

UMEX

UNION MINIERE EXPLORATIONS
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ASSESSMENT REPORT ON GEOPHYSICAL SURVEYS
GROUND MAGNETOMETER AND VLF-EM ON
CHARITY CLAIM GROUP

Charity, Hope, Coppermint I, Coppermint II,
Coppermint 3, Susan, Victoria, Victoria
Fraction, Copper Canyon, Elmore Fraction,
and Klondyke Mineral Claims

Record Nos. 136 (Feb.), 87 (May), 17566-68K,
35 (March), 18240M, 74 (Jan.) 18241M,
75 (Jan.), 18243M - Victoria Mining Division

N.T.S. 92B/13W

Latitude $48^{\circ}52'$

Longitude $123^{\circ}50'$

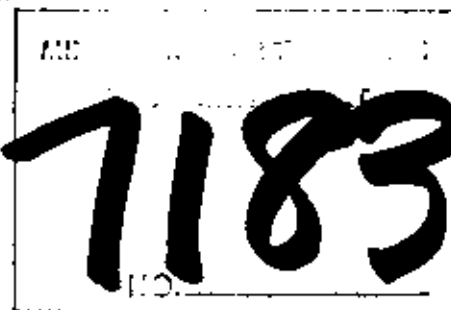
by

A. Pauwels, B.Sc.

Owner and Operator: Union Miniere Explorations and
Mining Corporation Limited

Work Dates: January 29 to February 3, 1979

Date: February 28, 1979



CONTENTS

	Page
INTRODUCTION	1
GEOLOGY	1
PREVIOUS WORK	2
GEOPHYSICAL SURVEYS	3
Line Placement	3
Magnetometer Surveys	3
VLF-EM Surveys	3
RECOMMENDATIONS	5

Appendices

APPENDIX I - STATEMENT OF EXPENDITURES
APPENDIX II - AUTHOR'S QUALIFICATIONS

Figures

following page

FIGURE 1 - Location of Charity Claim Group, 1/50,000	1
FIGURE 2 - Magnetometer Survey, 1/2,500	in pocket
FIGURE 3 - VLF-EM in-phase and out-of-phase data, 1/2,500.	in pocket
FIGURE 4 - VLF-EM Filtered Data, 1/2,500	in pocket

ASSESSMENT REPORT ON GEOPHYSICAL SURVEYS
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CHARITY CLAIM GROUP

INTRODUCTION

The claims are located 8 kilometers northwest by road from Chemainus, B.C. on the easterly slopes of the Chemainus River Valley. An excellent main logging road, owned by MacMillan Bloedel, traverses the claim group.

The centre of the property is at latitude $48^{\circ}52'$ and longitude $123^{\circ}50'$. Elevations range from 70 meters along the Chemainus River to 800 meters above sea level on the slopes of Mount Brenton. The claims are within the Vancouver Island ranges of the Insular Mountain physiographic subdivision.¹ Ground magnetics and VLF surveys were done from January 29 to February 3, 1979. Work was recorded at the Vancouver recording office (B.C. mining receipt 124155) on February 9, 1979.

All the claims mentioned on the title page were grouped in the Charity Claim Group on February 9, 1979 at the Vancouver mining recorder. The Hope, Victoria Fraction, Elmone Fraction, and Susan claims were acquired by Union Miniere by bill of sale from J. Deighton (January 8, 1979, MR124037), the Charity claim from N. Ball (January 8, 1979, MR124036), the Coppermint I claim from A. Whittles (January 10, 1979, MR124040), the Coppermint 3, Victoria, Copper Canon, Klondyke from F.C. Loring (January 10, 1979, MR124041 and 43), and the Coppermint II from G. Kinneard (January 10, 1979, MR124042).

The geophysical work done covered part of the Charity, Victoria Fraction, Susan, Copper Canon, Coppermint I, and Coppermint II claims. The work was planned and supervised by A. Pauwels, B.Sc.; Messrs. H. Holm and F. Thrane did the line placement and instrument readings.

