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## REPORT ON THE GEOLOGICAL

## EXAMINATION

AND

RECONNAISSANCE EXPLORATION WORK

OF

THE BRAVO PROPERTY

Lat. 51 20'N; Long. 122 25' 30"W

N. T. S. 92 0/8

CLINTON M. D.

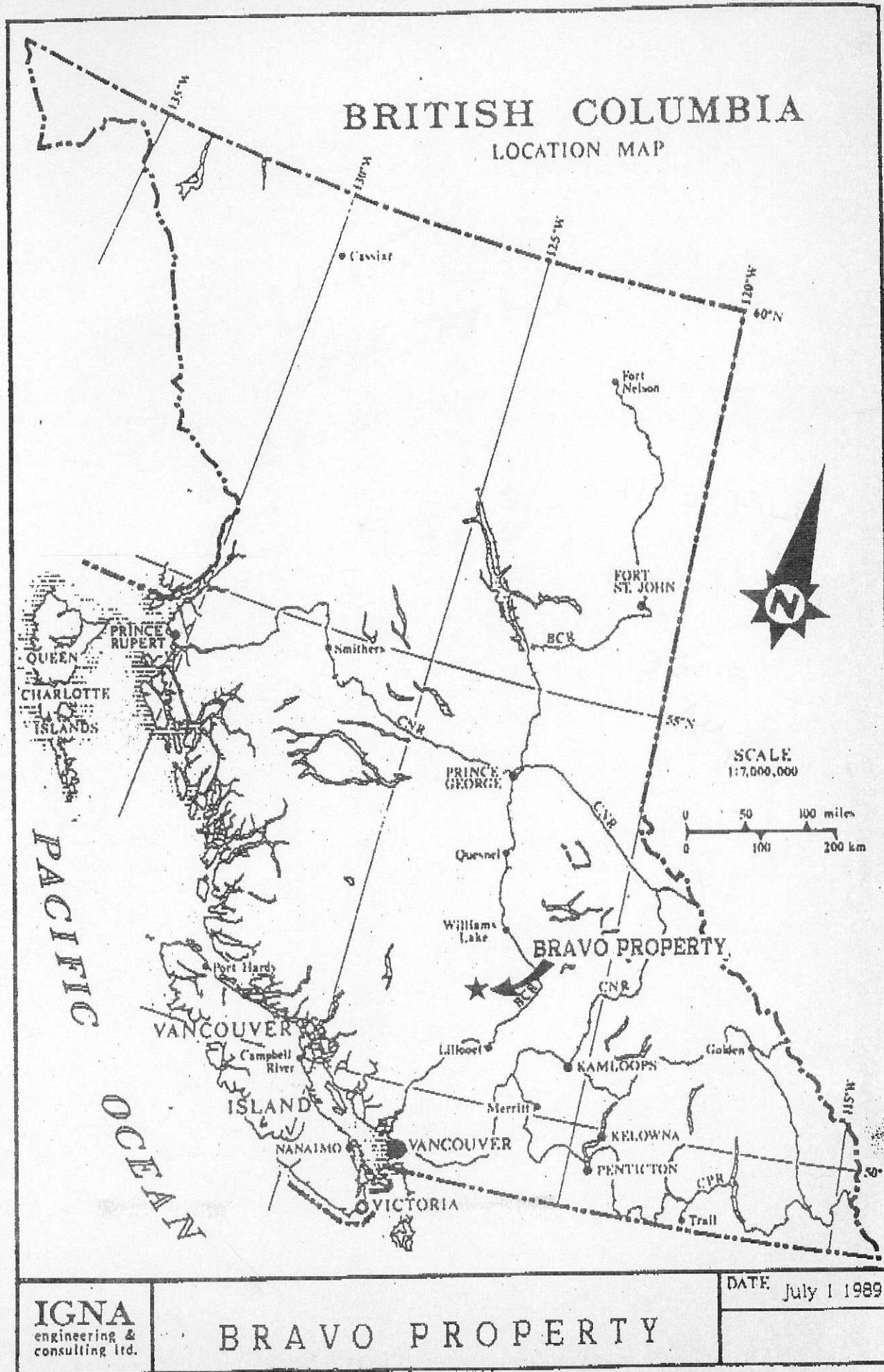
SUMMARY AND EVALUATION

for

G. BRAVO AND G. BIASON

by

I. BOROVIĆ, P. Eng.  
geologistVANCOUVER, B. C.  
July, 2 1989.



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## SUMMARY CONCLUSIONS AND RECOMMENDATION

The Bravo property is located on the slopes of the Black Dome Mountain and straddles Porcupine Creek about 3.5 km east of Blackdome Mine; 107.0 km west of Clinton, B. C.

