520331

REPORT
ON
GEOPHYSICAL SURVEYS

ADAMS RIVER AREA
VANCOUVER ISLAND
FOR
FALCONBRIDGE LTD.

ancouver, B.C.
ecember, 1984

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1.0 INTRODUCTION

This report presents the results of a program of horizontal loop electromagnetic (HLEM), very low frequency electromagnetic (VLF-EM) and magnetic geophysical surveys conducted in the Adams River area, Vancouver Island.

The surveys were conducted by Marston Geophysics Ltd. on behalf of Falconbridge Ltd. during the months of June through September, 1984.

The purpose of the surveys was to outline geoelectric and geomagnetic features indicative of massive sulphide mineralization similar to the mineralizaton present in the Westmin Resources Ltd. Buttle Lake deposits.

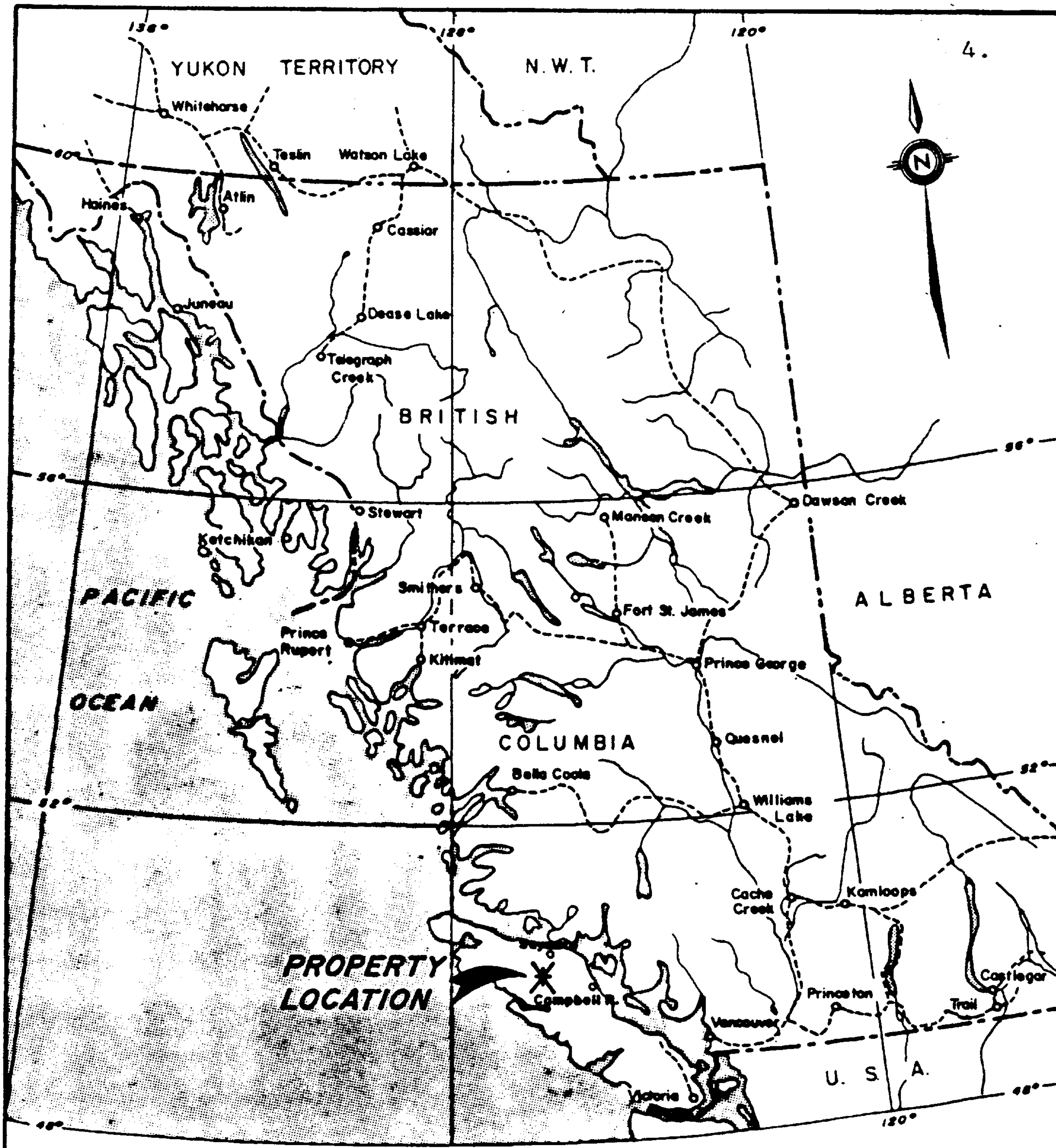
The geophysical signature of the Buttle Lake deposits is not known. Since the deposits are associated with massive sulphides, they would likely respond to electromagnetic geophysical methods. Since pyrrhotite does not occur in the deposits, a magnetic anomaly is unlikely, in contrast to other kinds of massive sulphide deposits which are signatured by a magnetic anomaly caused by pyrrhotite, one of the principal ore forming sulphides.

