DATA ANALYSIS

POTENTIAL FOR ECONOMIC PORPHYRY COPPER-GOLD DEPOSITS IN THE ASHNOLA-MCBRIDE CREEK AREA

NTS 92H/1W

by

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MAP

1. SUMMARY AND CONCLUSIONS

High precious metal content, discovered recently in the old drill core on the Lucky-Bill claims, has rekindled interest in the Ashnola-McBride Creek area that has a long history of exploration for porphyry copper deposits.

Mineralization of copper, gold and silver occurs in a breccia-pipe that is located peripheral to a quartz-monzonite porphyry deposit located near McBride Creek. The deposit contains below ore-grade copper and molybdenum mineralization.

The best precious metal intersection in the available core from the Breccia I averaged 1.11 g/t gold and 4.89 g/t silver across 11 metres. Associated copper content ranges from 500 ppm to 0.36%. The highest gold assay returned 2.39 g/t over 1.5 metre interval.

The breccia pipe measures 100 meters by 75 meters and appears to be one of many, intrusive related, structures exposed at different levels and related to undefined shallow pluton. Porphyry stocks and diatreme at the Ashnola Property is probably centrally located in the system whereas, breccia-pipes on the Lucky-Bill claims and vaguely defined "basal conglomerate breccia" in the Cool Creek area are the peripheral bodies.

The breccias generate poorly defined narrow precious metal anomalies, local base metal "highs" (Breccia I) and broader Sb, As, Ag anomalies (Cool Creek area). In the case of Breccia I, it is contrasting with significant increase of gold and silver at depth.

The porphyry system on the Ashnola Property, although centrally located, does not seem to have generated the heat and mineralizing fluids to produce ore grade copper-moly mineralization at the present level. Lack of geochemical gold indicators would also disqualify it as a potential target for precious metal mineralization. Consequently, high gold-silver grades in the periphery of the system related to breccia pipes must be somewhat younger, higher level mineralization, related to tectonic structures, ie: fault intersections or caldera related ring fracturing.

Significant precious metal mineralization and favourable geology make the area a worthy exploration target for breccia-pipe hosted copper-gold-silver deposits.

2. INTRODUCTION

Geographically the Ashnola-McBride Creek area is located in the Okanagan Range, approximately 40 km southeast of Princeton, B.C.

The area has been actively explored for copper-molybdenum deposits from 1961 to 1980. As a result, an extensive copper-porphyry system has been located between McBride and Cat Creek on the Ashnola property. However, the copper grades were low (0.17% Cu over 152 metres) and the increase of molybdenum grades with depth was not significant enough to warrant further work.

In 1987, analysis of old drill core from a hole drilled approximately 3 km to the south of the porphyry system revealed highly anomallous levels of gold associated with copper mineralization in a breccia pipe. In 1990, Placer Dome Inc. assayed all of the remaining core (79 metres). Values up to 2.39 g/t gold were obtained from 1.5 metre intervals (see Certificate of Analysis).

The recent discovery of Mount Milligan copper-gold porphyry system has increased exploration activity in the Intermontane Belt. Significant gold values at depth of hydrothermally altered breccia pipe near McBride Creek generated a new interest in this area. It is important to realize that no assays for precious metals had been done prior to 1984 when most of the exploration work, including all the drilling, had been carried out. This report is a first step in a systematic re-evaluation of all data in light of the potential for economic copper-gold mineralization.

3. PROPERTY OWNERSHIP

Ashnola-McBride Creek area is covered by several groups of claims owned by: International Prism Exploration Ltd. (59 units), Amber Minerals Ltd. & Chris Baldys (151 units), Goldquest Minerals Corp. (58 units) and Brian T. Mellahoff (30 units).

4. EXPLORATION HISTORY

(see next page)

YEAR	COMPANY	AREA	TYPE OF WORK	RESULTS
1961	Kennco Exploration Ltd.	part of area presently covered by Ashnola Property	geological mapping, geochemistry surveys, IP surveys, 9 AX-size drill holes; total footage 820 m.	not available
1966	Meridian Exploration Syndicate	Ashnola Property	Geochemistry surveys (soil, stream sediment), self potential surveys, bulldozer trenching and road construction, 210 m of drilling	not analyzed
1968 - 1969	Quintana Minerals Corp.	Ashnola Property (NOLA9, NOLA7)	6 NQ-size diamond-drill holes totalling 900 metres, geological mapping of alteration zones.	0.10% Cu over 154 metres in quartz monzonite plug
1970	Quintana Minerals Corp.	Ashnola Property (Cat Creek Area)	trenching and soil sampling	not available
1970 - 1971	Prism Resources	Ashnola Property	geochemical and geophysical surveys (I.P. and magnetometer survey)	inconclusive
1972	Getty Mines Ltd.	Ashnola Property	bulldozer trenching, percussion, rotary and diamond drilling (total 23 holes)	0.17% Cu over 152 metres
1972	Mineral Mountain Mining Co. Ltd.	Lucky-Bill claims area (formerly IT claims)	prospecting, geological mapping, geochemistry surveys, IP surveys	Two new breccia pipe zones. discovered. 0.19% Cu over 15 metres

YEAR	COMPANY	AREA	TYPE OF WORK	RESULTS
1973	Craigmont Mines Ltd.	Ashnola Property	diamond drilling program	not available
1975 - 1978	Prism Resources Ltd.	Ashnola Property	geological mapping, geochemistry surveys, analysis of previous data	defined extent of pyritic halo and zoning in the core of the porphyry system, new model of mineralization; potential for deep porphyry molybdenum deposit.
1976 - 1977	Santa Sarita Mining?	Lucky-Bill claims area (formerly CU, DA, AG, AL and NORM claims)	prospecting, geochemical surveys	not available
1978 - 1980	Ashnola Mining Company Limited	Lucky-Bill claims area (formerly CU, DA, AG, AL and NORM claims)	geological mapping, geochemistry surveys, 1979 diamond drilling (446 metres).	copper assays, ranging from 0.04 to 0.37% over 3.0 m intervals; only hole 79-1 split and analyzed for copper (135 m)
1980	E & B Explorations Incorporated	Ashnola Property (Nola 10, Nola 8)	diamond drilling; 3 holes totalling 567 metres	an increase of molybdenum grades and a decrease of copper grades with depth Cu: trace to 0.36%, Mo: trace to 0.062% over 2 m core intervals.