The property is composed of 2 located mineral claims with a total of 22 units.

The area of the Black Dome Mountain is underlain by early to mid-Tertiary volcanic rocks and associated volcanoclastic sediments, cut by narrow intermediate to mafic dykes.

The volcanic horizons strike NNE with shallow 10-20 dips to the southeast. Tension fractures are the loci of the epithermal, precious metal-bearing veins. The fractures were apparently, the result of uplift by volcanic doming. Minor normal faulting effects dislocation of some units and preserves some erosional remnants of younger rocks.

The gold and silver mineralization occurs in typical epithermal quartz veins, most of which are hosted by rhyolite and dacitic andesite.

Mineral exploration of the area started with exploration on gold and silver mineralization found during 1947 work on and around the Black Dome Mountain and Porcupine Creek area.

The observed geological and structural relations during the writer's reconnaissance geological and soil surveys show that gold, silver mineralization contained in quartz veins within the volcanic and volcanoclastic formations could also underly the Bravo property.

The property is well located with respect to potentially favorable geological environs, strong faulting, folding, fracturing and intrusive contacts.

It appears that the property's geological, structural and mineralogical relations point to the possibility of finding a mineral deposit in the property area. Ease of access, excellent location and proximity to the facilities of the Blackdome Mine add to the property's potential economic value.

Therefore a comprehensive basic mineral exploration program is strongly recommended.

It is the writer's opinion that detail mapping, sampling, geochemical and geophysical surveys followed by surface trenching have to be done before a comprehensive evaluation of the property's mineral potential should take place.

An essential operation in an exploration program is an economic appraisal at each critical juncture in addition to the feasibility study prior to development. The present value of the exploration venture at any time in its history should have a marked impact on the design of the remainder of the exploration program.

The exploration program is therefore to consist of two phases, whereby the second phase is dependant on the results of the first phase.

#### EXPLORATION PLAN AND ESTIMATED BUDGET 1989.

Exploration work should start by surveying of the grid over the whole property; grid lines running in the easterly direction in order to crosscut possible northerly striking mineral bearing structures.

Geological detail mapping, detail soil, VLF-EM and ground magnetic surveys, at an estimated cost of \$ 57 000.00 in the Phase I should be done in order to evaluate mineral potential of the property.

##### PHASE 1

Geology, engineering, supervision, mapping.....\$	9 000.00
Room & Board.....\$	3 000.00
Line cutting (50 km @ \$ 200.00/km.....)\$	10 000.00
Geochemical soil survey (50 km lines).....\$	6 000.00
VLF-EM (50 km @ \$150.00/km).....\$	7 500.00
Ground magnetic survey (50 km @ \$ 80.00/km) ..\$	4 000.00
Transportation (vehicle rental, fuel).....\$	3 000.00
Trenching.....\$	5 000.00
<b>Total</b>	<b>\$ 47 500.00</b>
Admin., office and misc. (20% of total).....\$	9 500.00
<b>Total Phase 1.....\$</b>	<b>57 000.00</b>

##### PHASE 2

Geology, engineering, supervision, evaluation.\$	35 000.00
Room & Board.....\$	10 000.00
Bulldozer support.....\$	5 000.00
Diamond drilling.....\$	350 000.00
Assaying.....\$	20 000.00
Transportation.....\$	10 000.00
<b>Total</b>	<b>\$ 420 000.00</b>
Admin. office and misc. (20% of total).....\$	84 000.00
<b>Total Phase 2.....\$</b>	<b>504 000.00</b>

## INTRODUCTION

Mr. G. Bravo and Mr. G. Blason of Vancouver, B.C. owners of the Bravo property have asked the writer to examine the Bravo property and write an evaluation of its mineral potential.

The following report is a summary of information obtained from the various published reports which are listed in the Bibliography on page 9; from the writer's personal knowledge and experience gained through research and work on similar style deposits and also from the personal examination and work on the Bravo property. The writer visited and examined the property on June 19. and 20. 1989.

## PROPERTY

### Location:

(see Location Map B. C.)

Lat: 51 20'N; Long: 122 25' 30"W; N. T. S. 92 Q/8  
Clinton Mining Division.

