

I.M. WATSON & ASSOCIATES LTD.

# 92B16-07

REPORT ON THE LARA PROJECT MT. SICKER AREA, VANCOUVER ISLAND, B.C.

for

#### LARAMIDE RESOURCES LTD.

by

#### L M. WATSON, P.Eng. L M. WATSON & ASSOCIATES LTD.

28 February 1986

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#### INTRODUCTION

The Lara claims in southeastern Vancouver Island, B.C., were originally staked by Laramide Resources Ltd. in 1981, and were optioned to Aberford Resources Ltd. (now Abermin Corporation) in 1982.

Exploration has resulted in the discovery of volcanogenic Zn-Pb-Cu-Ag-Au massive sulphide deposits similar to the Westmin Resources ore bodies at Buttle Lake, in central Vancouver Island, and to the Lenora/Tyee zones on adjacent Mt. Sicker.

This report, prepared at the request of Mr. A. F. Reeve, President of Laramide Resources, reviews the results of work on the property to date, and makes recommendations for future work. Information was obtained during visits to the Lara project on August 29 and November 21, 1985, and from discussions with personnel at the Abermin Crofton and Vancouver offices. Further background data were derived from visits to the Westmin Buttle Lake property in 1969 and August 1985, and from a one- month geological/geochemical programme carried out by the writer over the Mt.Sicker area in 1972.

#### SUMMARY

The Lara property is situated 15 kilometres northwest of Duncan, in the southeastern part of Vancouver Island, B.C.

The claims were originally staked to protect favourable rhyolite volcanics of the Sicker Group - rocks similar to those which host the Lenora and Tyee polymetallic massive sulphide deposits on adjacent Mt. Sicker and the Myra Falls ore bodies at Buttle Lake. Geological, geochemical and geophysical work by Abermin produced numerous anomalies which were investigated by trenching and diamond drilling during 1984 and 1985. This work resulted in the discovery of several stratiform polymetallic sulphide zones. One of these, the Coronation Zone, has been intersected in drill holes over a strike length of 500 metres, to depths of 100 metres, and across widths of up to 14 metres.

			Staking	Expiry
Claim Name	Record #	Units	Date	Date
Fang	534	20	May 8, 1981	1996
Silver 1	535	12	May 8, 1981	1996
Silver 2	536	9	May 8, 1981	1996
Solly	537	9	May 8, 1981	1996
T.L.	538	20	May 8, 1981	1996
Susan	698	1	October 26, 1982	1996
Klondyke	699	1	October 26, 1982	1996
Tinto View	700	1	October 26, 1982	1996
Jennie	1112	4	November 18, 1983	1996
Ugly	753	6	February 8, 1983	1996
Wimp	754	2	February 8, 1983	1996
Nero	755	1	February 8, 1983	1996
Touche	1396	12	January 21, 1985	1997
Cavity	1397	12	January 21, 1985	1997
Plant	1401	20	January 23, 1985	1996
Face	1402	12	January 23, 1985	1996
Tooth	1377	5	November 7, 1985	1996
Cor 1 Fraction	1378	ì	November 7, 1984	1996
Cor 2 Fraction	1379	1	November 7, 1984	1996
Cor 3 Fraction	1380	1	November 7, 1984	1996
Cor 4 Fraction	1381	1	November 7, 1984	1996
Cor 5 Fraction	1382	1	November 7, 1984	1996
Cor 6 Fraction	1383	1	November 7, 1984	1996
Cor 7 Fraction	1384	1	November 7, 1984	1996

The Lara claims surround a small 3 unit claim held by competitors.

Abermin has registered a complaint under Section 50 of the Mineral Act, disputing title of a competitor's mineral claim at the southern boundary of the Lara claims. At the time of writing, no decision had been given by the Minister of Mines. In the writer's opinion, the outcome will have no effect on the observations or conclusions contained within this report.

#### HISTORY

Although there is scant record of previous work on the Lara claims, the adjacent Mt. Sicker property has a long history of activity and production, dating from the first discovery of massive sulphides there in 1897. The main period of production at Mt. Sicker was between 1898 and 1909. Twin J Mines rehabilitated the workings and mined during the war years (1943-44) and subsequent operators mined briefly in 1947, 1951-52, and 1964. The mine production is summarised as follows: Drill hole assay data to date shows that the copper, lead, zinc and silver grades of the Coronation Zone are generally comparable with those of stratiform volcanogenic massive sulphide deposits in other areas in Canada, Europe and Japan. The gold content, however, is notably higher and compares more closely with that of Westmin's Buttle Lake ore bodies. (Table 2)

Further work is required to fully delineate the Coronation Zone, and to investigate other sulphide zones and areas of geological, geophysical, and geochemical interest within the property.

