## HIBERNIA MINING CO. LTD.

(Non-Personal Liability)
1408-207 West Hastings Street, Vancouver, B.C.

## PROSPECTUS

January 12, 1971
New Issue 212,000
Common Shares

# PROPERTY FILE 

|  | Price to Public | Commission | Proceeds to Issuer |
| :--- | :---: | :---: | :---: |
| Per Unit | $25 \phi$ | $61 / 4 \phi$ | $183 / 4 \phi$ |
| Total | $\$ 53,000.00$ | $\$ 13,250.00$ | $\$ 39,750.00$ |

THERE IS NO EXISTING OVER-THE-COUNTER MARKET FOR THE COMPANY'S SECURITIES IN THE PROVINCE OF BRITISH COLUMBIA OR ELSEWHERE.

A PURCHASE OF THE SHARES OFFERED BY THIS PROSPECTUS MUST BE CONSIDERED A SPECULATION SINCE THE COMPANY'S MINERAL CLAIMS ARE STILL ONLY IN THE EXPLORATION STAGE. REFERENCE SHOULD ALSO BE MADE TO THE CAPTION "PRINCIPAL HOLDERS OF SHARES" AND THE COMPARISON OF THE PERCENTAGE OF SECURITIES BEING OFFERED TO THE PUBLIC FOR CASH AND THOSE ALREADY ISSUED BY THE COMPANY TO ACQUIRE ITS PROPERTIES.

NO SECURITIES COMMISSION OR SIMILAR AUTHORITY IN CANADA HAS IN ANY WAY PASSED UPON THE MERITS OF THE SECURITIES OFFERED HEREUNDER AND ANY REPRESENTATION TO THE CONTRARY IS AN OFFENCE.

NO SURVEY HAS BEEN MADE OF THE COMPANY'S LOCATED MINERAL CLAIMS AND THEREFORE IN ACCORDANCE WITH THE MINING LAWS OF THE PROVINCE OF BRITISH COLUMBIA, THEIR EXISTENCE AND AREA COULD BE IN DOUBT.

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## REPORT

# on the ANNE Group of Mineral Claims on Chemainus River, Victoria, M.D. British Columbia <br> on behalf of <br> HIBERNIA MINING COMPANY LTD. 

by
J.H. Montgomery, Ph.D., P.Eng.
December 18, 1970

## SUMMARY AND CONCLUSIONS

Hibernia Mining Company Ltd. of Vancouver, B.C. holds title to the Anne group of 28 mineral claims on Chemainus River in Victoria Mining Division.

Exploration work in 1969 consisted of a geochemical soil survey, a magnetic survey and geological mapping. An electromagnetic survey was completed in 1970.

Four areas show coincident magnetic, geochemical and electromagnetic anomalies. These areas are also related to exposed copper and molybdenum mineralization.

An exploration program is recommended, consisting of bulldozer trenching and diamond drilling. Estimated cost of the program is $\$ 35,000.00$

## INTRODUCTION

The following report contains a record of the exploration work on the Anne Group of claims during 1969 and 1970. This work has been described in two previous reports: "Progress Report on the Anne Group of Mineral Claims on Chemainus River, Victoria M.D." by J.H. Montgomery, P. Eng. dated December 15, 1969 and "Geological and Geophysical Report on the Anne Group of Mineral Claims" by J.H. Montgomery, P. Eng. and D.R. Cochrane, P.Eng. dated October 7, 1970.

## LOCATION AND ACCESS

The Anne Group of mineral claims is located on the south side of the headwaters of Chemainus River about 4 miles north of Youbou, B.C. on Vancouver Island. See Location Map (Figure 1). N.T.S. ref. 92c/16E; Lat. $48^{\circ} 55^{\prime} N$, Long. $124^{\circ} 11^{\prime} \mathrm{W}$.

The property may be reached by a logging road which follows Chemainus River valley for a distance of 31 miles from the highway. The road is privately owned by MacMillan Bloedel Ltd. and an access permit is required. In addition, special insurance requirements must be met.

An alternate route over the pass from Youbou, B.C. is possible but the road is in need of repair.

