GEOCHEMICAL FOLLOW-UP STUDIES IN LABRADOR

by

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Field work in 1981 was concerned with obtaining additional soil and rock samples and conducting a VLF-EM geophysical survey over a zinc anomaly in the Labrador Trough 15 km east of Schefferville, Quebec (Figure 1). The work was aimed at investigating the cause of a pronounced zinc anomaly previously detected in lake sediments and waters, stream sediments and waters and in soils. A report on the earlier work was published in 1981 as Labrador Open File 563.

During 1980, stream sediment and waters were collected from areas having anomalously high Zn contents in lake sediments and which are underlain dominantly by shales and slates. Analyses of these water samples were performed in the field using a colorimetric dithizone method. The geometric mean heavy metal content was 4.9 mg/t. A pronounced heavy metal anomaly was defined by a cluster of 37 samples having a mean analysis of 14.9 mg/t and a maximum of 35 mg/t.

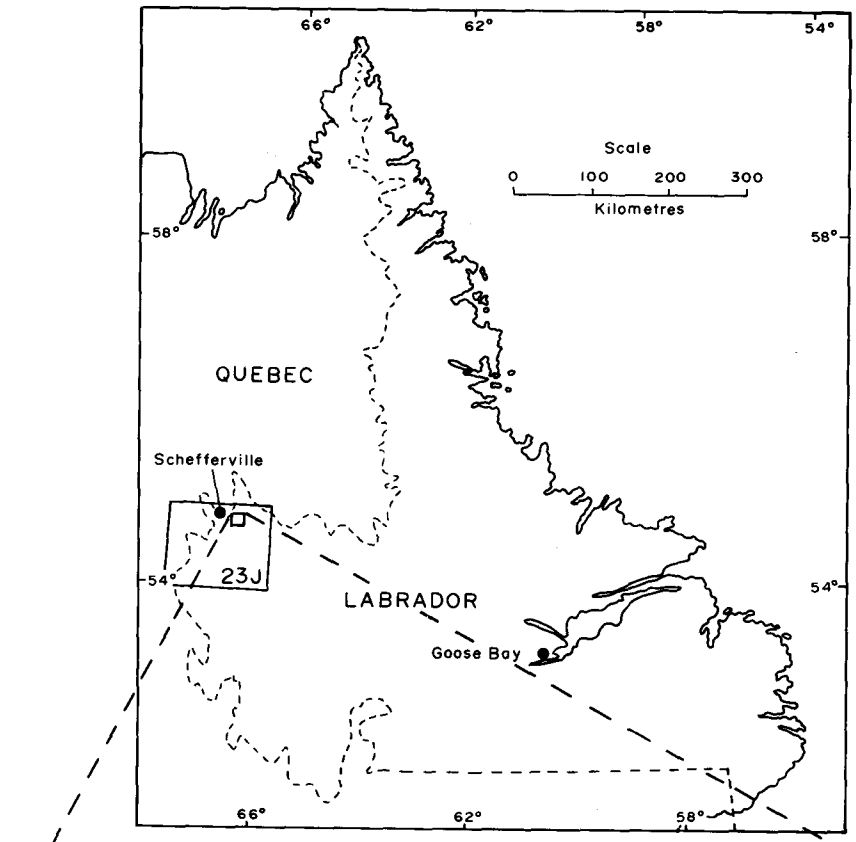
A four square kilometre grid was cut and chained across the anomaly which topographically is of low to moderate relief and covered by a thin till veneer with locally thick lenses. The area is underlain by folded shales and slates of the Menihek Formation, which have been intruded by dikes or sills of Wakuach gabbro. B horizon soil samples were collected at 50 m intervals along lines spaced 400 m apart and running perpendicular to strike. The 235 samples were analysed for Cu, Pb, Zn, Ni, Co, Ag, Mn, Fe, Mo, F, Cd and loss-on-ignition (L.O.I.).

Evaluation of the data indicated several moderately anomalous Zn samples (500-2000 g/t) and an element association of Zn-Ni-Co-Cu-Mn-Mo.

A plot of the raw Zn data yielded a somewhat scattered pattern of high values. Zn residuals, calculated by regressing $\log_{10}$ Zn against $\log_{10}$ Mn and L.O.I. resulted in a more linear pattern of high values approximately parallel to the strike of the shales.

During the summer of 1981, additional lines were cut and chained giving a line spacing of 200 m and 85 more soil samples were collected. Four of these samples have Zn contents ranging from 1400 to 8000 g/t. Areas in the vicinity of the previous year's anomalous samples (as defined both by raw data and Zn residuals) were examined. Sample sites with high Zn concentrations and low Zn residuals often proved to be areas where bog iron or bog manganese ('wad') deposits had formed. This is a poorly consolidated, crumbly brown material highly enriched in Zn, Ni, Co and Mo. The best evidence of bedrock mineralization, on the other hand, was found near a soil sample site which was only moderately anomalous in Zn (700 g/t) but which had the second highest residual zinc score of all the soil samples. A frost heaved block of black shale with thin quartz veinlets adjacent to a frost heaved block of gabbro was sampled. No sulphides were visible in the hand sample but the analysis returned 490 g/t Zn. By way of comparison the mean (geometric) Zn analysis of the 25 shale samples was 90 g/t.