YEAR	COMPANY	AREA	TYPE OF WORK	RESULTS
1983 - 1984	Minequest Exploration Associates Ltd.	Cool Creek claims	geological mapping, geochemistry surveys	anomalous levels of gold and associated elements in conglomerate breccias and rhyolites of Kingsvale Group
1987	C. Baldys & Amber Minerals Ltd.	Lucky-Bill claims	prospecting, analysis of core for precious metals (DDM 79-1)	values from 390 to 3800 ppb of gold and up to 16.2 g/t silver obtained from strongly altered sections of core (1.5 m intervals)
1987	Murtec Resources Ltd.	Lucky-Bill, Dino claims	geological mapping, geochemistry and geophysical surveys, analysis of core for precious metals (79-1)	minor anomallies of gold, silver, copper and associated elements in soils. VLF conductors indicating complex structure and locally coincident with soil anomalies, gold values to 1.2 g/t and silver to 10.3 g/t in 1.5 m intervals
1988	International Prism Exploration Ltd.	Ashnola Property	precious metal geochemistry in bedrock, stream sediments and old drill core	background levels of gold and silver; best bedrock sample result: 68 ppb Au and 25.0 ppm Ag.
1990	Amber Minerals Ltd., Placer Dome Inc.	Lucky-Bill claims area	precious metal analysis of 79 m of core (DDH 79-1)	gold assays from 65ppb to 2.39 g/t, copper from 500 ppm to 0.36%, silver up to 12.3 g/t

5. GEOLOGY

The Ashnola-McBride Creek area is situated at the southern margin of so-called Nicola Belt, a northerly trending terrain within Intermontane Belt. The Nicola Belt is some 40 km wide extending from the U.S. border to Kamloops Lake, united by similar stratigrsphy and tectonics and noted for its large number of copper mines and prospects.

Field work in 1984 in the east half of the Hope map area (92H E/2; bounded by latitudes 49 and 50 degrees and longitudes 120 and 121 degrees) by J.W.H. Monger of the Geological Survey of Canada resulted in a revision of the earlier reconaissance map of this area by Rice (1947). Since most of the reports from Ashnola-McBride Creek area are based on Rice's work, some changes in geolocial interpretation can be expected.

NICOLA GROUP (Triasic)

The oldest rocks in the area are Nicola Group volcanics and sedimentary rocks. Eastern facies of this group consisiting of augite porphyry volcaniclsstics and alkaline flows of latest Triasic and (?) earliest Jurassic age cover the slopes of Similkameen Valley to the west. It grades eastwards into Middle and Upper Triasic, locally tuffaceous, black argillites and siltstones. However, the distribution of Nicola Group rocks within Ashnola-McBride Creek area is uncertain, probably because of poor bedrock exposure.

SPENCES BRIDGE GROUP* (Lower Cretaceous)

This group consists of rhyolites, andesite flows and pyroclastic rocks which are resting unconformably on the Nicola rocks. They were previously mapped as Kingsvale Group, but were lately correlated on litholgical grounds with Spences Bridge Group (Monger, 1985). Granitic dykes cut Spences Bridge volcanics in places, however pebbles of granodiorite were also found in lavas of this group suggesting that older granitic plutons (Jurrasic) form the local basement in the area.

Rhyolitic lavas bearing abundant quartz eyes and smaller feldspar phenocrysts are the most common rock unit in the Ashnola-McBride Creek area. In the southern part of the area rhyolitic volcanics are overlain by andesite flows and breccias.

* KINGSVALE GROUP by previous authors

Spences Group
Rhyolites

ASHNOLA
PORPHYRY

Diatreme

Cat Creek

Qtz-
Monzonite
Porphyry

Qtz Porphyry

McBride Creek

?

Andesite

Rhyolite

Rhyolite

creek

Andesite

core
shack

VENT
BRECCIA

RHYOLITE
DOME

Spences Bridge Andesites
(flows, tuffs, breccias)

CLAIM BOUNDARY (APPROXIMATE)

DDH
79-1

BRECCIA I
PIPE

?

?

VENT
BRECCIA

VOLCANIC NECK

Granite

creek

Ashnola River

Princeton Group
(tuffs, breccias)

VENT? BRECCIA II

VENT? BRECCIA III

?

?

N

Legend

road
outcrop
fault
geol. contact

Scale

0 100 200 300 400 500
meters

ASHNOLA-McBRIDE CREEK AREA

Geology

after A.S. Fraser

Drawn by: C.B. | Date: November 90

CATHEDRAL LAKE PLUTONS (Mid-Cretaceous (?) and older)

Batholith-size granitic plutons intrude the Nicola Groups rocks. They are part of the Coast-Cascade Crystalline Complex. Rocks of this suite form the local basement upon which younger volcanic rocks were unconformably deposited. They are well exposed along sides of the Ashnola River.

LIGHTENING CREEK INTRUSIONS (Upper Cretaceous - Early Tertiary)

Stocks, dykes and sills of quartz diorite composition cutting Spences Bridge volcanics appear to be related to an intrusive suite called Lightening Creek by Rice (1947).

In the central part of the Ashnola property, a quartz monzonite (diorite?) porphyry forms a small central stock from which dyke-like apophyses emanate. Another larger intrusive body mapped as quartz porphyry was mapped 400 m to the southeast of the monzonite stock.

PRINCETON GROUP (Pleistocene or earlier)

Youngest volcanic suite is widely distributed in the western and southwestern part of the area. It is a sequence of continental volcanics, mainly andesite porphyry and breccias. Late Tertiary plateau basalts thinly cover much of the western part of the area. Princeton Group rocks unconformably overlie the Spences Bridge Group.