The possibility of a distal shale hosted massive sulphide deposit like Anvil, Jason/Tom and Cirque deposits occurring on the property, is also entertained. This arises because it is not certain that the Sicker Group rocks which host the Buttle Lake deposit are present on the property. Shale hosted massive sulphide deposits often contain pyrrhotite, thereby giving rise to both electromagnetic and magnetic anomalies.

Focus of the geophysical surveys was based on the results of a helicopter airborne electromagnetic and magnetic survey conducted in the area by Dighem Limited in March 1984.

The surveys were conducted on 6 grids designated Grid A, Grid B, Grid BNE, Grid BSE, Grid C and Grid D. Of these, Grids A, B, BNE and BSE constitute a contiguous and/or overlapping grid system.

The geophysical surveys were part of a more extensive exploration program which included geological mapping, prospecting and soil geochemical sampling conducted in the area by Falconbridge Ltd.



FALCONBRIDGE LIMITED	
LOCATION MAP	
Project No. 098, 099	By
Scale 1: 7,920,000	Drawn
Drawing No. 1	Date Nov., 1984.
MARSTON GEOPHYSICS LTD.	

Figure 1

0 100 200 300 400 500 km

Scale 1" = 125 miles

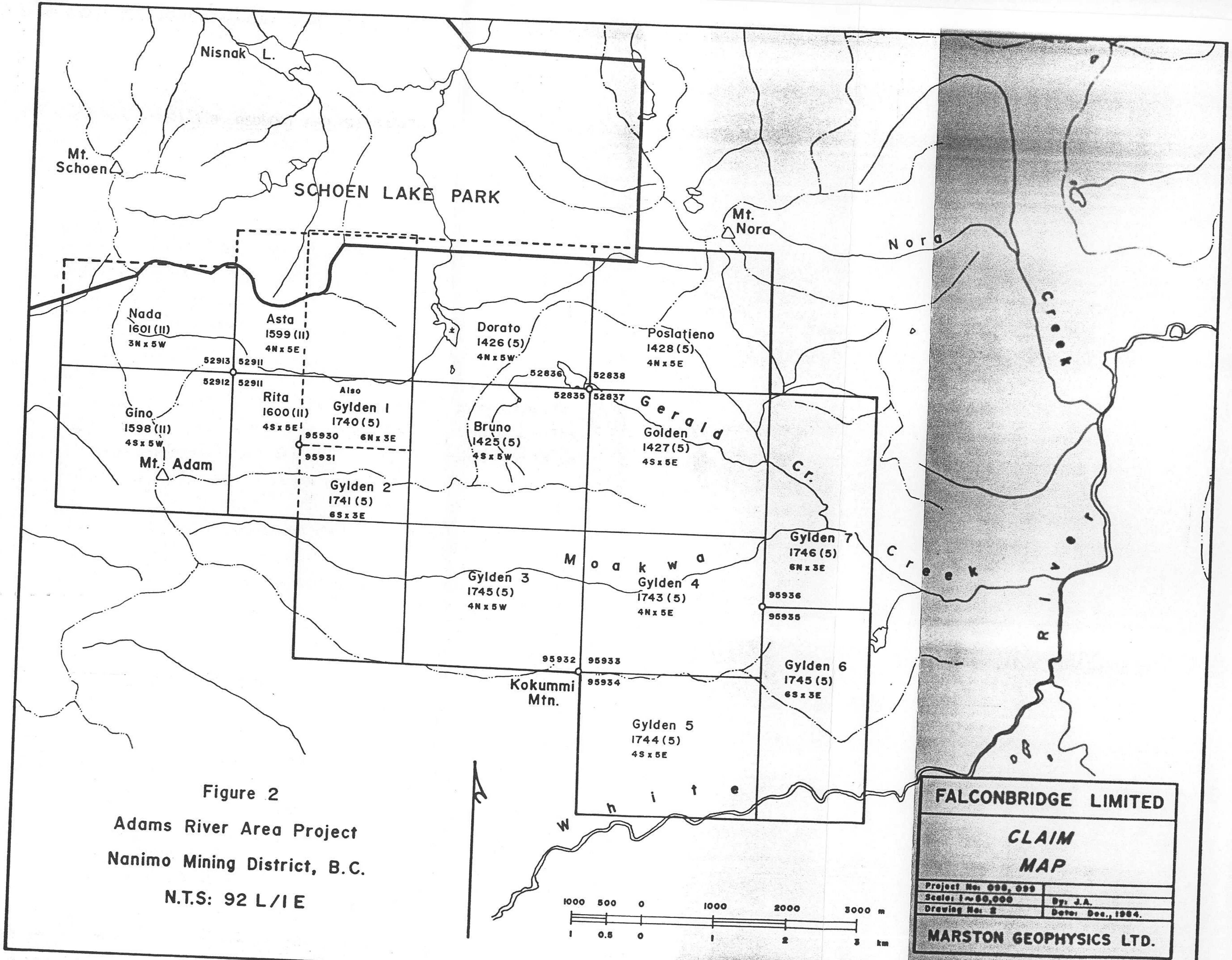


Figure 2

Adams River Area Project

Nanimo Mining District, B.C.

N.T.S: 92 L/1E

3.0 GEOLOGY AND MINERALIZATION