The property is situated on the slopes of the Black Dome Mountain, Camelsfoot Range. It straddles Porcupine Creek. It is 3.5 km east from Blackdome Mine, and 77.0 km westnorthwest from Clinton B. C.

### Access

The property is reached by 140.0 km of Empire Valley gravel road leading westerly from provincial highway #97 starting 18.0 km north of Clinton.

The old Porcupine Creek road passes through the middle of the property and Blackdome Mine access road passes about 150.0 metres from the northern end of Bravo #1 claim.

### Claims:

(Fig. 2)

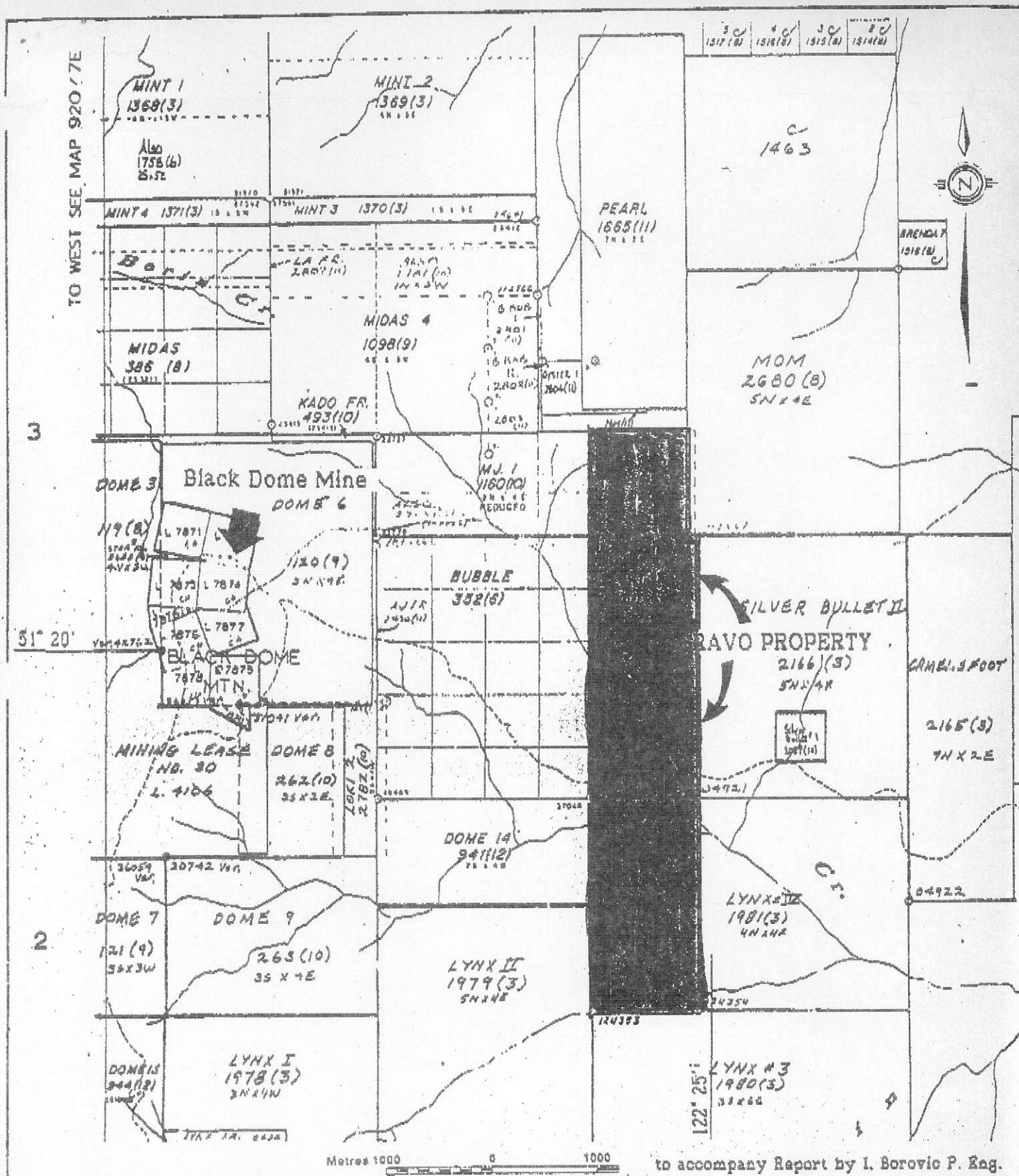
The Bravo property is composed of 2 located mineral claims with total of 22 units as follows:

