

BARITE EVALUATION IN THREE AREAS OF SOUTHEASTERN NEWFOUNDLAND

by

A.F. Howse and C.J. Collins\*  
Mineral Deposits Section

Introduction

An evaluation of the barite potential of the western Avalon Peninsula continued during the summer of 1983. This assessment consisted of a regional stream sampling and

prospecting program in two main areas of interest (Figure 1): (1) the eastern section of the Avalon Isthmus between Southern Harbour railway station in the north and Normans Cove in the south, an area underlain mainly by late Precambrian

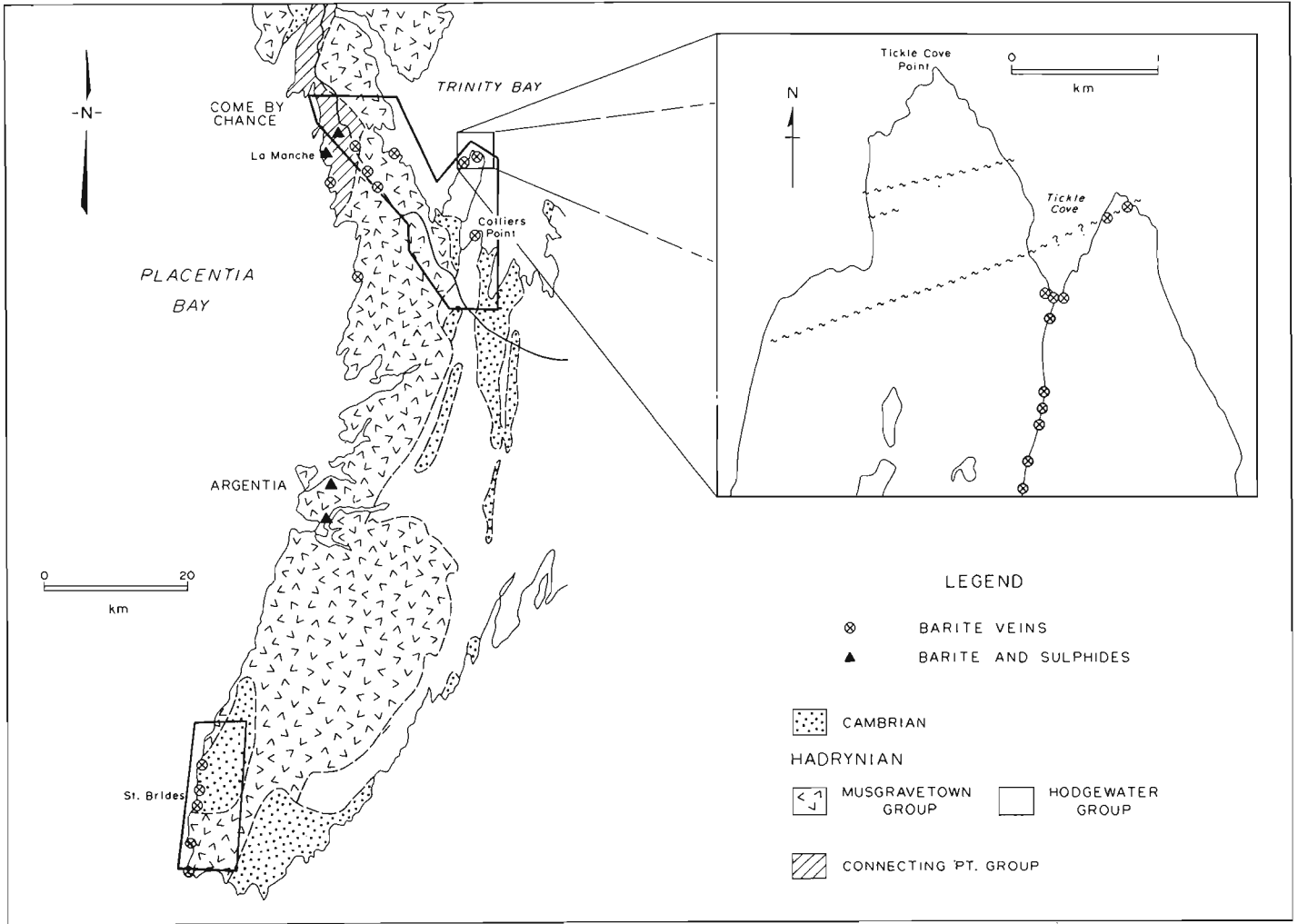


Figure 1: Western Avalon showing project areas; insert shows barite occurrences on Bellevue Peninsula.

