

**WELCOME NORTH MINES LTD. (N.P.L.)**

1027 - 470 Granville St., Vancouver, B.C. V6C 1V5 Telephone (604) 687-1658

WOODSIDE PROJECT

1978

GEOLOGICAL, GEOCHEMICAL AND SAMPLING REPORT

ON THE

MAY 1-144 MINERAL CLAIMS

N.T.S. 105K-4

WHITEHORSE MINING DISTRICT

Latitude  $62^{\circ}03'N$

Longitude  $133^{\circ}45'W$



090468  
December, 1978

Robert T. Holland



This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

\$ 16,800.00

Ruth Debicki

acting Resident Geologist or June 15/79  
Resident Mining Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

B. R. BAXTER

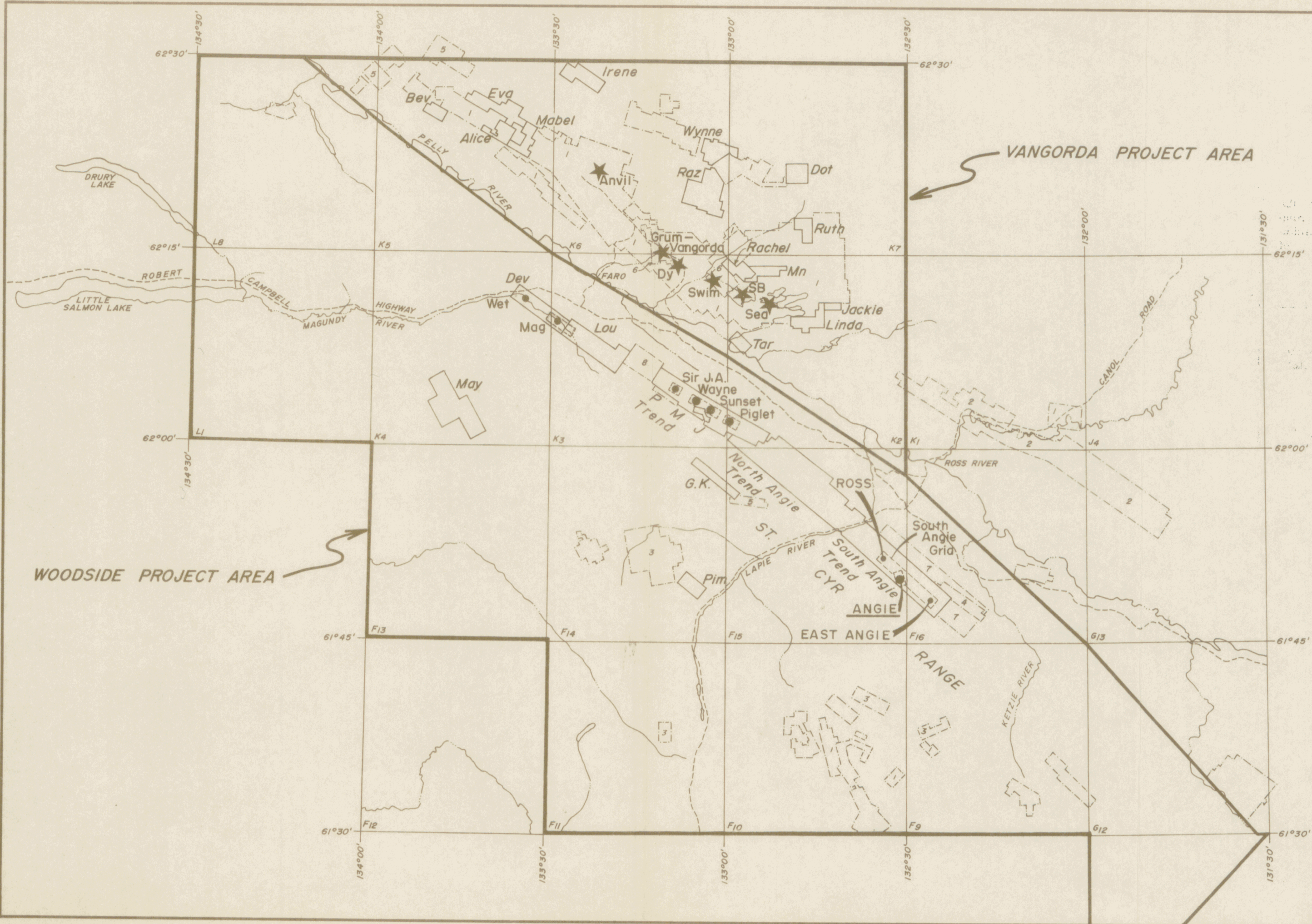
Supervising Mining Recorder

Commissioner of Yukon Territory



Robert T. Holland

804090  
December, 1978



**LEGEND**

Massive Sulphide Deposit . . . . . ★

Mineral Occurrence . . . . . ●

River, Creek . . . . . ———

Highway . . . . . - - - - -

Claims:

