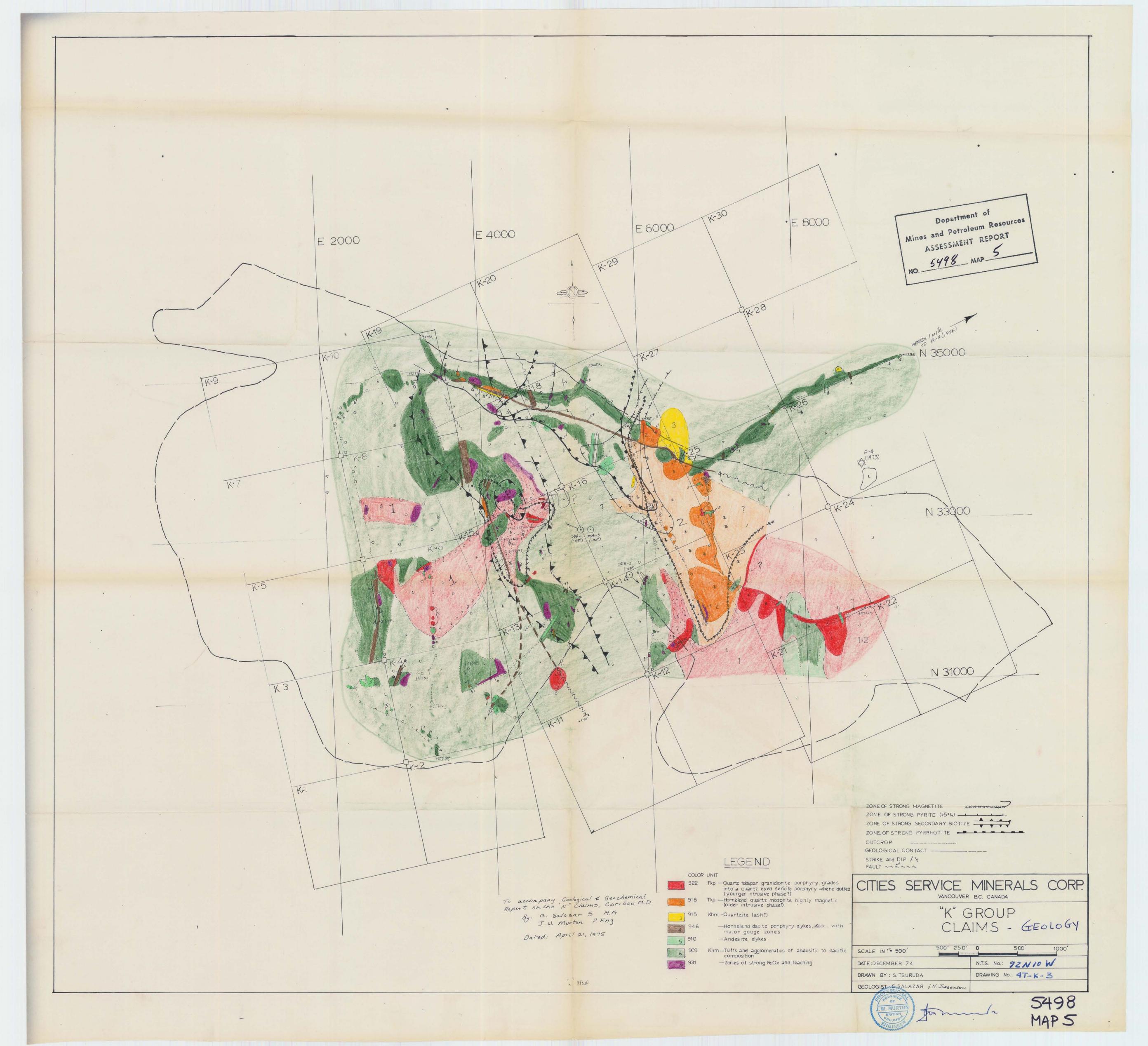
Vancouver, B.C. April 22, 1975