#### LOCATION, ACCESS

The Lara property is situated in southeastern Vancouver Island, 15 kilometres northwest of Duncan (Fig. 1). The claims lie within the Victoria Mining Division, NTS Map reference 93B/13. The approximate centre of the property is at latitude  $48^{\circ}52'30$ "N and longitude  $123^{\circ}52'W$  (Fig. 2).

The claims are easily accessible from the main Victoria-Nanaimo highway by a network of logging roads, and by service roads to and along the high voltage power line which crosses the western part of the property.

Elevations within the claim area range from 160 to 960 metres a.s.l. Slopes are moderate. Most of the property has been logged and is now covered by dense second-growth bush.

#### CLAIMS

The Lara property comprises three reverted Crown Grants, seven fractional mineral claims, and 14 Modified Grid claims containing a total of 144 units. The original claims were staked by Laramide Resources Ltd. in 1981 and were optioned to Aberford Resources Ltd. in 1982. Additional claims were staked as indicated below. Positions of claims on the ground have not been verified by the writer, and no opinion can be passed as to the manner of staking. Information regarding the claims is as obtained from company and government records. The essential data are as follows:

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Period	Tons	Au oza.	Ag oza.	Cu lbs.	Zn lbs.
1898 - 1907	252,678	36,600	738,019	19,078,049	(no recovery)
1943 - 1944	34,893	2,617	71,531	921,175	4,270,903
1947	8,295	507	15,878	173,952	536,995
1951 - 1952	9,754	316	15,554	86,773	713,954
1964	167	12	<u> </u>	5,814	?
Total	305,787	40,052	841,276	20,265,763	<u>N/A</u>

or 305,787 tons grading 0.13 oz/ton Au; 2.75 oz/ton Ag; 3.3% Cu; ? Zn. (Sharp, 1972; Stevenson, 1945)

Currently the Mt. Sicker property is under option to Falconbridge Limited.

Prior to the staking of the Lara property, Cominco (1965-66) and Umex (1978-1979) were active on ground now covered by the Silver 1 claim (Cominco I.P. survey) and by the TL and Solly claims (Umex soil sampling survey).

The Lara claims were staked in 1981 by Laramide Resources Ltd. Following initial geochemical, geophysical, and geological work by Laramide, the property was optioned to Abermin Corporation in 1982. Abermin's exploration programme consisted of preliminary geological mapping, geochemical sampling, and geophysical surveys (magnetometer, VLF, EM, and I.P. - Fig. 6) followed by trenching of geochemical and geophysical anomalies. Several zones of polymetallic sulphides were found (Fig. 5), and these were tested by a 12-hole 1346 metre diamond drill programme late in 1984. DDH 84-12, the last hole of that series, intersected 8.2 metres of sulphides containing a zone assaying 1.21% Cu; 0.69% Pb; 5.18% Zn; 2.66 oz/t Ag; and 0.135 oz/t Au over 3.3 metres.

This zone, designated the Coronation Zone, was tested by a further 30 hole programme during the early summer of 1985. Results indicated geological continuity of the zone over a strike distance of nearly 400 metres to a depth of 105 metres. Hole 85-40 of this programme was drilled to test ground 500 metres east of the main zone, and intersected 3.7 metres of strong polymetallic sulphide mineralisation assaying 1.16% Cu; 2.53% Pb; 9.22% Zn; 8.49 oz/t Ag; and 0.213 oz/t Au (Coronation Extension).

The final phase of the 1985 drilling, consisting of 31 holes totalling 4945 metres, was completed in early December 1985. 28 holes were drilled to test the area between holes 84-12 and 85-40. These holes established continuity of lithology between the two areas, and several intersected significant zones of sulphides, expanding the high grade part of the Coronation Zone around hole 84-12. Three holes were drilled to test Zones I and II in the eastern grid area.



inches centimetres

#### GEOLOGY

#### **Regional Geology**

The Lara property is underlain by Carboniferous age Sicker Group Volcanics, which form a 130-kilometre northwesterly trending belt extending from Saltspring Island in the south to Horne Lake in the North.

