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BLENDE PROPERTY
YUKON TERRITORY

NDU RESOURCES LTD.

October 20, 1989

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SUMMARY AND RECOMMENDATION

The Blende silver-lead-zinc property is owned 100% by NDU Resources Ltd. and was optioned to Billiton Metals Canada Inc. on October 5, 1989. On signing, Billiton paid NDU \$100,000 as a partial reimbursement of the 1988 exploration costs on the property. Billiton will repay all 1989 exploration costs on the property to October 5, 1989 (estimated at \$400,000) and guarantee an additional \$1,100,000 in exploration expenditures before December 31, 1990. Billiton can earn a 50% interest in the property by spending a total of \$4,000,000 before December 31, 1991 and paying an additional \$200,000 to NDU to complete the reimbursement of the 1988 exploration costs. If NDU elects not to participate in further work after the 50% earn-in, Billiton can earn up to a 70% interest by paying NDU \$300,000 and spending a further \$3,000,000 before December 31, 1992.

The property consists of 122 claims (approximately 25 sq km) in central Yukon, 67 km northeast of Elsa which is 600 km by all-weather road from the seaport at Skagway, Alaska.

Mineralization occurs in fractures as tabular breccia and stockwork zones within a 160 m wide composite fault system cutting Proterozoic dolomite. The ore minerals are a metallurgically simple assemblage of galena, sphalerite and pyrite with minor chalcopyrite and tetrahedrite. The gangue is predominantly secondary dolomite and iron carbonate.

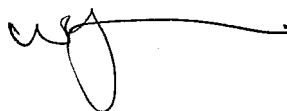
Geological mapping and prospecting have traced the faults and mineralization over a 6000 m strike length while geochemical surveys in the western and central part of the system have outlined a 3800 by 250 m area of extremely anomalous lead, zinc and silver response. In 1988, three holes were drilled in the western part of the system. All three returned long mineralized

intercepts with the best assays coming from Hole 2 which averaged 5.2% Pb, 2.8% Zn and 109.0 g/t Ag across 81.7 m, including 19.8 m grading 12.3% Pb, 4.4% Zn and 284.6 g/t Ag. None of the holes tested the entire width of the system or the area of highest grade surface mineralization.

The Blende property has potential for a large tonnage of moderate grade mineralization that could be mined by low cost, open pit methods. The next phase of exploration will consist of approximately 4000 m of diamond drilling in widely spaced holes using a camp, bulldozer and diamond drill already on the property.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED



W.D. Eaton, B.A., B.Sc.

/mc

INTRODUCTION

The Blende property is owned 100% by NDU Resources Ltd. which has completed an option agreement with Billiton Metals Canada Inc. that will permit Billiton to earn a 50% interest in the property by making exploration expenditures of \$4,000,000 and cash payments of \$300,000 to NDU, all before December 31, 1991. If NDU elects not to participate in further work after the 50% earn-in, Billiton can earn up to 70% interest by spending a further \$3,000,000 and paying NDU an additional \$300,000 before December 31, 1992.

The occurrence was first staked by Cyprus Anvil Mining Corp. in 1975 when mineralization was discovered upstream from anomalous stream sediment samples. Although initial prospecting showed that mineralization was widespread, the claims were dropped when the company's exploration focus shifted to sedex deposits.

Archer, Cathro restaked the area in 1981, conducted minor prospecting and chip sampling later that year and in 1982, and performed geological mapping, hand trenching and systematic chip sampling in a joint venture with Norvista Developments Ltd. during 1984.

In 1986, the property was vended to NDU Resources Ltd. which staked more claims, prospected, hand trenched, flew airphotographs and drilled three holes totalling 718 m in 1988. In 1989, NDU mobilized a bulldozer and diamond drill to the property, constructed a 15 man camp, staked more claims and performed geological mapping, grid soil geochemistry and VLF and magnetic surveys in preparation for a major drill program in 1990.

LOCATION, ACCESS AND INFRASTRUCTURE

The Blende property consists of 122 claims (approximately 25 sq km) located 67 km northeast of Elsa, the millsite and administrative centre for United Keno Hill Mines Ltd., as shown on Figure 1. Access is by helicopter or a 70 km winter road extending from the end of the government-maintained Yukon road system to the property, as illustrated on Figure 2. During 1989, some 9 km of four-wheel drive roads were built on-site to provide access to various parts of the property.

The distance from Blende to the seaport of Skagway, Alaska is 729 km which compares favourably with other lead-zinc deposits in Yukon such as: Faro (536 km), Logan (592 km), Mt. Hundere (706 km), Tom-Jason (777 km), and, Howard's Pass (978 km). An under-utilized hydroelectric dam which formerly provided power to United Keno Hill Mines is located near Mayo, some 110 km by road from the Blende property.