Several samples of pyritiferous shale were sampled. Pyrite occurred both as disseminations and thin laminae conformable with bedding. Rarely, the pyrite occurred as vein fillings. The pyritiferous samples, however, did not carry significant amounts of trace metals. The mean trace element concentrations of the 25 shale samples are listed in Table 1 for comparative


66°
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0 100 200 300
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QUEBEC
Schefferville
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LABRADOR
Goose Bay
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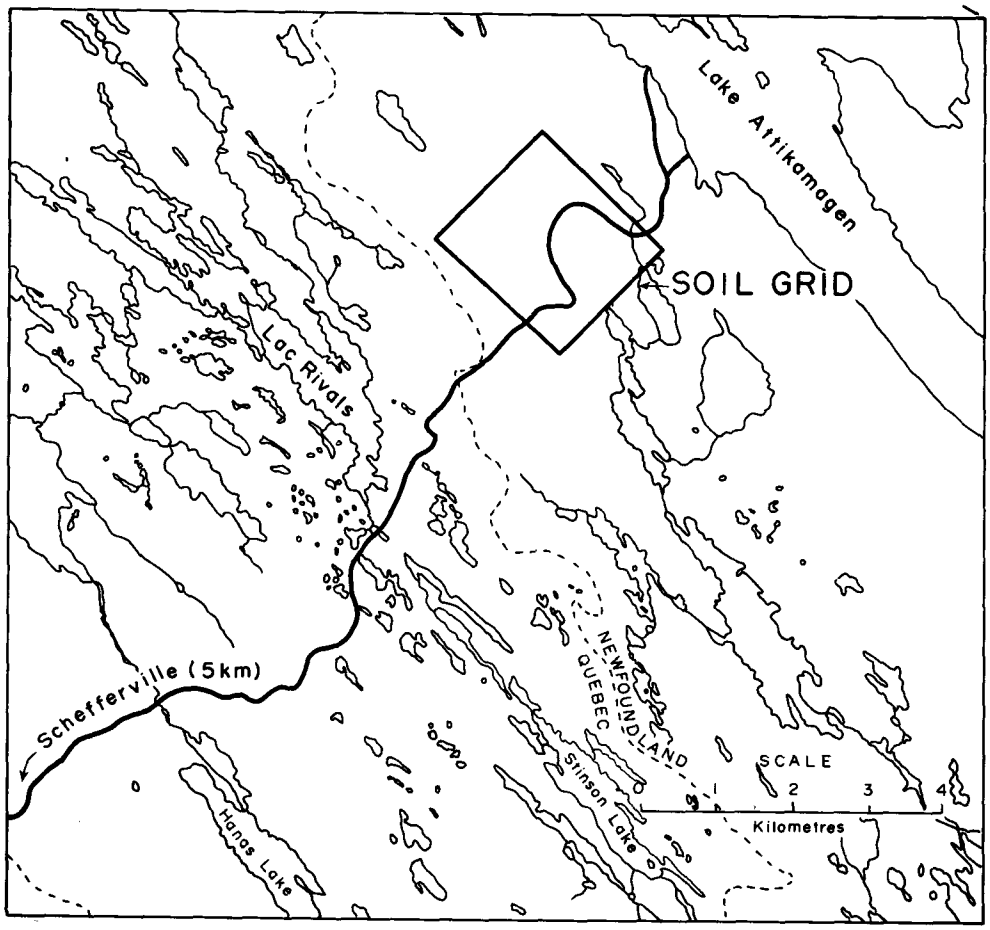
INDEX MAP


Lake Attikamagen
SOIL GRID
Lac Rivals
Schefferville (5km)
NEWFOUNDLAND
QUEBEC
Stinson Lake
Hanos Lake
SCALE
1 2 3 4
Kilometres

purposes with those of the 310 soil samples. Except for F and Pb, the element distributions in the two media are very similar suggesting that the soil geochemistry is, indeed, reflecting the underlying bedrock geochemistry. The discrepancies are likely a function of the relative differences in mobility in the secondary environment.

A VLF-EM survey was conducted over the grid. The resulting data was filtered, plotted and contoured. Many conductive zones were identified but no obvious correlation with the soil geochemistry patterns could be recognized.

A more complete discussion of this summer's work will be included in a fuller report on geochemical methods of base metal exploration in Labrador to be released this winter.

TABLE 1: Geometric mean concentration (g/t) of trace elements in rock and soil samples.

ELEMENT	SHALE/SLATE SAMPLES	SOIL SAMPLES
Cu	27 g/t	31 g/t
Pb	15 g/t	8.4 g/t
Zn	89 g/t	107 g/t
Ni	30 g/t	18 g/t
Co	5.8 g/t	7.6 g/t
Ag	0.36 g/t	0.37 g/t
Mo	5.3 g/t	3.1 g/t
F	1020 g/t	452 g/t