GEOLOGICAL AND GEOCHEMICAL SURVEY REPORT ON THE PROPERTY OF MESSRS. J. BARTLE AND T. DOUBT, AND GRANDORA EXPLORATIONS LTD. (NPL), WHIPSAW CREEK, SIMILKAMEEN MINING DIVISION, B. C.

92H/7E

NEV 5-44

Situated between Whipsaw Creek and Friday Creek, 12 miles south of Princeton, B. C.

49° 19'N; 120° 38'W

Submitted by: D.P. Taylor, geologist

Endorsed by: R.H.D. Philp, P. Eng.

Owners: J. Bartle, T. Doubt and Grandora Explorations Ltd. (NPL)

Work conducted by: Agilis Exploration Services Ltd.

3939

GEOLOGICAL AND GEOCHEMICAL SURVEY REPORT
ON THE NEV CLAIM GROUP
OF T. DOUBT, J. BARTLE, AND
GRANDORA EXPLORATIONS LTD. (NPL),
WHIPSAW CREEK,
SIMILKAMEEN MINING DIVISION, B. C.

November, 1972

Vancouver, B. C.

AGILIS EXPLORATION SERVICES LTD.
CONSULTING ENGINEERS & GEOLOGISTS
107 - 325 HOWE STREET, VANCOUVER 1, B.C.

TABLE OF CONTENTS

MAPS

GEOLOGICAL AND GEOCHEMICAL SURVEY REPORT
ON THE NEV CLAIM GROUP
OF T. DOUBT, J. BARTLE, AND
GRANDORA EXPLORATIONS LTD. (NPL),
WHIPSAW CREEK,
SILMILKAMEEN MINING DIVISION, B. C.

INTRODUCTION

Most of the Nev Claim Group was restaked by J. Bartle and T. Doubt in the fall of 1971 after it had been allowed to lapse by Grandora Explorations Ltd. (NPL). The group is composed of 40 contiguous mineral claims, Nev 5-44 located on Whipsaw Creek, westward into Friday Creek, in the Similkameen Mining Division, 12 miles south of Princeton.

During the first half of September, 1972, a crew of Agilis Exploration Services Ltd. put a grid over the eastern half of the property and conducted a geochemical survey on the grid and mapped the entire property geology. Geological mapping was conducted by Tong Yol Kim, geologist. All work was performed under the direction of D. P. Taylor, geologist, who inspected the property for three days during the program.

LOCATION AND ACCESS

The eastern boundary of the property lies on the east flank of Whipsaw Creek, the property extends westward toward Highway 3, Hope-Princeton, along the upper reaches of Friday Creek.

The centre of the property is located:

49^{o} 19'N 120^{o} 38'W.

Access to the property is good up a new forestry road on Whipsaw Creek, however, all of the bridges across the Creek have been washed out and access from the east to the centre of the property is not possible by truck. Old roads, in poor condition, cross the property and meet the Hope-Princeton Highway just north of Friday Creek, four wheel drive vehicles are necessary for access from Friday Creek.

PHYSIOGRAPHY

The property lies on the north slope of Friday Mountain and drops into Friday Creek and Whipsaw Creek. Elevations on the property range from 3600' to 5000' and average about 4500'. Except in Whipsaw Creek, where some steep rock bluffs and slopes are found, the property topography is gently rolling with local steep sections around smaller creeks.

The property is covered with small timber, spruce, pine and fir with light underbrush except in creeks. Apart from the two main creeks, Whipsaw and Friday, only minor tributaries are found on the property.

Precipitation in this area is moderate, with light summer rains and moderate to light snowfall in the winter.

PROPERTY

Claims	Owner	Record Number
NEV 5-22	J. Bartle	34399M-34416M
NEV 23-35	Grandora Explorations Ltd. (NPL)	23755N-23772N
NEV 36-44	T. Doubt	34417N-34426N

All claims are recorded in the Similkameen Mining Division, B. C.

HISTORY

During the 1969 field season four and one-half miles of road was constructed on the property and seven trenches were cut. Traces of chalcopyrite were reported found toward the eastern end of the property and NEV 40-44 were staked to acquire possible extensions of this mineralization.

In the summer of 1970 four short diamond drill holes, totalling 419 feet, were drilled in the area of 26E, 22N. The holes all encountered Nicola volcanic tuffs and breccias with traces of pyrite. No economic mineralization was reported encountered.

REGIONAL GEOLOGY

The property lies in an area of Upper Triassic Nicola Group Volcanics overlain extensively by Miocene or earlier Princeton Group volcanics and sediments. Five miles west of the property the Eagle Granodiorite complex is found, and to the northeast the intrusives associated with the Copper Mountain ore bodies are four miles away.

Strong north northwesterly foliations on the property are associated with the Eagle Granodiorite complex lineations.

PROPERTY GEOLOGY

The property is underlain toward the east by sheared and metamorphosed Nicola Group Volcanics and sediments, locally intruded by small stocks and dikes. The western half of the property is underlain by Princeton Group Volcanics varying from andesitic to basaltic in composition.

NICOLA GROUP

The Nicola Group volcanics on the property have been extensively sheared and metamorphosed. Shearing follows the regional north northwesterly trend with dips varying from 5^{o} to 30^{o} southwesterly.

Bedding attitudes vary from northerly to westerly striking with shallow easterly to northerly dips. The general degree of metamorphism appears to be to green-schist facies. The majority of the Nicola andesites have been altered to chlorite schist; calcareous areas have either survived as narrow (up to two feet wide) limestone bands or have been altered to calc-schist. Two limited areas of sericite schist have been noted, the largest of these being on NEV 29 and 31 and a smaller one on NEV 43.

Minor argillite bands are intercalated in the Nicola series as discontinuous narrow bands generally parallel or sub-parallel to the schistocity. There is a fault contact at 38E, 12N between Nicola volcanics and a massive series of argillites intruded by an intermediate dike swarm. This more massive series of argillite is believed to correlate with Dolmage's Wolf Creek Formation, part of the lower Nicola Group. This series of rocks strike north with steep easterly dip.

PRINCETON GROUP

West of an assumed contact striking north northeasterly through Station 48E, 20N extensive outcropping of Princeton Group volcanics are found, particularly well exposed in road cuts.

Exposures show volcanics varying from andesitic to basaltic in composition with aphanitic to porphyritic textures.

INTRUSIVES

DIORITE

A small diorite plug was found at 14E, 22N. The stock is about 600' long and 400' wide, a medium grained rock enclosed by green schist. A small outlier of the same rock was found at 28E, 26N.

GABBRO

A small stock of gabbro lies in the southeastern corner of the claim group centred at 22E, 20S. The stock has apparent dimensions of 1000' diameter, any westward extensions are concealed by deep overburden.