Figure 1

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

LOCATION MAP

BLENDE PROPERTY, YUKON

NDU RESOURCES LTD.

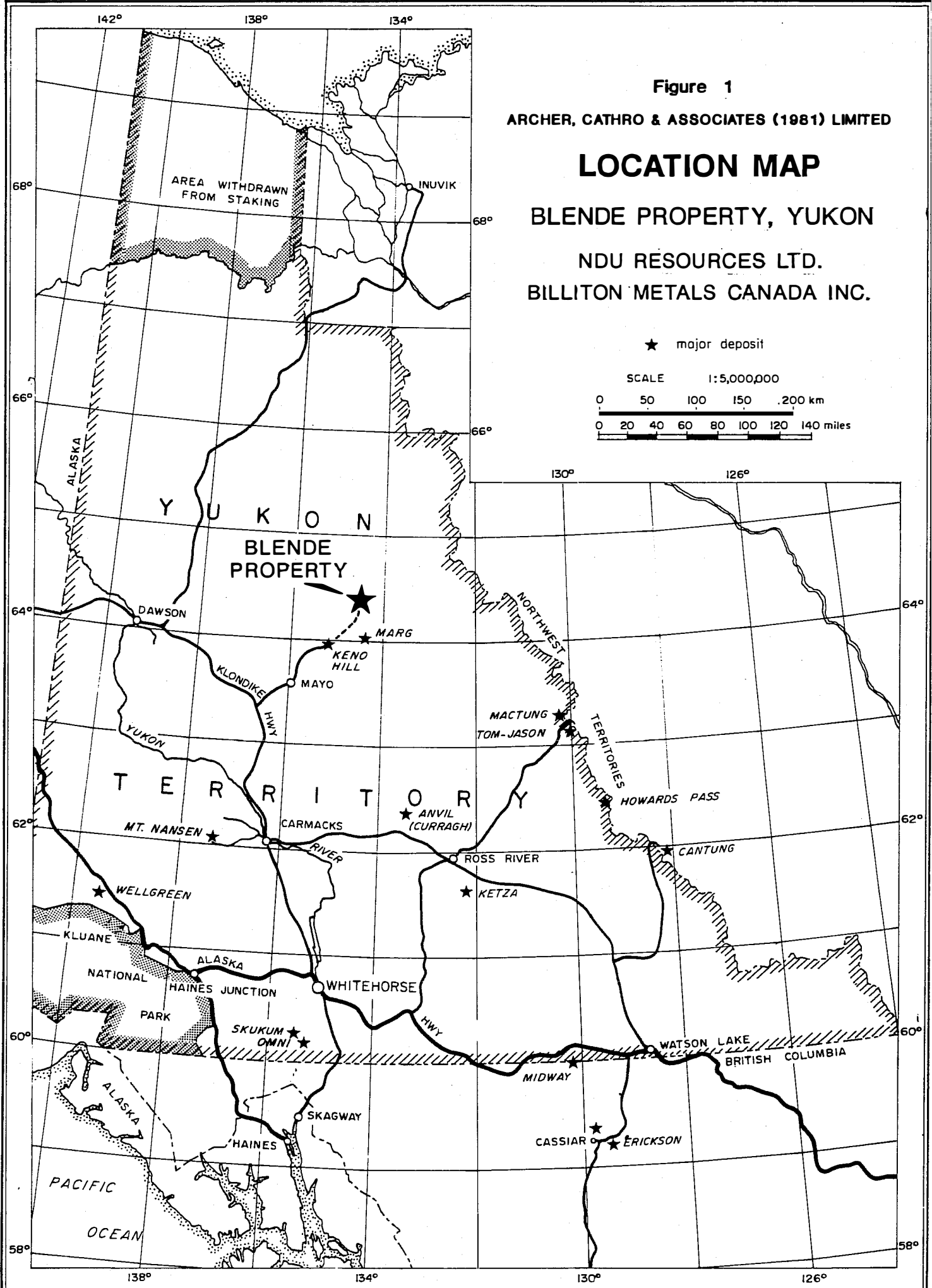
BILLITON METALS CANADA INC.