6. STRUCTURE

The Ashnola-McBridge Creek area is in the southwest corner of the Intermontane Tectonic Belt at its margin near the Coast-Cascades Crystaline Belt. The eastern boundary of this belt is the Fraser-Yalakom fault zone. A branch of this fault zone, the Pasayten Fault, lies some 20 km southwest of the area. Another major structure, Boundary Fault is located approximately 15 km to the west. It is a northeast to southwest trending structure bounding the Princeton Basin on the east.

Complex structure in regional scale is attributed "transtentional" block faulting of Eocene age related to the dextral wrench faulting of the Fraser River Fault System (J.W.H. Monger, 1985).

The Ashnola-McBride Creek area lies at the intersection of two regional lineaments - the Hedley lineament, striking SSE and the Ashnola River lineament which strikes approximately due south. They have been interpreted from drainage and landform lineaments seen on satelite and air photos. In addition, major faults are exploited by some creeks and they include Cool Creek, Ashnola River and possibly Cat Creek.

During the course of exploration programs in the area, two predominant sets of major fractures were encountered; northeast and northwest. The shapes of some of the intrusive bodies and breccia zones conform to these directions.

The three breccias mapped on Lucky-Bill claims occur along an arcuate northeasterly trending linear (Fraser, 1987). The trace of this linear is possibly a major structure along which other breccias may be localized. Association of this linear with ring fracturing of a possible volcanic caldera should be examined in further investigations.

7. MINERALIZATION

7.1. Ashnola Copper - Molybdenum Porphyry Deposit

The main focus of exploration since 1961 has been a porphyry system located north of McBride Creek on the Ashnola Property.

Following geological features indicative of a porphyry system were established:

1. Presence of porphyritic rocks - both intrusive and extrusive that form hosts for sulphides (porphyritic rhyolites of Spences Bridge Group intruded by quartz porphyry and quartz monzonite stocks).

2. Presence of a pyritic halo encompasing zone of quartz-sericite alteration and grading to argillic and potassic alteration and magnetite core towards the centre of the system.

3. Localized zones of copper and molybdenum sulphide concentrations in fractures and less abundantly as disseminated grains.

Based on geological interpretation done by Sinclair (1975) and Christie (1977) the following mineralizing events have taken place:

(a) first stage, smaller scale event: emplacement of quartz porphyry and younger (?) quartz monzonite stock followed by potassic alteration and minor disseminated mineralization.

(b) second stage, most extensive: pyritic alteration and associated fracture controlled quartz-sericite alteration and copper-molybdenum mineralization.

(c) third event interpreted by J.S. Christie (1977) as latest-mineral, post copper-moly, associated with a large diatreme which has been mapped in the eastern portion of the porphyry system.

Hypogene sulphides: pyrite, chalcopyrite and molybdenite occur in that order of decreasing abundance and paragenesis (oldest to youngest).

The third event deserves particular attention in light of significant gold mineralization associated with similar diatreme on the Lucky-Bill claim area.

The diatreme on the Ashnola Property was recognized and described in detail by J.S. Christie (1977). It comprises of breccias and pebble dykes and is cut by minor dykes of fine grained dacite. Clasts within the breccias are matrix supported and range up to 100 mm in diameter. Average clast size is less than 10 mm in a fine grained porous matrix grading to igneous matrix in proximity to related quartz porphyry dykes. Most clasts are mineralized and include varieties of all rock types including Spences Bridge volcanics and younger porphyritic intrusives. Mineralization within the clasts is distinctly stronger than in the matrix and more diverse in style and intensity.

Closer examination of some clasts revelaed considerably higher molybdenum grade than any observed at the surface. This along with other features of the porphyry system at the McBride Creek led to a new model; the deep porphyry molybdenum deposit such as Henderson in Colorado (Christie, 1977). As a consequence deeper diamond holes were drilled in 1979. The results confirmed the increase of molybdenum and the decrease of copper grades with depth near the center of the system.

Christie also noted the implications of re-interpretation as a diatreme, of rocks previously mapped as fragmental rhyolite volcanics. It's late-mineral, post copper-moly age was considered responsible for the incomplete, horseshoe shaped I.P. high, as it appeared to have effectively "blown a hole" in the east side of the pyritic shell.

7.2. Breccia-Hosted Gold-Copper Mineralization on Lucky-Bill Claims

At least one more diatreme has been mapped in the area (Breccia I). It is located approximately 3 km southeast of the center of the porphyry system. The shape of the diatreme is eliptical and measures 100 meters by 75 meters. It consists of fragments of rhyolite porphyry ranging in size from dust to several metres. The breccia is fragment supported with a matrix of finely comminuted rock partly replaced by oxidized minerals. Voids between fragments are common and these are often lined with fine-grained quartz crystals and limonite.

Copper-gold mineralization is associated with limonite, malachite and chalcocite with remnants of pyrite and chalcopyrite in the matrix of intensely argillically altered rhyolite breccia. The breccia is grading into rhyolite porhyry at approximately 124 m depth. Minor pyrite and copper values up to 0.31% are continuing down to the end of the hole (see 1979 assay results).

Although, at least two holes have been drilled into the breccia by Ashnola Mining Company Ltd., the location and copper grades are only known for hole 79-1. Results of recently re-assayed sections of this hole are attached to this report.

Two more breccia zones have been located 2.5 and 3.2 km southwest from the Breccia I respectively. The larger of the two, Breccia II is a heterolithic body containing both fragments of host andesite (Princeton Group) and rhyolite from the underlying sequence of Spences Bridge volcanics. Montgomery describes the breccias as being collapse breccia in the andesite pophyry composed of tuff, andesite and rhyolite fragments. According to Pendler (1972) and Fraser (1987), they are vent related breccias similar to previously described bodies. They also have undergone argillic alteration and have anomalous levels of gold, copper and silver.