Three old trenches were found in this stock. The rock is composed of pyroxenes and feldspar with traces of magnetite and chalcopyrite and some fine quartz-epidote veinlets.

DIKES AND SILLS

Numerous dikes and sills intrude the dark argillites and green schists, particularly in the areas 40E-46E between 6N and 20N, and 4E-10E between 2N and 6N. These intrusives are generally oriented parallel to country rock attitudes and foliations and are themselves foliated with lineated parallel hornblende crystals. One leucocratic sill carrying euhedral biotite was noted at 44E, 20N.

MINERALIZATION

Two zones of fracture controlled quartz-calcite veins with pyrite and traces of chalcopyrite were noted at 34E, 12N and 24E, 4N.

Both occurences are in strongly sheared calc-schist, limestone and chlorite schist.

The gabbro stock in the southeast corner of the property has scattered traces of chalcopyrite in it, not considered to be of economic significance.

GEOCHEMICAL SURVEY

A geochemical survey was conducted over the eastern half of the claim group, covering all of the Nicola Group and intrusive

exposures. It was not considered worth conducting the survey over the area underlain by Princeton Group Volcanics.

GRID

An east-west baseline was established through the centre of the claims. North-south flagged grid lines were established every 400 feet along the baseline with stations every 200 feet on the lines.

SAMPLING PROCEDURE

Soil samples were taken at every station possible on the 200 by 400 foot grid established. Samples were taken from the B horizon, 10 to 14 inches depth, using mattocks. Samples were placed in kraft paper bags provided by the laboratory.

ANALYSIS

All samples were shipped to Core Laboratories--Canada Ltd., 325 Howe Street, Vancouver, for ppm copper and zinc analysis. A minus 80 mesh fraction was taken from each sample and digested for two hours in hot perchloric-nitric acid. Quantitative analysis was performed using a Gerald Ash 82800 atomic absorbtion machine.

RESULTS

A total of 654 samples were analysed from this survey for ppm content of copper and zinc. Statistical analysis shows that there are two distinct populations in the survey results, one from the area underlain by Nicola Group and intrusive rocks, and the other from the area underlain by Princeton Group rocks. The dividing line between the two populations appears to lie between lines 56E and 60E. Separate frequency distribution graphs have been made for copper and for zinc for each population. On the maps the two populations are separated for colour coding, the same colours being used for both groups for degrees of anomalous value, with a separate anomalous value base for each population.

Copper

Copper values range from 3 ppm to 410 ppm. On the eastern population (479 samples) this was the range. The frequency distribution graph shows the background for this population to be 21 ppm and the anomalous break to be at 56 ppm. The top 2.5% of samples were valued greater than or equal to 120 ppm.

On the western Princeton Group grid the range was 5 ppm to 71 ppm over 175 samples with a background of 15 ppm and the

anomalous break at 29 ppm. The top 2.5% of samples are valued greater than or equal to 55 ppm.

Zinc

Zinc values range from 6 ppm to 410 ppm on the eastern Nicola Group population. Background for this population was 65 ppm. The anomalous break occurs at 114 ppm, which leaves less than 2.5% of the population anomalous. Percentage comparison with the other population established the low anomalous level at 87 ppm.

The Princeton Group, western population of 175 samples ranged from 5 ppm to 367 ppm. Background is 26 ppm and the anomalous break is at 68 ppm.

INTERPRETATION

COPPER

Results obtained for copper in the survey appear very erratic when plotted. However, two patterns seem to develop.

A secondary dispersion pattern on Whipsaw Creek is fairly well developed. Six highly anomalous values are directly related to the creek and a strong halo of low anomalous values cover the stream slopes. The significance of this anomaly is difficult to assess as there appears to have been glacial movement down the creek and shallow glacial till is pervasive between outcrops. The low anomalous halo does suggest a local source for the anomaly and widely scattered anomalous values out of the creek valley may indicate sources for the groundwater drainage secondary dispersion feature.

The outcrops noted with traces of chalcopyrite show no geochemical expression, however, each outcrop is in line with vaguely defined north northwesterly oriented anomalous trends. One trend runs from the southwest corner of the grid through the area of the mineralized outcrop at 32E, 10N to Whipsaw Creek. The other parallel trend runs from the area of 24E, 16S to the area of 4E, 16N, and includes the outcrop of 24E, 2N on its extreme northeast flank. These trends parallel geological structure.

The secondary dispersion patterns relate well to these regional geochemical trends.

ZINC

The anomalous zinc soil samples show very good correlation to the copper results. A secondary dispersion pattern very similar to that of copper has developed for zinc on Whipsaw Creek.

The vague northwesterly trends shown in the copper results are not duplicated by the zinc results, however, a widely dispersed anomaly on the southwest corner of the grid correlates to the copper results.

A zinc anomaly has developed on the northwest extension of the grid where only a few minor anomalous copper values have been found.

CONCLUSIONS

Strongly northwesterly foliated Nicola Group volcanics and sediments, frequently metamorphosed to green-schist facies, have been intruded by small gabbro and diorite plugs, and intermediate dikes and sills.

The property lies 5 to 6 miles southwest of Copper Mountain and Similkameen Mining Co.'s Ingerbelle deposit.

Consistent secondary dispersion anomalies have developed on Whipsaw Creek for both copper and zinc.

Vague copper anomalies have developed following the regional foliation. Outcrops carrying traces of chalcopyrite with pyrite have been found related to these anomalies.

Dispersed anomalies have been found in the area underlain by Princeton Group volcanics, possibly related to overlain Nicola Group volcanics.

Glacia overburden covers the southern central portion of the claim group, possibly masking geochemical expression in this area.

RECOMMENDATIONS

The claim group should be surveyed and a boundary survey conducted. Any open ground immediately north of the grid should be staked.

A thorough photogeological study should be made of the area, concentrating particularly on finding fracture structures cutting the regional trend.

Carefully controlled detailed geochemical surveys should be conducted over the anomalous zones. In areas of overburden biogeochemical sampling should be considered.

A follow up program of trenching with possible contingency for drilling is recommended.

It is not considered that geophysical investigation would be very productive in this geological environment.

Respectfully submitted by:

D.P. Taylor, geologist

Endorsed by:

R.H.D. Philp, P. Eng.

CERTIFICATION

I, David Pelham Taylor, of Vancouver, B. C., do hereby certify that:

1. I am an exploration geologist residing at 2097 West 6th Avenue, Vancouver, B. C.

2. I am a graduate of the Royal School of Mines, London (M.Sc., D.I.C., 1971).

3. I have practiced as an exploration geologist in B. C. for four years.

4. I have inspected the property subject of this report and supervised the work conducted in September, 1972.

D. P. Taylor, M.Sc., D.I.C.

November, 1972 Vancouver, B. C.

DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

TO WIT:

In the Matter of the geological, geochemical and claims survey, gridding and assessment work on the NEV Group.

I, David Pelham Taylor

of c/o 107-325 Howe Street, Vancouver 1, B. C.

in the Province of British Columbia, do solemnly declare that the following personnel were employed and costs incurred in conducting the survey.

PERSONNEL:

N. Newsom - party chief, field	14 days @	61.81/day	865.34
, office	2 days @	61.81/day	123.62
Tong Kim - geologist	17 days @	55.68/day	946.56
L. Mamoser	14 days	41.77/day	584.78
J. Pitcher	14 days @	33.81/day	473.34
D. Kay	11 days @	43.80/day	481.80
D. Taylor - geologist	7½ days @	75.00/day	462.50
			4,037.94

DISBURSEMENTS:

Groceries, supplies and gas	455.57	
Car	33.50	
Geochemistry	859.69	
Mining Recorder	201.00	
Meals and accomodation	166.05	
Travel expenses	85.10	
Miscellaneous - parking, telephone	47.10	
Camp charges	120.00	
Truck rental	450.00	2,420.01
10% service charge on disbursements		242.00
TOTAL		6,699.95

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the VANCOUVER, B. C.

of in the

NOV 14 1972

Province of British Columbia, this

day of A.D.

Sub - Mining Recorder

A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.

In the Matter of

.....

.....

.....

.....

Statutory Declaration

(CANADA EVIDENCE ACT)

BRITISH COLUMBIA

GRANDORA EXPLORATIONS LTD. (NPL)