★ major deposit

SCALE 1:5,000,000

0 50 100 150 200 km

0 20 40 60 80 100 120 140 miles



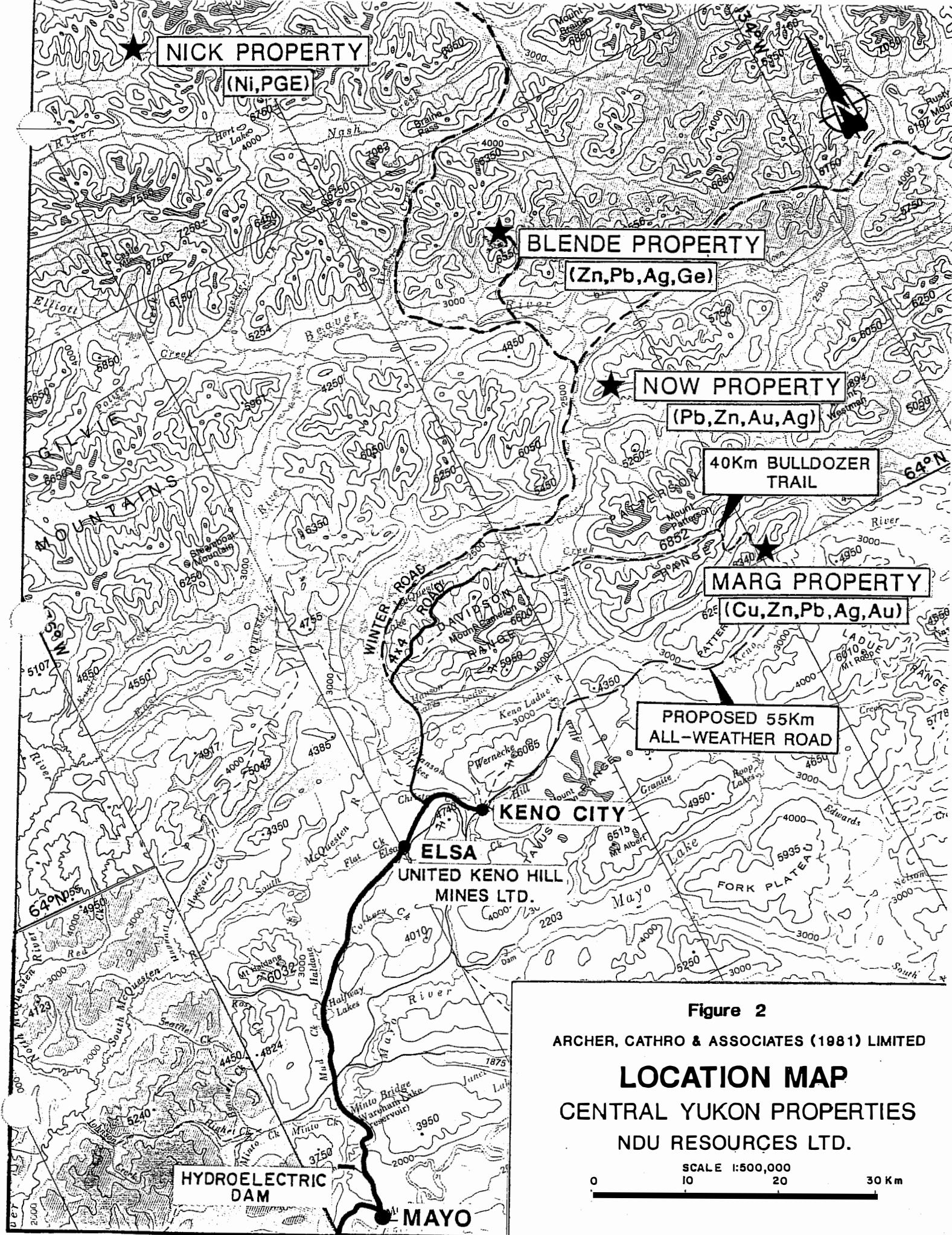


Figure 2

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

LOCATION MAP
CENTRAL YUKON PROPERTIES
NDU RESOURCES LTD.