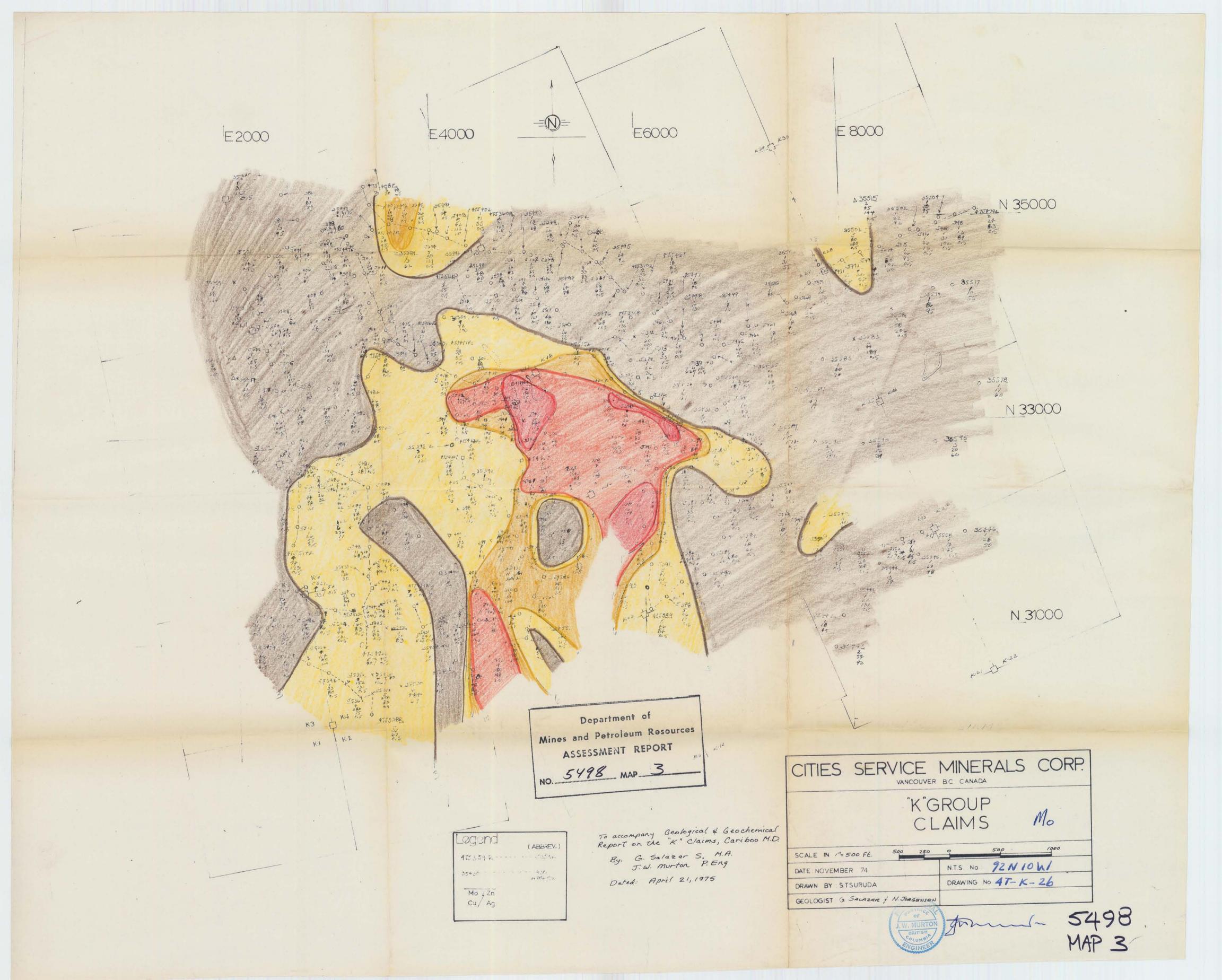
Guillermo Salazar S. M.A.