NEV CLAIM GROUP

SIMILKAMEEN MINING DIVISION

PROPERTY LOCATION MAP

SCALE IN MILES

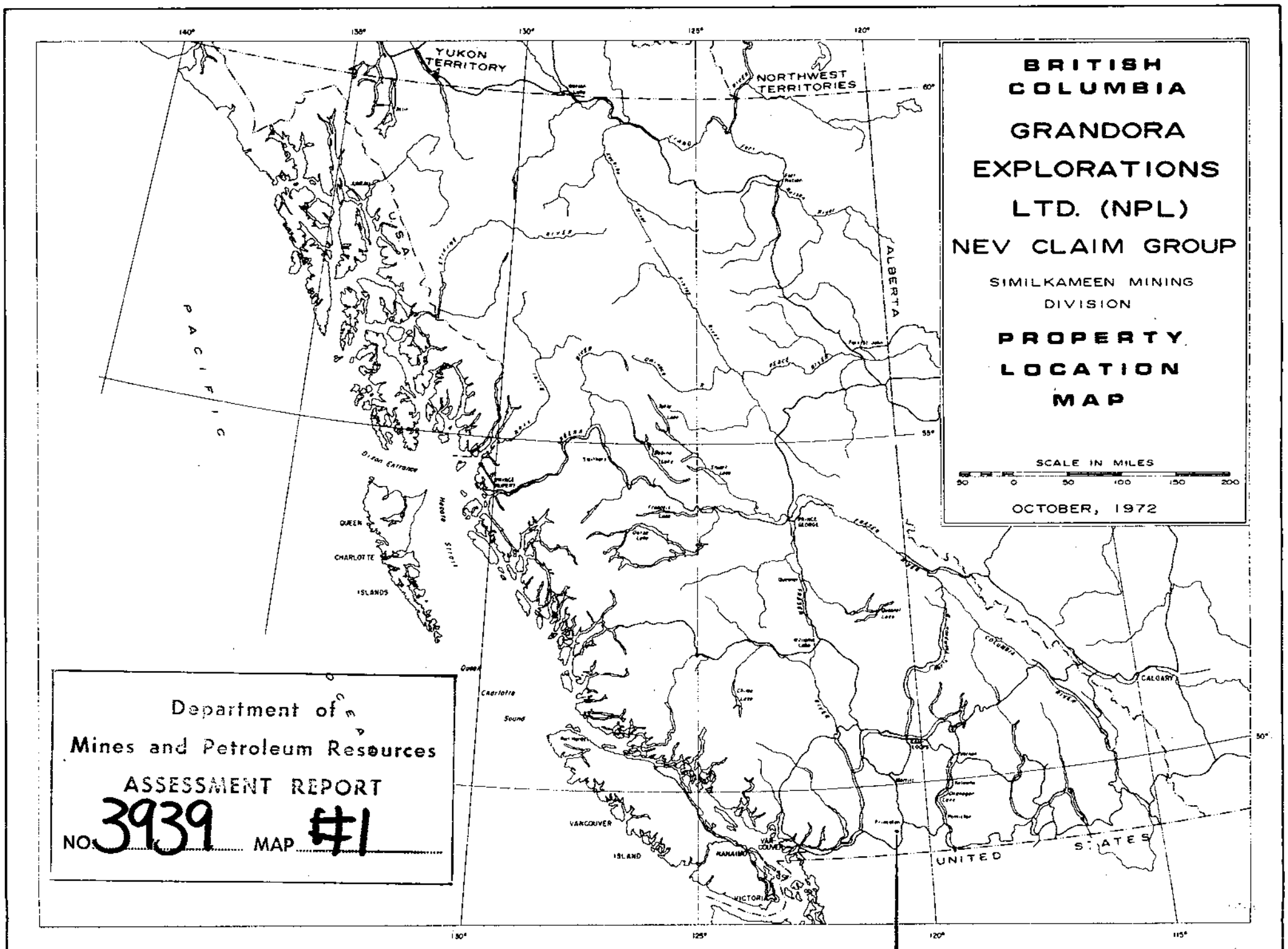
50 0 50 100 150 200

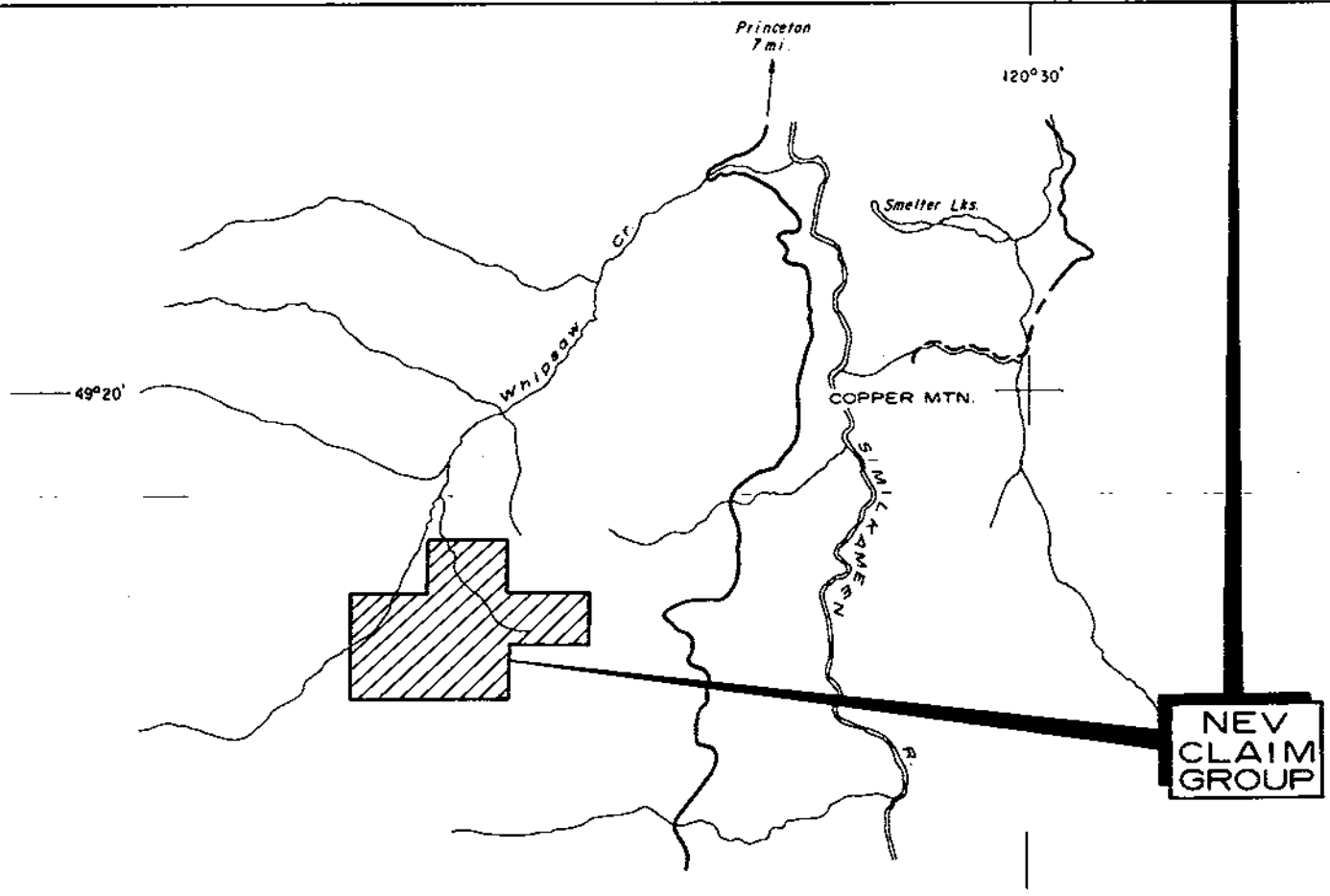
OCTOBER, 1972

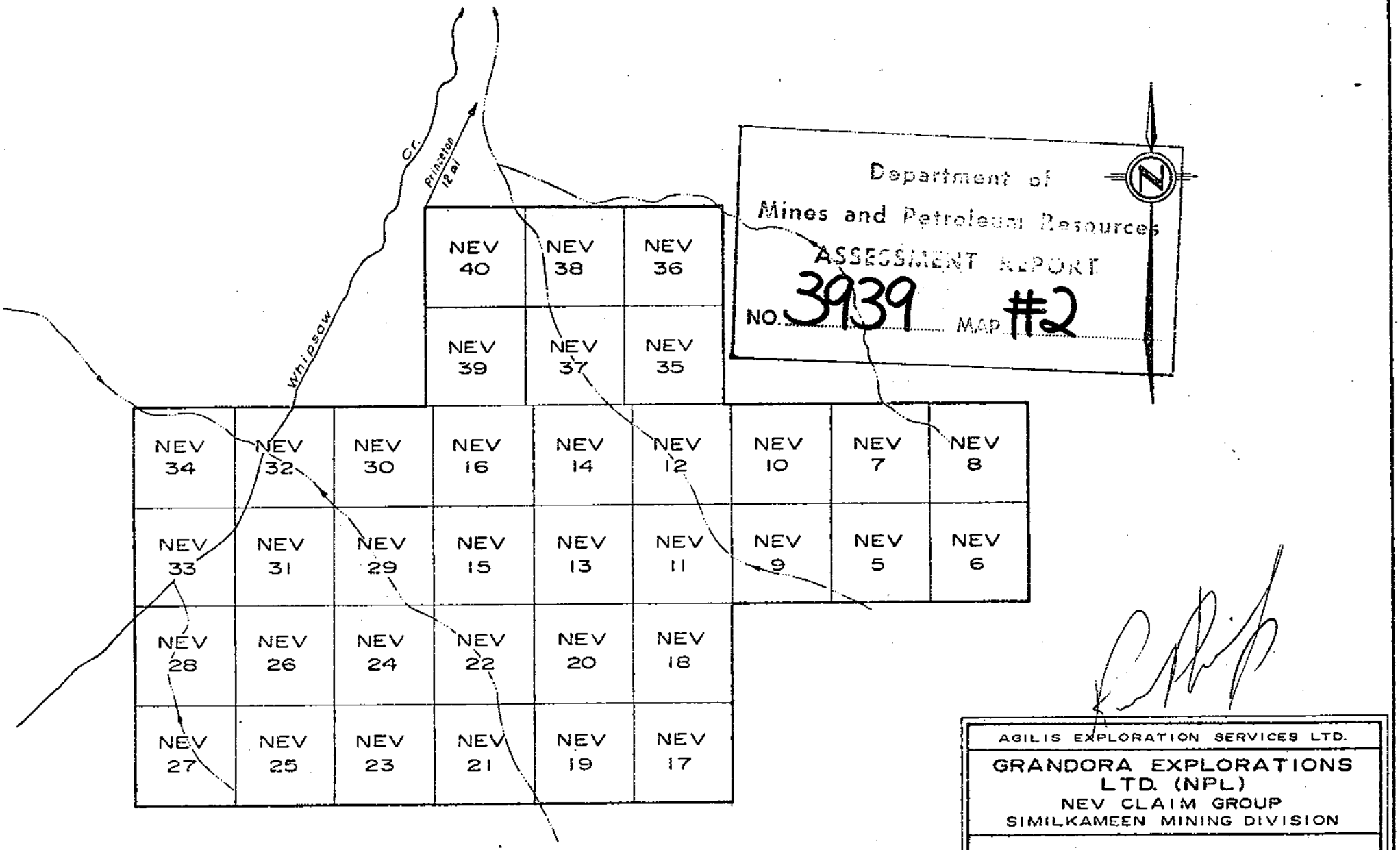
Department of Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 3939 MAP #1