SCALE 1:500,000
0 10 20 30 Km

GEOLOGY

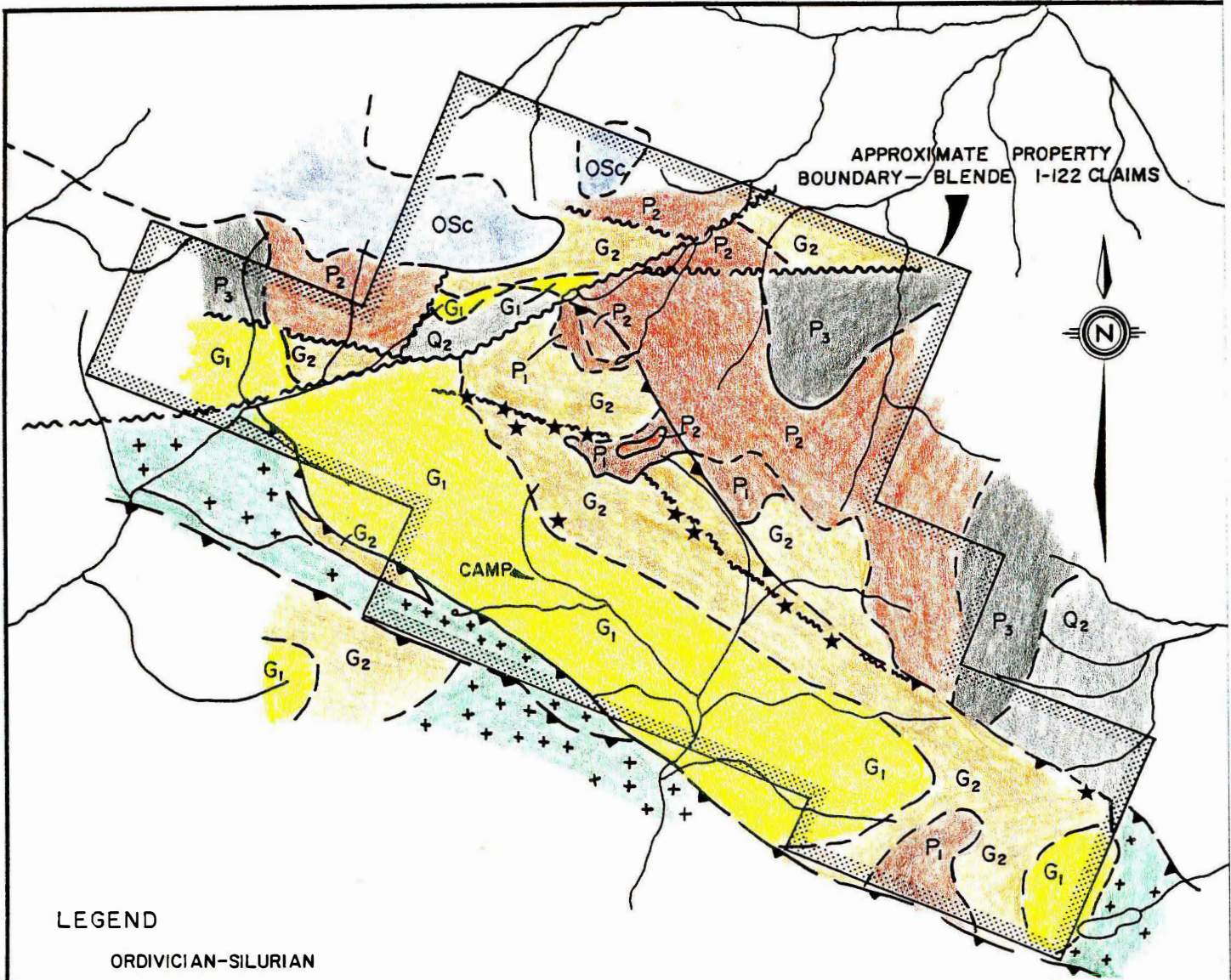
The Blende property is located on the southwestern margin of the MacKenzie Platform which consists predominantly of Proterozoic and Paleozoic, shallow water carbonate and clastic sedimentary rocks. The Proterozoic strata are intruded by mafic dykes and sills, while the entire section is cut by Cretaceous age thrust faults and high angle faults of various ages. Property geology is illustrated on Figure 3.

The oldest rocks belong to the Middle Proterozoic Wernecke Supergroup and include slates and argillites of the Quartet Group and overlying dolomite, shale and siltstone of the Gillespie Lake Group. Most mineralization occurs in Unit G2, buff to orange weather dolomite and dolomitic siltstone, which is the younger of two units comprising the Gillespie Lake Group on the property.

The Wernecke Supergroup rocks are unconformably or structurally overlain by Late Proterozoic Pinguicula Group dolomite, limestone, siltstone and shale and the entire sequence is unconformably capped by Paleozoic carbonates.

Mafic dykes and sills are dioritic to gabbroic in composition and intrude Wernecke Supergroup and Pinguicula Group rocks. Bleached, dedolomitized alteration zones are commonly developed in dolomitic units adjacent to the intrusions. Most of the mafic bodies are elongated in a northwesterly direction and many form the soles of thrust sheets.