The property is underlain by Triassic and Lower Jurassic volcanic and sedimentary rocks belonging to the Vancouver Group. On Vancouver Island the Vancouver Group is subdivided into a basal sediment-sill unit, Karmutsen Formation, Quatsino Formation, Parson Bay Formation and Bonanza Formation. Only the sediment-sill unit and Karmutsen Formation, however, are exposed in the immediate survey area.

The sediment-sill unit comprises three rock types: sediments, limestone and diorite sills. The sediments are predominantly argillites and cherts with minor greywacke and siltstone. The argillites are massive to laminated with beds from 10 to 15 cm thick. Some of the beds contain up to 30% graphite.

Limestone beds occur throughout the sediment-sill unit. The upper part of the unit hosts a laterally continuous 50 m thick bed. Sills and dykes are found throughout the sediments. The most prominent of these is a diorite sill of up to 150 m thick near the top unit.

Karmutsen Formation overlies the sediment-sill unit. The Karmutsen Formation is composed of basaltic lava pillows, breccias and flows. Along Gerald Creek, the Karmutsen and sediment-sill units are in fault contact. Displacement, north side down, on the fault of several hundred metres juxtaposes the Karmutsen and sediment-sill unit.

Bedding in the sediment-sill unit generally dips to the south at less than 20°. Minor folding occurs in the vicinity of sills and dykes.

Pyrite is ubiquitous to all the main rock formations. It mainly occurs as disseminations and veins. In some places in the argillites, the pyrite appears to be bedded.

