

## Babs

**Model:** Porphyry (Au, Cu, Mo)

**Location:** NTS 93K/13W, 93L/16E  
Latitude 54 - 51' N  
Longitude 126 - 00' W  
East side of Babine Lake, 10 km SSE of the Granisle mine.

**Geology:** Eocene, biotite-feldspar porphyry host rocks similar to both the Granisle and Bell mines.

### Highlights:

- 150 x 500 m sub-angular float train consisting of 164 rock samples returned values form 0.135 to 1.3 g/t Au and 0.2 to 1.2 % Cu.
- DDH BB 92-6 0.34% Cu over 3m (hole tested only 3m of bedrock)

### Recommendations:

- Expose and sample the vein structure 600 m east of Gossan Road pit.
- Expand soil geochem grid to the south to cover open-ended southern extension of the IP chargeability anomaly.
- Drill test IP chargeability and high soil geochemical anomalies.
- - See updated report attached of D. HANSEN - TENG.

ATT. WAYNE ROBERTS  
Please find attached data in which I and partners have available for option.  
- D. HANSEN asked me to forward same to you.  
- IF further information required, I will be in VICTORIA until approx Feb 22nd  
Phone - 250-383-7181 before returning home.  
- Have support data for all properties (Geo-Chem or Geo-Physics) with exception of WMS properties W. of Kitimat

**AURORA GEOSCIENCES LTD. (GEOLOGY & GEOPHYSICS)**  
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*Randi Kede*

# BABS Porphyry Cu-<sup>Ag</sup> Property

by Daryl J. Hanson, P.Eng.  
January 19, 2004

Location: Latitude 54°51'N Longitude 126°00'W  
75 km east of Smithers on the east side of Babine Lake  
NTS: 093L 16E & 093K 13W  
Minfile: 093L 325  
Claims: Babs 1-6 (120 units), Omineca M.D.  
Access: From Topley to Michelle Bay and then via logging ferry across Babine Lake and then 9 km on the Nose Bay and Pat's Forest Service roads  
Owners: Ralph Keefe, Joseph Hidber  
Commodities: copper, gold

## Introduction and Purpose:

The Babs mineral property is located at the southeast end of the productive Babine Porphyry Camp which includes the Granisle and Bell past producers and the Morrison and Hearne Hill deposits. Prospecting on the Babs property has discovered a mineralized float train approximately 500 metres long by 150 metres wide and oriented at 130°. The float consists of greater than 100 angular cobbles and boulders to 1.5 metres in diameter of biotite-feldspar porphyry (BFP) similar to the Babine intrusions which host mineralization at the Granisle, Bell, and Morrison deposits. The cobbles and boulders contain chalcopyrite±magnetite porphyry-style mineralization with grades up to 1.2% copper and 1.3 g/t gold.

The purpose of this report is to present a brief summary of the geology, geochemistry and geophysics of the property, to interpret the results, and to make recommendations for further exploration.

## History<sup>1</sup>:

- 1991: prospector R. Keefe discovered mineralized boulders in a logging clear-cut
- 1992: Equity Silver Mines Ltd. optioned the property and completed 15 km linecutting; 6.0 km mag/VLF and IP; 4.0 km soil geochem (50 m intervals on lines 200 m apart); backhoe test pits; and 322 m of diamond drilling in 7 holes. The source of the boulders was not discovered.
- 1993: Noranda Exploration Company optioned the property and drilled 200.6 m in 2 holes. Subeconomic but significant copper mineralization (0.21 % Cu over 10.4 m) in sericite-clay altered felsic volcanoclastic rocks.
- 1994: Noranda Exploration Company completed 32.2 km of linecutting; 22.95 km of pole-dipole IP; 40.11 km of magnetic; 25 km<sup>2</sup> of geologic mapping; soil sampling (393 samples); rock sampling (15 samples); prospecting; and 196.8 m of

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<sup>1</sup> after Gray, 1996

diamond drilling in 2 holes. Subeconomic copper mineralization was intersected in hole NB94-10 including 0.19% Cu over 77.3 m in altered felsic volcanoclastics. The source of the BFP boulders was not discovered.

- 1995: Northern Dynasty Minerals Ltd. optioned the property and completed 46.2 km of linecutting; soil sampling (635 samples); prospecting (10 samples); and limited geologic mapping. Three copper soil geochemistry anomalies were identified (Main, Central, and Northwest).
- 1995-1996: Northern Dynasty Minerals Ltd. in a joint venture with Pacific Sentinel Gold Corp. completed 48.1 km of IP; 47.1 km of magnetometer; and drilled 1143.23 m in eight diamond drill holes. While some copper mineralization was encountered in felsic volcanoclastic rocks, the source of the mineralized boulders was not discovered.

### **Geology:**

Vast areas of the Babs claims are covered by glacial till of variable thickness. Surficial mapping by the BCGS in 1995 established the main iceflow direction toward 150° (Stumph et al, 1996).

The claims are mainly underlain by Early Jurassic Topley intrusive rocks. The area of the boulder train is underlain by weakly mineralized (up to 0.2% Cu) rhyolitic volcanoclastic rocks that most likely are contained in a graben structure within the Topley intrusions. These felsic volcanoclastic rocks have been correlated with the Babine igneous suite of Eocene age (MacIntyre et al, 1996) that hosts 30% of the Bell orebody (Dirom et al, 1995). A narrow, pyritic BFP dyke has been mapped (MacIntyre et al, 1996) crosscutting Topley intrusives approximately 1.25 km northwest of the boulder train.

For a complete discussion of the property geology, please refer to a *Summary Report on the Babine Project* by Michael Gray, 1996.