Claim	No. of Units	Rec. #	Aniv. Date
BRAVO # 1	14	2072	9/18/89
BRAVO # 2	8	2703	9/18/89

### Owners:

[REDACTED] vo  
[REDACTED]  
[REDACTED]  
[REDACTED] 517969





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**BRAVO PROPERTY**

## Claim Map

Scale:

N.T.S. 92 0/8

Date: July 1 1989

Figure: 1

1

Titles to the Claims have been examined by the writer in the Mining Recorder's offices in Vancouver, B. C. and found to be in order. Title is held by Mr. Gianpietro Bravo.

#### **Climate**

The area is part of subalpine country with moderate to high snow cover and severe winters. Precipitation is high from 40 to 180 cm.

#### **Physiography**

The Bravo property is located within the Camelsfoot Range of the Fraser Plateau area of central B. C. The area is characterised by high peaks (to 7500') and deeply incised creek valleys. Most of the area below 6500' is wooded with spruce, alpine fir, pine Douglas fir, alpine larch etc.

#### **Facilities and Services:**

Room and board for the exploration crew is available on timely request in the accommodations of the Blackdome Mine some 3.5 km west from the Bravo property.

#### **Property facilities:**

Timber and water for drilling is available on the property from the Porcupine Creek and its tributaries.



## G E O L O G Y

### Regional Geology

(Tipper, H. W. 1978, Vivian, G. et al 1987; Faulkner, E. L. 1986; Church, B. N. 1980, 1982 and 1987)  
(Fig. 2)

The region is underlain by Cretaceous and Tertiary volcanic and volcanoclastic rocks and related feeder dykes.

### The Black Dome Mountain Area

The area of the Black Dome Mountain is underlain by rocks of early to mid-Tertiary volcanic rocks and associated volcanoclastic sediments, cut by narrow intermediate to mafic dykes.

Lower Miocene to Upper Oligocene porphyritic basalt flows are the youngest rocks of the sequence. Underlying the basalts is a series of Eocene porphyritic andesite flows. A thin, irregular and discontinuous clastic unit underlies the porphyritic andesite.

