

MINERAL TITLES BRANCH
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**ASSESSMENT REPORT ON THE
BERENGARIA CLAIM GROUP,
BER 1 - 4 tenure #'s 362506 - 362509,
PONY 1 -12 tenure #'s 362917 - 362928,
RUTH 1 -7 tenure #'s 362510 - 362515, 363447,
RIO 1 - 4 tenure #'s 362624 - 362627,
GARIA 1 - 8 tenure #'s 372006 - 372013
MINERAL CLAIMS
RIONDEL, BRITISH COLUMBIA
VLF-EM SURVEY**

Slocan Mining Division
NTS: 82 F/10 W
Longitude: 116° 52' 00"
Latitude: 49° 42' 00"

Owners: Richard Deane, Mike Delich
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July 12, 2000
GEOLOGICAL SURVEY BRANCH
VANCOUVER OFFICE

26,295

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INTRODUCTION

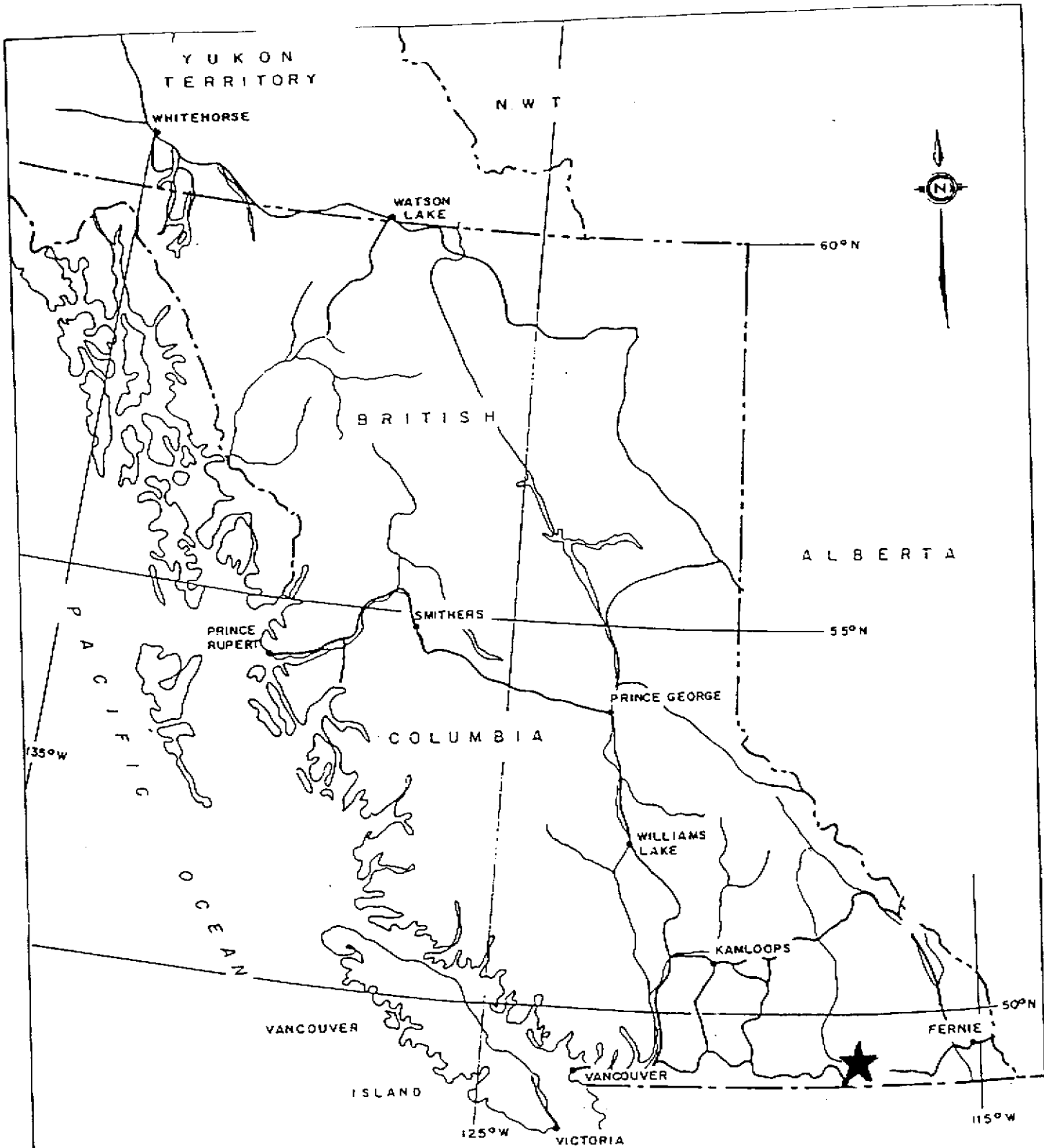
The VLF-EM data described in this report is being presented as assessment work for the Ber 1-4 (tenure #'s 362506-362509), Pony 1-12 (362917-362928), Ruth 1-7 (362510-362515, 363447), Rio 1-4 (362624-362627) and Garia 1-8 (372006-372013) mineral claims of the Berengaria claim group.