Contribution to the Canada-Newfoundland co-operative minerals program 1982-84. Project financed by the Newfoundland Department of Mines and Energy and the Geological Survey of Canada.

\* Department of Earth Sciences, Memorial University of Newfoundland, St. John's A1B 3X5.

volcanic and sedimentary rocks, and (2) the St. Brides area of the Cape Shore, from Cape St. Mary's to Angels Cove, an area underlain by Hadrynian and Lower Cambrian sedimentary rocks. Prospecting along streams was carried out in conjunction with sampling. The stream sediment survey on the Avalon Isthmus was coordinated with a similar project in an adjacent area by Butler and Davenport (see report in this volume), who carried out geochemical follow-up of lake sediment anomalies that had been identified by a 1975 regional survey (Davenport et al., 1975). The results will be made available as an open file release after the analyses are completed.

A major sampling program was also carried out on known fluorspar veins in the St. Lawrence area of the Rurin Peninsula, with particular emphasis on those veins known to contain associated barite. Forty veins were examined and sampled.

#### Isthmus of Avalon

A stream sediment survey was done along the eastern section of the Avalon Isthmus between Southern Harbour railway station in the north and Normans Cove in the south. The regional geology of the area was mapped and described by McCartney (1967). The oldest rocks there are marine sediments and tuff of the Connecting Point Group, which underlie the northwest part of the study area. Basaltic and rhyolitic volcanics of the Bull Arm Formation unconformably overlie the Connecting Point Group, and comprise the central and northeast section of the survey area. The Bellevue Peninsula and Collier Point are underlain by sedimentary rocks (mainly green arkose, siltstone and minor conglomerate) of the Hodgwater Group. South of the Bellevue Peninsula and west of Chapel Arm, the survey area is underlain by quartzite of the Random Formation and Lower Cambrian red and green shales and nodular limestone.

Barite veins are widely distributed throughout the area and were the subject of a Department Mines and Energy survey in 1982 (Howse and French, 1983). The best known vein, at Collier Point, is of commercial interest and is presently being developed, while the potential of other areas (notably the Bellevue Peninsula) for hosting veins of high grade barite is being recognized. All documented occurrences of barite, with the exception of some minor showings exposed in road cuts, are on the coast.

The 1983 stream sediment survey represents an effort to assess the barite (and base metal) potential inland. Prospecting for mineralized float and outcrop was also an integral part of the stream traverses.

395 samples were collected, as uniformly as possible, at approximately 400 m intervals along the streams. Duplicate samples, for field control purposes, were taken at every twentieth sample site. A special effort was made to collect only active silt and to avoid, where possible, organic-rich material. The samples were dried and sieved to minus 80 mesh (<180  $\mu$ m) and are being analyzed for Ba, Sr, Cu, Pb, Zn, Ag, Fe, Mn and L.O.I..

#### Mineralization

A new barite-galena vein was discovered in sedimentary rocks of the Connecting Point Group about 2 km east of Little Southern Harbour. The vein is located midway between the east shore of Little Southern Harbour and the Trans Canada Highway immediately upstream from the water supply dam (approximate UTM grid reference: 5288700 N, 279850 E). The vein, which appears to lie along a brecciated fault zone, strikes northeasterly and is nearly vertical. It has a maximum width of about 80 cm but appears to pinch out rapidly on both sides of the stream in which it is exposed. The barite and associated galena occur as pods, blebs and stringers within the fractured and brecciated host rock. One such pod, about 20 cm in width but wedging at depth, contains an estimated 60% barite and 40% galena. Calcite also is present as a minor constituent. The galena usually occurs as coarse crystal aggregates in a barite and calcite gangue, but isolated patches were also observed. The mineralization could not be traced beyond the banks of the stream because of overburden.

Five grab samples of the mineralization were taken for assay and the results are shown in Table 1 below.