Three main fault sets are present: the oldest trends west-northwesterly and dips steeply toward the south; the second is comprised of northwest-trending thrust faults that dip 30 to 60° to the southwest; and, the youngest strikes northeast, dips near vertical and offsets the older sets. The dominant structures are open northwest-trending folds associated with the thrust faults. There is also evidence for at least one phase of earlier deformation.



LEGEND

ORDIVICIAN-SILURIAN

Osc light grey weathering dolomite and limestone

LATE (?) PROTEROZOIC

+ diorite and gabbro

PINGUICULA GROUP

P₃ black shale with basal conglomerate

P₂ red weathering dolomite

P₁ argillite, shale and chert

**MIDDLE PROTEROZOIC
GILLESPIE LAKE GROUP**

G₂ orange weathering dolomite

G₁ interbedded shale and dolomite

**MIDDLE PROTEROZOIC
QUARTET GROUP**

Q₂ interbedded shales, phyllites, argillites and quartzites

— geological contact (defined, inferred)

~ high angle fault (defined, inferred)

— thrust fault (defined, inferred)

★ Pb-Zn occurrence

Figure 3
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED
GEOLOGY AND MINERALIZATION

BLENDE PROPERTY

NDU RESOURCES LTD.
BILLITON METALS CANADA INC.

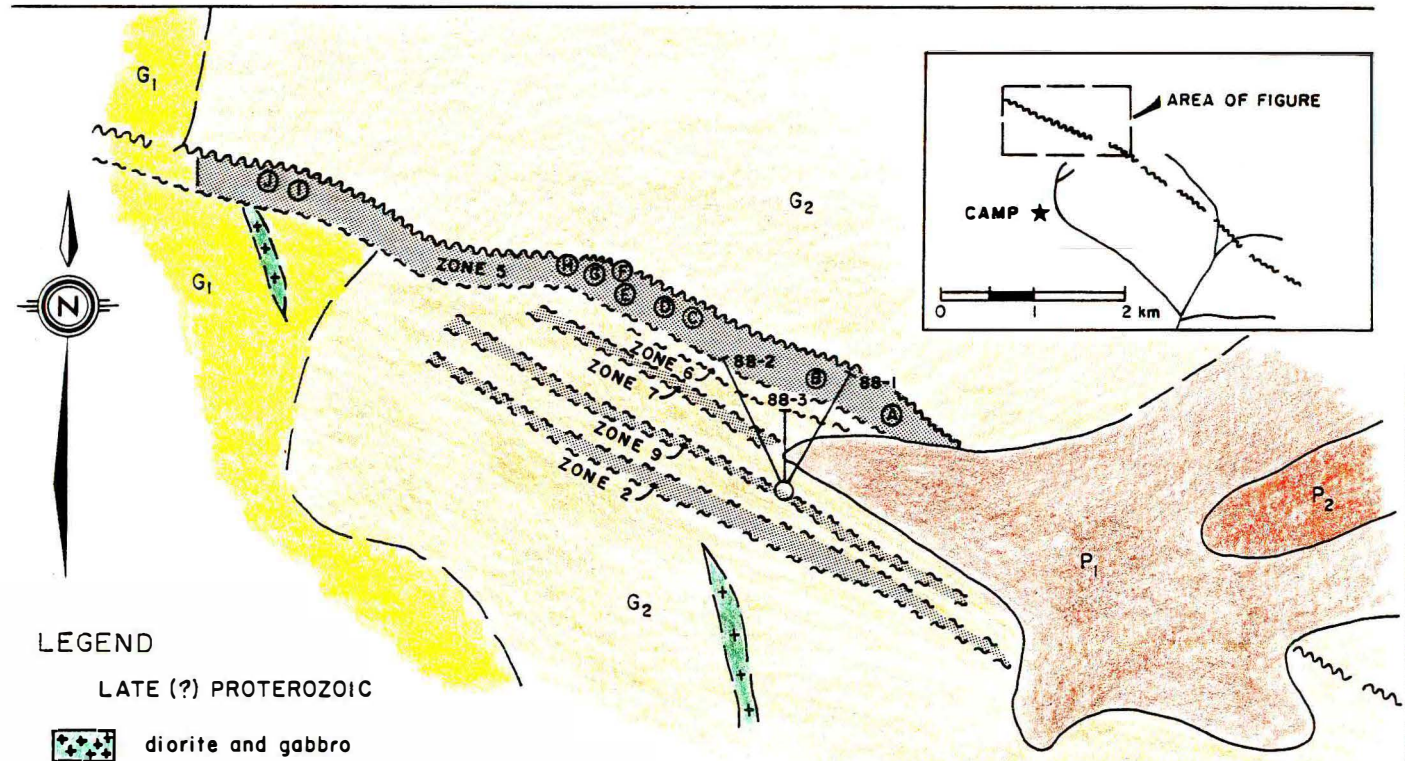
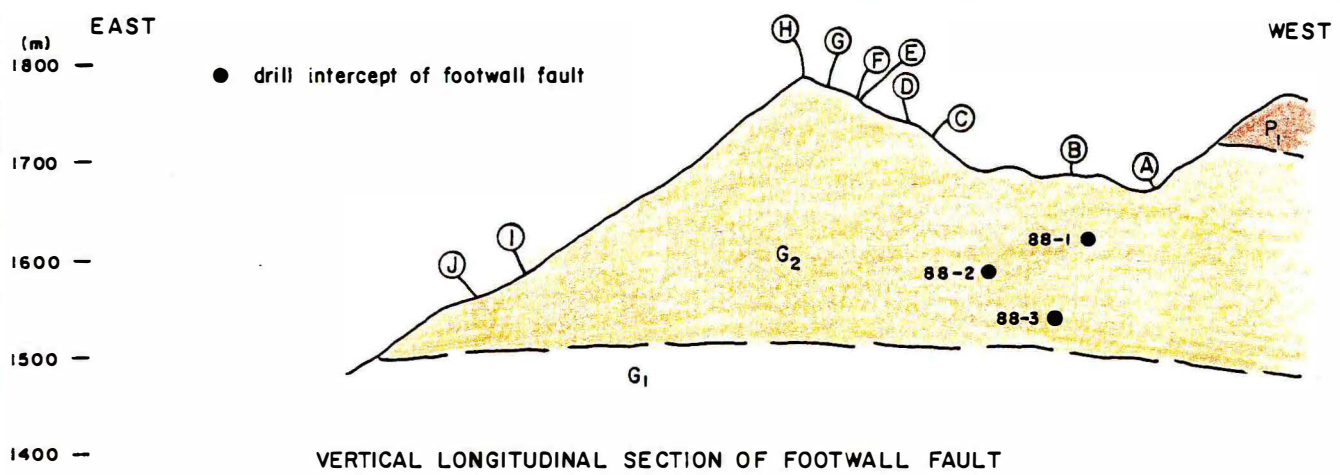
SCALE 1:50,000



