

84-#220A - 12403  
3/85

REPORT ON  
STREAM SEDIMENT GEOCHEMICAL AND  
GEOLOGICAL SURVEYS  
ON THE  
BEN 1 AND 2 CLAIMS  
NEAR PORT MCNEILL, VANCOUVER ISLAND, B.C.

Nanaimo Mining Division  
NTS Map Area 92L/6  
Lat. 50° 22' N, Long. 127° 12.5' W

Owned by W.G. Smitheringale  
Operated by Vancouver Island Syndicate

Prepared by

W.G. Smitheringale, P. Eng.  
W.G. Smitheringale & Associates Ltd.

Submitted  
March 28, 1984

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

12,403

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## SUMMARY

The Ben 1 and 2 claims are located in the Nanaimo Mining Division, 28 km SSW of Port McNeill, northern Vancouver Island. They lie 27 km by the Keogh Main logging road south of the Island Highway.

The claims contain 23 units, they were recorded in April, 1982, they are owned by W.G. Smitheringale and are operated by Vancouver Island Syndicate.

The claims are underlain by Karmutsen basalt and Quatsino limestone. In places an interflow limestone unit is present near the top of the Karmutsen Formation. Bedding in both units generally strikes northwesterly and dips 20° to 40° southwestward. In one place a small gossan zone occurs near the base of the Quatsino Formation.

Stream silt samples from 21 localities were analyzed for Cu, Ag, As and Au. The results indicate that the drainage basins of two streams warrant investigation. Two other drainage basins are marginally anomalous.

The cost of the program was \$2,556.78.

## **INTRODUCTION**

### **Location and Access (Figure 1)**

The Ben 1 and 2 claims are located in northern Vancouver Island, 28 km SSW of Port McNeill, as follows:

Lat. 50° 22' N, Long. 127° 12.5' W  
NTS Map Area 92L/6  
Nanaimo Mining Division

Access is via the Island Highway to 3 km west of the Port McNeill turn off, then south for 27 km on the Keogh Main logging road.

About one third of the area covered by the claims is occupied by Iron Lake and adjacent flat, swampy areas. The remainder of the area is characterized by moderate to steep slopes, most of which are traversed by logging spur roads. Raging River flows northward through the property into Iron Lake. Numerous small streams flow into Raging River and Iron Lake. In places some of these flow through deep gulleys with steep to vertical sides. Karst topography is prevalent in the southeast corner of Ben 1, east of Raging River. Most of the property has been logged or is currently being logged.

### **Property Description**

Ben 1 claim: 15 units, record number 1125, expiry date - April 2, 1984.

Ben 2 claim: 8 units, record number 1126, expiry date - April 2, 1984.

The claims are owned by W.G. Smitheringale, who holds the title in trust for Vancouver Island Syndicate and W.G. Smitheringale & Associates Ltd. The operator of the property is Vancouver Island Syndicate.

The claims were staked in March, 1982, on the basis of several anomalous stream sediment samples that were collected during a reconnaissance exploration program in 1981. To the writer's knowledge the area of the claim has not been staked before,

### LEGEND

- Jg ISLAND INTRUSIONS  
granite
- IJB BONANZA VOLCANICS  
basalt to rhyolite, minor argillite
- uRPB Parson Bay  
calcareous siltstone and related sediments
- uRo QUATSINO LIMESTONE
- muRk KARMTSEN VOLCANICS  
basalt

