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GEOPHYSICAL - GEOCHEMICAL REPORT

ON

MAGNETIC, VLF-EM AND SOIL GEOCHEMISTRY SURVEYS

KAM CLAIM

CHERRY CREEK, KAMLOOPS M.D., B.C.

KAM Claim: 19 km S65W of Kamloops on SE side of Cherry Creek.

: 50° 120° NW

: 92I/10E

Report by: David G. Mark,
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For: Charles Boitard
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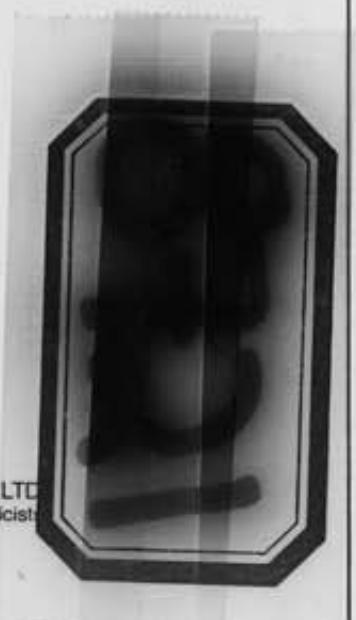
Vancouver, B.C.

Dated: December 5, 1980



GEOTRONICS SURVEYS LTD.
Engineering & Mining Geophysicists
VANCOUVER, CANADA

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SUMMARY

A combined VLF-EM, magnetometer, and soil geochemistry survey was carried out over the KAM Claim during the first half of August, 1979. The purpose of the surveys was to map lithology, structure, and locate any probable zones of sulphide mineralization.

The claims are located on Cherry Creek southwest of Kamloops within the Kamloops Mining Division, B.C. Access is by highway, secondary road and 4-wheel drive road out of Kamloops. The terrain is generally that of gentle slopes, except on the creek sides where it is moderate The underbrush is light within an open forest.

The property is underlain by Nicola volcanics. Tertiary volcanics are found a few thousand feet to the northeast and Coast Intrusive outcroppings are found throughout the Nicola volcanics. Drill holes in the area and on the property have revealed some copper mineralization within shear zones.

In the Iron Mask Batholith area, many copper occurrences are known, the main copper minerals being chalcopyrite and bornite. Afton Mines occurs only 7 km to the NW. The VLF-EM survey was carried out with a receiver unit using the Seattle, Washington transmitter. Both the dip angle and field strength readings were taken and the results were subsequently profiled. The magnetic readings were taken with a portable vertical-component fluxgate magnetometer. Only one line was read and the results were also profiled.

On the soil geochemistry survey, the B horizon was sampled and all samples subsequently analyzed for copper, molybdenum, zinc, and arsenic by the hot acid extraction method.

CONCLUSIONS

1. The VLF-EM survey revealed a long, lineal, strong conductor that is a reflection of a regional shear zone with which copper mineralization is associated.

2. The magnetic readings on L-90S revealed little.

3. Isolated anomalous values were revealed on the copper and zinc maps though the values have no correlation. The molybdenum and zinc values were quite flat.

RECOMMENDATIONS

On the basis of the VLF-EM results within this report, the writer recommended a Max-Min EM survey. This was done and resulted in a more accurate interpretation of the VLF-EM anomaly. Subsequently, diamond drilling was recommended which was also carried out. The drilling revealed a series of faulting and shearing which is important in the area and in the Afton Mine orebody for the occurrence of mineralization. The writer therefore recommends that the VLF-EM survey be repeated but in a much more detailed manner, say a 12.5 m reading interval on 50 m spaced lines.

A deep-penetrating but detailed induced polarization survey could also be useful. The use of I.P., however, was limited on the Afton property in their exploration program. However, the geological environment on Afton is different than that of the Kam property.

GEOPHYSICAL - GEOCHEMICAL REPORT

ON

MAGNETIC, VLF-EM AND SOIL GEOCHEMISTRY SURVEYS

KAM CLAIM

CHERRY CREEK, KAMLOOPS M.D., B.C.

INTRODUCTION AND GENERAL REMARKS

This report discusses the survey procedure, compilation of data, and interpretation of results of a very low frequency electromagnetic (VLF-EM) survey with a few magnetic readings carried out over the KAM Claim within the Kamloops M.D., B.C. It also discusses the sampling method, testing procedure and interpretation of results of a soil geochemistry survey. All of the above work was carried out from August 1 to 15, 1979 under the direct supervision of Charles Boitard.

The number of line km of VLF-EM was 4.3 and the number of soil samples picked up was 31.

The purpose of the VLF-EM survey was to delineate probable zones of sulphide mineralization and/or shear zones associated with sulphides. That of the magnetic survey was primarily to map rock contacts and secondarily to delineate mineralized zones. That of the soil geochemistry was to locate areas of copper, molybdenum, zinc, and gold mineralization.

PROPERTY AND OWNERSHIP

The property consists of one 9-unit claim as described below and as shown on Fig. 1.

CLAIM NAME	NO. UNITS	RECORD NUMBER	EXPIRY DATE
KAM	9	1917	June 15, 1980

If the assessment work as described in this report is accepted, then the expiry date will be June 15, 1982.

The property when the survey was done was owned by Charles Boitard. On April 15, 1980, it was sold to Green Valley Mine Incorporated who optioned it on September 18 to Lakewood Mining Co. Ltd.

LOCATION AND ACCESS:

The property is located in the Kamloops M.D. 19 km S65W of the city of Kamloops and 4.5 km S10W of Ned Roberts Lake. It abuts the southeast side of Cherry Creek.

The geographical coordinates for the center of the property are 50° 36' N latitude and 120° 34'W longitude.

Access is via the Cherry Creek road which leaves Highway No. 1 in a southerly direction 20 km west of Kamloops. 7 km along the Cherry Creek is a southeasterly running 4-wheel drive road along which the property is located 5.5 km.