The VLF-EM survey, covering 3.8 line km., was conducted between Apr. 22 and Apr. 25, 2000 on the Garia 1-3 and Ber 1 claims of the Berengaria claim group. This survey forms part of an on-going exploration program whose goal is to locate and define economic concentrations of mineral bearing sulfides near the past producing Bluebell mine area.

LOCATION AND ACCESS

The Berengaria claim group is located approximately 6 km. south of the town of Riondel in the Slocan Mining Division, southeastern B.C. (fig. 1 and 2). Riondel is located on the east shore of Kootenay Lake, approximately 84 km. north of the United States border. Geographic coordinates of the approximate center of the Berengaria claim group are longitude $116^{\circ} 52' 00''$ W and latitude $49^{\circ} 42' 00''$ N on N.T.S. map sheet 82 F/10 west (claim map 82F.076).

Riondel and vicinity is served by provincial highways 3A south to the town of Creston and west to Nelson via the Kootenay Lake ferry. Access to the property is good along numerous 4-wheel drive logging, power-line and cottage roads. The VLF grid lies between highway 3A and the east shore of Kootenay Lake, approximately 5 km. south of Riondel.



PROPERTY LOCATION		
DATE	NTS: B2F / 10 W	FIGURE 1

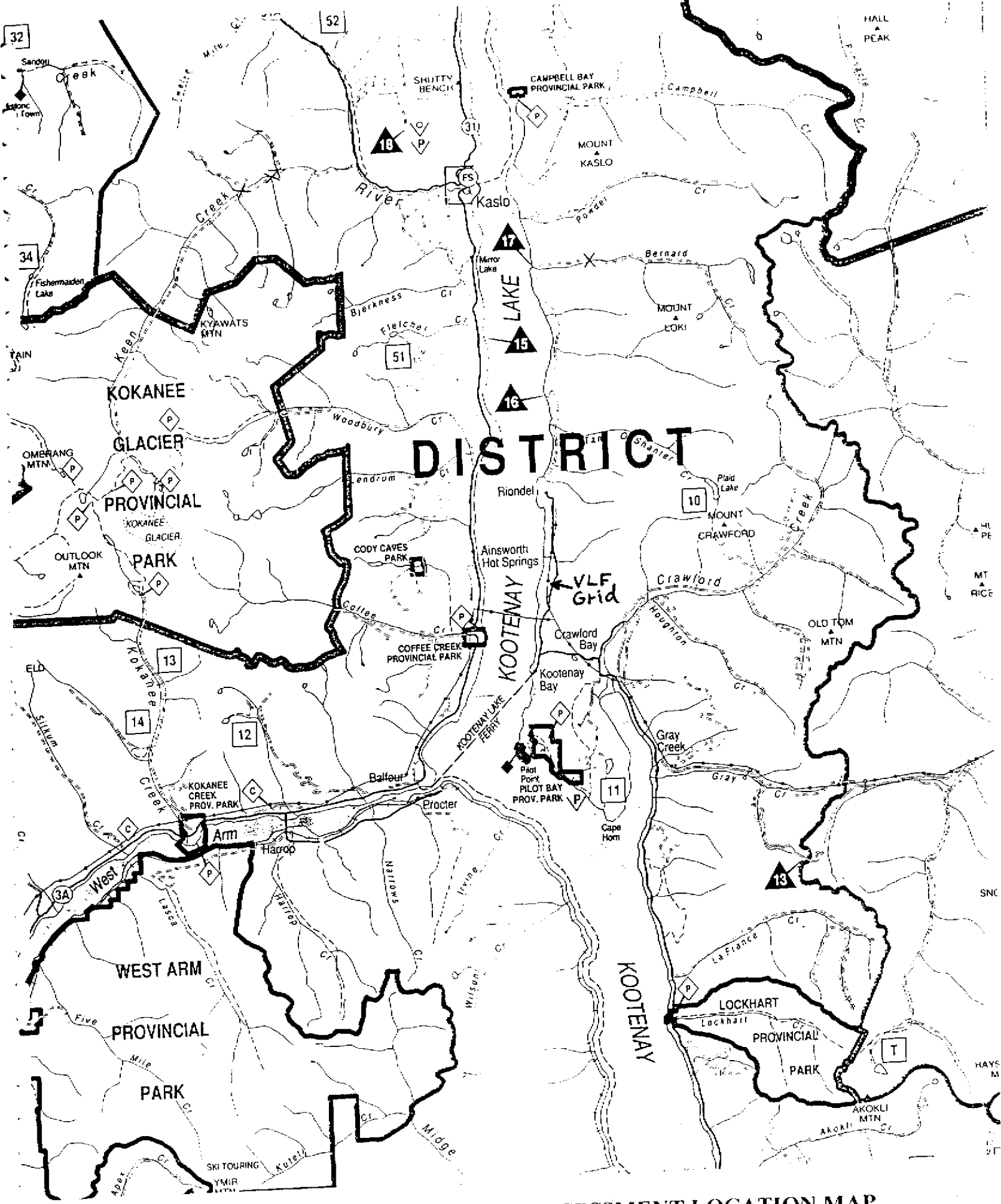


fig. 2 BERENGARIA GROUP CLAIM ASSESSMENT LOCATION MAP

PHYSIOGRAPHY AND VEGETATION

The Berengaria claim group is approximately 1300 meters above sea level, sloping gently up from the east shore of Kootenay Lake. The region has been affected by continental glaciation. Two ice directions have been recorded with the final advance being south. The claim group is blanketed by a thin cover of glacial till on the order of 1 to 3 meters thick. Outcrop exposures are limited to lakeshore, local ridges and road excavations. The property is heavily wooded and locally logged with some dense bushy areas. Hemlock, fir, cedar, spruce and tamarack are the predominant forest cover. Most surface rights within the claim group are privately owned.