GEOLOGY

The property is underlain by schistose metavolcanics of the Sicker, unconformably overlain to the south by Cretaceous sediments of the Nanaimo Group.² Mr. J. Deighton mapped parts of the property in 1976-1977³ and

¹Holland, S.S., 1964, Land Forms of British Columbia, a Physiographic Outline: B.C.D.M. Bulletin 48

²Muller, J.E., 1977, Geology of Vancouver Island, G.S.C. Open File 463

³Deighton, J., 1977 Assessment Reports on Geological Mapping on Elmone Fraction, Susan, and Victoria Claims



FIGURE 1
Location of Charity
Claim Group
N.T.S. 92B/13W
1/50,000
Victoria Mining Division

reported quartz-sericite schist, chlorite schist, rhyolite porphyries, and dioritic intrusion in the area. The property is located a short distance west of the Twin J⁴ massive sulphide deposit and several copper and zinc showings are known on the Crown Granted claims since the late 1800's.⁵

PREVIOUS WORK

The first work on the present claim group dates from 1898 to 1903.⁵ During this period the area was extensively prospected and the various Crown Granted claims were located over copper and zinc showings. The main work in that period is summarized below:

- 1) A 310 foot tunnel-adit, with various smaller crosscuts and a raise, was driven on the Copper Canon claim on chalcopryrite-pyrite showings on the banks of the Chemainus River.
- 2) Two test pits and a 150 foot tunnel were driven on the Victoria claim; also on chalcopryrite-pyrite showings along the Chemainus River.
- 3) Various test pits and adits were located during this period on the Susan and Klondyke claims. No written record of this work remains.

Interest in the area died down after 1905 and the next major exploration work reported was done in 1965-1966 by Cominco.⁶ The work consisted of extensive IP surveys and geochemical soil sampling in a large area, part of which is now covered by the Hope claim and the western half of the Charity claim. Very detailed VLF-EM, seismic surveys, magnetometer survey, gravity surveys, soil sampling, and geological mapping were done by Mr. Whittles, P.Eng.⁷ mostly restricted on a small area in the eastern half of the Copper Canon claim, the Elmore Fraction and the Victoria claim. The surveys presented in the report partly overlap some of the above work.

⁴Stevenson, J., 1948, Twin J Mines, in Structure and Geology of Canadian Ore Deposits, CIM, p.88-93

⁵MMAR, 1898, 1903, Reports on Copper Canon, Victoria, Susan and Klondyke Claims

⁶Tikkansen, G.D., M.Sc., P.Eng., October 25, 1966, Geophysical Report on Induced Polarization and Soil Sampling on the TOT-RUM Claim Group, Victoria Mining Division, Cominco, CPOG, Assessment Report 936

⁷Whittles, J., P.Eng., 1971, 1973, 1977: Assessment Reports 3099 and 4624

GEOPHYSICAL SURVEYS

Line Placement

Lines were all traced by compass, marked with coloured flagging, and distances measured with a hip chain. Stations were marked every 25 meters. Distances on slopes were corrected to horizontal through measurements of the slope with a visual dip angle meter. The lines run north-south and were spaced 100 meters apart.

Magnetometer Surveys

The instrument used was a McPhar M700 magnetometer which measures the vertical component of the earth's magnetic field. The maximum sensitivity of the instrument is 20 gammas on the 1000 gamma scale division. A base station was selected at 0+00 of the line grid on a tree stump. Twice daily checks at this base station permitted correction of the readings for diurnal variations. Readings were taken every 25 meters over a total of 8 kilometers; the results are illustrated in Figure 2. The readings show a moderate magnetic relief varying from 30 to 575 gammas. One high reading at 2+20S, 1E was caused by old machinery abandoned in the area. The trend of the contours is approximately east-west, parallel to the strike of schistosity and lithologies in the area.

VLF-EM Surveys

The survey was completed with a Geonics Ronka EM-16 VLF instrument. A total of 6.8 kilometers were done with readings at 10 meter intervals. This instrument is a sensitive audio receiver that uses electromagnetic signals transmitted for military purposes in the 15 to 25 kHz frequency range. For this survey the "NPG" station located in Jim Creek, Washington, U.S.A. was used. The direction of the station from the property is S62°E.

The VLF transmitting station creates a concentric horizontal magnetic field. This magnetic field induces secondary fields over conductive bodies. The EM-16 has two inputs with two receiving coils, a horizontal coil and a vertical coil.

The signal from the vertical coil is first minimised by tilting the instrument. The remaining signal in this coil is finally balanced out by a measured percentage of a signal from the other coil after being shifted by 90°.