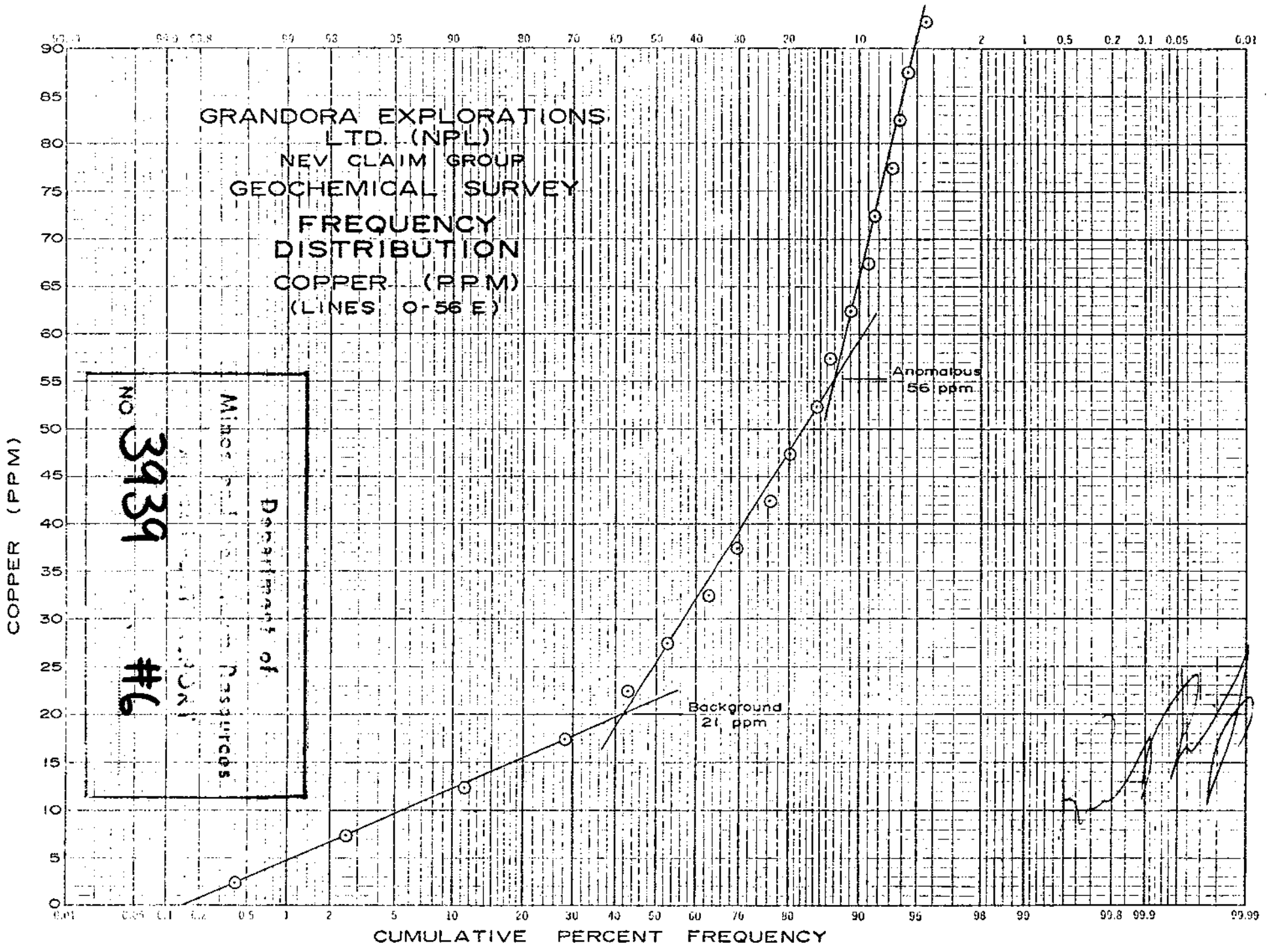


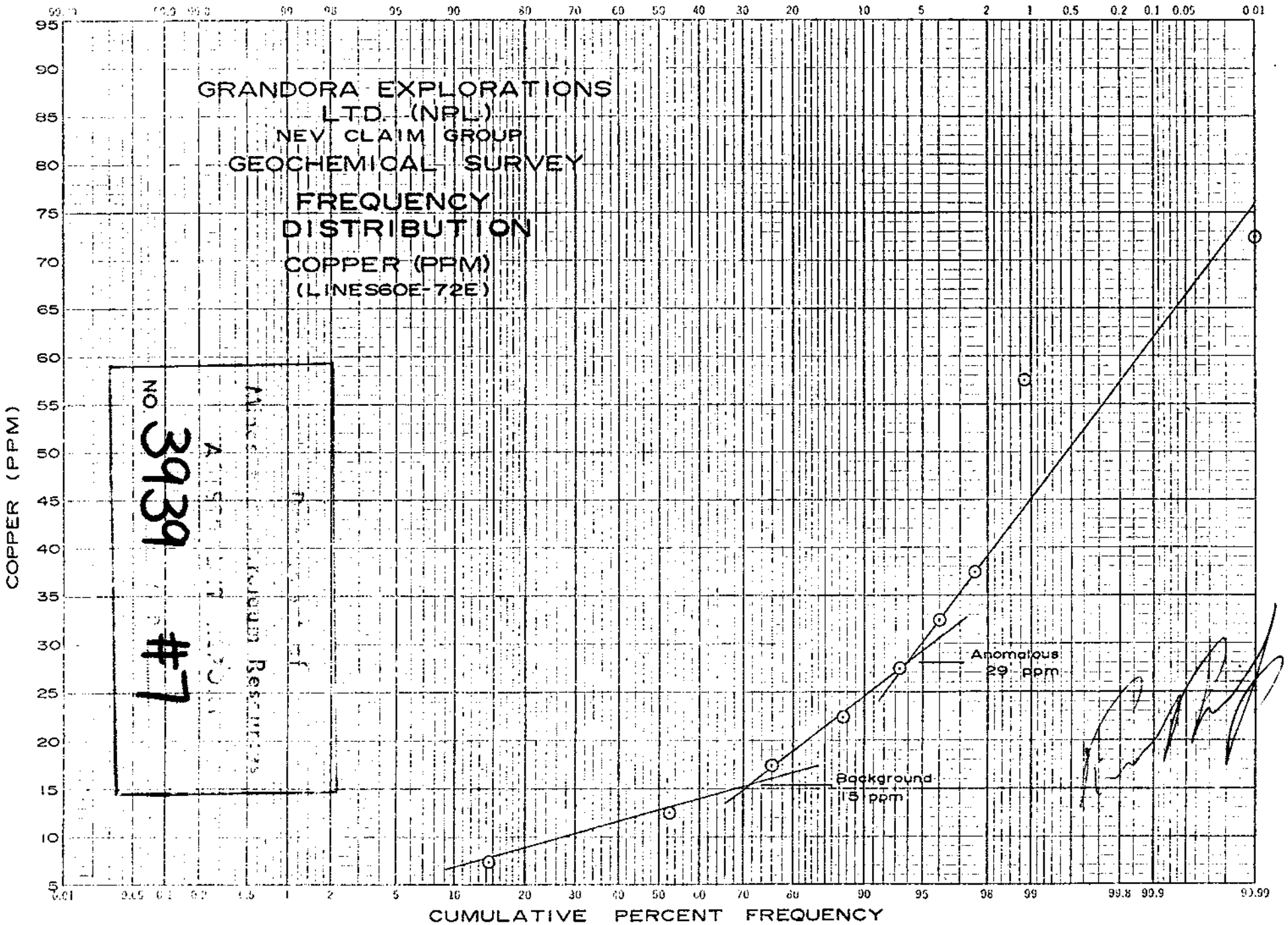
AGILIS EXPLORATION SERVICES LTD.