PHYSIOGRAPHY

The property is found within the physiographic unit known as the Thompson Plateau which forms part of the Interior Plateau. The

terrain varies from gentle over most of the property to moderate around Cherry Creek in the northwest corner. The elevation varies from 1,160 m to 1,310 m giving a relief of only 150 m.

Cherry Creek is the main water drainage in the area and flows northeasterly through the northwest corner of the property.

Tree cover is generally that of open forest with grasses as well as some thick second growth.

Pleistocene i e occupied the Thompson Plateau and thus much of the claim area is probably covered by glacial drift which could become quite deep over the flatter areas.

HISTORY OF PREVIOUS WORK

Since the claims were staked no known work has been done. However, before the staking, induced polarization and magnetic surveying were done, as well as, in all likelihood, other work.

GEOLOGY

This section is taken from the G.S.C. Map of W.E. Cockfield, published in 1947 and Open File Map 886A published by the GSC in 1971.

The oldest rocks of the area are those on the property being of the Nicola group which is of Upper Triassic Age. The rock types composing this group are greenstone, andesite, basalt, agglomerate, breccia, tuff, minor argillite, limestone and conglomerate.

The next rock group in decreasing age sequence is the Jurassic Coast Intrusives that outcrop throughout the Nicola volcanics. The rock types are granite, granodiorite, and gabbro; or

syenite, monzonite, diorite, and gabbro of the Iron Mask Batholith. None of this type are shown to be on the property.

The Tertiary volcanics, mainly basalt, of the Kamloops Group are the youngest rocks in the general area. This Group also does not occur on the property.

No faults or shear zones have been shown by the G.S.C. map to exist on the property. Nonetheless, geophysics and diamond drilling done in the area have shown numerous faults and shear zones.

No economically interesting mineralization has been seen so far on or in the immediate area of the claims except for minor native copper within a shear zone to the immediate northeast of the property.

The many copper occurrences in the general area are found both within the Iron Mask Batholith and the older, intruded Nicola rocks close to the batholith. Generally, they are veins, impregnations, stockworks and mineralized shear zones in the country rock with the principle copper minerals being chalcopyrite and bornite as well as some chalcocite, cuprite, azurite and malachite. Additional minerals that often occur with the copper are magnetite and pyrite. There have been shipments of ore, though small, from many of the prospects. The largest producer was the Iron Mask Mine which shipped a total of 189,230 tons of ore.

Afton Mines Ltd., located 7 km N32E of the property, as reported on February 21, 1972, has blocked out 36 million tons of 0.66% copper with associated gold. The main mineral form is native copper found within an intrusive breccia at the contact of the Nicola volcanics.

Numerous occurences of mineralization are known in the general region. Many veins and disseminations of copper minerals have been found in the rocks of the Nicola group. Vein deposits containing gold and silver, with lead, zinc and copper minerals occur in the Triassic greenstone at Stump Lake, 30 km southeast, and similar veins occur with replacement deposits in the greenstones and limestones of Swakum Mountain 37 km southwest.

GEOPHYSICS

A. INSTRUMENTATION AND THEORY

1) VLF-EM UNIT

A VLF-EM receiver, Model, 27, manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. was used for the VLF-EM survey. This instrument is designed to measure the electromagnetic component of the very low frequency field (VLF), transmitted at 18.6KHz, from Seattle, Washington or at 17.8KHz from Cutler, Maine.

In all electromagnetic prospecting, a transmitter produces an alternating magnetic field (primary) by a strong alternating current usually through a coil of wire. If a conductive mass such as a sulphide body is within this magnetic field, a secondary alternating current is induced within it which in turn induces a secondary magnetic field that distorts the primary magnetic field. It is this distortion that the EM receiver measures. The VLF-EM uses a frequency range from 16 to 24 KHz, whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Because of its relatively high frequency, the VLF-EM can pick up bodies of a much lower conductivity and therefore is more susceptible to clay beds, electrolyte-filling fault or shear zones and porous horizons, graphite, carbonaceous sediments, lithological contacts as well as sulphide bodies of too low a conductivity for other EM methods to pick up. Consequently the VLF-EM has additional

uses in mapping structure and in picking up sulphide bodies of too low a conductivity for conventional EM methods and too small for induced polarization. (In places it can be used instead of I.P.) However, its susceptibility to lower conductive bodies results in a number of anomalies, many of them difficult to explain and, thus, VLF-EM preferably should not be interpreted without a good geological knowledge of the property and/or other geophysical and geochemical surveys.

2) MAGNETOMETER

The magnetic readings were taken using a portable vertical component, Model G-110 fluxgate magnetometer manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. This is a visual-null type instrument using a digital dial readout with a range of 100,000 gammas and a reading accuracy of 10 gammas. The G-110 has a temperature co-efficient of 2 gammas per degree centigrade.

Only two commonly occurring minerals are strongly magnetic; magnetite and pyrrhotite. Hence, magnetic surveys are used to detect the presence of these minerals in varying concentrations. Magnetic data are also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

B. SURVEY PROCEDURE

The lines were put in with compass and thread chain. The baseline runs in a S20W direction with the survey lines being in a perpendicular direction at S70E and N70W and 100 m apart. The survey stations were marked at 50-m intervals with flagging.

The VLF-EM survey was run using the Seattle, Washington transmitter

which transmits at 18.6KHz. All readings were taken at 50-m intervals facing the station.

The magnetic readings were taken only on line 90S at the 50m stations.

C. COMPILATION OF DATA

Both the VLF-EM dip angle and field strength readings as well as the magnetic readings were profiled on Figs. 3, 4 and 5. The horizontal scale used was 1" = 200 m or 1:7800 and the vertical scales, 1" = 20° for dip angle, 1" = 20% for field strength, and 1" = 40 gammas for magnetometer.