MINERALIZATION

Most silver-lead-zinc mineralization on the Blende property occurs on fractures in tabular breccia and stockwork zones within Unit G2 dolomite and silty dolomite beds where they are cut by an up to 200 m wide west-northwest striking composite fault system that dips about 65° to the south. Mineralization consists of fine- to coarse-grained galena, sphalerite and pyrite with minor chalcopyrite and tetrahedrite. The host dolomite unit is approximately 250 m thick and mineralized structures horsetail and pinch out rapidly in the underlying shale. Footwall rocks exhibit abundant quartz and coarse siderite veinlets and resist weathering, while mineralized rocks are highly fractured and weather into small fragments that are usually obscured by coarser unmineralized talus. Prospecting has traced the mineralization in outcrop and float over a total strike length of 6000 m with the best exposures found along ridge crests and on steep slopes near the west end of the fault complex. Grid soil sampling over the western and central parts of the fault system returned extremely anomalous lead, zinc and silver values over a 3800 by 250 m area which suggests the mineralization extends beneath talus covered areas.

Well mineralized breccia and stockwork zones appear to occur en echelon and are elongated parallel to the strike of the fault system; however, their individual width and strike length continuity is difficult to assess because of poor exposure. In 1984, a series of chip samples were taken from outcrops and hand trenches along Zone 5 which is relatively well exposed as it fortuitously occurs on steep slopes adjacent to the footwall fault at the west end of the fault system. The samples avoided obvious surface concentrations and, in most areas, the entire width of the zone was not exposed. Results are summarized on Table 1, while sample locations are shown on Figure 4. Individual exposures



- LEGEND**
- LATE (?) PROTEROZOIC**
- diorite and gabbro
- PINGUICULA GROUP**
- P₂ red weathering dolomite
 - P₁ argillite, shale and chert
- MIDDLE PROTEROZOIC GILLESPIE LAKE GROUP**
- G₂ orange weathering dolomite
 - G₁ interbedded shale and dolomite
- geological contact (defined, inferred)
 - high angle fault (defined, inferred)
 - vein zone
- 1984 chip sample location (assays on Table 1)
 - diamond drill hole (see figures 5-7 for assays)

Figure 4

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**GEOLOGY AND MINERALIZATION
FAULT COMPLEX – WEST END**

BLENDE PROPERTY

NDU RESOURCES LTD.
BILLITON METALS CANADA INC.