Geophysical surveys performed over a portion of Breccia II zone in 1987 showed coincident VLF-EM conductor, magnetic low and soil anomally.

8. GOLD GEOCHEMISTRY

Very limited information is available with respect to distribution of gold in rocks and soils in the area. First reports about elevated gold concentrations associated with porphyritic rhyolites and "basal conglomerate breccias" of Spences Bridge Group come from the Cool Creek area some 5 km northwest of the Ashnola Porphyry deposit. Broad anomallies of antimony, arsenic and silver with narrow gold zones were outlined in 1983. However, gold values were low and the highest rock sample from underlying bedrock exposures yielded 140 ppb gold.

Lucky-Bill Claim Area

1987 exploration Lucky-Bill claims concentrated in the vicinity of the known breccia zones. None of them, however, was fully covered by the grid. Nevertheless, several single point gold anomalies ranging from 15 to 70 ppb were located within broader copper, silver and zinc anomalies. Volatile indicators (As, Sb, Bi) were not present in above background ievels. A one metre channel sample collected in 1987 from a typically altered and mineralized surface explosure of Breccia I assayed 0.02 oz/ton gold.

The 1990 assay results from available sections of core from hole 79-1 show significant gold values. It prenetrated the breccia pipe to the depth 124 m. From 124 to 140 m it intersected argillically altered rhyolite porphyry. The hole was drilled at inclination -50 degrees and azimuth 200 degrees.

Gold assays range from 30 ppb to 2.39 g/t and correlate with silver ranging from 0.1 g/t to 12.3 g/t. Copper content ranges from 500 ppm to 0.36% and is not coincident with high gold and silver values. The best precious metal assay was obtained from the interval 71.6 to 73.2 m. It yielded 2.39 g/t gold and 12.3 g/t silver. The average value across 11 metre interval (from 62.5 to 73.2 m) was 1.11 g/t gold and 4.89 g/t silver.

Precious metals and copper are not confined to a particular level or alteration type within the breccia zone. It is essentially disseminated and appears to be associated with both, alteration of matrix in the breccia pipe and argillic alteration of rhyolite wall rock. Only 27% of total footage was available for assays in 1990. There is no gold assays from the lower section of the hole where rhyolite porphyry was interesected. Continuing copper mineralization, however, allows to assume that precious metals are present at depth.

Ashnola Property

Precious metal geochemistry surveys performed in 1989 did not discover any significant enrichment of gold in old core, bedrock exposures or stream sediment samples. The best results were 68 ppb Au and 25.0 ppm Ag from a bedrock exposure.

The hydrothermal indicator suite of volatile elements - As, Bi, Sb, Hg and Se - were generally low. Lead and zinc were not present, except in some of the higher Cu/Mo samples from the drill hole. Some galena rich samples were enriched in Ag as well as the volatiles.

There is no indication of testing the diatreme for precious metals.

Regional Stream Sediment and Water Geochemistry Survey was performed in the area in 1981. Two stream sediment sample analysis are available from creeks draining the area of breccia-pipe mineralization on Lucky-Bill claims. Both samples have very high uranium content (81.0 and 90.0 ppm). In addition, one of them assayed 380 ppm Zn, 140 ppm Pb and 5,000 ppb Hg.

9. DISCUSSION

9.1. Model of Mineralization

The mineralization in the Ashnola-McBride Creek area follows the quartz-monzonite porphyry model. This is unlike most other copper porphyry deposits in British Columbia which are alkaline quartz-deficient porphyries.

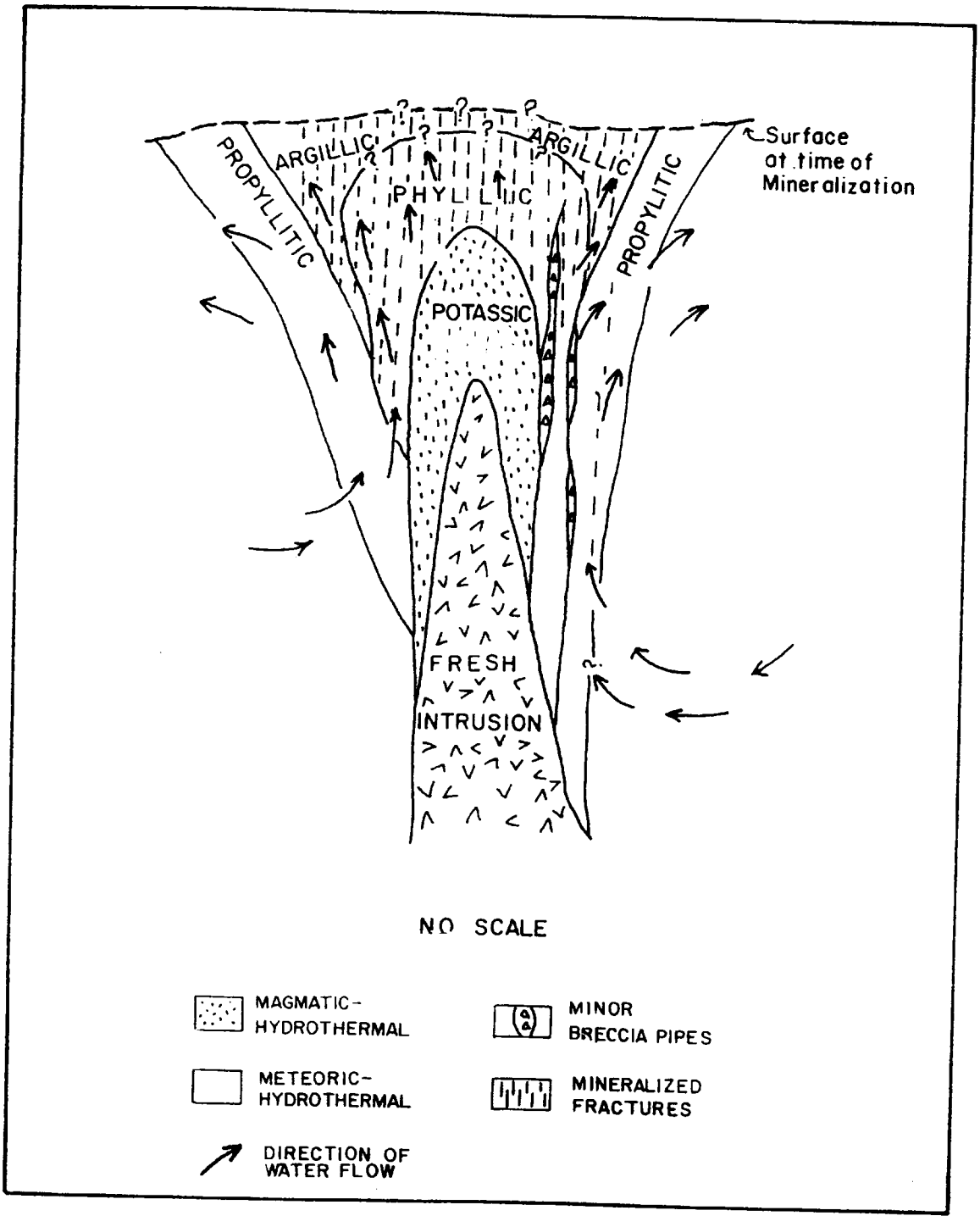
High Si:Na2O+K2O ratios in quartz-monzonite porphyry deposits result in considerable development of quartz stockwork and alteration zone of quartz + pyrite + sericite, which hosts significant amount of ore. In addition, it is prone to hydrogen metasomatism that accounts for large argillic zone.