D. DISCUSSION OF RESULTS

The major cause of VLF-EM anomalies, as a rule, are geologic structures such as fault, shear and breccia zones. It is therefore logical to interpret VLF-EM anomalies to likely be caused by these structural zones. Of course, sulphides may also be a causitive source. But in the writer's experience, where VLF-EM anomalies correlate with sulphide mineralization, the anomalies are usually reflecting the structure associated with the mineralization rather than the mineralization itself.

The VLF-EM survey revealed one long, lineal anomaly which the writer has traced onto Fig. 2. The length of this anomaly suggests the causitive source to be a shear or fault zone. This has subsequently been verified by diamond drilling carried out in the first part of November, 1980. Furthermore, diamond drilling on the adjoining Dave Claim to the northeast revealed a shear zone that could be an extension of the one on the KAM claim. The drilling on both properties has shown copper mineralization within the shear.

The 50-meter spacing is somewhat wide for VLF-EM survey work, but is good for revealing regional structure, which the writer believes the KAM anomaly is.

The magnetic readings on L-90S only vary 30 gammas which appears to be within the noise envelope of the area. For example, a small magnetic high correlates with the VLF-EM anomaly but at the same time is no larger than a nearby similar magnetic high where there is no VLF-EM anomaly.

SOIL GEOCHEMISTRY

A. SURVEY PROCEDURE

The samples were picked up on the 100 m separated survey lines at the 50 m centers but only on lines 60S and 90S. The soil horizon sampled was B which was a brown to reddish-brown colour. The samples were taken at a 20 to 40 cm depth by a mattock and placed in brown, wet-strength paper bags.

B. TESTING PROCEDURE

All samples were tested by Vangeochem Lab Ltd. of North Vancouver, B.C. The sample is first thoroughly dried and then sifted through a -80 mesh screen. A measured amount of the sifted material is then put into a test tube with subsequent measured additions of hot aqua regia. This mixture is next diluted with demineralized water. The parts per million (ppm) of copper, molybdenum and zinc is then measured by atomic absorption.

For arsenic, HCl is used instead of aqua regia. The arsenic is then evolved from solution of KI, $SnCl_2$ by Zn metal into AgDDC which is read colorimetically.

C. TREATMENT OF DATA

There are too few samples taken to statistically analyze them for background and anomalous threshold values. These, therefore can only be determined by 'eyeballing'.

The copper, molybdenum, zinc, and arsenic values have been plotted on figures 6 to 9, respectively. Values of primary interest have been marked by a filled circle and values of secondary interest, by a half-filled circle.

DISCUSSION OF RESULTS

The limited number of samples precludes any significant discussion on the results. Furthermore the spacing is somewhat wide though it is certainly wide enough for reconnaissance purposes.

The copper and zinc geochemistry maps were the only 2 to reveal values of any significance. The molybdenum and arsenic (which is actually done for gold) results were quite flat.

Only a few of the copper and zinc values were considered anomalous and furthermore the anomalous values are isolated. The values do not correlate with each other, nor with the VLF-EM results. If mineralization exists on the claim, the lack of geochemical expression could be caused by shallow overburden cover and/or the wrong ph.

December 5, 1980

Respectfully submitted,
Geotronics Surveys Ltd.

David G. Mark
Geophysicist

SELECTED BIBLIOGRAPHY

Aeromagnetic Map, Cherry Creek, British Columbia, Geol. Surv. of Can., Map 5217G, Sheet 92 I/10, 1968.

Aeromagnetic Map, Kamloops, British Columbia, Geol. Surv. of Can., Map 5216G, Sheet 92 I/9, 1968.

Cockfield, W.E. Geology and Mineral Deposits of Nicola Map-Area, British Columbia, Geol. Surv. of Can., Mem. 249, 1948.

G.S.C. O.F. Map 886A, 1971.

GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the city of Vancouver, in the Province of British Columbia, do hereby certify:

THAT I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices at 403-750 West Pender Street, Vancouver, British Columbia.

I further certify:

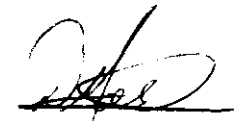
1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc., degree in Geophysics.

2. I have been practising my profession for the past twelve years and have been active in the mining industry for the past fifteen years.

3. That I am an active member of the Society of Exploration Geophysicists and a member of the European Association of Exploration Geophysicists.

4. This report is compiled from data obtained from VLF-EM, magnetic and soil geochemistry surveys carried out under the supervision of Charles Boitard from August 1 to 15th, 1979.

5. I have no direct or indirect interest in the KAM Claims nor in Green Valley Mine Incorporated or Lakewood Mining Co. Ltd., Vancouver, B.C. nor do I expect to receive any interest therein as a result of writing this report.