PROPERTY DESCRIPTION AND EXPLORATION HISTORY

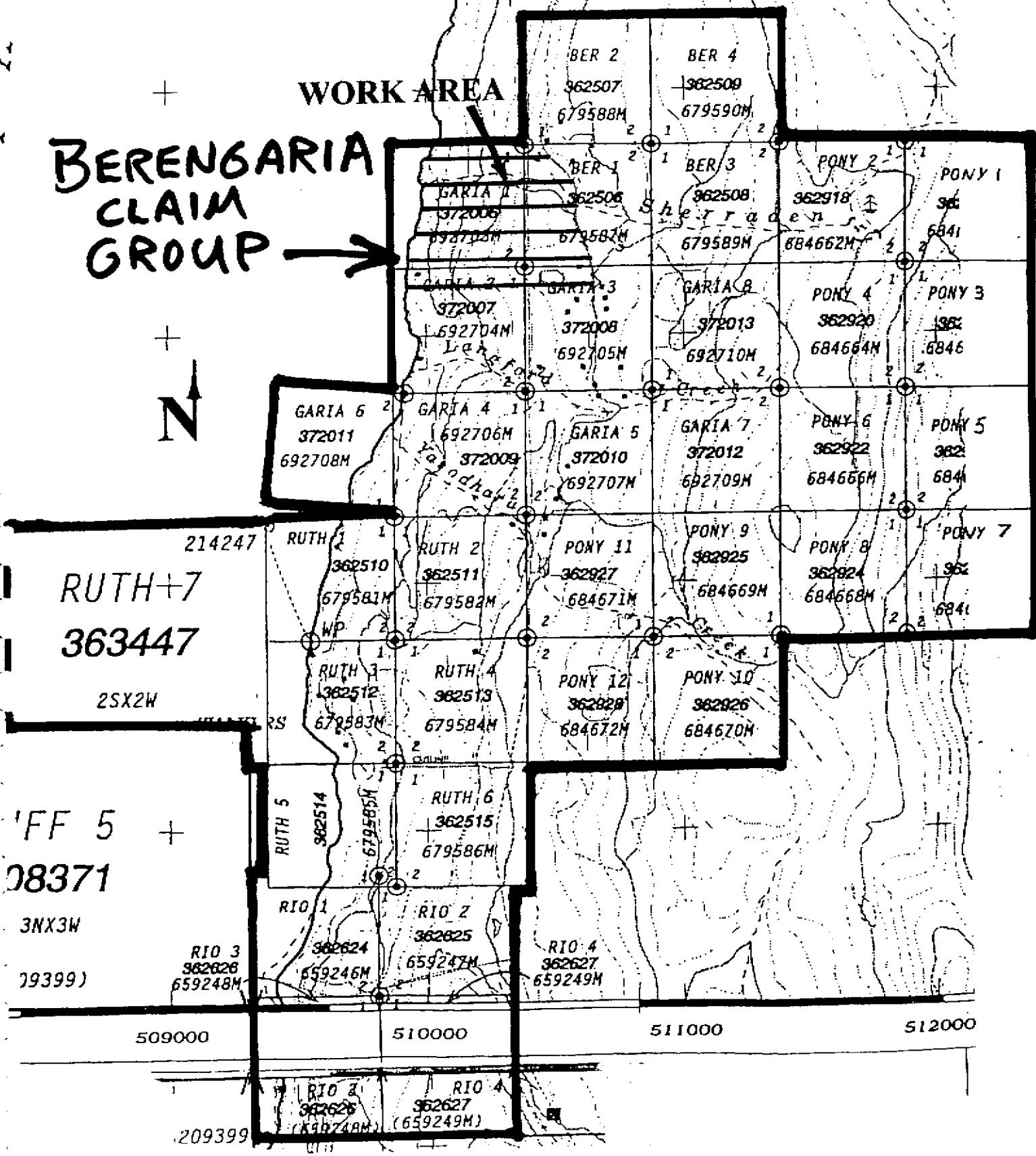
The Berengaria claim group consists of 1 modified grid unit, the Ruth 7 (tenure # 363447) and 34 two-post mineral claims, the Ber 1-4 (tenure #'s 362506-362509), Pony 1-12 (362917-362928), Ruth 1-6 (362510-362515), Rio 1-4 (362624-362627) and Garia 1-8 (372006-372013) totaling 38 claim units (fig. 3). These claims are presently in good standing and owned by Richard Deane (50%) and Mike Delich (50%) of Rossland, B.C.

The Bluebell mine near Riondel is one of the oldest mines in the province. The property was staked in 1882 and from 1895 to 1927 produced 489,888 tonnes grading 6.5 % lead and 8.2 % zinc. Cominco mined the deposit from 1952-1971, producing a further 4,333,694 milled tonnes grading 5.1 % lead, 6.1 % zinc, 0.1 % copper, 0.03 % cadmium and 48 grams silver per tonne (Hoy, 1980).

In 1927, the Berengaria Mining Company explored near the vicinity of a large mineralized boulder discovered near the mouth of Sherraden Creek. Although the source of the boulder was not discovered, it was mined and graded approximately 20 % combined lead-zinc and 93 grams silver per tonne (Hoy, 1980).

**BERENGARIA
CLAIM
GROUP**

WORK AREA



82 F10/W (82 F.076)

fig.3 CLAIM AND GRID LOCATION MAP

Some small trenches are present on the Berengaria claim group but there is no record of much of this activity. In 1999 a small VLF-EM survey was carried out on portions of the Ruth 1-4 mineral claims (Wehrle, 1999).

GEOLOGY

The Riondel area is located in the central part of the Kootenay Arc, a structural zone characterized by north-trending tightly folded Precambrian to Early Mesozoic rocks. The grid area is underlain by calc-silicate and hornblende gneiss intruded locally by Late Mesozoic pegmatite and quartzo-feldspathic veining. The Bluebell mine near Riondel is hosted in the Lower Cambrian Badshot marble. Here localized steep cross-fractures that trend west/northwest and dip 85° north host lead-zinc orebodies that plunge westward following the intersection of the fractures with the marble (Hoy, 1980).

OBJECTIVE OF PRESENT WORK

Previous exploration and mining on nearby claims show mineralization hosted within roughly north trending limestone/marble stratigraphy. A surface VLF-EM grid geophysical program was designed to test for north trending conductors on the Garia 1 - 3 and Ber 1 claims (fig.3). An east-west field grid was set up with lines 100 meters apart and stations at every 25 meters. VLF readings were taken at each station using the Seattle transmitter.