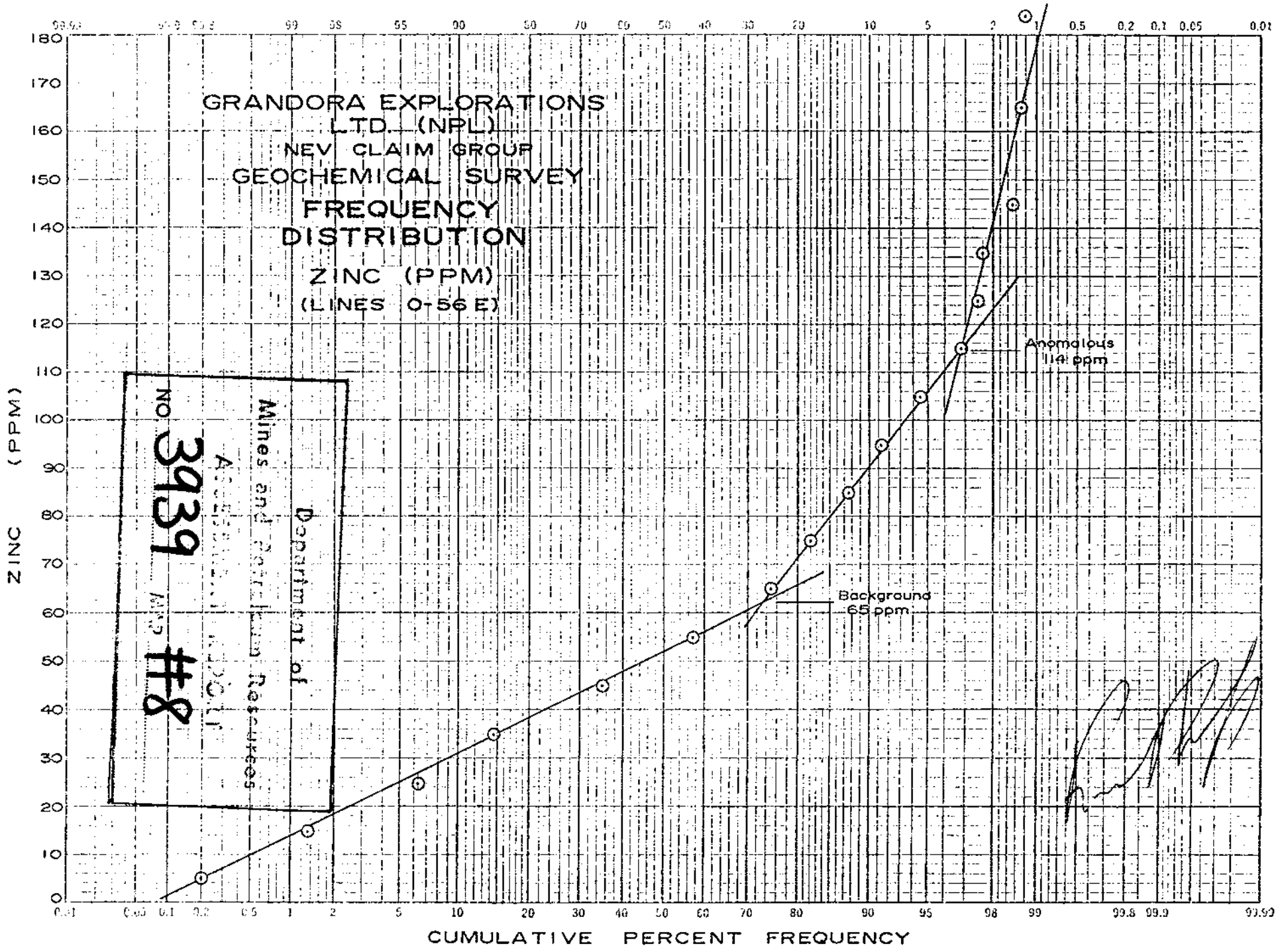
GRANDORA EXPLORATIONS LTD. (NPL)
NEV CLAIM GROUP
SIMILKAMEEN MINING DIVISION

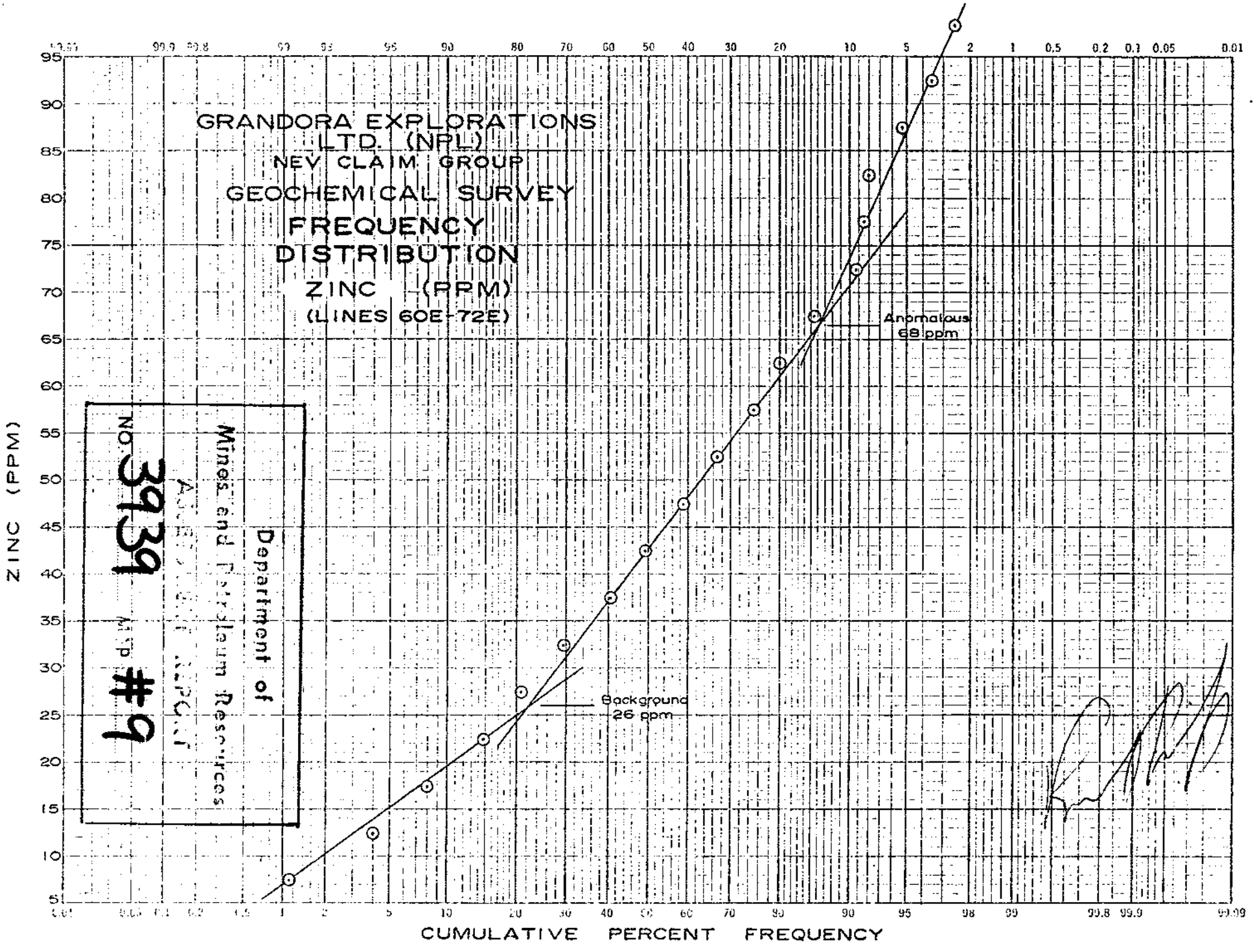
CLAIM MAP

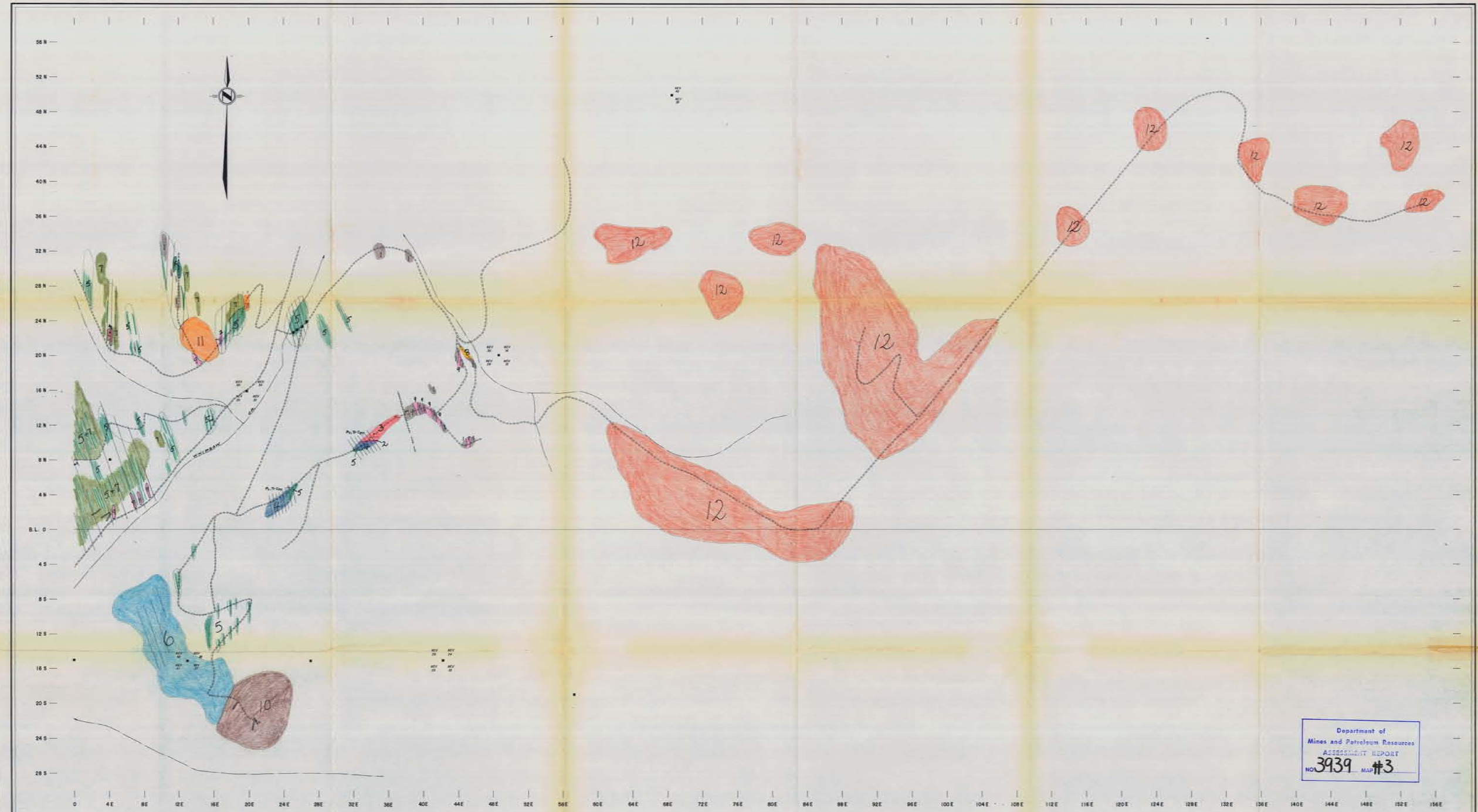
SCALE – 1" = 2000 FEET
OCTOBER, 1972











LEGEND

- Creek
- Road
- Claim post
- Boundary of outcrop with contact
- Strike and dip
- Sheared
- Fault
- Trench
- Diamond drill hole

PRINCETON GROUP volcanics

INTRUSIVES

- Diorite
- Gabbro
- Intermediate dykes and sills
- Leucocratic sill

NICOLA GROUP

- Andesite
- Dioritized andesite
- Chlorite schist
- Calc-schist
- Sericite schist
- Limestone
- Argillite

3939 M-3

AGILIS EXPLORATION SERVICES LTD.