David G. Mark

December 5, 1980

C. Boitard: B.C.I.T. electronics student with field experience in geophysical exploration.

AFFIDAVIT OF EXPENSES

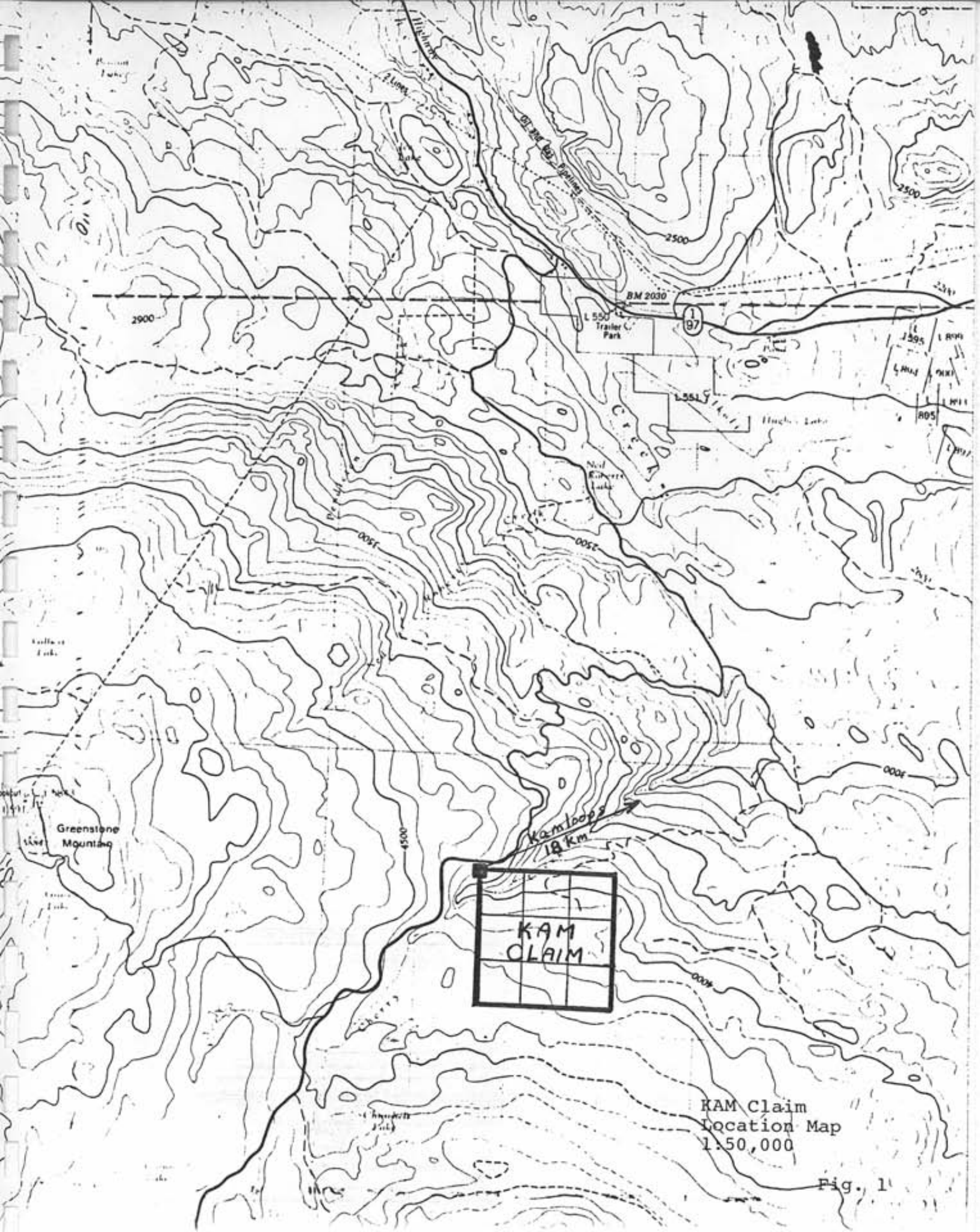
This is to certify that a combined VLF-EM, magnetic, and soil geochemistry survey was carried out on the KAM Claim from August 1st to 15th, 1980, to the value of the following:

Geophysical Technician, 24 hours at $20/hour		$ 480.00
4-Wheel drive rental, 3 days at $60/day		180.00
Room and Board, 3 days at $50/day		150.00
Instrument rental, 2 instruments for 1 week @ $50/week		100.00
Supplies and gas (transportation)		50.00
		960.00
Assay	$144.75	
Report, Geophysicist, 6 hours @ $35/hour	210.00	
Geophysical Technician, 24 hours @ $20/hour	480.00	
Typing, xeroxing and compilation	120.00	
	$954.75	954.75
Total		$1,914.75