INSRUMENTATION AND THEORY

A VLF-EM receiver, model 27, manufactured by Sabre Electronic Instruments Limited of Burnaby B.C. was used for the VLF electromagnetic survey. This instrument is designed to measure the electromagnetic component of the very low frequency field (VLF-EM). The source of the primary field used was the U.S. navy submarine transmitter at Seattle, Washington which transmits at a frequency of 18.6 kHz.

In 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 sulfide body is within the magnetic field, a secondary alternating current is induced within it which in turn produces a secondary magnetic field which can be detected at surface through deviations of the normal VLF field.

VLF means very low frequency, about 15 to 25 kilocycles per second. Relative to frequencies generally used in geophysical exploration, this is actually very high. Consequently the high frequency of the VLF-EM method results in numerous anomalies from lower conductive sources such as swamps, creeks, topographic highs, electrolyte-filling faults or shear zones, porous horizons, graphite, carbonaceous sediments, lithological contacts, as well as sulfide bodies of too low a conductivity for other EM methods to pick up. On the other hand, the tendency for VLF to respond to poor conductors has aided in mapping faults and rock contacts as well as picking up conductors of too low a conductivity for conventional EM methods and too small for induced polarization.

VLF data may have anomalies and it would be nearly impossible to differentiate between those that are geologically significant and those that are not. Thus, VLF-EM preferably should not be interpreted without a good geological knowledge of the property and/or other geophysical and geochemical surveys.

PROCEDURE

Dip angle readings were taken at 25 meter intervals along grid lines 1+00 south to 6+00 south. Readings were always made with the instrument pointed away from the 18.6 kHz transmitter station at Seattle Washington.