Sillitoe (1979) states that gold-rich porphyries are not confined to any particular class of deposits, but are equally common in quartz-monzonite, quartz-diorite and quartz-deficient alkali porphyries. However, most of the B.C. deposits are gold-rich, alkaline class porphyries (Afton, Galore Creek, Cariboo-Bell, Copper Mountain-Ingerbelle). Copper Mountain-Ingerbelle group of deposits, located approximately 30 km northwest of the Ashnola-McBride Creek area, contains only little amounts of gold.

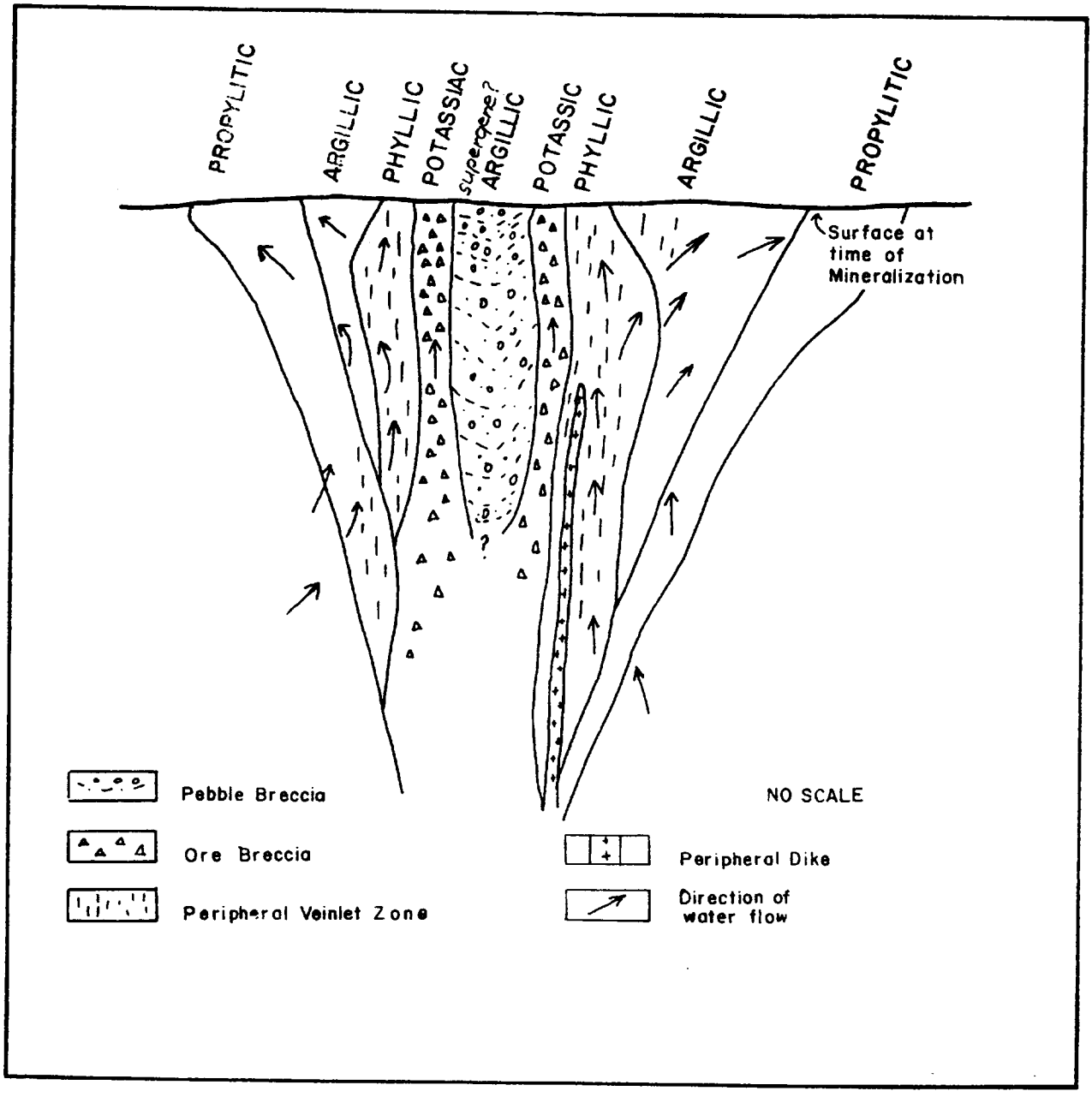
In all classes of porphyry copper deposit, the gold occurs as disseminations and fracture fillings generally in the potassic alteration zones which contain an unusual abundance of magnetite from 3 to 10% by volume commonly accompanied by replacement quartz. However, quartz is absent at the alkaline porphyry examples. Sericitic alteration, where present, normally contains substantially less gold than potassic alteration (Sillitoe, 1979). Relatively high gold values continue up into the advanced argillic zones of some Phillipine and Sulawesi porphyry deposits (Sillitoe, 1982).