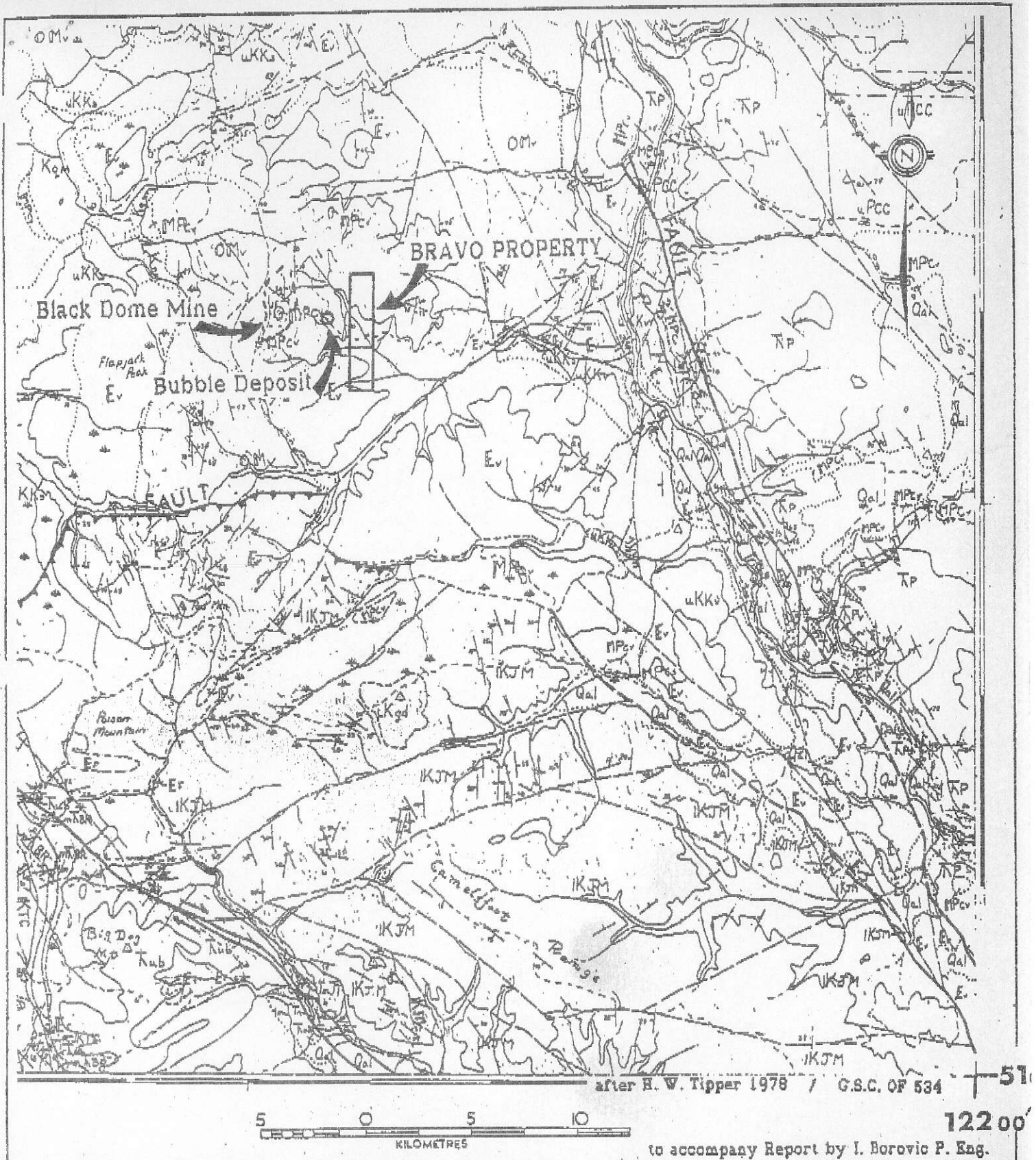
This unit, which is up to 30 m thick, varies from a volcanoclastic sandstone to coarse agglomerate with mafic bombs up to 40 cm long. A "chaotic rhyolite" unit, which underlies the porphyritic andesite is actually a mixture of volcanic wacke. Underlying "chaotic rhyolite" and beneath the clastic horizon at the base of the andesite unit, north and northeast of the "chaotic rhyolite", is a series of Eocene porphyritic dacite flows. Andesite flows (with propylitic alteration), tuffs and agglomerate underlie the dacite unit, constituting the oldest units on the property.

### Structure

A northeasterly trend dominates the structure of veins and host rocks in the main area as a result of tensional forces in the northwest-southeast direction during Eocene time. Blackdome Mountain and the dacitic domes form a northeasterly line of eruptive centres along the axis of a broad anticline with a shallow northeasterly plunge. Feeder dykes strike northeast. Flows generally strike northeast also, with gentle dips to the northwest or southeast seldom exceeding 20 degrees. The dips are not entirely depositional; in the Ridge zone, the direction of flow lineations and the direction of dip differ by up to 30 degrees, indicating that the ridge zone has been uplifted relative to the summit area.

### Mineralization

There are at least 12 quartz veins or vein systems within the Blackdome Mine area. Although the surface trace of some of the veins is sinuous, they generally strike north 40 degrees east, with moderate to steep northwesterly dips. The veins commonly follow shear zones. The veins occupy tensional openings; where movement on the faults has been determined, it is normal.



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## BRAVO PROPERTY Regional Geology

Scale:

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Figure: 2



The gold and silver mineralization occurs in typical epithermal quartz veins, most of which are hosted by rhyolite and dacitic andesite.

Above tree line the veins either outcrop or occur beneath areas containing quartz float. Below tree line they have been found by trenching precious metal soil geochemical anomalies.

The veins vary from a few centimetres to a few metres in width and from weak stringer zones to sheeted, vuggy veins composed almost entirely of quartz. The best precious metal values occur only in veins with a high percentage of quartz, but abundant quartz does not guarantee precious metal values.

## HISTORY OF EXPLORATION

The mineral prospecting in this area began with the discovery of gold-bearing quartz veins close to the summit of Black Dome Mountain in 1947 by L. Frenier. Empire Valley Gold Mines gained control of the property in 1952 and completed underground testing of the vein system. In 1953 Silver Standard Mines Limited secured an option and continued drilling and trenching. Following sharp increase in gold prices during 1977 Barrier Reef Resources Ltd. initiated another period of strong exploration activity of the area which continued under Blackdome Exploration Ltd and resulted in opening of the Blackdome gold-silver mine.