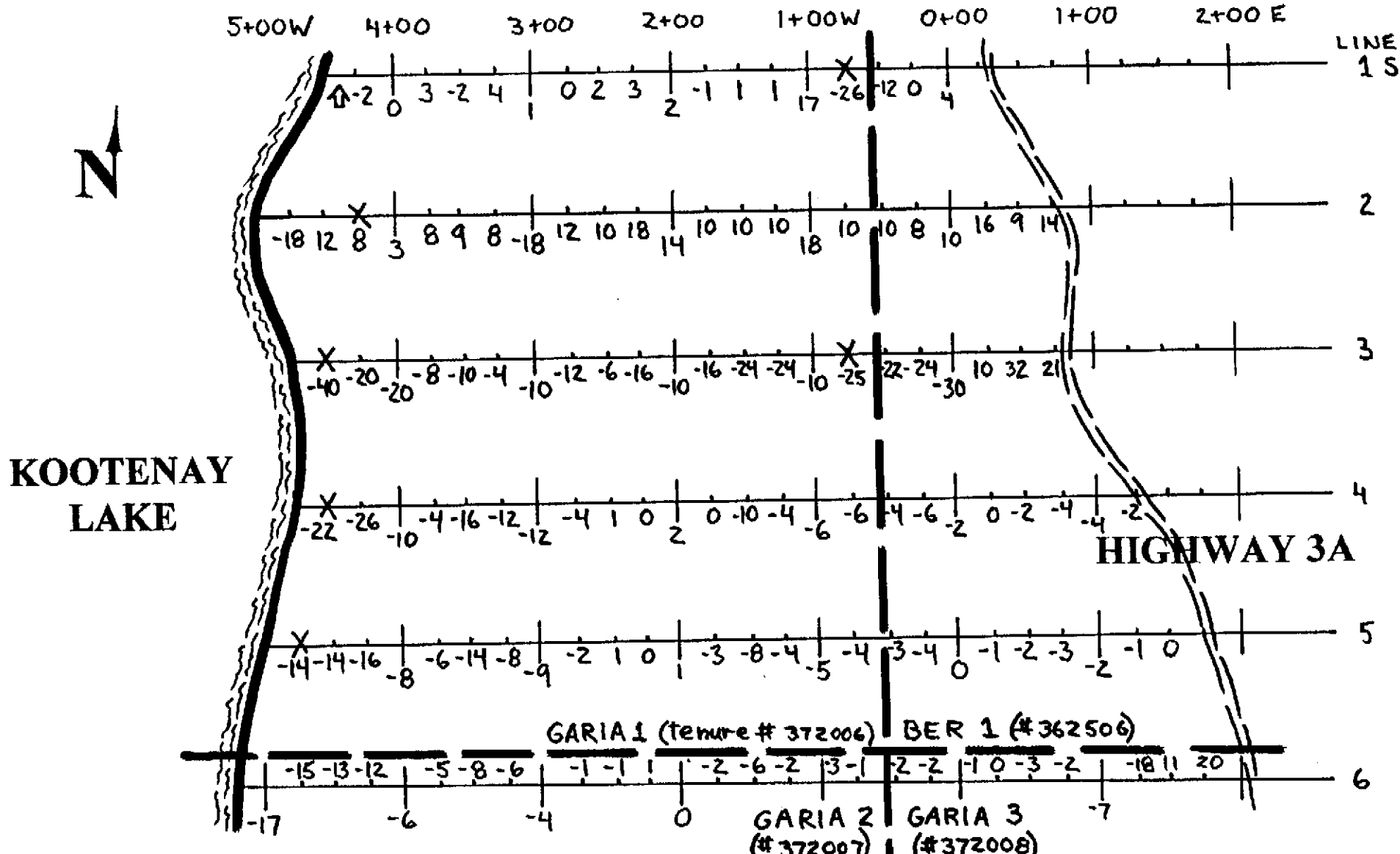
COMPILATION OF DATA

The VLF-EM field results were reduced for plotting by applying the Fraser filter. This is essentially a 4-point difference operator which transforms 0 crossings into peaks, and a low pass smoothing operator which reduces the inherent high frequency noise in the data. Thus noisy, non-contourable data are transformed into a less noisy, contourable form. Another advantage is that a conductor that does not show up as a cross-over on the unfiltered data