**Table 1:** Assay analyses of samples taken from the Little Southern Harbour vein.

| Sample No. | Ba (%) | Cu (ppm) | Zn (ppm) | Pb (%) | Sr (%) | Ca (%) | Ag (ppm) |
|------------|--------|----------|----------|--------|--------|--------|----------|
| 14         | 56.3   | 704      | 2        | <1     | 1.17   | 0.02   | 1        |
| 16         | 20.6   | 202      | 12       | 43.5   | 0.71   | 1.32   | 26.7     |
| 17         | 3.2    | 38       | 14       | 56.8   | 0.10   | 4.21   | 38.3     |
| 20         | 10.9   | 50       | 9        | 52.0   | 0.31   | 1.81   | 44.1     |
| 22         | 5.8    | 36       | 4        | 7.42   | 0.15   | 0.47   | 27.7     |

On the Bellevue Peninsula, numerous barite veins were discovered along a 1200 m length of the stream which flows northward into Tickle Cove (Figure 1). The veins pinch and swell from a few centimetres up to 1 m in thickness. They are steeply

dipping and the strike varies from 0° to 025°. The host rocks are grayish black siltstones. The barite is pink and white, and quartz is sometimes present. Barite float is also widely scattered along the stream bed. All of these barite occurrences appear to be part of a northward trending system of subparallel veins, the most northerly expression of which is exposed along the south shore of Tickle Cove.

Seven barite veins ranging in width up to 30 cm were identified in two rock cuts on the railway line about 1 km east of Jacks Pond provincial park. The veins are vertically dipping and all trend in a northeast direction. The barite is pink in color and consists of coarsely bladed crystal aggregates. The host rocks are highly sheared and altered, northwest dipping sediments of the Connecting Point Group.

#### Cape Shore - St. Brides

A stream sediment survey was carried out in the St. Brides area of the southwestern Avalon. The sampled area includes several barite prospects, nearly all of which are exposed on the coast.

315 samples were collected from a 110 km<sup>2</sup> coastal strip between Cape St. Mary's and Angels Cove. Streams in this area generally flow in a westerly and southwestern direction across sedimentary formations which range in age from Hadrynian to Lower Cambrian. The samples were taken from active sediment at approximately 400 m intervals. Duplicate samples were collected routinely at every twentieth sample site to allow a quantitative assessment of sample variance to be estimated. The samples were dried and sieved to minus 80 mesh (<180 µm) and are being analyzed for Ba, Sr, Cu, Pb, Zn, Ag, Fe, Mn and L.O.I..

#### Mineralization

Several minor occurrences of barite were noted during the stream survey. Barite float found in a tributary which flows southward into Cuslett Brook was traced to its source, which consists of poorly exposed veins, <10 cm wide, cutting red mudstone. Similar barite veining occurs in a road cut on Route #8 about 500 m west and along strike from the stream occurrence.

#### St. Lawrence Area

During the 1983 field season, a major rock sampling program was carried out on the known fluorspar veins in the St. Lawrence area. The main purpose was to assess the barite potential of vein deposits of fluorite-barite mineraliz-

ation. Samples were also collected for use in a B.Sc. thesis study (being conducted at Memorial University of Newfoundland by C.J. Collins) on some aspects of the genesis of the ore deposits.

A total of 40 veins and showings were examined (Figure 2) resulting in the collection of more than 250 samples. Wherever possible, continuous sections were sampled across the entire width of the veins or as far as exposure would allow. Some veins and showings were sampled using grab samples of outcrop wherever possible. Some veins were not exposed at all, so there it was necessary to take grab samples of float or dump (trench or workings) material.

#### Conclusions

710 silt samples were collected from two project areas on the western Avalon Peninsula. In addition, more than 300 rock samples were collected from various veins and occurrences, including those in the St. Lawrence fluorspar district of the Burin Peninsula. Several new barite veins were discovered on the Avalon Peninsula, including a new barite-galena vein near Southern Harbour. Analyses of the stream sediment data will be released in 1984.

#### Acknowledgements

We gratefully acknowledge the competent assistance provided by Peter Bull and Karl Freake throughout the summer. Dr. Peter Davenport and Jim Butler were helpful on many occasions and their continuing help and interest are much appreciated. Wayne Ryder, Sidney Parsons, and David Warren cheerfully attended to our logistical needs. The help and encouragement of Paul Dean are also much appreciated.

#### References

- Butler, J. and Davenport, P.H.  
*this volume: Geochemical follow-up studies in eastern Newfoundland.*
- Davenport, P.H., Butler, A.J. and Howse, A.F.  
 1975: A lake sediment geochemical reconnaissance survey over the Harbour Main Group and Bull Arm Formation, Avalon Peninsula, Newfoundland. Newfoundland Department of Mines and Energy, Mineral Development Division, Open File 879.
- Howse, A.F. and French, V.A.  
 1983: Barite evaluation - eastern and western Newfoundland. In Current Research. Newfoundland Department of Mines and Energy, Mineral Development Division, Report 83-1, pages 150-156.