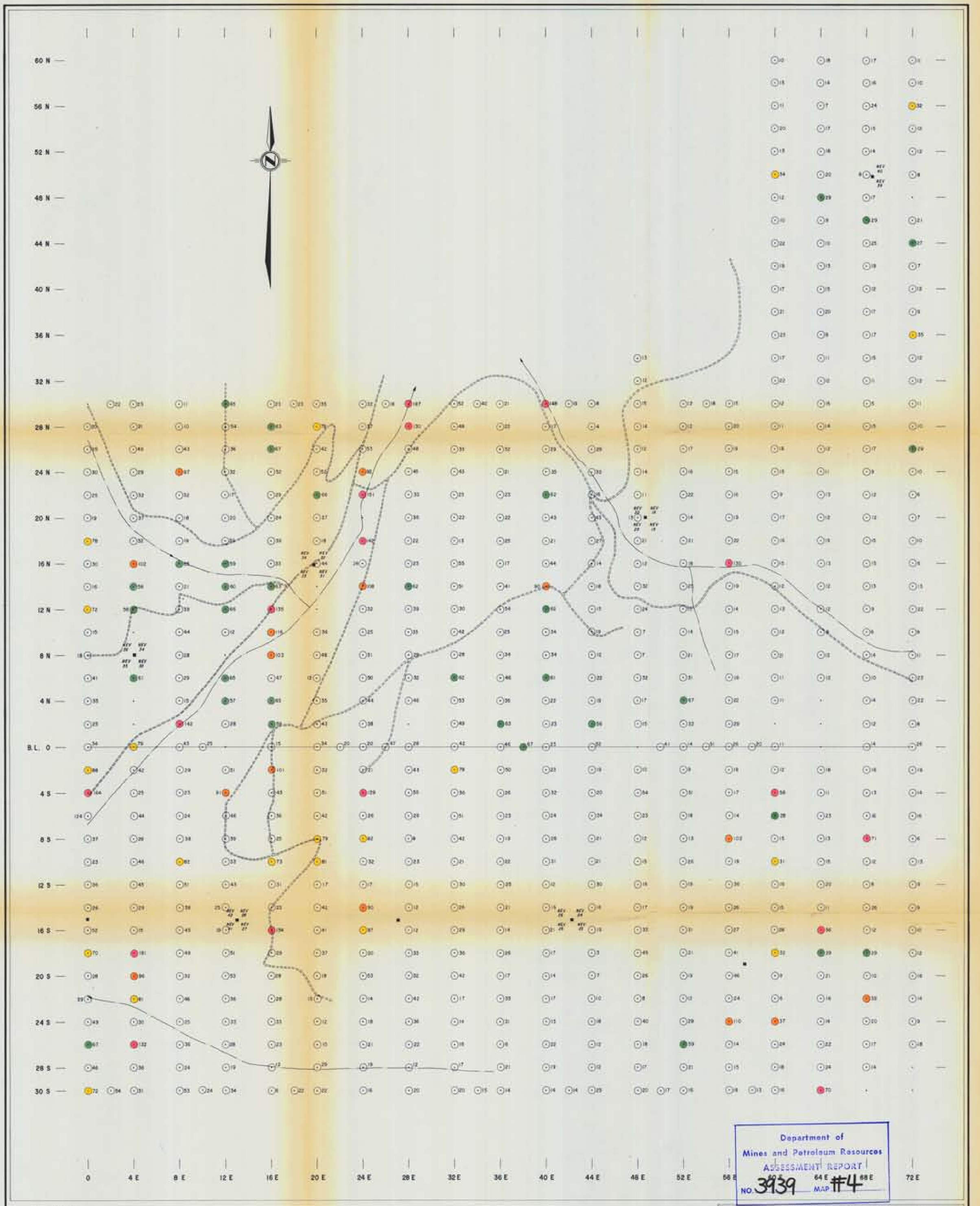
GRANDORA EXPLORATIONS LTD. (NPL)
NEV CLAIM GROUP
SIMILKAMEEN MINING DIVISION, B.C.

GEOLOGICAL SURVEY

MAPPED BY — T.Y. KIM

SCALE IN FEET
400 0 400 800 1200

OCTOBER 1972


60 N
56 N
52 N
48 N
44 N
40 N
36 N
32 N
28 N
24 N
20 N
16 N
12 N
8 N
4 N
B.L. 0
4 S
8 S
12 S
16 S
20 S
24 S
28 S
30 S
0
4 E
8 E
12 E
16 E
20 E
24 E
28 E
32 E
36 E
40 E
44 E
48 E
52 E
56 E
60 E
64 E
68 E
72 E
N
LEGEND
Creek
Road
Claim post
LINES 0 - 56E
56 - 69 ppm
70 - 89 ppm
90 - 119 ppm
≥ 120 ppm
LINES 60E - 72E
27 - 30 ppm
31 - 35 ppm
36 - 54 ppm
≥ 55 ppm
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3939 MAP #4
AGILIS EXPLORATION SERVICES LTD.
GRANDORA EXPLORATIONS
LTD. (NPL)
NEV CLAIM GROUP
SIMILKAMEEN MINING DIVISION, B.C.
GEOCHEMICAL
SURVEY
COPPER (ppm)
SCALE IN FEET
400 0 400 800 1200
OCTOBER 1972

60 N
56 N
52 N
48 N
44 N
40 N
36 N
32 N
28 N
24 N
20 N
16 N
12 N
8 N
4 N
B.L. 0
4 S
8 S
12 S
16 S
20 S
24 S
28 S
30 S

0 4 E 8 E 12 E 16 E 20 E 24 E 28 E 32 E 36 E 40 E 44 E 48 E 52 E 56 E 60 E 64 E 68 E 72 E

LEGEND

Creek
Road
Claim post

LINES 0-56E
67 - 99 ppm
100 - 110 ppm
111 - 149 ppm
≥ 150 ppm

LINES 60E-72E
68 - 72 ppm
73 - 80 ppm
81 - 99 ppm
≥ 100 ppm

AGILIS EXPLORATION SERVICES LTD

GRANDORA EXPLORATIONS
LTD. (NPL)
NEV CLAIM GROUP
SIMILKAMEEN MINING DIVISION, B.C.

GEOCHEMICAL SURVEY

ZINC (ppm)

SCALE IN FEET
400 0 400 800 1200

OCTOBER 1972