Respectfully submitted December 5, 1980

Charles Boitard

Charles Boitard



KAM Claim
Location Map
1:50,000

Fig. 1

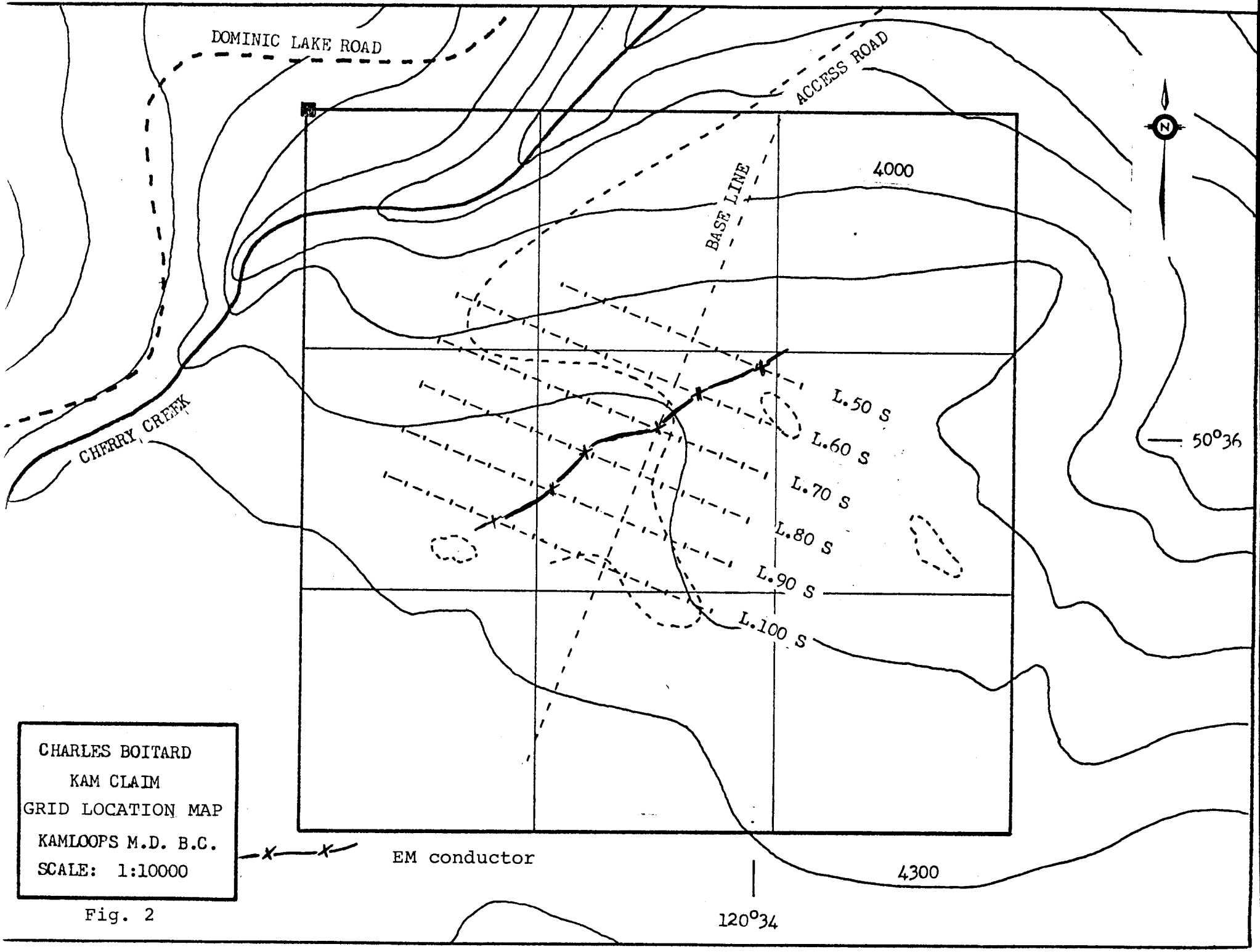

DOMINIC LAKE ROAD
ACCESS ROAD
BASE LINE
4000
CHERRY CREEK
L.50 S
L.60 S
L.70 S
L.80 S
L.90 S
L.100 S
50°36
4300
120°34
N
CHARLES BOITARD
KAM CLAIM
GRID LOCATION MAP
KAMLOOPS M.D. B.C.
SCALE: 1:10000
EM conductor

Fig. 2

KAM CLAIM

LINE 50 SOUTH (reading stations at 50 meter intervals)

50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30

E.M. dip angle

15
10
5
0
5
10
15

E.M. field strength

55
50
45
40

LINE 60 SOUTH

E.M. dip angle

15
10
5
0
5
10
15

1:7800
(1"= 200m)

E.M. field strength

45
40
35
30
25

Fig. 3

KAM CLAIM

LINE 70 SOUTH (reading stations at 50 meter intervals)

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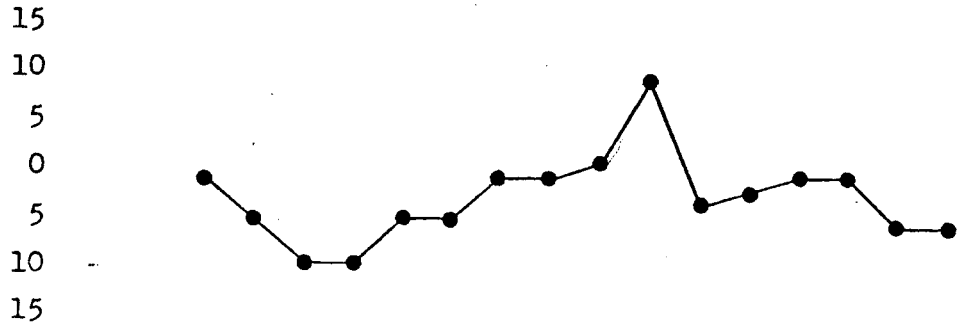
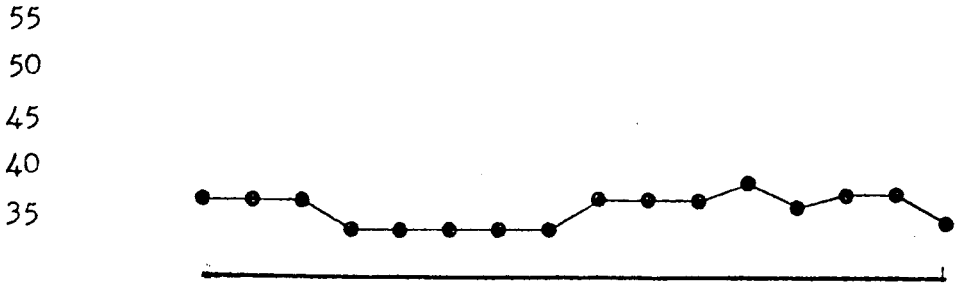
E.M. dip angle

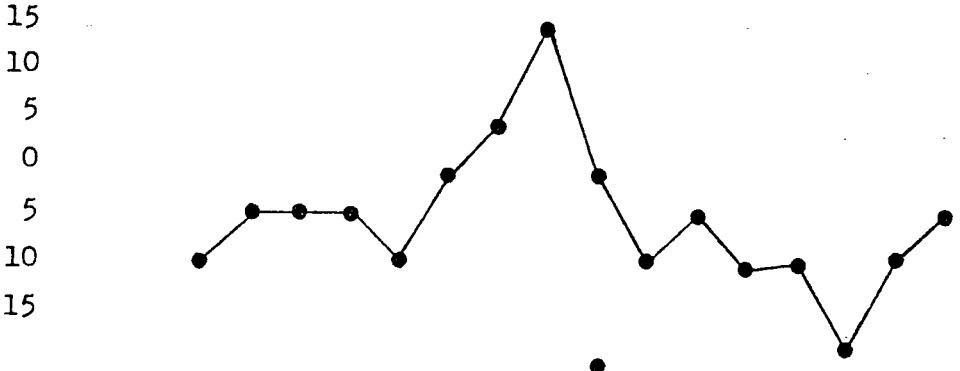


E.M. field strength

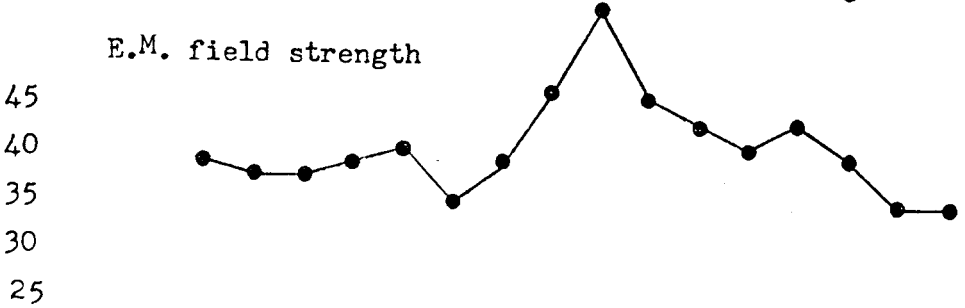


LINE 80 SOUTH

E.M. dip angle



E.M. field strength



1:7800
(1"= 200 m)