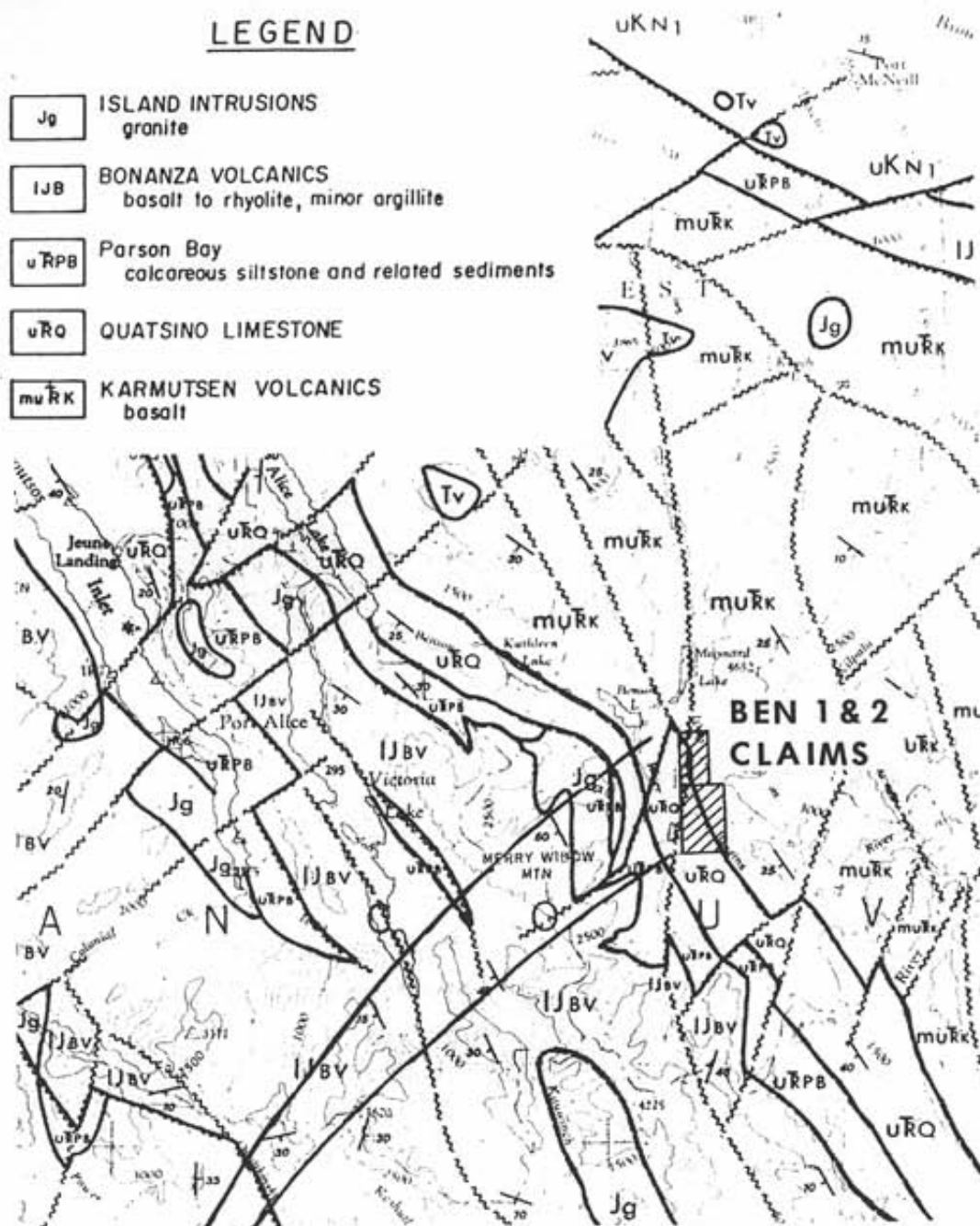


FIGURE 1

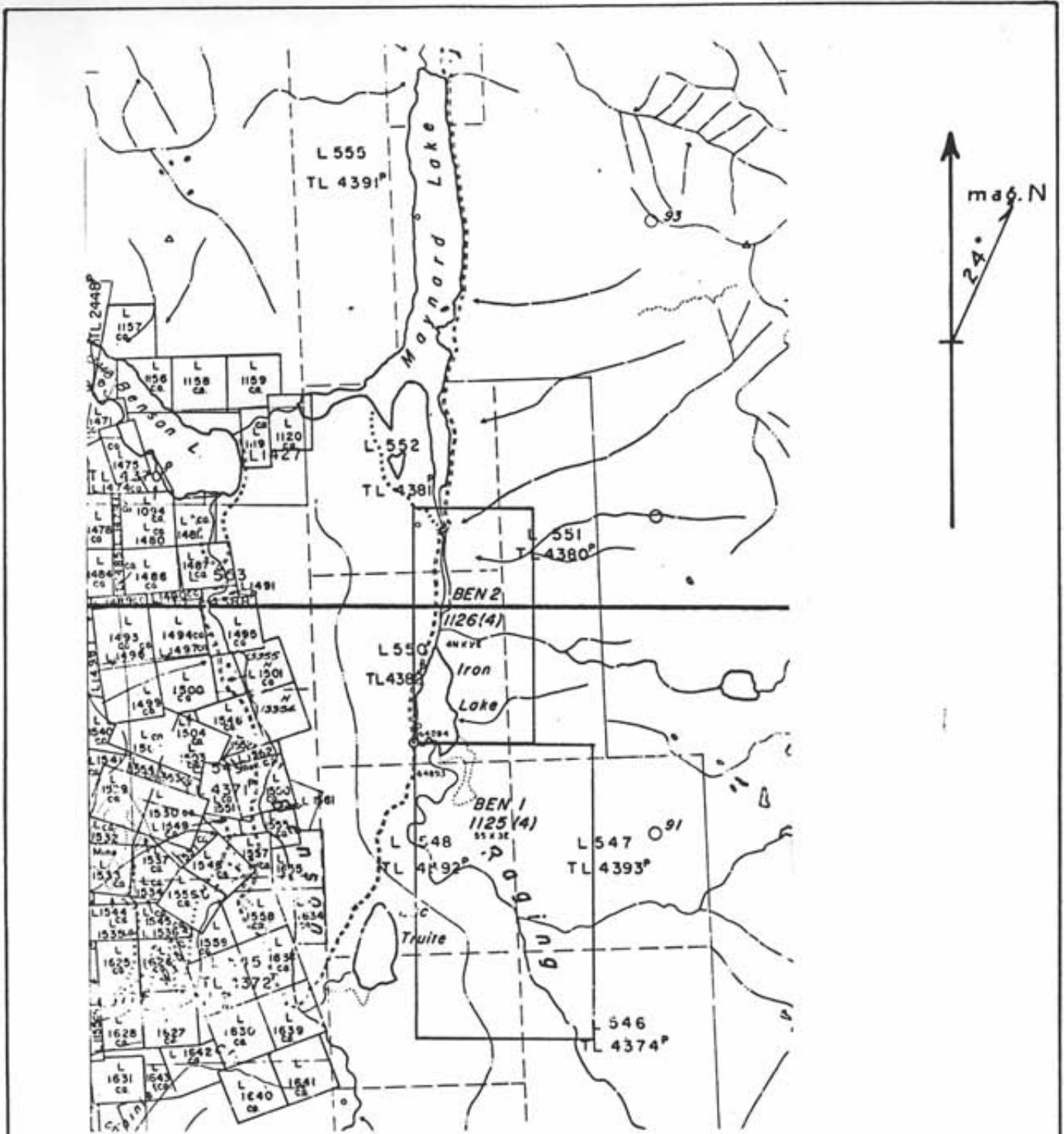


### VANCOUVER ISLAND SYNDICATE

## BEN 1 & 2 CLAIMS LOCATION AND REGIONAL GEOLOGY

scale 1:250,000





92 L-6 E

FIGURE 2

<b>VANCOUVER ISLAND SYNDICATE</b>
BEN 1 & 2 CLAIMS
CLAIM MAP
scale 1:50,000
0 1 2 km
W.G. SMITHERINGALE & ASSOCIATES LTD. MAR. 28 1984

although 1 km to the west numerous Crown-granted claims cover the Old Sport, Benson Lake, Rainier and adjacent properties.

In 1983 the claim was maintained in good standing by paying cash in lieu of assessment work. The exploration program described in this report is the first exploration work done on the claim.

### **Summary of Work Done**

During March 6th to 9th, 1984, the following work was done on the Ben claims:

1. Stream silt geochemical survey: sieved silt samples were collected from 21 localities. These were analysed for Cu, Ag, As and Au.
2. Geological mapping: the central portion of the claims, comprising an area of about 10 units (2.5 sq. km) was mapped on a scale of 1:10,000.

## **TECHNICAL DATA AND INTERPRETATION**

### **Regional Geology**

Most of northern Vancouver Island is underlain by a conformable sequence consisting, in order of decreasing age, of basaltic rocks known as the Karmutsen Formation, limestone known as the Quatsino Formation, calcareous siltstone and shale known as the Parson Bay Formation, greywacke, argillite and tuff known as the Harbledown Formation and andesitic to rhyodacitic lava, tuff and breccia known as the Bonanza Volcanics. The age of the Karmutsen, Quatsino and Parson Bay formations is Late Triassic and the age of the Harbledown Formation and Bonanza Volcanics is Early Jurassic. These rocks are intruded by stocks and batholiths of quartz diorite and quartz monzonite of Middle Jurassic age that are known as the Island Intrusions.<sup>1</sup>

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1. Muller, J.E., Northcote, K.E. and Carlisle, D., 1974: Geology and Mineral Deposits of Alert-Cape Scott Map-Area, Vancouver Island, British Columbia; Geol. Surv. Canada paper 74-8, with geological map.