## CLAIMS AND OWNERSHIP

The Anne Group consists of 28 claims located in the Victoria Mining Division of B.C. Title to the claims is held by Hibernia Mining Co. Ltd. of Vancouver, B.C. Claim information is given in the following table:

Claim
ANNE 1 -10
ANNE 11-12
ANNE 23, 25, 27
ANNE 29-32
ANNE 24, 26, 28
ANNE 35-40

Record No.
14574-83
14644-45
14646,48,50
14652-55
14647,49,51
14656-61

Expiry Date
August 9, 1971
November 19, 1971
November 19, 1971
November 19, 1971
November 19, 1971
November 19, 1971

## PHYSIOGRAPHY

The claims are located in the southern part of the Vancouver Island Mountains at an elevation of 2,000 to 3,700 feet above mean sea level. Topography is moderately rugged with a relief of 1700 feet over the claim area.


The area is mainly heavily timbered with little underbrush and is part of an active logging operation. Logged areas are a tangle of deadfalls, underbrush and second growth conifers.

Two northerly-flowing creeks, which are tributary to Chemainus River, provide adequate year round water supplies for drilling or camp purposes.

## WORK PREVIOUS TO 1969

The claims cover a series of old workings, in part described by Fyles in the B.C. Minister of Mines Report for 1948. There are several adits, pits and trenches excavated into the side hill, and now covered by the Anne 7, 8, 9, and 10 claims.

## GRID LAYOUT

A ground control grid was established in 1969, and consists of an East-West baseline 6,000 feet long which essentially bisects the claim group. Cross lines, running due north-south, are turned off at 400 foot intervals, and in the "showings" area, cross lines are spaced 200 feet apart.

All lines are flagged and picketed, with line number and station co-ordinates marked at 200 foot intervals.

## GEOLOGY

The geology has been described by Y.T. Fyles in the Minister of Mines Report for 1948. The present writer, using the grid for base map control, mapped outcrops within the survey area. The results are shown in Figure 9.

The map-area is underlain primarily by andesites and bedded tuffs which have been assigned to the Vancouver Group by Fyles. Granodiorite and feldspar porphyry dykes also outcrop in several places.

A hornblendite was also observed at $8 \mathrm{~S} / 16 \mathrm{E}$ and is well fractured with traces of pyrite and pyrrhotite.
The andesite is most commonly a dark to medium-green aphanite, but in some areas, porphyritic phases are present. Here, fine phenocrysts of plagioclase or pyroxene are found in a green, aphanitic matrix. The tuffs are well-bedded and cherty in nature. The granodiorite is coarse-grained.

Because few outcrops are present, the structural relationships between the various rock types are not clear. A few bedding attitudes obtained from the cherty tuff outcrops showed a general northwest strike but dips over a wide range, both easterly and westerly, occur. Thus, a complex structure is suggested.

Mineralization consists mainly of chalcopyrite, pyrite, pyrrhotite and molybdenite in a garnet skarn. Magnetite, quartz and calcite are also found in some of the old trenches. Most of the mineralized showings are plotted on Figures 9, 10, and 12. The configuration of the showings have a northwest trend suggesting a possible bedding or lithologic control for mineralization.

## GEOCHEMICAL SURVEY

A geochemical soil survey was conducted over the property during the periods June 25 to July 11, 1969 and August 20 to September 9, 1969. Approximately 72,000 feet of line was sampled at 200 feet intervals making a total of 363 samples.

The overburden over the map-area consists of glacial till of shallow to moderate depths (2-20 feet). In most places, a partly developed B horizon was encountered at depths of less than 12 inches.

The samples were analyzed for copper and molybdenum by Bondar-Clegg and Co. of North Vancouver, B.C. The results of the analyses and locations are shown in Figures 2 to 7.
Frequency distributions and cumulative percent distributions were plotted for copper and molybdenum. Figures 4 and 6 show frequency distribution curves for copper and molybdenum respectively. Both curves are positively skewed and appear to have log normal distributions. Calculated means are 140 p.p.m. copper and 11 p.p.m. molybdenum.