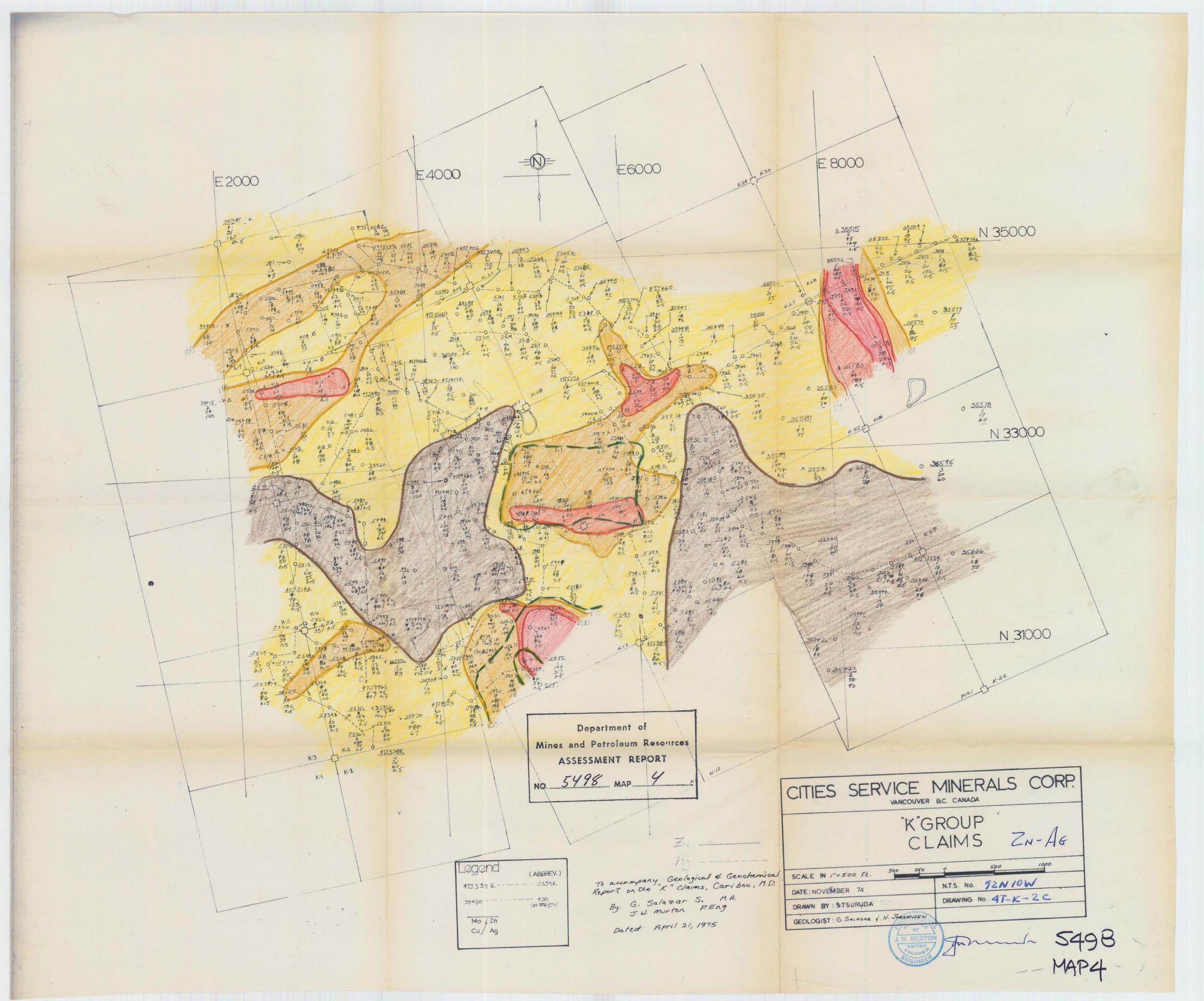
## APPENDIX A

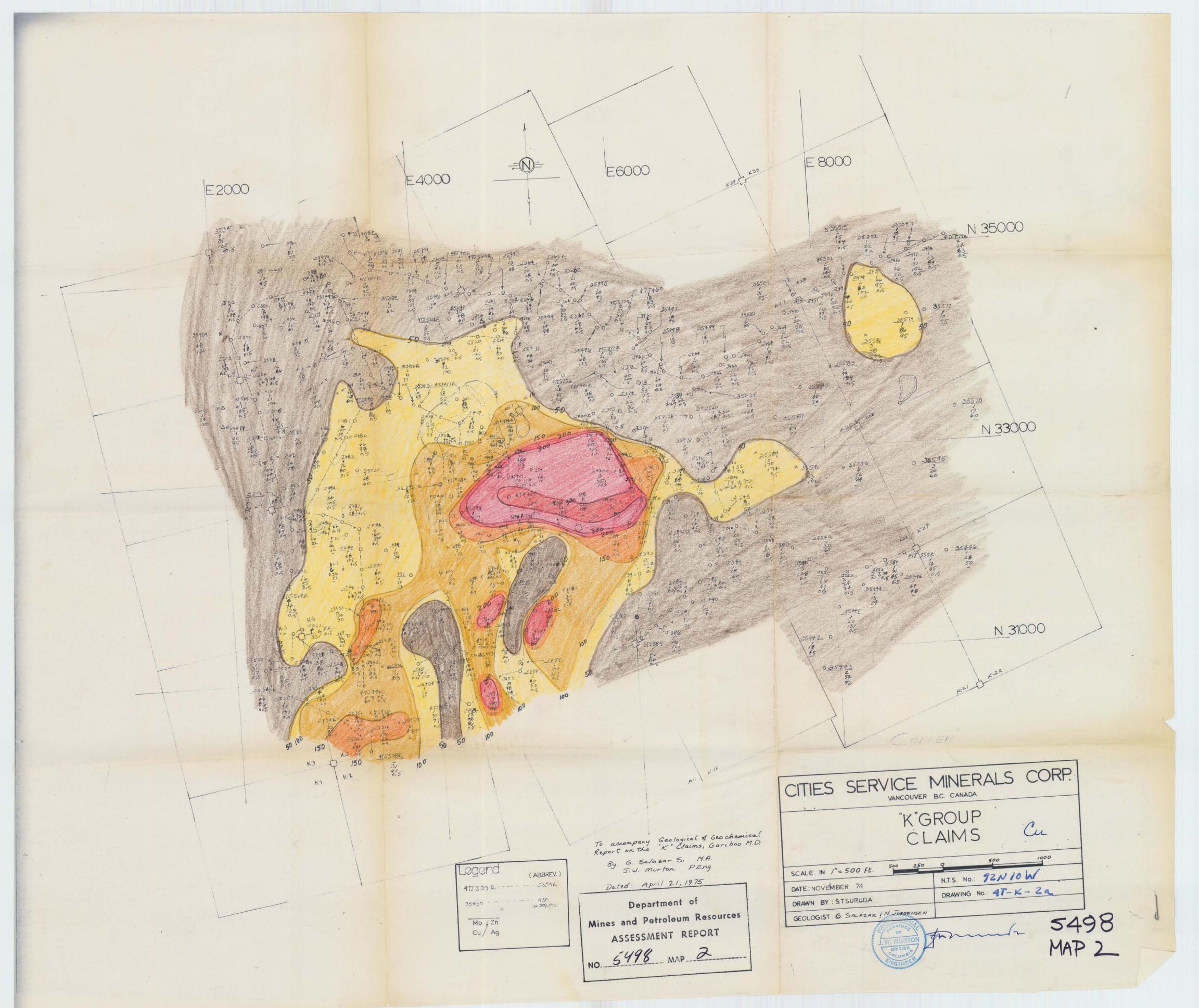
## ANALYTICAL PROCEDURE

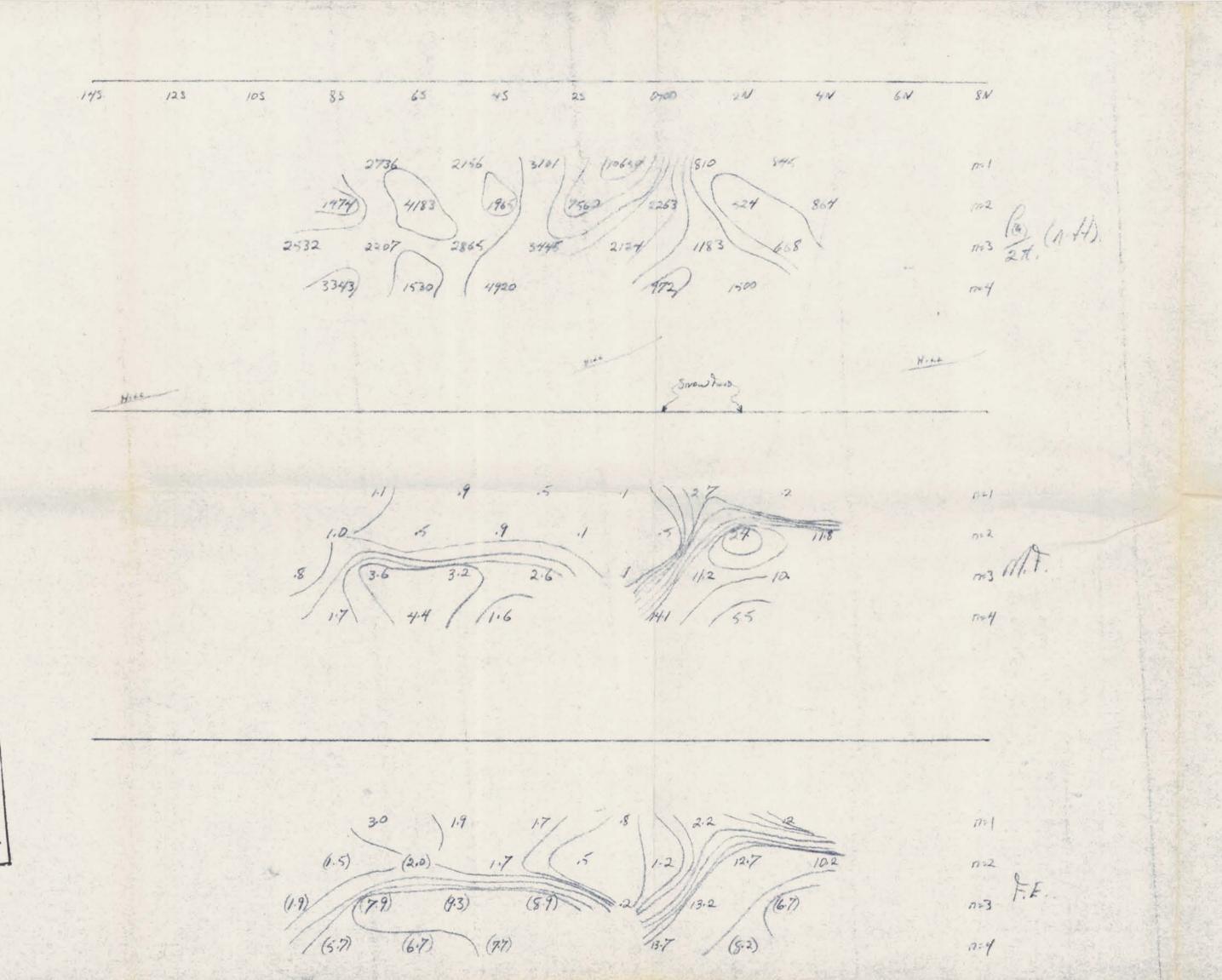
and Ag by atomic absorption techniques. Samples at the laboratory were dried in an electric oven at 80°C for a period of 12-24 hours, then screened to -80 mesh. Rock geochemical materials were crushed, dried, and pulverized to -100 mesh. Following this, a ½ gram sample was digested by a hot perchloricnitric acid mixture for 2-3 hours, then analysed for total copper, molybdenum, and zinc, after diluting samples to 25 mls using demineralized water, using a Techtron AA.5. Atomic absorption Unit. Values are reported in parts per million (p.p.m.).











Department of

Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 5498 MAP 6

CITIES SERVICE MINERALS COR TATLA LAKE AREA K CLAIMS

P-660 FREQUENCY DOMAIN I.A.

0.3 4 5.0 HZ

OPERATORS: MORRISON + DEPA

SCALE: 1"= 200"

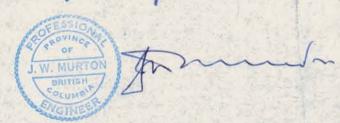
DATE: AUG. 18, 1974

K - CLAIMS

To accompany Geological of Geochemical Report on the "K" claims, Cariboo M.D.

By: G. Salazar S. M.A. J.W. Murton P. Eng Dated: April 21, 1975

4T-K-4



5498 MAP 6