In the area of the Ben claims Karmutsen, Quatsino, Parson Bay and Island Intrusion units are present. The stratified rocks generally strike northwesterly to northerly and dip southwestward. A northwesterly elongated stock of monzonite, diorite and gabbro lies 2.5 km west of the property. The entire sequence is cut by northerly to northeasterly trending faults, most of which show a right lateral displacement (Figure 1).

A number of skarn deposits of Cu and/or Fe one to three km west of the Ben claims are hosted by Karmutsen, Quatsino and Parson Bay rocks adjacent to the above mentioned stock. Some contain Zn or Au. Six of the deposits have production records, the largest two being the Old Sport Mine, which produced over 2 million tons of ore averaging about 2% Cu, 0.05 oz. Au/t and 0.2 oz. Ag/t, and the Merry Widow-Kingfisher deposits, which produced 3.7 million tons of iron ore.

### **Property Geology (Figure 3)**

The property is underlain by Karmutsen basalt and Quatsino limestone. The contact runs north-northwesterly across the property, with Karmutsen on the east side and Quatsino on the west side.

The Karmutsen basalt is dark green, massive and dominantly fine grained. In a number of outcrops it is amygdaloidal. A few outcrops display pyroxene phenocrysts. In places, e.g. about 200 m east of sample 84-B-6 and in the quarry near the southeast corner of Iron Lake, there is a bed of limestone about 10 m thick within the Karmutsen Formation. It is light grey, fine grained and massive to indistinctly bedded. Its contact with the underlying and overlying basalt appear to be comfortable, at least on a broad scale. These beds appear to be within 200 m of the top of the Karmutsen. It is not known if they are the same bed or two different beds.

The Quatsino limestone is medium grey, fine grained and generally massive. Near its base it is commonly distinctly to indistinctly bedded. The Karmutsen-Quatsino contact is exposed along the creek between samples 84-B-2 and 84-B-3. The contact there appears to be conformable. The area south of this creek and east of Raging River is underlain by Quatsino limestone in which numerous sink holes, some over 15 m across and 10 m deep, have developed.



Bedding in the Karmutsen and Quatsino units generally strikes northwesterly and dips 20° to 45° southwestward. No major folds were detected. The only fault observed was east of sample 84-B-2, and this north striking fault does not appear to be a major structure.

The only mineralization observed was a gossan zone near the base of the Quatsino limestone that is exposed in a steep creek wall about 90 m east of sample 84-B-2. The zone is about 1 m thick, 8 m long and is conformable to bedding. The zone was inaccessible because of high water in the creek.

### **Stream Silt Geochemical Survey**

The purpose of the silt survey was to confirm two weak Cu anomalies in silt samples collected during a reconnaissance program in 1981 and to locate their source.

Silt samples were collected from 21 localities on the Ben 1 and 2 claims. Three samples were collected from Raging River, the rest are from fifteen small to fairly large creeks flowing into Raging River or Iron Lake.

The drainage basins of eight of these creeks contain either the Karmutsen-Quatsino contact or the top one or two hundred metres of the Karmutsen.

### **Sampling Method**

Sufficient material from the active part of a stream bed was sieved through a 20 mesh sieve to yield about 0.5 kg of -20 mesh silt. This sample was placed in a wet strength kraft envelope and submitted to Min-En Laboratories Ltd. of North Vancouver, B.C., for analysis of the heavy mineral fraction. The low specific gravity minerals (less than 3.1) were removed using heavy liquid flotation and the resulting heavy mineral concentrate was analyzed for Cu, Ag, As and Au by atomic adsorption.

### **Sample Results and Discussion**

The sample sites are shown on Figure 3 and a copy of the analysis certificate appears in the Appendix.