Sicker Group Volcanics also occur in the area south and west of Buttle Lake where they host the Myra Falls bedded massive sulphide ore bodies currently being mined by Westmin Resources (Fig. 3).

Muller (1980) has subdivided the Sicker Group into three formations, in decreasing order of age: the Nitinat, Myra and Buttle Lake Formations. Muller has also recognized a transitional unit between the Myra and Buttle Lake Formations, designated the Sediment-Sill Unit.

The Nitinat Formation is comprised mainly of pyroxene basalt flows and minor tuffs. The Myra Formation conformably overlies the Nitinat Formation and consists of basic to rhyolitic volcanics, volcaniclastics and sediments. The upper portions of the Myra Formation, the Sediment-Sill Unit, is dominantly sedimentary but contains intercalated diabase sills. At Buttle Lake, Mt. Sicker and on the Lara property, the massive sulphide deposits are hosted by the dominantly felsic volcanic sequence within the Myra Formation.

The upper unit of the Sicker Group, the Buttle Lake Formation, consists mainly of limestones with interbedded siltstones and cherts, and minor diabase sills.

All the Sicker Group rocks on Vancouver Island have been moderately to strongly deformed, and generally fall within the greenschist facies of regional metamorphism.

In the Lara-Mt. Sicker area, the Sicker Formation strikes west-northwesterly, and is cut by major faults sub-parallel to strike and by northerly trending cross faults. The Lara property lies largely within a block created by cross faults along Copper Canyon on the Chemainus River to the east, and Chipman Creek to the west (Muller 1980 and Fig. 4).









original size

#### Lara Property

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On the Lara property, outcrop is sparse and the most abundant and reliable geological information comes from the 70 diamond drill holes which tested the sulphide zones in the western part of the property. This data is complemented by outcrop mapping, mainly along creeks, roads and in trenches. The greater part of the claim group is underlain by rocks of the Myra Formation; these are flanked to the south by the Sediment-Sill Unit, and by Cretaceous age Nanaimo Group sediments (Fig. 5). Abermin's mapping also places the Sediment-Sill Unit to the north of the Myra Formation rocks. Relationships between the units are unclear, and are presumed to be the result of folding and/or faulting.

A large part of the Myra Formation consists of felsic volcanics, which have been designated the 'Rhyolite Sequence' by Abermin geologists. The dominant rock types within this unit are felsic tuffs and possible flows including varieties porphyritic in quartz and/or feldspar. Within the rhyolitic rocks, there are several narrow mudstone bands which appear to persist along strike. The Lara sulphide zones are associated with these sedimentary units. Sulphides consist mainly of pyrite, but locally there are significant concentrations of sphalerite, chalcopyrite and galena, accompanied by gold and silver.

Abermin's geophysical, geochemical and trenching programmes detected four main polymetallic sulphide zones in pyritic rhyolite tuffs (Zones I - IV, Fig. 5). In the southwestern portion of the property, south of Zone III, a one-metre band of sulphides was exposed in trench 83-35. The mineralisation occurs in fine grained rhyolite. The first drill programme of 1984 tested this area, and it was the last hole of the series (DDH 84-12) that intersected the gold and silver bearing polymetallic sulphides of the Coronation Zone.

#### **Coronation Zone**

The 1984 and 1985 Abermin drilling programmes indicate lithological continuity of the sediments hosting the Coronation Zone over a distance of at least 500 metres (Figs. 7, 8). The Myra Formation host rocks strike west-northwest and dip steeply to the north. A typical cross section of the zone is illustrated by Figure 9; the succession consists

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## Figure 8



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## TABLE 2:AVERAGE GRADE AND TONNAGE DATA- VOLCANOGENIC MASSIVE SULPHIDE DEPOSITS(SELECTED AREAS)