There are no reperts, however, about sampling of the magnetite-potassic core zone and testing for precious metal content at Ashnola Porphyry deposit. However, given the 1989 sampling results from the inner pyrite + sericite + quartz alteration zone, no ore grades can be expected at least at present level of the exposure.

Hollister (1978) divided the quartz + monzonite porphyry deposits into two types: stockwork type and breccia type. The breccia type has a large breccia pipe that typically formed by multiple stages of brecciation and contains clasts of various lithologies. Examples of breccia-pipe shapes and alteration models are presented on the next pages.

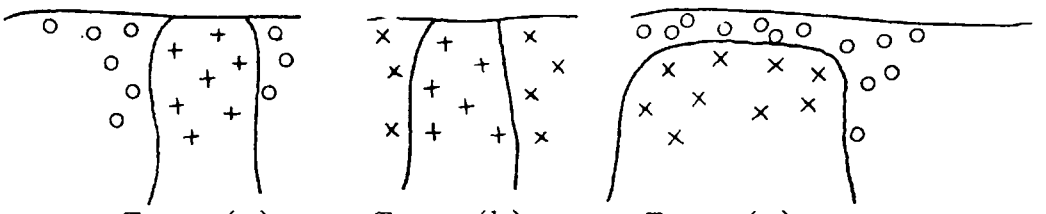


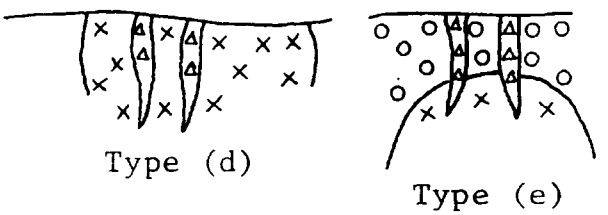
Alteration zones in a quartz monzonite, stockwork-type porphyry copper deposit. (After Hollister, 1978).



Alteration zones in a quartz monzonite, breccia-type porphyry copper deposit. (After Hollister, 1978).

(a)





++ Porphyritic intrusive

×× Equigranular intrusive

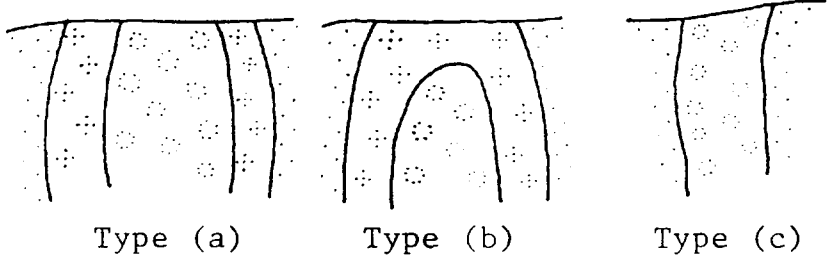
oo Other rock types

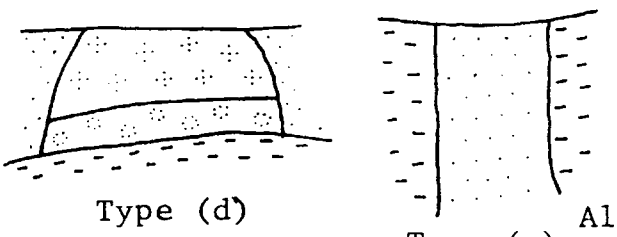
Stockwork and disseminated mineralization

Collapse breccia pipes

Porphyry copper deposits

(b)





Alteration types

Potassium silicate

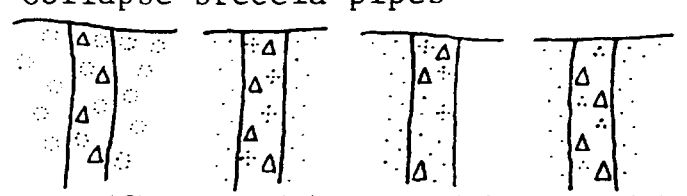
Sericitic

Propylitic

Silicification

Unaltered

Collapse breccia pipes



Cartoons of various types of (a) intrusive situations, and (b) alteration zones, at Mexican porphyry copper deposits. (After Sillitoe, 1976).

The breccias in the Ashnola McBride Creek area differ in textures and range from homolithic to heterolithic, depending on the level of exposure and the number of brecciation stages. The large diatreme on the Ashnola Property being the latest-mineral post copper-moly stage structure, contains fragments of possible copper-molybdenum deposit at depth and lacks alteration textures in the matrix similar to those in breccia-pipe on Lucky-Bill claim area (Breccia I).

At Highmont copper-molybdenum deposit located near Kamloops, a distinct type of breccia-pipe occur approximately 200 metres south and east of the ore zone. The breccia has a comminuted matrix and carries numerous quartz, chalcopyrite and molybdenite-bearing fragments.

The mineralization in Breccia I developed in pre-existing, intrusion related, breccia pipe and in general originate by upward streaming of hydrothermal fluids given off by a magma body. Precious metals and copper minerals precipitated with quartz and pyrite in void spaces between fragments. Mineralization appears to be confined to the argillic zone. This alteration however, may be largely of supergene origin. Detailed analysis of alteration halo is yet to be performed in order to properly explain the hydrothermal process and distribution of metallic and nonmetallic elements.