The 1981 reconnaissance survey data indicates a threshold value for Cu in areas of Karmutsen rocks of about 120 ppm. The samples collected in March, 1984, ranged from 53 ppm to 425 ppm Cu. Samples 84-B-1 (165 ppm Cu), 84-B-2 (122 ppm Cu), 84-B-10 (425 ppm Cu) and 84-B-14 (128 ppm Cu) are possibly anomalous, assuming a threshold value of 120 ppm. The weak Cu anomalies obtained in the 1981 reconnaissance survey were confirmed as possible marginal anomalies by samples 84-B-2 (122 ppm compared to 124 ppm in 1981) and 84-B-15 (117 ppm compared to 134 ppm in 1981).

### **Interpretation**

Geological mapping indicates that Ben 1 and 2 claims have similar geology to that in the vicinity of the Old Sport Mine. Mineralization at the Old Sport occurred along the Karmutsen-Quatsino contact and in a skarn horizon near the top of the Karmutsen that may have developed from an interflow limestone horizon. On the Ben property the Karmutsen-Quatsino contact runs through both claims and, at least in places, the upper part of the Karmutsen contains a limestone horizon. The gossan zone east of 84-B-2 indicates that mineralization of some type, albeit very local and not economically significant, occurs near the bottom of the Quatsino.

The results of the stream silt geochemical survey indicate that the drainage basins for the creeks from which samples 84-B-1 and 84-B-10 were collected warrant investigation. The area drained by the two creeks represented by samples 84-B-14 and 84-B-15 may be anomalous. The gossan zone described above may be responsible for the marginally anomalous sample 84-B-2 (also anomalous in the 1981 reconnaissance survey). This zone should be examined when the water in the creek is low.

### ITEMIZED COST STATEMENT

#### Wages:

W.G. Smitheringale, P. Eng.

Travel, Vancouver to Port McNeill - March 5, 1984 - 1 day

Field work, March 6 to 9, 1984 - 4 days

Report preparation, March 27, 28 - 2 days

7 days @ \$200/day \$ 1,400.00

#### Meals and Accommodation for 1 man at Port McNeill:

<u>Date</u>	<u>Meals</u>	<u>Accommodation (Dalewood Inn)</u>	
March 5	\$10.63	\$ 17.86	
6	21.53	17.86	
7	19.80	17.86	
8	19.35	17.86	
9	<u>23.35</u>	<u>17.86</u>	
	\$94.66	\$ 89.30	183.96

#### Transportation:

Station Wagon rental from

W.G. Smitheringale & Associates Ltd.

5 days @ \$150/week 107.14

885 km @ 10¢/km 88.50

Gasoline 66.42 262.06

#### Sample Preparation and Analysis:

21 samples @ \$30.65 each 643.65

#### Miscellaneous Expenses:

Maps and field supplies 15.40

Typing report 41.90

Map reproduction and xeroxing 9.81 67.11

Total \$ 2,556.78

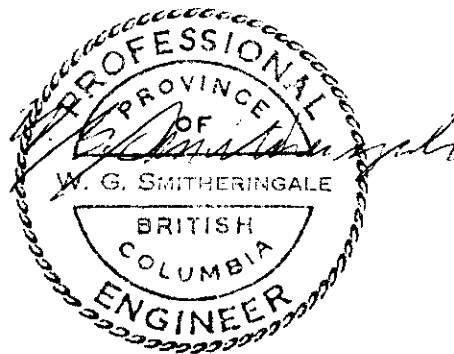
The cost of the silt survey was:

Sampling - 3.5 man days	\$ 700.00
Analysis	<u>643.65</u>
Total	\$ 1,343.65

The cost of report preparation was:

Writing and drafting - 2 days	\$ 400.00
Typing	41.90
Xeroxing, map reproduction and supplies	<u>16.21</u>
Total	\$ 458.11

Respectfully submitted,



W.G. SMITHERINGALE & ASSOCIATES LTD.  
W.G. Smitheringale, Ph.D., P. Eng.

March 28, 1984

### CERTIFICATION

I, William G. Smitheringale, certify that:

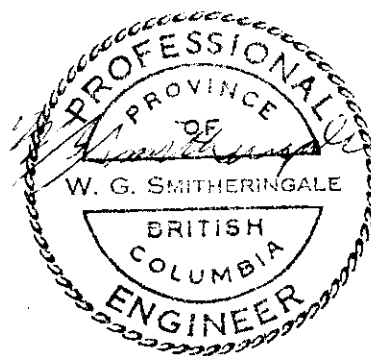
I am a practising Professional Geological Engineer, resident at 2008 Fullerton Avenue, North Vancouver, B.C.