0 100 200 300 m

TABLE 1
 CHIP SAMPLE ASSAYS
ZONE 5, BLENDE PROPERTY

<u>Sample Location</u>	<u>True Width (m)</u>	<u>Pb (%)</u>	<u>Zn (%)</u>	<u>Ag g/t</u>
A	23.0	2.7	1.6	27.4
B	31.3	2.6	1.2	44.6
C	11.9	7.8	2.1	120.0
D	35.1	0.5	1.7	10.3
E	30.6	0.8	4.1	27.4
F	47.3	1.6	4.3	30.9
G	21.4	1.9	2.2	27.4
H	21.5	1.2	3.6	20.6
I	25.0	3.4	6.1	61.7
J	28.0	3.7	3.0	130.3

*See Figure 4 for sample locations.

averaged up to 3.4% Pb, 6.1% Zn and 111.1 g/t Ag across a true width of 25 m, while the weighted average of all exposures sampled over a strike length of 380 m was 2.2% Pb, 3.1% Zn and 44.8 g/t Ag across a true width of 27.5 m.

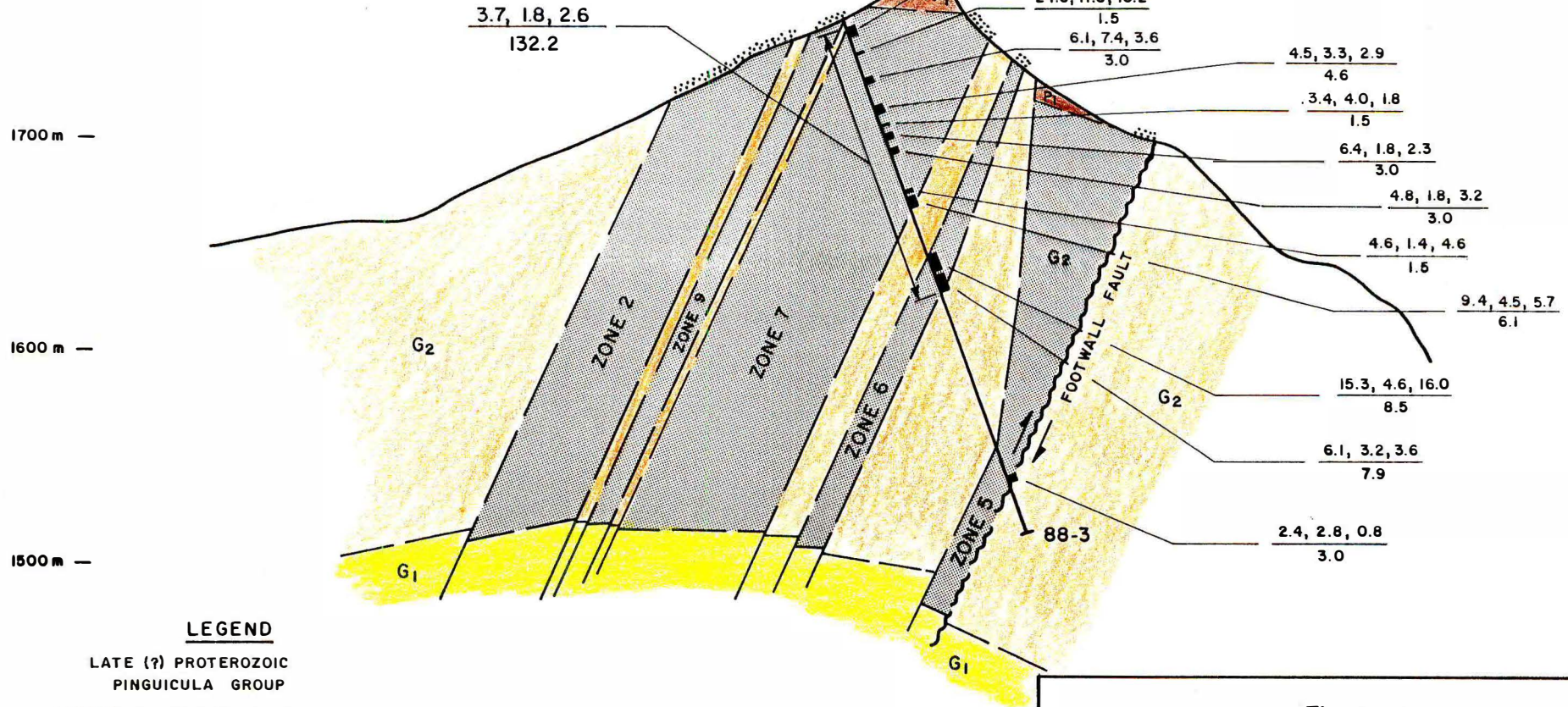
In 1988, three holes were drilled in a fan from a single site, which was the only drill site that could be built in the frozen talus at the time of the program. The holes were primarily intended to test Zone 5 but also cut beneath other subparallel zones in the hanging wall. Assays are summarized on Table 2 and illustrated with simplified geology on Figures 5, 6 and 7. Surprisingly the best mineralization was intersected near the top of the holes in mineralized zones that are obscured at surface by a barren shale cap and talus. The highest assays came from Hole 88-2 which averaged 5.2% Pb, 2.8% Zn and 109.0 g/t Ag across 81.7 m, including 19.8 m that graded 12.3% Pb, 4.4% Zn and 284.6 g/t Ag. Zone 5 was poorly mineralized in the holes; however, surface assays above the drill intercepts were also lower grade than the Zone 5 average. The holes were collared about two-thirds of the way across the width of the fault system and prospecting and soil geochemistry suggest that additional parallel zones are present in the non-drill tested portion farther in the hanging wall.