A showing, called the Davis Copper Showing occurs on the property. It is located on Grid B on the bank of Gerald Creek at about 107+00E, 119+50N. The showing is hosted by Karmutsen volcanics just north of the fault which marks the contact between the Karmutsen Formation and the sediment-sill unit. Mineralization ~~in the showing~~ occurs in quartz veins and shear zones ~~in the quartz veins~~.

7.0 CONCLUSIONS

The HLEM and VLF-EM surveys detected a large number of conductors on the various grids.

Many individual conductors were not adequately defined by the HLEM survey because they occur too close together to be resolved by the 100 m coil spacing used for the survey.

In these instances, the VLF-EM survey appears to provide better resolution of individual conductors.

Properties of the conductors interpreted from the results of the surveys may also be in error because of the poor resolution of the HLEM anomalies. Dip of the conductors is the most uncertain parameter. Most of the interpreted dips are steeper than the gentle dip of the geology in the area. In addition, the direction of the interpreted dips are often inconsistent on individual lines and on a line to line basis. Any drilling that ensues as a result of the surveys should rely on geological dips rather than the interpreted dips.

The large number and variable character of the conductors and the wide line spacing pose difficulties in tracing the conductors from line to line. The causes of most of the conductors cannot be ascertained from the results of the electromagnetic surveys alone. The concentration and variable character of the conductors is typical of graphitic terrains and is atypical of Sicker Group rocks on Vancouver Island which are generally electromagnetically inactive.

The magnetic surveys outlined a number of anomalies which, in general, do not correlate from line to line. Locally, some of the magnetic anomalies correlate intermittently with conductors.

Two distinct magnetic regimes are present in the area. The bulk of the area is signatured by bland to variably anomalous magnetic response. At the north sides of Grids A, B, BNE and BSE, however, anomalies increase in amplitude significantly. The lithomagnetic contact demarked by the onset of these anomalies correlates with conductors interpreted to reflect the fault between the Karmutsen volcanics and the sediment-sill unit.

The location of this fault at the northeast corner of Grid A and the northwest corner of Grid B, in the vicinity of the Davis Showing, is ambiguous. This ambiguity may be caused by the presence of northeast/southwest faults, a number of which can be inferred from the results of the surveys in this part of the property.

The Davis Showing does not appear to respond electromagnetically. The showing occurs in the vicinity of a VLF-EM conductor (conductor Z - Grid B) which is interpreted to reflect the contact between the Karmutsen volcanics and the sediment-sill unit. The showing also occurs in the vicinity of HLEM conductor N on Grid B. It is not clear whether conductor B is caused by the Karmutsen/ sediment-sill contact or a separate conductor unrelated to the contact.

Any one of the conductors detected on the property represents a prospective target with respect to the Westmin Resources, Buttle

Lake deposits. Conductors which correlate with magnetic anomalies represent prospective foci for shale hosted massive sulphide mineralization. Adopting this latter model for exploration on the property reduces the number of targets which require follow-up exploration.

Comparison of the results of the geophysical surveys with the results of the geological and geochemical surveys conducted on the property is difficult because different map scales, 1:2,500 and 1:10,000, respectively, were used to compile the data. In addition, the locations of the lines and stations used by Falconbridge to plot the geochemical data, in particular, differ from their actual locations.

8.0 RECOMMENDATIONS

The results of the geochemical surveys conducted on the property should be compiled on the base maps used for the geophysical surveys and a more rigorous comparison between the two sets of data should be undertaken.

Follow-up exploration on conductors which correlate with magnetic and/or geochemical anomalies is recommended.

The follow-up exploration should be confined to mapping, prospecting and possibly backhoe trenching initially, focussed on shallow, less than 1 m deep conductors. The principal objective of the follow-up exploration is to determine the causes of the conductors and/or magnetic anomalies.

Conductors with interpreted depths of 10 m or more will probably have to be evaluated by diamond drilling. However, diamond drilling is not recommended at this time because the ultimate nature and signature (geophysical and geochemical) of the mineralization on the property has not been established.