The data was also plotted on cumulative percent paper as shown in Figures 5 and 7. Inspection of the cumulative percent curves suggested background values 0 to 300 p.p.m. copper and 40 to 100 p.p.m. molybdenum, mixed values 300 to 500 p.p.m. copper and 40 to 100 p.p.m. molybdenum and anomalous values greater than 500 p.p.m. copper and greater than 100 p.p.m. molybdenum.

The use of these intervals in Figures 2 and 3 shows the presence of several anomalous zones within the map area.

## MAGNETOMETER SURVEY

A magnetometer survey using the Scintrex MF-1 was conducted over the property during the period October 23 to October 30, 1969. Readings were taken at intervals of 200 feet along the established grid lines.




Fig. 5



Fig. 7




The results of the survey are plotted in Figure 8. Four magnetic anomalies were detected. These are shown in Figure 10 in relation to geochemical anomalies and surface showings.

## ELECTROMAGNETIC SURVEY

## Electromagnetic Field Procedure

A Crone J.E.M. Dual Frequency ( 1800 and 3600 Herz) electromagnetic unit was used exclusively. The unit deploys a "shoot back" procedure which essentially eliminates topographic influence. Readings are in degrees and represent the dip of the resultant (primary plus secondary) electromagnetic field.

With the shoot back method, both operators (one a "chief" and the other a "helper") traverse along the same line and (in this case) are spaced 200 feet apart.

Normally the chief transmits first and the helper receives and measures the tilt angle of the field. The helper then transmits and chief receives and again measures the dip angle. The helper informs the chief of the first reading and the two readings are algebraically added to produce a final dip angle result. This procedure is repeated on the other frequency. Both men then move 100 feet to the west station.

## Electromagnetic Data Presentation

The EM results are shown in profile form in Figure 11 and a general interpretation of results is given in Figure 12. The readings are plotted midway between the two operators, positive angles on the east and negative angles on the west (or right hand side) of the traverse line. High frequency results ( 3,600 c.p.s.) are solid lines and low frequency results ( 1,800 c.p.s.) dashed lines.

Cross line correlation, as attempted in Figure 12 is tentative, since many of the conductors are not throughgoing.

## Discussion of Electromagnetic Results

Electromagnetic response is quite complex. Individual values ranged from a high of 8 degrees to a low of minus 6.

Tilt angle response was categorized as follows:
(a) less than 4 degrees change in 200 feet - minor crossover
(b) between 4 and 6 degrees change in 200 feet - moderate crossover
(c) greater than 6 degrees change in 200 feet - major crossover

The convention applied to plotting (that is, results midway between the two units) determines the position of the conductor, and in this case, the "top edge" of the condutor lies at the most positive tilt angle position. Due to complexity of results, cross line correlation must be considered tentative. Many of the tilt angle changes are isolated and not throughgoing, which is somewhat encouraging in that most of the response cannot be considered structural or lithologic.

A total of 5 major crossovers were located, and these have been designated conductors $A$ to $E$ inclusive.
Conductor $A$ lies immediately south of the base line between 6 and 10E. It consists of an east-west series of three crossovers, one major and two of moderate amplitude. There is a reasonable amount of confidence in the cross line correlation. This conductor appears to dip approximately 60 degrees north and the depth to the top is estimated at 50 feet. Good conductivity is indicated by the ratio of high to low frequency results, and sulphides are suspected. Conductor $B$ is located close to the road between 4 and 8 E . It consists of one major and two minor crossovers which appear to be East-West correlatable. The expected dip of the conductor in $75^{\circ} \mathrm{N}$, and the depth to the top, approximately 60 feet. Good conductivity is indicated.
Conductor $C$ is made up of one minor and one major crossover trending in a west-northwest direction from the point $8 \mathrm{~N}: 12 \mathrm{E}$. The profile skewness indicates a dip of $80^{\circ} \mathrm{S}$, and the depth to the top is very small. The conductivity is only fair.
Conductor $D$ is a single major crossover situated at 15 S on line 12 E . The strike is undeterminable and the dip is believed to be steep. The depth of the top is estimated at 30 feet and the conductivity is quite good.
Conductor $E$ is located at the north end of line $O$. The south half of the anomaly was the only section covered since a bluff and stream made traversing impossible. The E conductor is believed to be a result of wet, fracured (or faulted) bedrock. The conductivity is fair to poor.