Thus if the secondary signals are small compared to the primary field horizontal field, the mechanical tilt angle is an accurate measure of the vertical real component and the compensation $T/2$ -signal from the horizontal coil is a measure of the out-of-phase vertical signal. Readings are recorded in percent up to an accuracy of 1%.

The readings on this survey were taken every 10 meters along north-south lines and are illustrated on Figure 3.

The in-phase values were also filtered and contoured and these data are presented on Figure 4. The filter used is described by Fraser.⁸ Basically if four consecutive data in-phase values, P_1, P_2, P_3, P_4 , are considered the value $F = (P_3 + P_4) - (P_1 + P_2)$ is computed and plotted at the midpoint between P_2 and P_3 . The main effect of this filtering is to transform zero crossovers and inflections indicative of conductors into positive peaks. This technique effectively removes most of the topographic effects on the readings.

A total of 8 kilometers were surveyed on the property and conductive zones were detected at the following locations:

- 1) 4N, Line 2 to 5W
- 2) 2+75N, Line 0 to 5W
- 3) 0+50N, Line 0 to 1E
- 4) 1S, Line 2 to 5W
- 5) 3+50S, Line 4, 5W
- 6) 4S, Line 1E + 2E

The direction of all these conductors is approximately east-west and closely parallel to the strike trend of schistosity and lithologies in the area.

As a wide range of conductors from highly conductive graphite and sulphide zones to poorly conductive shears and overburden clays are responsive to the VLF, detailed geological work in the area is necessary to fully evaluate the conductors found in the area.

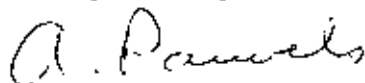
A peculiar reversal was recorded at 01, 2W; this is reflected in 2 areas of positive readings at 0+10N and 0+30S on the filtered data. This could be caused by railway tracks reported to be buried under the roadbed in this location parallel to the surveyed line.

⁸Fraser, D.C., Dec. 1969, Contouring of VLF-EM Data, Geophysics, Volume 34, No. 6

RECOMMENDATIONS

Geological mapping and prospecting is recommended to explain the magnetic features and electromagnetic conductors found during the surveys.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "A. Pauwels".