Conductors which warrant follow-up are listed below. The list details the reasons for each selection and specify a location where the follow-up exploration work should concentrate.

FOLLOW-UP TARGETS

Grid	Conductor	Location	Characteristics	Geochemical	Remarks
A	A	40+00N, 61+75E	Poor, shallow conductor	-	Located in the vicinity of the Davis Showing. Conductor extends onto Grid B.
	B	40+00N, 55+50E and 55+87E	Moderate conductors at moderate depths which correlate directly with magnetic anomalies.		Conductors may be too deep for effective appraisal by surface exploration methods.
	D	56+00N, 48+25E	Shallow conductor with direct magnetic correlation.	Au soil geochemical anomalies associated with conductors to the west of conductor D which were not picked up on their geophysical merits.	Follow-up should extend to west to cover soil geochemical anomalies.
B	B	110+00E, 116+37N and 116+87N	A long conductor which correlates with a short lithomagnetic unit.		
	G	116+00E, 111+75N	Same as conductor G from Grid BNE.	Au soil anomaly	Adjacent conductors worth examining as well.
	I	102+00E, 114+50N	Same as conductor B, Grid A. Long conductor which is intermittently magnetic.	Au soil anomaly.	Interpreted depth (25 m) of the conductor on line 102+00E may be too deep for surface evaluation methods.
	J	110+00E, 108+37N	Single line conductor associated with a magnetic anomaly.	Au and Zn soil anomaly.	20 m deep. May require diamond drilling for evaluation.
	L	102+00E, 98+75N and 99+50N	Pair of moderate conductors.	Cu and Zn geochemical anomalies.	
	M	104+00E, 97+75N & 96+50N-97+00N	Pair of conductors, one of which is 50 m wide.	Zn soil geochemical anomaly in vicinity of conductor.	
BNE	G	120+00E, 105+00N	Shallow, weak conductor which correlates with a magnetic anomaly.		
BSE	A	134+00E, 105+75N - 106+00N	Moderate (25 m wide) conductor at generally shallow depth.		
	B	134+00E, 94+00N	Moderate, shallow conductor with magnetic correlation. Conductor appears to be isolated from main mass of conductors on the grid.	Spot Au soil anomaly associated with conductor on line 132+00E.	
	C	130+00E, 97+00N	Moderate conductor at a depth of 10 m, which is intermittently magnetic.		
	D	130+00E, 98+63N	Good to moderate conductor at an average depth of 20 m. Magnetic correlation occurs on most of the conductor.		Interpreted depth of 20 m may exceed the effective depth of exploration of surface techniques.
C	A	36+00E, 16+50N-16+75N	Good, shallow, 25 m wide conductor. Possible direct magnetic correlation.		Located on a steep slope; possibly difficult to access with a backhoe.
	B	32+00E, 11+00N	Moderate conductor. Appears to consist of two subparallel conductors on line 11+00N.	Copper soil anomaly.	Copper soil geochemical anomaly trends obliquely to interpreted axis of conductor.
	C	30+00E, 9+50N-10+00N	Wide intersection of an otherwise narrow but good conductor.	Copper soil anomaly.	Above comments apply.
D	A	18+00E, 38+00N	A long conductor.	Cu soil anomaly?	
	B	14+00E, 36+25N-36+50N	Moderate conductor, 25 m wide on line 14+00E.	Possible Cu soil anomaly.	
	C	10+00E, 34+50N	Excellent conductor.	Cu soil anomaly?	
	D	16+00E, 32+75-33+00N	Poor conductor but 25 m wide on line 16+00E.	Cu soil anomaly?	
	F	12+00E, 31+00N-31+75N	Wide or two conductors.	Cu soil anomaly displaced down slope.	

The targets recommended for follow-up exploration are tentative and subject to revision based on the recompilation of the geochemical data.

Respectfully submitted,

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MPH Consulting Limited

December, 1984
Vancouver, B.C.