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Deposit/Area	Cu %	Ръ %	Zn %	Ag 	Au oz/ton	Au Equiv. 	Tons x 106
Abitibi, Quebec	1.47	0.07	3.43	0.09	0.023	0.147	10.1
Norway, Caledonides	1.41	0.05	1.53	-	-	0.028	3.9
Bathurst, N.B.	0.56	2.17	5.43	1.80	0.014	0.191	9.6
Japan (Green Tuff Belt) (Lydon, 1984)	1.63	0.92	3.86	2.80	0.026	0.221	6.4
Buttle Lake, B.C.							
Lynx-Myra-Price	1.00	0.90	7.70	2.30	0.070	0.303	1.2
HW (Walker, 1985)	2.20	0.30	5.70	1.10	0.070	0.290	15.2
Sicker (Lenora Tyee) (Sharp 1972, Stevenson, 1943)	3.3	?	?	2.75	0.130	0.310	0.31
Lara (see Table 1)							
Coronation Zone	0.85	0.69	4.33	2.50	0.116	0.281	-
Extension Zone	0.56	1.35	5.31	3.51	0.146	0.343	-
Net Au Equiv. values: (assuming metal recove	ries listed)				-		
Coronation Zone	-	-	-	. –	-	0.210	
Extension Zone	-	-	-	-	-	0.260	(net)

		%
Metal Recoveries:	Metal	Recovery
	Cu	79
	РЪ	71
	Zn	73
	Au	78
	Ag	76

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#### CONCLUSIONS

- 1. The 1984-85 drilling programmes on the Lara property have partially defined very significant zones of volcanogenic massive sulphides.
- The host rocks, nature of mineralisation, and grades are similar to those of the Westmin Resources ore bodies at Buttle Lake, and the sulphide zones on the adjacent Mt. Sicker property.

Massive sulphide deposits of this type tend to occur within and along a specific stratigraphic interval, e.g. Noranda, Matagami, and Bathurst areas (Lydon, 1984). The Lynx, Myra, and Price ore bodies at Buttle Lake were formerly parts of a continuous system of stratiform sulphide lenses extending for 5800 metres along strike, but are now separated by erosion and structural displacement, with folding as an added complexity (Walker, 1985). On the Lara property, there is excellent potential for the discovery of new sulphide lenses along the strike and down the dip of the Coronation Zone. It is also possible that the stratigraphic interval hosting the zone may be repeated to the north by folding.

3. The lengthy geochemical/geophysical anomalies to the north of the Coronation Zone are known to correlate with sulphide/sedimentary zones, but are largely untested (Zones I - IV, Fig. 5).

#### RECOMMENDATIONS

- Geological mapping and prospecting of the property should be completed. Particular attention should be paid to the search for possible strike extensions of the Coronation Zone, or for evidence of repetition by folding, and/or faulting.
- 2. Geochemical and geophysical coverage should be extended, dependent on results of the geological mapping/prospecting.
- 3. Anomalies or zones of geological interest should be investigated by trenching, wherever feasible.
- Diamond drilling is recommended to test the Coronation Zone at depth and along strike. More closely spaced drilling adjacent to the Coronation and Extension Zones is desirable to ensure that these zones are adequately defined.

Drilling is also recommended to test the more favourable sections of Zones I-IV, selection of drill sites to be dependent on results of the mapping, geochemical, geophysical, and trenching programmes.

5. Further work would be dependent on an assessment of results arising from 1-4 above.

#### PROPOSED PROGRAMME AND BUDGET

Abermin Corporation has proposed a programme and budget for the ongoing exploration of the Lara property. This proposal has been approved and accepted by Laramide Resources Ltd. The writer has reviewed the proposed programme and budget, and considers both to be fully justified and in keeping with the merits of the property.

The Abermin 1986 proposal is summarised below. Under the terms of the option agreement, Laramide contributes 35% of the programme expenditures, as indicated.

	Total Cost	Laramide Share (35%)
Phase I (January 1 - April 15, 1986)		
1985 data compilation and evaluation	\$ 54,400	\$ 19,040
Phase II (April 15 - June 30, 1986) Diamond drilling		
<ul> <li>a) Testing of Coronation and Coronation</li> <li>Extension Zones</li> <li>1. Down dip projections of high grade</li> </ul>		

	west of zones 3. 'Fill-in' detail drilling between Coronation and Extension Zones, and as indicated by results of 1 and 2 above.			
	Estimate 4000 metres, 17 holes	312,160		
Ъ)	Reconnaissance drilling of geochemical/ geophysical targets (Zones I - IV)			
	Estimate 1000 metres, 5 holes	78,040	390,200	136,570

#### Phase III (July 1 - August 31, 1986)

zones

a) Data compilation and evaluation of Phase II

2. Possible strike extensions east and

- b) Geological mapping/prospecting
- c) Linecutting
- d) Geochemical and geophysical surveys
- e) Trenching