A. Pauwels

APPENDIX I

STATEMENT OF EXPENDITURES

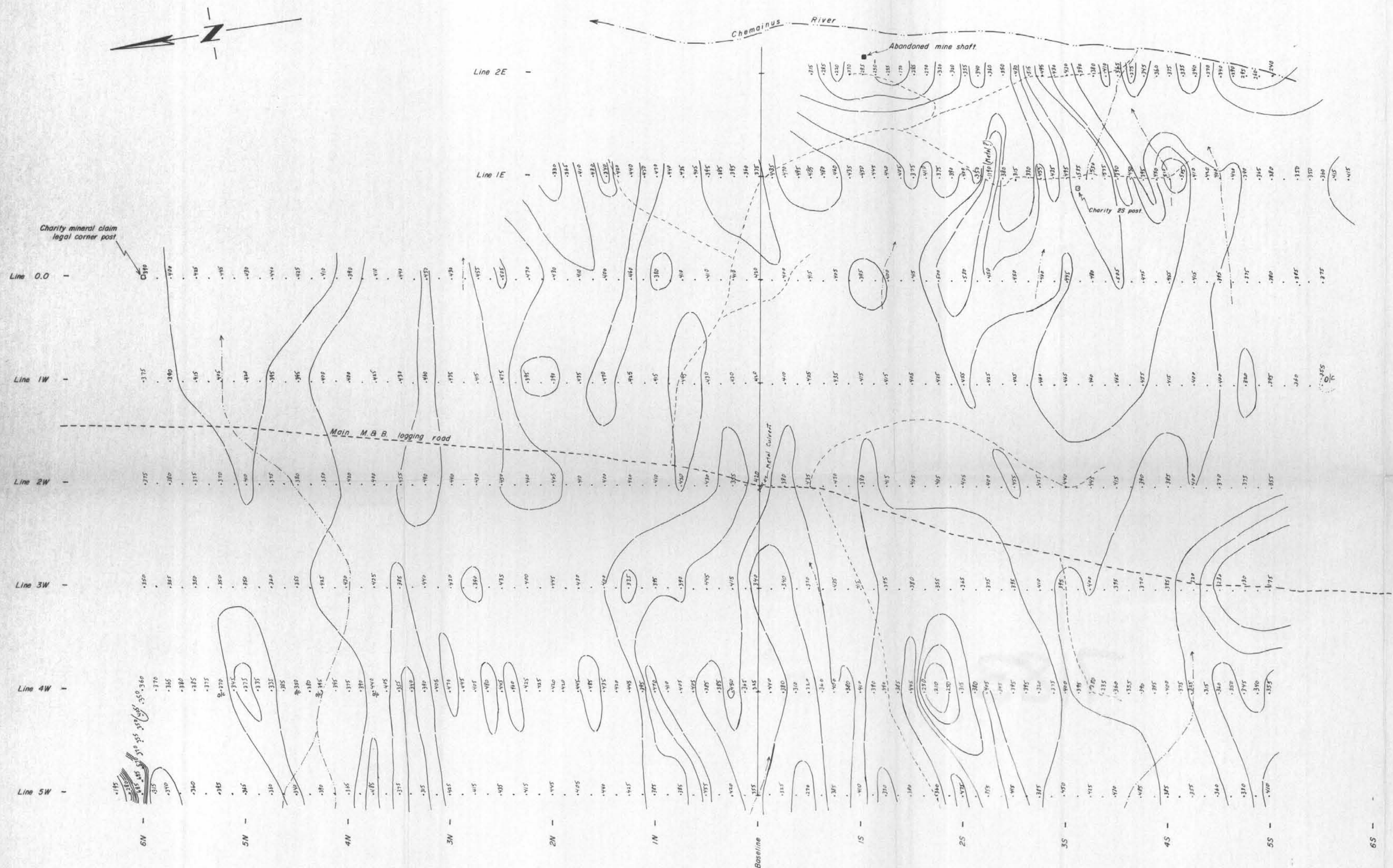
A. Pauwels - planning, supervision, report - 1 day @ \$140.08/day	\$ 140.08
H. Holm - Jan. 29 to Feb. 3, 1979, 6 days @ \$94.24/day	565.44
F. Thrane - Jan. 29 to Feb. 3, 1979, 6 days @ \$60.00/day	360.00
Motel (Thunderbird, Duncan)	63.00
Food	145.00
Truck (including gas), 6 days @ \$40/day	240.00
Ferry charges	48.00
Office supplies, survey supplies	20.00
Typing	30.00
	<hr/>
	\$1,611.52
	<hr/>

APPENDIX II

AUTHOR'S QUALIFICATIONS

I, Andre Pauwels of 4900 Mariposa Court, Richmond, B.C., hereby certify that:

- 1) I am a graduate of the Rijksuniversitet of Ghent, Belgium, B.Sc. Geology in 1970.
- 2) I have practised my profession since 1970 with Union Miniere Explorations and Mining Corporation Limited (UMEX) in Ontario (1970-1972) and British Columbia (1972-1979).



Legend

Streams.

Roads.

O/C Outcrop.

Plot point with reading in gammas.

Contoured at 250, 300, 350, 400, 450 & 500 gammas.

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No.

NOTES

Instrument — McPhar fluxgate (M-700) magnetometer.

Base station on stump at 0.0 + 0.0 = 420 gammas.

Declination = 23° east.

Baseline = N80°W

Lines = N10°E

Figure No. 2

CHARITY CLAIM GROUP MAGNETIC SURVEY

NTS. 92B/13W (Duncan)