I am a graduate of the University of British Columbia with a degree in Geological Engineering (B.Ap.Sc., 1955) and of the Massachusetts Institute of Technology with the degree of Doctor of Philosophy in Geology (Ph.D., 1962).

I have practised my profession continuously for twenty-two years as Geologist with the Geological Survey of Canada, as Assistant and Associate Professor, Department of Geology, Memorial University of Newfoundland and, since 1974, as a Consulting Geologist.

I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia (Registration No. 10,802).

This report is based on field work conducted by me on March 6th to 9th, 1984.



W.G. SMITHERINGALE, Ph.D., P. Eng.

March 28, 1984

**APPENDIX**

**CERTIFICATE OF ANALYSIS**

GEOCHEMICAL ANALYSIS CERTIFICATE

COMPANY W.G. SMITHERINGALE  
PROJECT BEN  
ATTENTION W.G. SMITHERINGALE

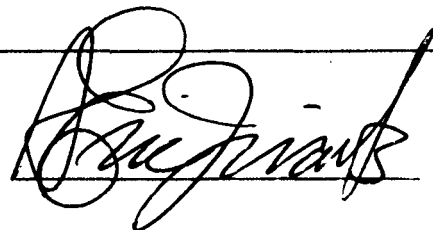
FILE NO 4-126  
DATE MARCH 23/84

We hereby certify that the following are the results of the geochemical analysis made on 21 samples submitted.

SAMPLE NUMBER	CU PPM	AG PPM	AS PPM	AU PPB	HM %
84-B-1	165	1.3	3	5	26.39
84-B-2	122	1.2	3	5	21.58
84-B-3	94	0.9	4	10	27.06
84-B-4	90	1.3	6	5	38.33
84-B-5	106	1.2	5	5	36.19
84-B-6	79	1.6	4	10	9.27
84-B-7	100	1.6	7	45	43.43
84-B-8	107	1.4	2	10	17.35
84-B-9	109	1.3	4	5	18.96
84-B-10	425	0.9	2	25	16.57
84-B-11	104	1.2	3	10	22.03
84-B-12	105	1.1	4	5	26.47
84-B-13	59	1.2	4	45	16.30
84-B-14	128	1.1	3	5	31.45
84-B-15	117	0.9	4	5	21.18
84-B-16	71	1.3	2	10	18.59
84-B-17	78	1.0	3	5	18.31
84-B-18	67	1.4	5	20	15.32
84-B-19	96	1.3	4	5	27.93
84-B-20	53	1.4	4	15	5.24
84-B-21	65	1.3	<1	10	3.23