9.2 Tectonic Style and Age

Porphyry deposits of the Canadian Cordillera are situated within Intermontane Terrain that has a long history of strike-slip movement on numerous faults and fault systems. Within the deformed belt, small plutons that have concentrated copper deposits have evolved during times of strike-slip tectonics rather than during periods of northeast compression, but the deposits themselves do not actually appear to occur on strike slip faults (Holister, 1978). At larger scale, many deposits appear to be localized at fault intersections.

Copper producing deposits near Princeton and Highland Valley deposits occur in Late Triassic volcanic rocks and associated plutons.

Structural setting and age of the Ashnola-McBride Creek porphyry system still remains to be defined. It is clear however, that mineralization is related to instrusive stocks and breccia pipes that are younger than Spences Group volcanics and possibly coeval with Princeton Group volcanics.

Enrichment of uranium in stream sediments near the area of breccia-pipes occurrence on the Lucky-Bill claims could have interesting structural implications. One of the possible interpretations would lead to association of uranium with ring fracturing in a caldera system similar to the examples from the southwestern U.S. At the Silverton caldera, uranium is concentrated in the basement rock below the volcanic pile (Smith and Bailey, 1968).

If this interpretation can be verified by detailed structural mapping and radiometric surveys, the comparison of breccia-pipe setting to Red Mountain district in Silverton Caldera could be useful in locating other breccia-pipes and predicting vertical mineralization patterns. In recent studies however, Lipman and others (1976) postulated that driving mechanisms which supply heat and mineralizing fluids are predating the caldera structures in many districts and concluded that the caldera-related deposits might be more closely related to standard porphyry models.

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LUCKY BILL PROPERTY

SAMPLES FROM DDH 79-1

- submitted by Michael Renning
of Amber Minerals Ltd.

From (m)	To (m)	Sample No.
4.6	7.6	80001
36.6	38.1	80002
38.1	39.6	80003
39.6	41.1	80004
41.1	42.7	80005
42.7	44.2	80006
44.2	45.7	80007
45.7	46.9	80008
46.1	48.1	80009
48.1	50.3	80010
62.5	64.0	80011
64.0	65.5	80012
65.5	67.1	80013
67.1	68.6	80014
68.6	70.1	80015
70.1	71.6	80016
71.6	73.2	80017
100.6	102.1	80018
102.1	103.6	80019
107.3	108.8	80020
108.8	111.3	80021

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MAY 14, 1990

CERTIFICATE OF ANALYSIS ETK 90-104

Placer Dome Inc.
401, 1450 Pearson Place
KAMLOOPS, B.C.
V1S 1J9

A S S A Y S

DATE RECEIVED: MAY 8, 1990 REJECTS: STORE
PROJECT: GENERAL 1E PULPS: STORE
NUMBER SAMPLES: 21
TYPE SAMPLES: ROCK(CORE) N O T E : > = MORE THAN

ET#	Description	Au (g/t)	Au (oz/t	Cu (%)
104 - 5	80005			.13
104 - 6	80006			.27
104 - 7	80007			.34
104 - 8	80008	1.33	.039	.36
104 - 10	80010			.30
104 - 12	80012			.17
104 - 13	80013	1.61	.047	
104 - 14	80014	1.33	.039	
104 - 15	80015			.14
104 - 16	80016	1.03	.030	
104 - 17	80017	2.39	.070	
104 - 18	80018	1.24	.036	.16
104 - 19	80019			.26
104 - 20	80020			.23
104 - 21	80021			.15

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B.C. Certified Assayer

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10041 East Trans Canada Hwy., Kamloops, B.C. V2C 2J3 (604) 573-5700 Fax 573-4557

MAY 14, 1990

CERTIFICATE OF ANALYSIS ETK 90-104

Placer Dome Inc.
401, 1450 Pearson Place
KAMLOOPS, B.C.
V1S 1J9

DATE RECEIVED:	MAY 8, 1990	REJECTS:	STORE
PROJECT:	GENERAL 1E	PULPS:	STORE
NUMBER SAMPLES:	21		
TYPE SAMPLES:	ROCK(CORE)	NOTE :	> = MORE THAN

ET#	Description	Au (ppb)	Ag (ppm)	Cu (ppm)
104 - 1	80001	285	7.5	584
104 - 2	80002	110	1.1	948
104 - 3	80003	210	.5	740
104 - 4	80004	325	.7	995
104 - 5	80005	305	3.1	>1000
104 - 6	80006	650	3.4	>1000
104 - 7	80007	410	4.9	>1000
104 - 8	80008	>1000	3.5	>1000
104 - 9	80009	65	.2	856
104 - 10	80010	320	4.3	>1000
104 - 11	80011	970	2.7	905
104 - 12	80012	150	2.7	>1000
104 - 13	80013	>1000	2.7	760
104 - 14	80014	>1000	2.6	645
104 - 15	80015	295	2.1	>1000
104 - 16	80016	>1000	9.1	500
104 - 17	80017	>1000	12.3	825
104 - 18	80018	>1000	2.0	>1000
104 - 19	80019	380	5.3	>1000
104 - 20	80020	30	.1	>1000
104 - 21	80021	140	3.8	>1000

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Lucky Bill Prospect.

1979 ASSAY RESULTS (AFTER MONTGOMERY)

Drill Hole 79-1

Drilling Company - Interior Diamond Drilling Ltd.