Scale: 0 25 50 75 100 125 meters. 1:2500

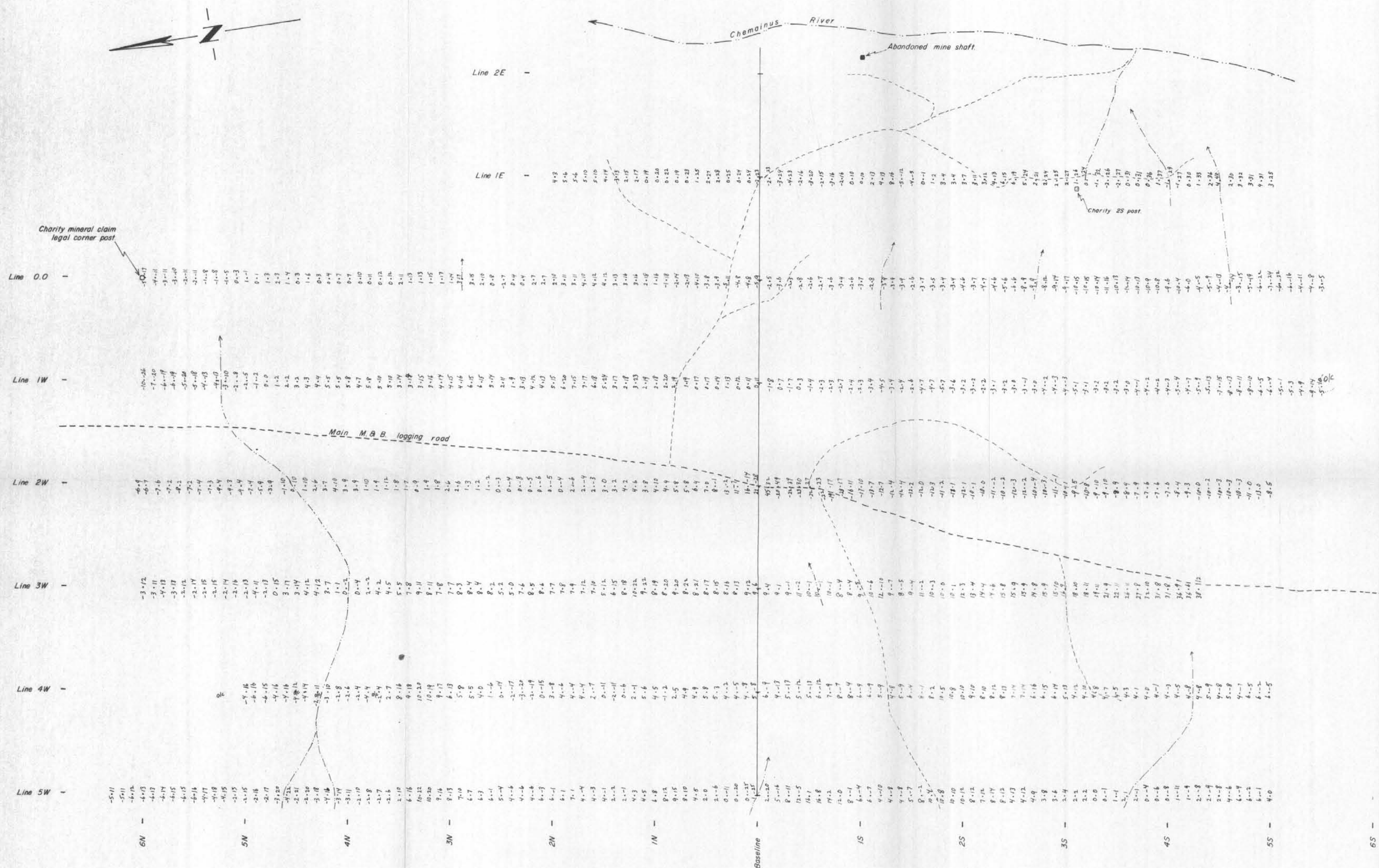
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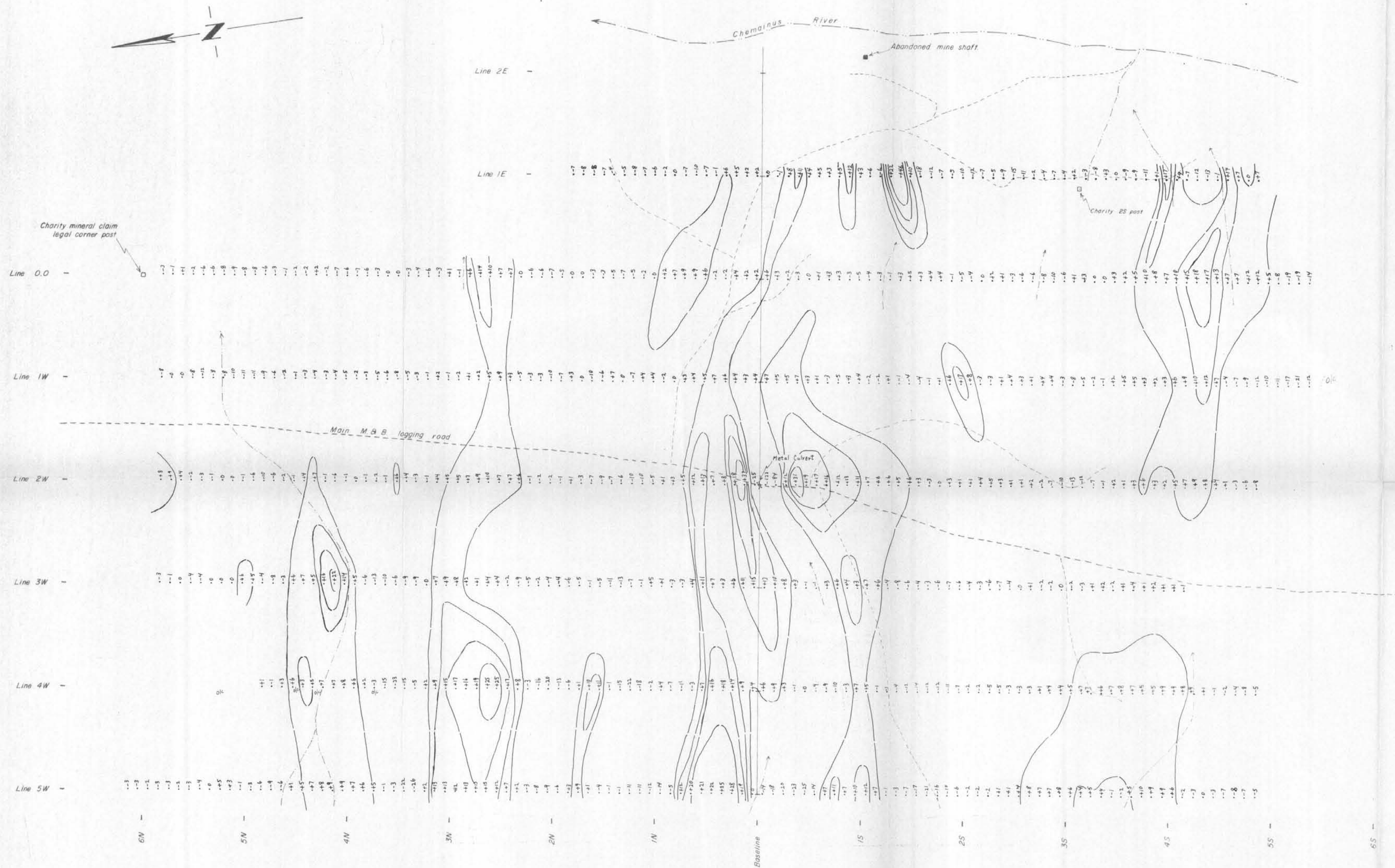
DRAWN BY: H. Holm
DATE: February, 1979
SURVEYED BY: H.H.F.T.

DWG. No.

To Accompany Assessment Report on Geophysical
Surveys, Ground Magnetometer and VLF-EM on
Charity Claim Group, by A. Pauwels, B.Sc.,
February 28, 1979

A. Pauwels





Legend

Streams

Roads

O/C Outcrop

Plot point with filtered value in %

Contoured at 5, 10, 15 & 20%

NOTES

Instrument - Geonics Ronka T.B.-2 EM-16 unit.

VLF transmitter - Jim Creek, Washington at a frequency of 18.6 KHz.

All readings taken facing southerly.

Declination = 23° east.

Baseline = N80°W

Lines = N10°E

Figure No 4

MINERAL RESOURCES BRANCH
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CHARITY CLAIM GROUP
EM-16 SURVEY
FILTERED IN-PHASE

NTS. 92B/13W (Duncan)

Scale: 0 25 50 75 100 125 meters. 1:2500

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DRAWN BY: H. Holm
DATE: February, 1979
SURVEYED BY: H.H., E.T.

DWG. No.

To Accompany Assessment Report on Geophysical Surveys, Ground Magnetometer and VLF-EM on Charity Claim Group, by A. Pauwels, B.Sc., February 28, 1979

A. Pauwels