will quite often show up as a peak on the filtered data. The original field data is recorded on figure 4. The filtered data was plotted at reading station midpoints and the positive values contoured at 10 degree intervals beginning at zero (fig. 5).

DISCUSSION OF RESULTS

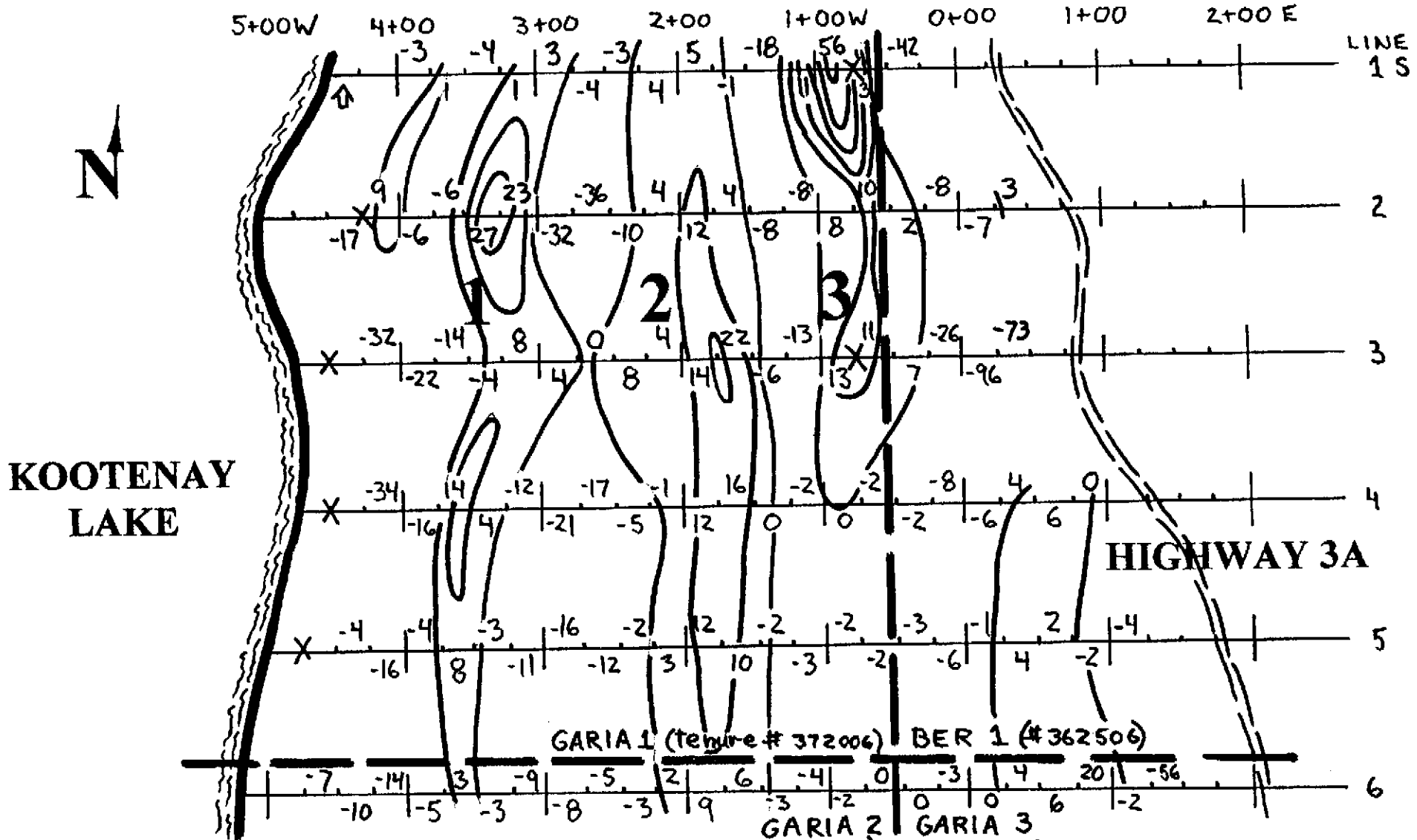
A moderate and continuous north trend is evident for the VLF anomalies, roughly paralleling the trend of known mineralized structures. Three significant anomalies are evident from the results (fig. 5).