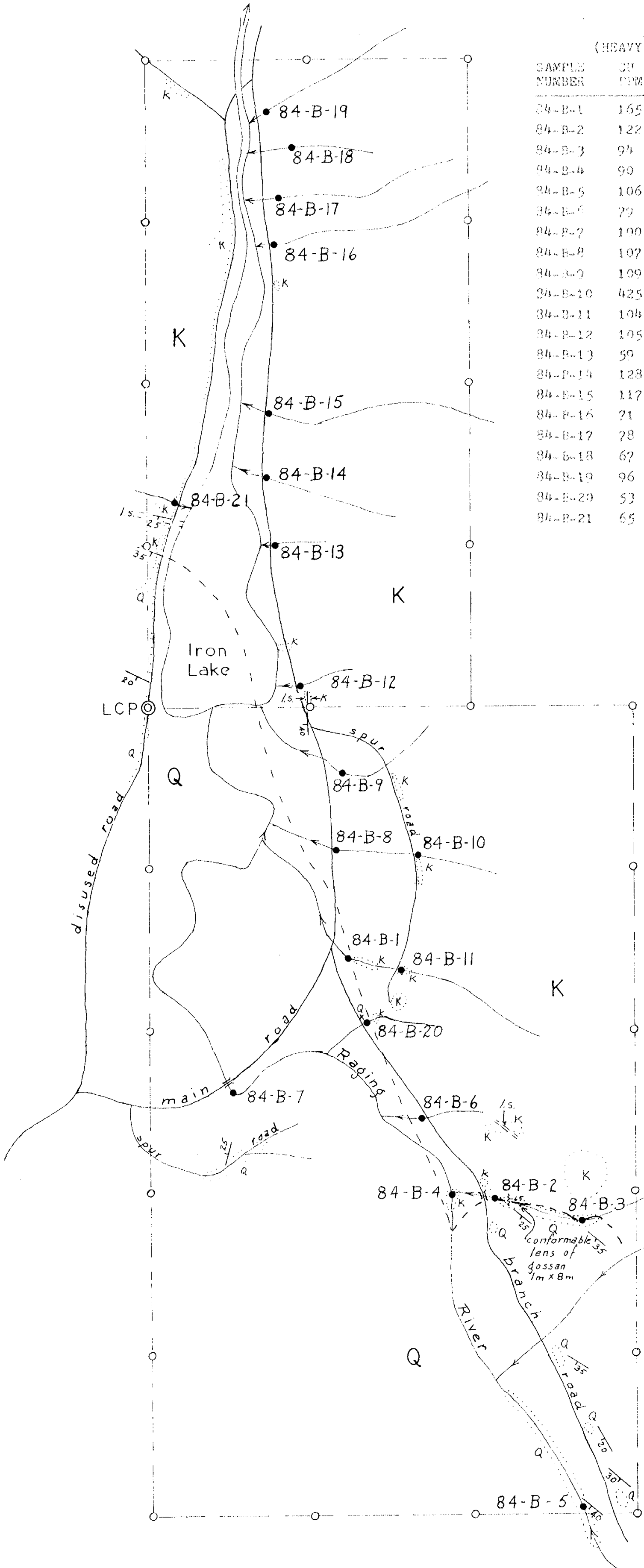
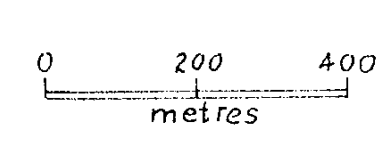
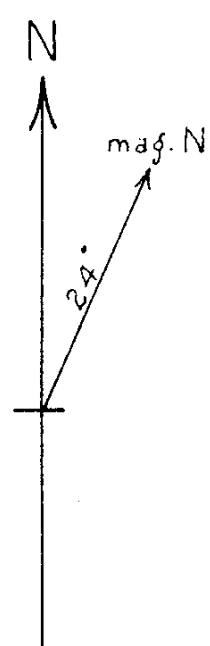
\*HEAVY MINERALS

Certified by



SILT ANALYSES  
(HEAVY MINERAL FLOTATION)

SAMPLE NUMBER	CU PPM	AG PPM	AS PPM	AU PPB	HM %
84-B-1	165	1.3	3	5	26.39
84-B-2	122	1.2	3	5	21.58
84-B-3	94	0.9	4	10	27.06
84-B-4	90	1.3	6	5	38.33
84-B-5	106	1.2	5	5	36.19
84-B-6	79	1.6	4	10	9.27
84-B-7	100	1.6	7	5	43.43
84-B-8	107	1.4	2	10	17.35
84-B-9	109	1.3	4	5	18.96
84-B-10	425	0.9	2	25	16.57
84-B-11	104	1.2	3	10	22.23
84-B-12	105	1.1	4	5	26.47
84-B-13	59	1.2	4	45	16.30
84-B-14	128	1.1	3	5	31.45
84-B-15	117	0.9	4	5	21.18
84-B-16	71	1.3	2	10	18.59
84-B-17	78	1.0	3	5	18.31
84-B-18	67	1.4	5	20	15.32
84-B-19	96	1.3	4	5	27.93
84-B-20	53	1.4	4	15	5.24
84-B-21	65	1.3	1	10	3.23



LEGEND

- 84-B-1 stream silt sample location
- — ○ — claim boundary
- ⋯ area of outcrop
- x individual outcrop
- 30° bedding
- — — geological contact: observed, assumed
- 60° ~ ~ ~ fault
- K Karmutsen volcanics
- l.s. limestone member within Karmutsen
- Q Quatsino limestone

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

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FIGURE 3

VANCOUVER ISLAND SYNDICATE

BEN 1 & 2 CLAIMS  
Nanaimo Mining Division, Vancouver Island, B.C.

1984 EXPLORATION PROGRAM  
STREAM SILT SAMPLE AND GEOLOGY MAP  
Scale 1:10,000

W.G. Smitheringale & Associates Ltd.  
March 28, 1984