In early 1980th The Bubble Hotspring Deposit was found on the old Porcupine Creek road about one km west of the Bravo property. (Fig. 3)

## FINDINGS 1989

### Geochemical reconnaissance survey (Fig. 3)

#### Survey control

The soil reconnaissance survey line was done in the northern part of the Bravo #1 claim

#### Sampling method

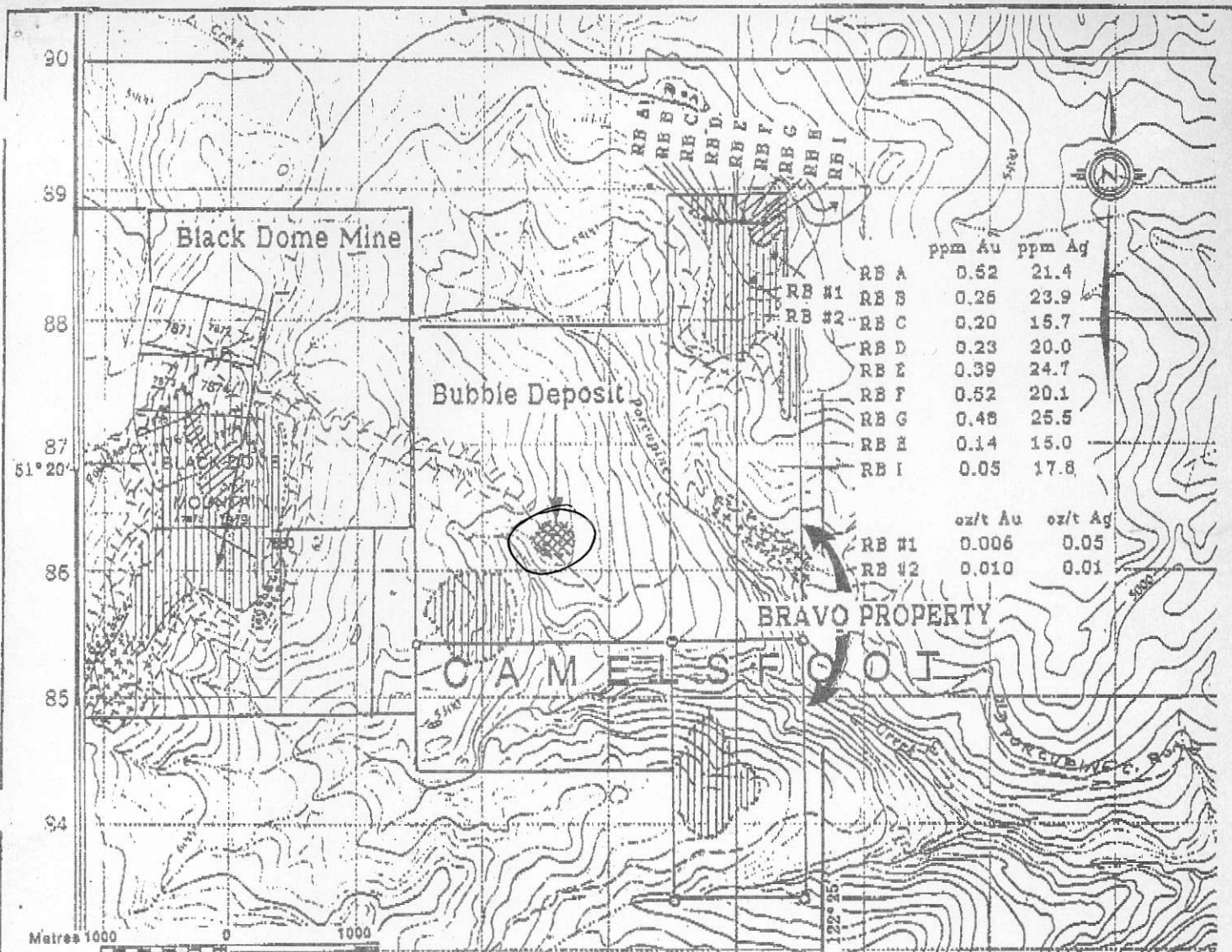
Samples were taken from the subcrop because real soil does not exist but only for a few cm from the surface in this area of the property.

The material was collected with a spoon; cleaned of larger size rocks and put in the standard soil sample envelope. Samples were collected at regular 50 m intervals along the line. Total of 9 samples was collected and assayed.