Preliminary mineralogical studies suggest favourable metallurgy and analysis for detrimental elements, such as mercury, tin, arsenic and antimony indicates that there will be no significant smelter penalties. Smelter credits may include cadmium and possibly germanium (initial results have returned between 20 and 200 ppm from well mineralized samples).

A specimen of galena from Zone 5, submitted to Dr. C. Godwin at the University of British Columbia for lead isotope analysis ($^{206}\text{Pb}/^{204}\text{Pb}$ versus $^{208}\text{Pb}/^{204}\text{Pb}$), returned a Helikian model age of approximately 1.4 billion years.

SOUTH

NORTH



LEGEND

LATE (?) PROTEROZOIC
PINGUICULA GROUP

P₁ INTERBEDDED BLACK ARGILLITE, SHALE AND CHERT;
MINOR ORANGE WEATHERING DOLMITE INTERBEDS.

MIDDLE PROTEROZOIC
GILLESPIE LAKE GROUP

G₂ ORANGE WEATHERING, MASSIVE GREY TO INTERBEDDED LIGHT GREY
AND BLACK ARGILLACEOUS AND STROMATOLITIC DOLOMITE
WITH MINOR CHERT INTERBEDS.

G₁ LIGHT ORANGE TO MAROON - GREEN WEATHERING INTERBEDDED MAROON AND GREEN
SHALE WITH WHITE TO TAN DOLOMITE INTERVALS.

— — — — — GEOLOGICAL CONTACT

~~~~~ FAULT

$\frac{3.5, 3.2, 1.7}{10.7}$  Pb (%), Zn (%), Ag (oz/ton)  
METRES

— — — — —  $\geq 5\%$  Pb + Zn

~~~~~ SURFACE MINERALIZATION

Figure 7

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

VERTICAL CROSS SECTION

DDH 88-3

BLNDE PROPERTY

NDU RESOURCES LTD.

BILLITON METALS CANADA INC.



TABLE 2
SIGNIFICANT DRILL INTERSECTIONS
BLENDE PROPERTY

| <u>Hole No.</u> | <u>Interval (m)</u> | | <u>Width (m)</u> | <u>Pb (%)</u> | <u>Zn (%)</u> | <u>Ag g/t</u> |
|-----------------|---------------------|-----------|------------------|---------------|---------------|---------------|
| | <u>From</u> | <u>To</u> | | | | |
| 88-1 | 4.3 | 29.0 | 24.7 | 3.5 | 3.2 | 58.3 |
| 88-2 | 8.8 | 90.5 | 81.7 | 5.2 | 2.8 | 109.0 |
| including | 70.7 | 90.5 | 19.8 | 12.3 | 4.4 | 284.6 |
| 88-3 | 3.7 | 135.9 | 132.2 | 3.7 | 1.8 | 89.1 |

CONCLUSION

Soil geochemistry and initial diamond drilling at the Blende property have produced encouraging results from a composite fault system that is 6000 m long and up to 200 m wide indicating potential for a large open pit deposit of moderate base metal grade with a higher than normal silver content.

The best exposed and most anomalous part of the system strikes along a ridge crest with steep slopes on either side which will effectively reduce the stripping ratio. Preliminary mineralogical studies and trace metal analysis suggest favourable metallurgy.

The next phase of exploration will consist of approximately 4000 m of diamond drilling in widely spaced holes intended to delineate the limits of the mineralization. Work will commence in late May utilizing a camp, bulldozer and diamond drill stored on the property.