### **Geochemistry:**

A copper soil geochemistry anomaly centered on the boulder train and extending approximately 400 metres in the up-ice and down-ice directions has been identified. The anomaly is approximately 600 metres wide. Within the anomaly copper values were erratic with highs to 467 ppm copper.

### **Geophysics:**

IP surveys have outlined a 1.2 km by 0.5 km crescent-shaped chargeability anomaly, as defined by readings of greater than 10mV/V and up to 17mV/V. The anomaly overlaps the boulder train and partially overlaps a 700 metre by 200 metre magnetic low. The northern edge of the anomaly has been drill tested with negative results.

Four hundred metres northwest (up-ice) of the boulder train and coincident with the northern limit of the copper soil geochemistry anomaly, there is an ENE trending

series of magnetic lows in a topographically low area completely covered by glacial overburden. These magnetic lows are less than 400 metres from the northwest edge of the 10 mV/V IP chargeability contour.

#### **Interpretation:**

- A local up-ice source for the boulder train is interpreted based on the angular nature of the boulders and on the unlikely coincidence that glacial till with mineralized boulders would be deposited on top of mineralized bedrock if the mineralization is unrelated (Wojdak, 1996).
- Based on the magnetic signature, the width of the Eocene graben structure is estimated at greater than 2000 metres and extends from 800 metres east of the boulder train to the Nose Bay Road. (Note that DDH 96-14 and 96-15 are logged as fine grained Topley rhyolitic intrusive rocks but they could equally be interpreted as Eocene Babine rhyolites.)
- Based on drillhole information, the pyrite/chalcopyrite mineralization within the Eocene felsic volcanic rocks is part of a pyrite halo that has developed peripheral to a porphyry system.
- The magnetic lows coincident with the up-ice extent of the copper soil geochemistry anomaly, in part coincident with a weak IP chargeability anomaly, and 400 metres up-ice of the boulder train can be interpreted as a large, phyllic altered, partially mineralized BFP dyke where the overprinted alteration has destroyed the hydrothermal magnetite. Smaller, highly mineralized zones may be contained within this dyke and may be the source of the boulder train.
- Alternatively the boulder train may be sourced from a narrow BFP dyke cross-cutting the felsic volcanic rocks in the immediate area of the boulder train.

#### **Recommendations for Exploration:**

##### **Phase I**

Detailed magnetic and IP surveys should be conducted in a 2km by 1 km area on 200 m spaced N-S lines to more exactly define the ENE trending, large magnetic low and weak IP chargeability anomalies located 400 metres up-ice from the boulder train. Coincident magnetic and weak IP chargeability anomalies should be followed-up by diamond drilling.

##### **Phase II**

Coincident copper soil geochemistry and magnetic low anomalies on the perimeter of the 10 mV/V chargeability contour in the area west of drillhole 93-09 should be tested by diamond drilling.

##### **Phase III**

Reconnaissance scale IP and magnetic surveys should also be completed in the overburden covered area southwest of the boulder train which is interpreted to be underlain by Eocene volcanics.

## REFERENCES

- Dirom, G.E., Dittrick, M.P., McArthur, D.R., Ogryzlo, P.L., Pardoe, A.J., and Stothart, P.G. (1995): Porphyry Copper-Gold Deposits, Babine Lake Area, West-central British Columbia; *in* Porphyry Deposits of the Northwestern Cordillera of North America, Schroeter, T.G., Editor, *Canadian Institute of Mining, Metallurgy and Petroleum*, Special Volume 46, pages 247-255.
- Gray, M.J. (1996): Summary Report on the Babine Project (Babs Claims), unpublished report for Northern Dynasty Minerals Ltd. and Pacific Sentinel Gold Corp.
- MacIntyre, D.G., Webster, I.C.L., and Bellefontaine, K.A. (1996): Babine Porphyry Belt Project: Bedrock Geology of the Fulton Lake Map Area (93L/16), British Columbia; *in* Geological Fieldwork 1995, Grant B. and Newell, J.M., Editors, *B.C. Ministry of Energy, Mines and Petroleum Resources Paper 1996-1*, pages 11-35.
- Stumph, A.J., Huntley, D.H., Broster, B.E., and Levson, V.M. (1996): Babine Porphyry Belt Project: Detailed Drift Exploration Studies in the Fulton Lake (93L/16) and Old Fort Mountain (93M/01) Map Areas, British Columbia; *in* Geological Fieldwork 1995, Grant, B. and Newell, J.M., Editors, *B.C. Ministry of Energy, Mines and Petroleum Resources Paper 1996-1*, pages 37-44.
- Wojdak, P. (1996): BABS - Unusual Copper Mineralization in a Southern Extension of the Babine Porphyry Camp; *in* Exploration in British Columbia 1995, *B.C. Ministry of Employment and Investment*, pages 117-121

ABANDONED PIT

Nose Bay F.S.R.

PORPHYRY DYKE (4m)

Regional Glacier Trend 150'

692,000 E.

9619

+973

6,083,000 N.

Pat's Rd.

9614

9616

92-07

9615

94-10

94-11

9613

92-05

B.A.B.S. 1  
301370

B.A.B.S.  
301371

MAIN BOULDER FIELD

92-01

B.A.B.S.  
301373

EBr

B.A.B.S. 3  
301372

EBr

5  
75

+894

9617

scale: 1:10,000

⊗ mineralized float

--- mag. low contour

⋯ 10 mV/V chargeability contour

● copper in soil > 75 ppm

● DDH (pre 1995)

■ DDH (1995-96)

EJT  
Topley Intrusions

EBr  
Babine rhyolite