Getty Mining Pacific - Welcome North Mines . . . . .	□
Cyprus Anvil Mining . . . . .	1
Du Pont of Canada . . . . .	2
Utah Mines . . . . .	3
Cominco . . . . .	4
Amex Potash . . . . .	5
Kerr Addison Mines . . . . .	6
St. Joseph Exploration . . . . .	7
Brendex Resources . . . . .	8
Misc. Other . . . . .	□

**WELCOME NORTH MINES LTD.**  
**GETTY MINING PACIFIC LTD.**

**PROJECT AREA &  
PROPERTY LOCATIONS**

Scale: 1" = 8 miles	Date: Feb. 1978	NTS 105
Revised: Oct. 1978	By: _____	Fig. _____

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## SUMMARY AND CONCLUSIONS

Mineral occurrences examined during 1978 on the MAY property have been found to be limited in size, of low grade and generally erratic in distribution. Only small areas of higher grade mineral concentrations have been found. These occurrences do not appear to have sufficient economic potential to warrant further work. There are however numerous showings on the property which have not yet been geologically examined especially in the northwestern area of the claim block. Initial prospectors' reports on several of the occurrences as documented in the 1977 Woodside Project Report suggest that they may be higher grade and potentially larger than the showings on the property which received work during the 1978 program. Although the tonnage and grade potential of many of these individual occurrences is not expected to be high, it is believed that further assessment would contribute to a more accurate understanding of the metallogeny of the area. This proposed work is justified by the wide distribution and local concentration of zinc metal known to occur on the property, and the apparent potential for undiscovered concentrations.

In addition, the Tungsten Zone to the north of the main creek (Fig. 1) which has not to date been examined appears of particular significance. Further work on this section of the property is of special interest in the light of recent development of the Risby Tungsten property by Cima Mines Ltd. in a similar geological environment situated 25 kilometers to the southeast of the MAY.