Fig. 4

KAM CLAIM

LINE 90 SOUTH (reading stations at 50 meter intervals)

50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30

E.M. dip angle

15 10 5 0 5 10 15

E.M. field strength

55 50 45 40 35

MAG.

5510 5500 5490 5480

LINE 100 SOUTH

E.M. dip angle

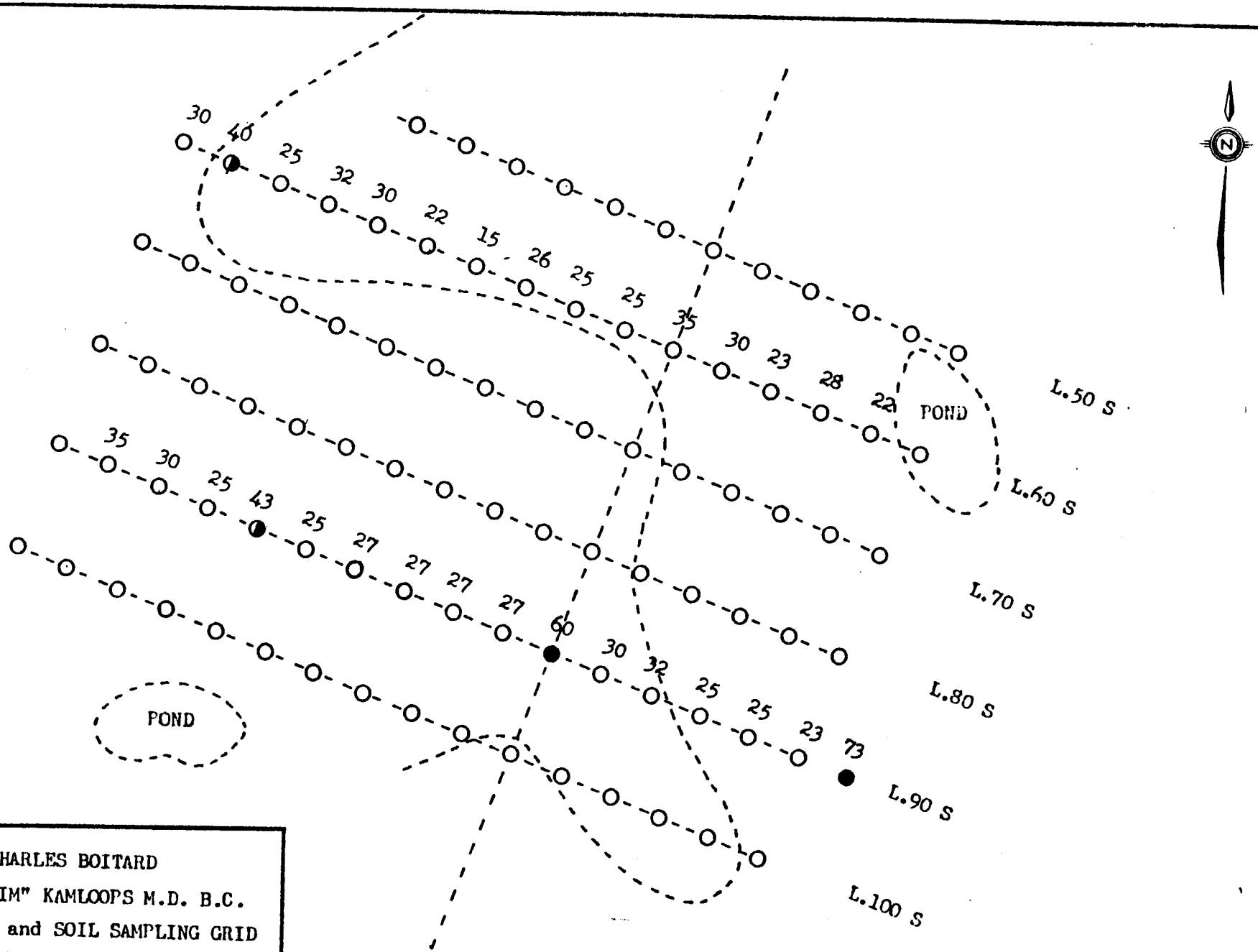
15 10 5 0 5 10 15

E.M. field strength

40 35 30 25

1:7800
(1" = 200 m)