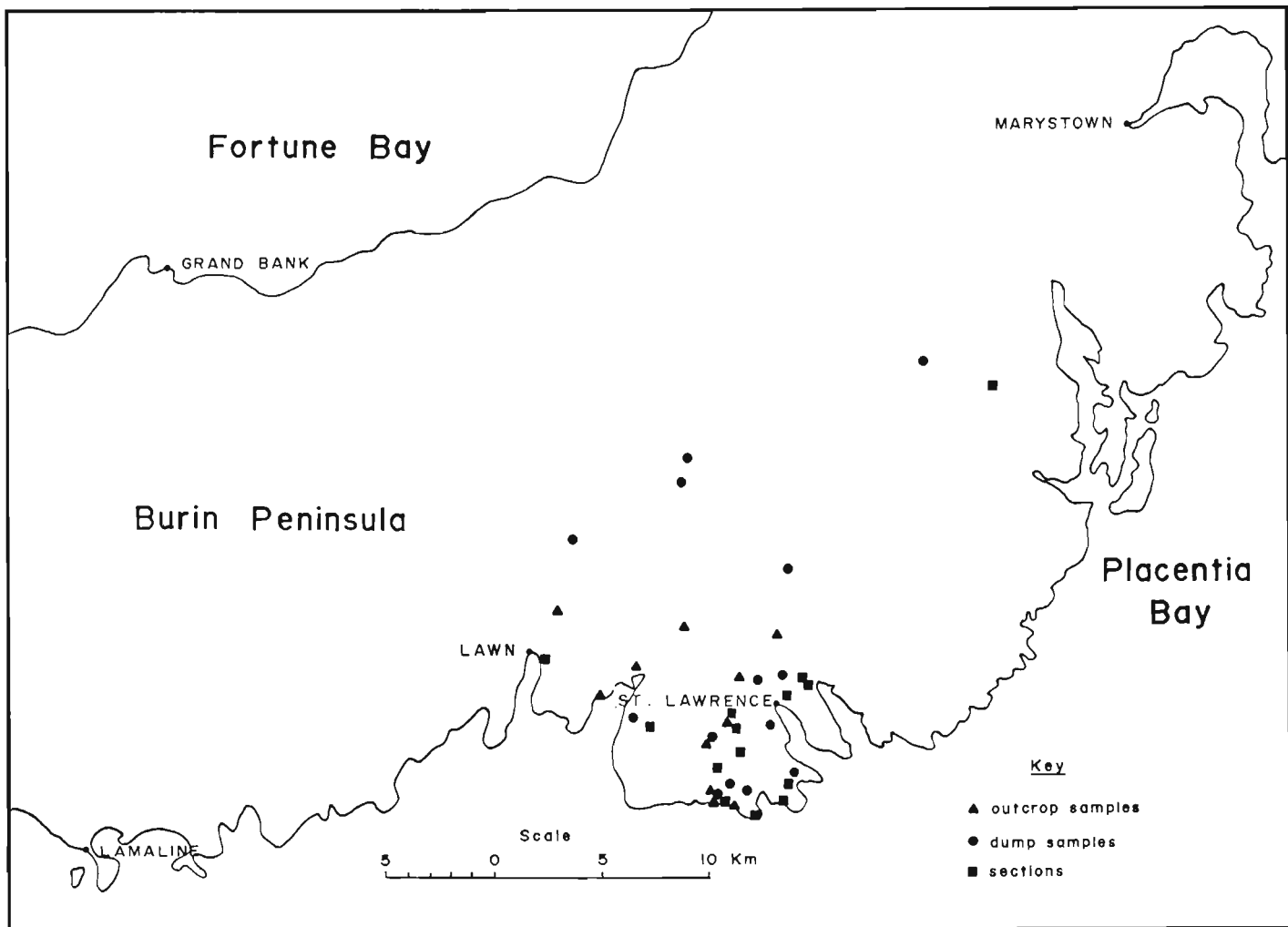
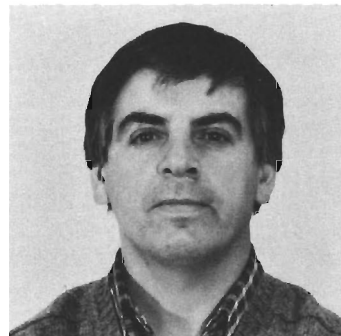


Figure 2: Sample sites, St. Lawrence area.

McCartney, W.D.  
1967: Whitbourne map area, Newfoundland. Geological Survey of Canada, Memoir 341, 135 pages.



A.F. Howse