	Total Cost	Laramide Share (35%)
Phase IV (September 1 - November 15, 1986)		
Diamond drilling Follow-up drilling based on results of Phases II and III a) Detailed drilling of sulphide zones, dependent on results of Phase II		
Estimate 3000 metres, 20 holes 234,60	0	
b) Testing of targets delineated by Phase III		
Estimate 2000 metres, 10 holes	<u>0</u> 391,000	136,850
Phase V (November 15 - December, 1986)		
Data compilation and evaluation	20,725	7,250
Sub-totals	977,275	342,045
Overhead (approx. 5% of overall costs)	55,797	19,530
	1,033,072	361,575
10% maximum overrun allowance	103,307	36,158
TOTAL PHASES I - V	\$1,136,379	<u>\$ 397,733</u>

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#### COST SUMMARY

#### PHASES I - V

	Phase I	Phase II	Phase III	Phase IV	Phase V	Total
<ol> <li>Salaries and administration</li> <li>Accommodation and travel</li> <li>Communications, freight, postage</li> <li>Vehicle expenses</li> <li>Equipment, purchases and rentals</li> <li>Geochemical analyses, assays</li> <li>Reproduction, printing</li> <li>Trenching</li> <li>Diamond drilling</li> <li>Contract (surveying)</li> <li>Environmental costs</li> </ol>	\$ 34,500 5,900 1,000 	\$ 45,000 11,000 2,500 7,500 3,500 16,200 1,000 	<pre>\$ 58,750 14,700 2,000 9,000 2,500 13,000 1,000 20,000</pre>	\$ 45,000 11,000 2,500 7,500 3,500 15,000 1,000 	<pre>\$ 15,625 3,100 500 - 500 - 1,000 *</pre>	<pre>\$ 198,875 45,700 8,500 24,000 11,000 48,200 7,000 20,000 599,000 3,000 7,000</pre>
<ul> <li>12. Mining and recording fees</li> <li>Total Costs (excluding overhead)</li> <li>Overhead (approx. 5% of overall costs)</li> <li>Subtotal</li> <li>10% maximum overrun allowance</li> <li>TOTAL COSTS - PHASES I-V</li> </ul>	<u>5,000</u>	<u>\$390,200</u>	<u>\$120,950</u>	<u>\$391,000</u>	<u>\$ 20,725</u>	5,000 977,275 55,797 1,033,072 103,307 \$1,136,379
Laramide's Costs (excluding overhead) (35%) Overhead (approx. 5% of overall costs) Subtotal 10% maximum overrun allowance LARAMIDE'S COSTS-PHASES I-V (35%)	<u>\$ 19,040</u>	<u>\$136,570</u>	<u>\$ 42,335</u>	<u>\$136,850</u>	<u>\$ 7,250</u>	342,045 <u>19,530</u> 361,575 <u>36,158</u> <b>\$ 397,733</b>

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5000 m. @ \$59.40/metre (all in cost)
5000 m. @ \$60.40/metre (all in cost)

#### CERTIFICATE OF QUALIFICATIONS

I, Ivor Moir Watson, of 584 East Braemar Road, North Vancouver, hereby certify that:

- 1. I am a consulting geologist with offices at 816 675 West Hastings Street, Vancouver, B.C.
- 2. I am a graduate of the University of St. Andrews, Scotland (B.Sc., Geology, 1955).
- 3. I have practised my profession continuously since graduation.
- 4. I am a member in good standing of the Association of Professional Engineers of B.C., and a Fellow of the Geological Association of Canada.
- 5. This report is based on information obtained from visits to the Lara project on August 29 and November 21, 1985; from examination of drill core and all relevant property data; and from discussions with Laramide and Abermin personnel. Further background information was derived from vists to the Westmin Resources Ltd. Buttle Lake property in 1969 and August 1985, and from a one month geological survey of the adjoining Mt. Sicker area made by the writer in 1972.
- 6. I have no interest nor do I expect to receive any interest, direct or indirect, in the Lara Property or in the securities of Laramide Resources Ltd. or its subsidiary.
- 7. I consent to the inclusion of this report in a prospectus or Statement of Material Facts.

February, 1985 Vancouver, B.C.

Watson, B.Sc. Ivor M.