Azimuth - 200 degrees

Declination - -50 degrees

Depth - 140 meters

Co-ordinates - 3770N, 3340E

SAMPLE	FROM	TO	WIDTH (m)	ROCK	%CU
1852-1854	5	8	3.0	RHYOLITE BR.	.180
1855-1857	8	11	3.0	with Limonite,	.113
1858-1860	11	14	3.0	Malachite,	.082
1861-1863	14	17	3.0	traces of	.354
1864-1866	17	20	3.0	chalcocite,	.265
1867-1869	20	23	3.0	cuprite, moly-	.285
1870-1872	23	26	3.0	bdenite,	.372
1873-1875	26	29	3.0	pyrite and	.115
1876-1878	29	32	3.0	chalcopyrite	.151
1879-1881	32	35	3.0		.165
1882-1884	35	38	3.0		.164
1885-1887	38	41	3.0		.078
1888-1890	41	44	3.0		.064
1891-1893	44	47	3.0		.132
1894-1896	47	50	3.0		.112
1897-1899	50	53	3.0		.135
1900-1902	53	56	3.0		.185
1903-1905	56	59	3.0		.088
1906-1908	59	62	3.0		.135
1909-1911	62	65	3.0		.248
1912-1914	65	68	3.0		.160
1915-1917	68	71	3.0		.201
1918-1920	71	74	3.0		.330
1921-1923	74	77	3.0		.135
1924-1926	77	80	3.0		.260
1927-1929	80	83	3.0		.165
1930-1932	83	86	3.0		.148
1933-1935	86	89	3.0		.061
1936-1938	89	92	3.0		.072
1939-1941	92	95	3.0		.138
1942-1944	95	98	3.0		.073
1945-1957	98	101	3.0		.047
1948-1950	101	104	3.0		.042
1970-1971	104	106	2.0		.040
1972-1974	106	109	3.0		.060

1979 CON'T

SAMPLE	FROM	TO	WIDTH	ROCK	%CU
1975-1977	109	-112	3.0	Rhyolite Br.	.080
1978-1980	112	-115	3.0	(as above)	.192
1981-1983	115	-118	3.0		.185
1984-1986	118	-121	3.0		.095
1987-1989	121	-124	3.0		.092
1990-1992	124	-127	3.0	Rhyolite	.090
1993-1995	127	-130	3.0	Porphyry	.205
1996-1998	130	-133	3.0	(minor	.308
1999,2000, 1851	133	-136	3.0	pyrite)	.282
2901-2903	136	-139	3.0		.072
2904	139	-140	1.0		.042

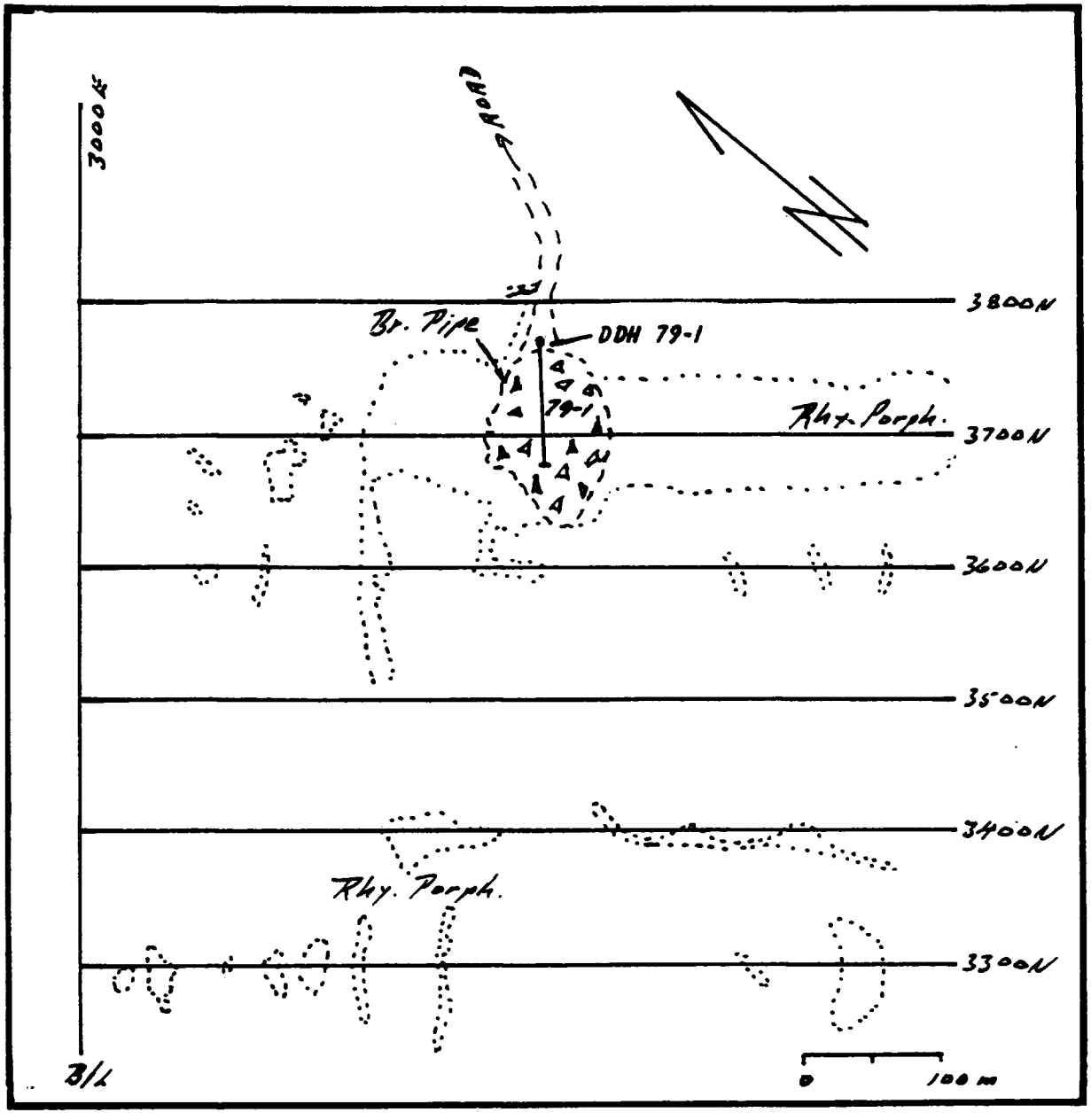

FIGURE DRILL HOLE 79-1

ASHNOLA RIVER COPPER PROSPECT

ASHNOLA MINES LIMITED

MONTGOMERY CONSULTANTS LIMITED JANUARY 15, 1980