Fig. 5

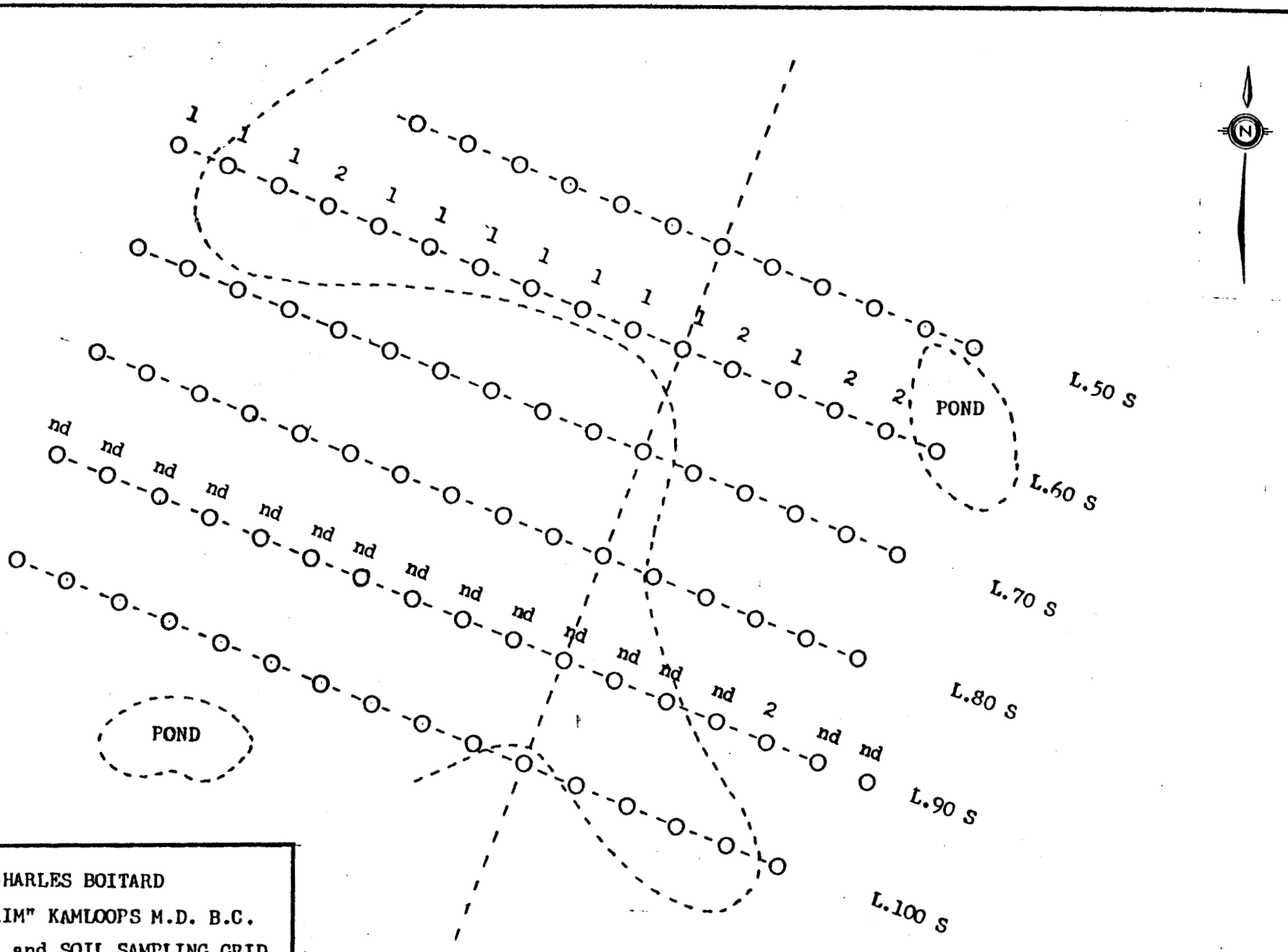


CHARLES BOITARD
"KAM CLAIM" KAMLOOPS M.D. B.C.
GEOPHYSIC and SOIL SAMPLING GRID
..CU. PPM (50 M. intervals)
SCALE: 1:5000

◑ 40 - 59 ppm

● above 60 ppm

Fig.6



CHARLES BOITARD

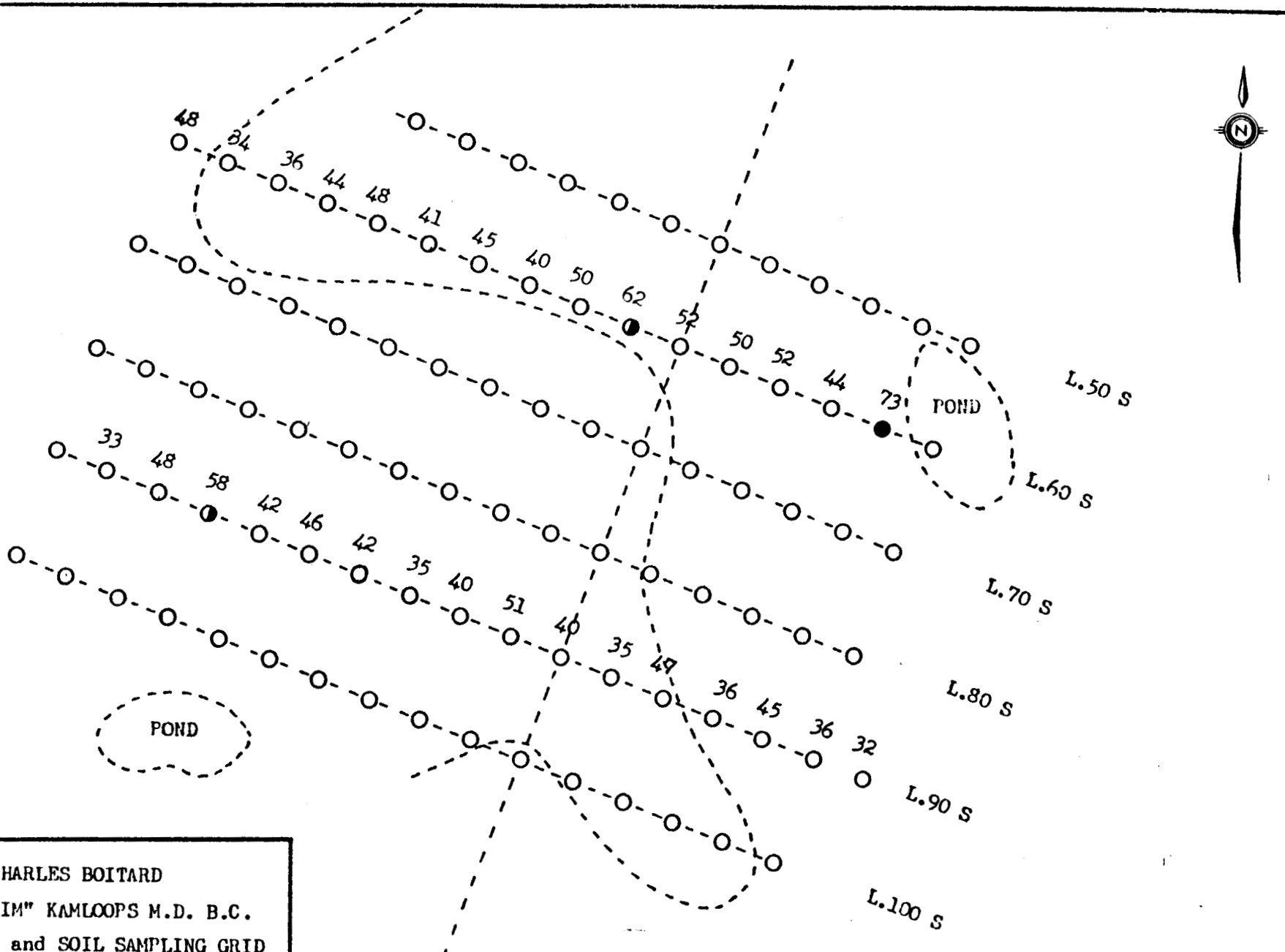
"KAM CLAIM" KAMLOOPS M.D. B.C.