Anomaly #1 in the west portion of the grid, is centered near 3+50 west on all 6 grid lines. This anomaly is fairly thin, averaging approximately 50 meters in width and appears to thin out north and south of the grid. The highest values are found on line 2 south between 3+00 and 3+50 west. Anomaly #2 in the central portion of the grid, is found near 2+00 west on all 6 grid lines. This anomaly is moderate in width, averaging 80 meters and could potentially continue north and south of the grid. Anomaly #3 is a powerline generated phenomena.



X - power lines
 ↑ - cottage/building

VLF-EM FIELD DATA		
82 F.076	scale 1:4000	Fig. 4



1 - VLF ANOMALIES

X - power lines

↑ - cottage/building

VLF-EM FRASER FILTERED DATA		
82 F.076	scale 1:4000	Fig. 5

CONCLUSIONS AND RECOMMENDATIONS

The VLF-EM responded well to the known mineralized trends of the area. Since the grid area tested on the Berengaria claim group lays only 5 km. south of the Bluebell mine workings, it is possible that the Garia claim VLF anomalies represent areas of increased sulfide concentration.

These anomalies could be further tested by decreasing the grid line spacing (25 or 50 meter grid line spacing) and thereby increasing the fine detail. Further reconnaissance VLF-EM (100 meter additional grid line spacing), may show improved conductor quality along strike north and south of the known anomalies. It is also recommended that geological prospecting, mapping and possibly rock and soil sampling be carried out over areas associated with the #1 and 2 Garia claim VLF-EM anomalies.

ITEMIZED COST STATEMENT**Labor: Professional Geoscientist:**

- 2 days grid setup and orientation.....	\$ 700.00
- 2 days VLF instrument operator.....	\$ 700.00
- 2 days report writing.....	\$ 700.00
- 1 day drafting.....	\$ 350.00

Expenses:	- 4 days 4 X 4 vehicle rental.....	\$ 800.00
	- VLF rental.....	\$ 400.00
	- field supplies and rentals.....	\$ 150.00
	- computer and drafting supplies.....	\$ 100.00

Total \$3,900.00

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AUTHOR'S QUALIFICATIONS

I, Dan Wehrle, of 1619 Spokane Street, in the City of Rossland in the Province of British Columbia do hereby certify that:

- 1) I am a Professional Geoscientist registered with the Association of Professional Engineers and Geoscientists of British Columbia.
- 2) I am a 1985 graduate of the University of Saskatchewan with a B.Sc. Honours degree in Geology and have practiced my profession as Exploration Geologist continuously since 1985.
- 3) This report is based on work supervised by myself on the Berengaria group claims in southeastern British Columbia.
- 4) I have not received nor expect to receive any interest direct or indirect, in the properties mentioned in this report.

Dated this 12th day of July, 2000 in the City of Rossland, British Columbia.


D. M. Wehrle, P. Geo.