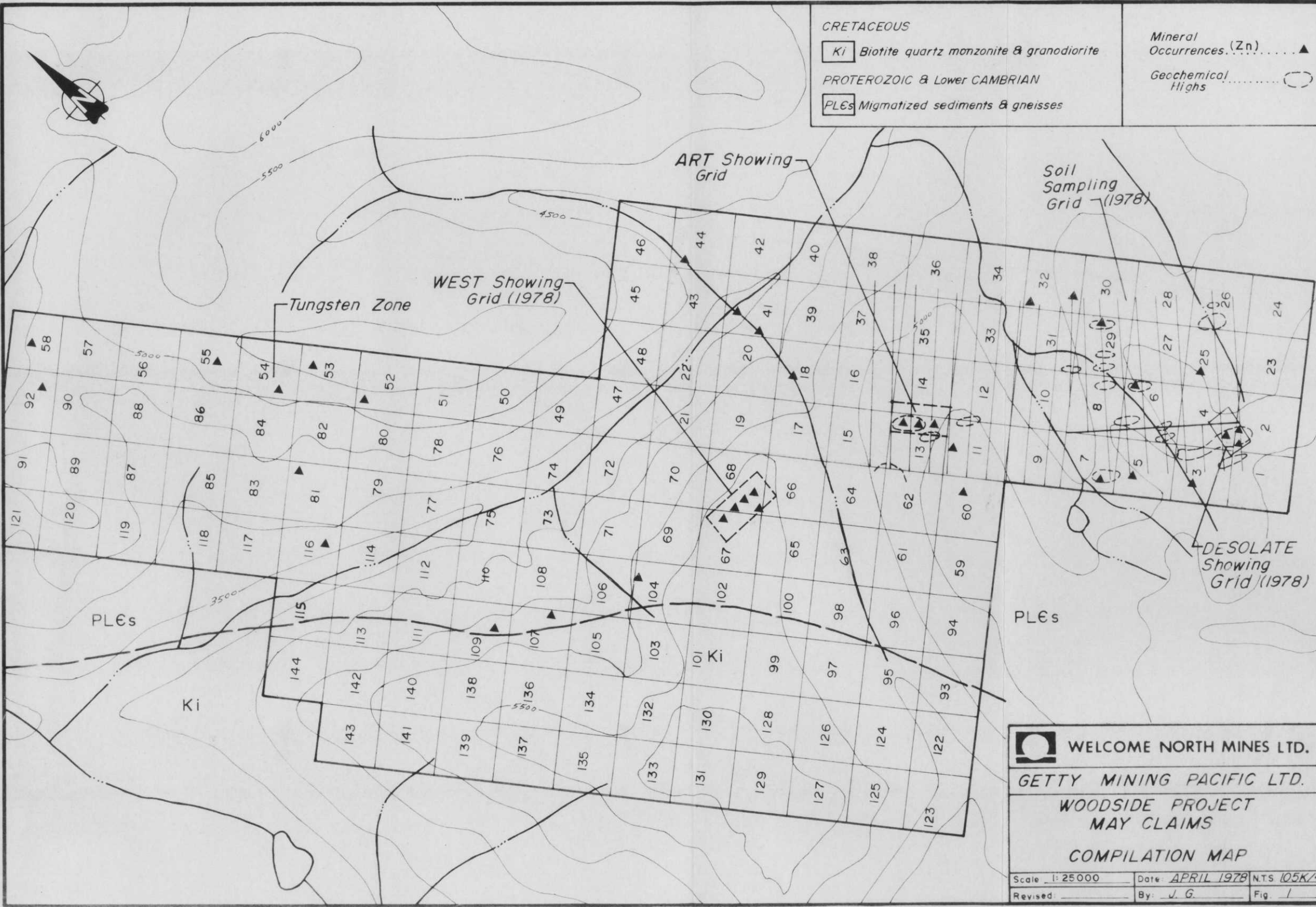
CRETACEOUS

**Ki** Biotite quartz monzonite & granodiorite

PROTEROZOIC & Lower CAMBRIAN

**PLCs** Migmatized sediments & gneisses

Mineral Occurrences (Zn) ..... ▲  
Geochemical Highs ..... ○



**WELCOME NORTH MINES LTD.**  
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**WOODSIDE PROJECT**  
**MAY CLAIMS**  
**COMPILATION MAP**

Scale 1:25000 Date: APRIL 1978 NTS 105K/4  
Revised: By: J. G. Fig. 1

RECOMMENDATIONS

It is recommended that the showings on the MAY Property which were discovered by prospecting in 1977 and which were not examined in 1978 be geologically assessed during the 1979 field season. This proposed program should entail the detailed geological mapping and sampling of the showings in conjunction with the thorough prospecting of areas adjacent to the showings. Emphasis in this work should be placed upon the tungsten occurrences which have been reported to occur in the northwestern section of the claim group.

As there has been difficulty in relocating many of the showings discovered by prospectors in 1977, it is recommended that the showings to be assessed be first revisited with the chief prospector originally in charge of the 1977 prospecting program.

## INTRODUCTION

The MAY 1-144 claims were staked to cover the discoveries of numerous zinc, lead and scheelite occurrences in skarn by Welcome North prospecting crews during 1977 (see Fig. 1 for showing locations). Welcome North Mines Ltd., as Operator of the Woodside Project Joint Venture with Getty Mining Pacific Ltd., carried out limited geological mapping and sampling of the more apparently significant showings later that year.

During the 1978 field season further prospecting and limited property scale geological mapping was undertaken to find additional showings and to locate previously reported occurrences. Detailed geological mapping on a scale of 1:500 and 1:1000 was completed over the Desolate, West and Art showings, using flagged line grids for control (Plate 1). Many of the more significant lead-zinc occurrences were chip sampled and assayed for lead zinc and occasionally tungsten. Work on the Desolate showing was carried out by S.G. Clemmer of Getty Mining Pacific Ltd. and the results of this work are detailed in a separate report entitled "Geology of the Desolate Showing, MAY Claims"<sup>1</sup>.

In addition, a flagged line grid for the purposes of soil sampling was established in the vicinity of the Art and of the Desolate showings. A total of 28.0 line kilometers of grid was sampled at 50-meter intervals along 150-meter spaced lines, covering an area of about 8 square kilometers.

<sup>1</sup> See Appendix III for copy of this report.

LOCATION AND ACCESS

The MAY claims are located approximately 28 air kilometers southwest of the town of Faro, Yukon and Territory and 18 air kilometers south of the Robert Campbell Highway, an all-weather road which connects to Whitehorse and the Alaska Highway, 400 kilometers to the southwest. Access to the property is via helicopter from Faro.

MINERAL CLAIMS

The MAY claim group is comprised of the following 144 mineral claims located in the Whitehorse Mining District:

<u>CLAIMS</u>	<u>GRANT NUMBERS</u>	<u>RECORDING DATE</u>
MAY 1- 44	YA19318-YA19361	August 4, 1977
MAY 45-144	YA19491-YA19590	August 10, 1977

PREVIOUS WORK

Previous work in the area was conducted by Atals Exploration Ltd., which staked the LIL claims in October, 1969 over what is now the Desolate Showing. Mapping and sampling revealed sphalerite mineralization grading up to 5 percent zinc in a skarn zone 60 meters long by up to 5 meters wide.