#### Analytical methods

Soil samples were dried, pulverized, screened to -80 mesh and subsequent analyses were done by General Testing Laboratories Ltd. of Vancouver, B.C.





	ppm Au	ppm Ag
RB A	0.52	21.4
RB #1	0.26	23.9
RB #2	0.20	15.7
RB D	0.23	20.0
RB E	0.39	24.7
RB F	0.52	20.1
RB G	0.48	25.5
RB H	0.14	15.0
RB I	0.05	17.8

	oz/t Au	oz/t Ag
RB #1	0.006	0.05
RB #2	0.010	0.01

## Reconnaissance Geology of the Bravo Property and Adjacent Areas

Bravo Property geology by I. Borovic 1989

adjacent areas by B. N. Church 1986(1987-1)

### LEGEND

#### MIocene

- Basalt lava and agglomerate
- Yellowstone siliceous sinter and obsidian

#### EOCENE

- Dacitic andesite domes
- Andesite lava and breccia
- Rhyolite lava and tuffs
- Aphyric dacite, andesite and basalt

subcrop sample----- RB A  
rock sample----- RB #1

Geological contact -----  
Fault -----  
Road -----  
Stream -----  
Claim group boundary -----  
Portal -----

*what is the  
Bubble  
deposit?*  
*B*

to accompany Report by I. Borovic P. Eng.

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**BRAVO PROPERTY**  
Geology

Scale:

N.T.S. 92 0/8

Date: July 1 1989

Figure: 3

Following are assay results:

Sample #	type	oz/t Au	% Ag
rock			
RB #1	grab(at random)	0.006	0.05
RB #2	grab(at random)	0.010	0.01
subcrop(thin soil)		ppm Au	ppm Ag
RB A		0.52	21.4
RB B		0.26	23.9
RB C		0.20	15.7
RB D		0.23	20.0
RB E		0.39	24.7
RB F		0.52	20.1
RB G		0.48	25.5
RB H		0.14	15.0
RB I		0.05	17.8

*High soils*

#### Comments:

Rock samples R #1 and #2 are quartz rich volcaniclastic rocks with no visible metallic mineralization. Basically assays show existence of gold and silver in this area.

Results of assays of subcrop-"soil" samples show very high gold and silver content. Gold assays are as high as 0.52 ppm or 0.52 g/t and silver assays are from 15.0 ppm = 15.0 g/t to 25.5 ppm = 25.5 g/t ( 1/2 ounce to 2/3 of an ounce of silver per metric tonne).

#### Reconnaissance geological mapping (Fig. 3; I. Borovic 1989)

The writer, accompanied by an assistant, walked accessible areas of the Bravo claims.

The most abundant rocks appear to be Eocene andesite lava and breccia outcropping in the southern and northern parts of the property.

Rhyolite lava and equivalent tuffs are outcropping on the Porcupine Creek road in the central part of the property and Andesitic breccias and possibly Miocene basalts are outcropping in the northern part of the property.

Main structural feature is series of strong quartz healed fractures striking 300 with dips 75 west to vertical and also crosscutting structure striking 20 with steep dips of 80 west.

## CONCLUSIONS AND RECOMMENDATIONS

The examination of the property supported by the study of available literature, results of reconnaissance sampling and writer's personal knowledge of the geology, structure and mineralization of the Blackdome Mine area has resulted in following conclusions;

- the property is well located;
- geological, structural relations and mineral paragenesis are similar to ones of the Blackdome Mine, Bubble Hotspring deposit and other gold-silver properties in the region;
- assays of samples collected by the writer show that gold-silver mineralization is located within the Bravo property area. This fact alone gives us enough encouragement to continue exploration of the whole Bravo property.

*what is the  
Bubble  
spring?*



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## C E R T I F I C A T E

I, Ignacije Borovic, of the city of Vancouver, B.C., do hereby certify that:

1. I am a member of the Association of Professional Engineers in the province of British Columbia.
2. I am employed by Igna Engineering and Consulting Ltd. with offices at 4258 West 10 th Avenue, Vancouver, B.C.
3. I am a graduate of the University of Zagreb, and I have practiced continuously as a geologist and graduate geological engineer since 1962.
4. I do not have any direct or indirect interest in the Bravo property
5. This report is based on research, study and evaluation work performed by me in the area of the Bravo property.

  
I. Borovic, P. Eng.

Vancouver, B.C.  
July 2, 1989.