Many moderate and minor crossovers are unnamed but are displayed on Figure 12. Conductor trends are primarily East-West to Northwest-Southeast and several of the "moderate" category crossovers are charaterized by



high to low frequency ratios indicative of sulphides. The crossover situated at 1 N on line 20 E (just south of the old pits) is one such example. Others are too numerous to textually describe, but warrant further investigation if other positive information is available.

## CORRELATION

Four main areas of good correlation between the various anomalies are selected. A composite map showing the spatial relationships between geochemical and magnetic anomalies and mineralized showings is given in Figure 10. The EM results are not included on the composite map due to their complex nature.

Area I contains a strong magnetic high about 400 feet by 400 feet. The area is associated with a strong downslope copper anomaly, and contains pyrrhotite-chalcopyrite mineralization in a trench. Conductor A shows a fair correlation (shifted about 200 feet to the northeast) with Area I.
Area // contains a small magnetic high with a coincident copper anomaly and several mineralized showings with associated downslope copper and molybdenum anomalies. Three crossovers, two moderate and one minor, show a northwesterly trend in Area II just northeast of magnetic anomaly c.
Area I/I contains high grade copper showings with an associated copper anomaly and a small magnetic high. A moderate electromagnetic crossover $1524 \mathrm{E}: 2 \mathrm{~N}$ correlates with magnetic anomaly d .
Area IV contains a number of copper-molybdenum showings, a moderate magnetic anomaly and associated copper and molybdenum anomalies. Conductor $C$ shows a strong correlation with magnetic anomaly $b$ and copper anomaly $\mathrm{C}_{3}$ and a series of copper-molybdenum showings.

## RECOMMENDATIONS

Magnetic and geochemical soil surveys on the Anne Group resulted in four coincident anomalous areas realted also to exposed copper and molybdenum mineralization.

An electromagnetic survey produced a complex pattern of crossovers, some of which can be correlated with the four anomalous areas mentioned above.

An exploration program is recommended, consisting of bulldozer trenching and diamond drilling.
The trenching is to proceed any drilling. The purpose of the trenching is to expose as much bedrock as possible in the four areas of interest and prepare drillsites, in case the overburden proves to be too thick. Seven drillholes ( 2 in Area I, 1 in Area II, 1 in Area III, 3 in Area IV) each 300 feet long are recommended. Exact location of the holes is contingent on the trenching results.

## COST ESTIMATE

Trenching 200 hours @ $\$ 30.00$
Diamond drilling 2,100 feet @ \$10.00
Engineering and Supervision
Assaying
Transportation
Administration, etc.
Contingencies (approx. 8\%)
\$ 6,000.00
21,000.00
3,000.00
600.00

1,000.00
800.00
\$32,400.00
2,600.00
\$35,000.00

Respectfully submitted,

"J. H. MONTGOMERY"<br>J.H. Montgomery, PH.D., P. Eng.

December 18, 1970
Vancouver, B.C.

## CERTIFICATE

I, J.H. Montgomery, of Vancouver, British Columbia, hereby certify that:

1. I am a geological engineer and reside at 4153 West 11 th Avenue, Vancouver 8, B.C.
2. I am a graduate of the University of British Columbia: B.Sc. in 1959, M.Sc. in 1960, Ph.D. in 1967.
3. I have practiced my profession since 1959.
4. I am a member of the Association of Professional Engineers of British Columbia.
5. I have no interest, direct or indirect, in the properties or securities of Hibernia Mining Company Limited or their affiliates, nor do l expect to receive any such interest.
6. I have based this report on personal visits to the property and on a previous report by myself and D.R. Cochrane, P.Eng.

DATED at Vancouver, B.C., this 18th day of December, 1970.

"J.H. MONTGOMERY"<br>J.H. Montgomery, Ph.D., P.Eng.<br>4153 West 11th Avenue,<br>Vancouver, B.C.