GEOPHYSIC and SOIL SAMPLING GRID

..MO PPM (50 M. intervals)

SCALE: 1:5000

Fig. 7



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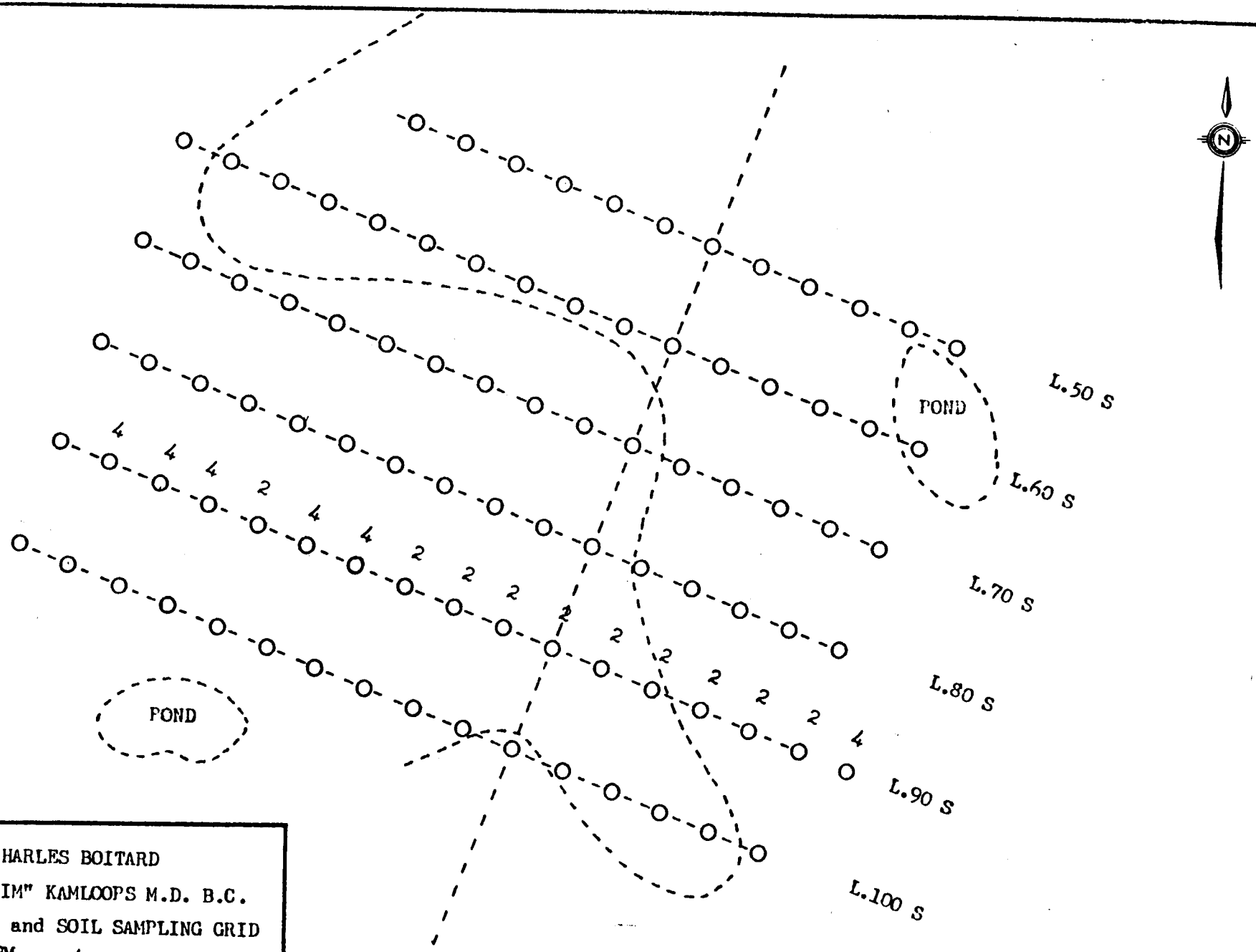
"KAM CLAIM" KAMLOOPS M.D. B.C.
GEOPHYSIC and SOIL SAMPLING GRID
..ZN PPM (50 M. intervals)
SCALE: 1:5000

◑ 55 to 70 ppm

● above 70 pmm

Fig 8



CHARLES BOITARD
"KAM CLAIM" KAMLOOPS M.D. B.C.
GEOPHYSIC and SOIL SAMPLING GRID
..AS. PPM (50 M. intervals)
SCALE: 1:5000

Fig. 9