## GEOLOGY

The MAY claim group straddles the transitional contact between a Cretaceous plutonic complex (Ki) underlying the southwestern edge of the property, composed of biotite-quartz monzonite and granodiorite and the Proterozoic and Lower Cambrian sedimentary and metamorphic sequences (PLES) to the northeast (Fig. 1). The latter includes slate, calcareous argillite and siltstone, limestone, dolomite, chert, archeocyathid limestone, shaley quartzite, banded hornfels, biotite-muscovite schist and amphibolite.

Known mineral occurrences on the property occur within an irregular and transitional migmatitic aureole to the Mount Patterson-Fox Mountain igneous complex (Unit A, Roddick and Green, 1961)<sup>1</sup>. The complex consists of a core of intrusive rock with a domal aureole of migmatized country rock. The migmatite includes fine-grained quartz biotite and feldspar gneisses and schistose gneisses (pelitic meta-sediments), biotite-rich metaquartzites, white marbles, calc-silicate hornfels, skarn, and white granites. The white granites occur as both sills and dykes.

In the area of the MAY claims the migmatitic complex forms a uniformly northeasterly dipping sequence. However, minor folds, most evident in the marbles, and the local oblique trend of gneissosity in the country rock relative to the marbles suggest a more complex structural history than is superficially evident.

<sup>1</sup> Geol. Surv. Can. File Map 13-1961, Tay River, Yukon Territory, Sheet 105K. Geology by J.A. Roddick and L.H. Green.

### Stratigraphy

Detailed mapping of the Desolate, Art and West showings plus limited property scale mapping and prospecting have distinguished five lithological units within the MAY claim group. A summary of these units is tabulated in Fig. 2 and described in more detail in the following sections.

#### Unit 1 - schist

Most of the rock exposures within the showing areas are fine to medium grained schist and gneissic schists of unit 1. Sub-unit 1a in turn forms the bulk of unit 1 rocks and consists mainly of interlocking quartz and plagioclase (An 25 as determined in thin section work, APPENDIX II) with coplanar subhedral biotite content ranging from less than 10% to approximately 30%. Biotite-rich facies tend to be moderate to strongly schistose and rusty weathering with an overall dark purplish coloration imparted by the biotite. Biotite-poor facies tend to be poorly fissile to gneissic, drab grey weathering, and light colored. Included in sub-unit 1a are minor undifferentiated amounts of sub-units 1b and 1c.

Sub-unit 1b occurs as fine grained quartz-rich, often weakly skarny (pale green) bands within 1a schist rocks. The bands are locally mappable on a showing scale and are distinguishable as rusty weathering, often banded, purple to purple and green, poorly fissile units containing disseminated pyrite and/or pyrrhotite, locally up to 10%. Traces of scheelite were also occasionally noted.

TABLE OF GEOLOGICAL FORMATIONS

KI	CRETACEOUS	
	INTRUSIVE	
	5b	HYBRID 5a - CHLORITIC
	5a	QUARTZ-FELDSPAR ± BIOTITE INTRUSIVE INCLUDES MINOR 5b
	5	5a, 5b UNDIFFERENTIATED
PLGs	PROTEROZOIC AND LOWER CAMBRIAN	
	4	AMPHIBOLITE
	SKARN	
	3c	EPIDOTE-FELDSPAR ± GARNET ± TREMOLITE SKARN, POSSIBLY ALTERED PHASE OF 5a
	3b	PALE GREEN SILICEOUS SKARN
	3a	DARK BROWN WEATHERING, DARK GREEN, DIOPSIDE ± SPHALERITE ± MAGNETITE SKARN; MAY INCLUDE SOME 3c
	3	3a, 3b, 3c UNDIFFERENTIATED
	MARBLE	
	2	GREY SANDY WEATHERING SILICEOUS MARBLE
	SCHIST	
	1c	QUARTZ-FELDSPAR-CHLORITE SCHIST, GNEISSIC SCHIST ALTERED EQUIVALENT OF 1a
	1b	SILICEOUS-BIOTITE POOR SCHIST
	1a	QUARTZ-FELDSPAR-BIOTITE SCHIST, GNEISSIC SCHIST MAY INCLUDE SOME 1b AND 1c
1	1a, 1b, 1c UNDIFFERENTIATED	

FIG. 2

Sub-unit 1c rocks are similar in nature to the biotite-poor facies of sub-unit 1a, but with chlorite replacing biotite. Generally these rocks occur as minor undifferentiated zones within sub-unit 1a but locally form larger mappable pods.

#### Unit 2 - marble

Occurring as interbands and lenses within unit 1 are massive, fine to coarse grained, light grey to white and rusty white siliceous marbles. These bands range from 1 meter to greater than 20 meters in thickness and are easily distinguished from adjacent schistose rocks by their characteristic sandy uniform grey weathering surfaces. The marbles are recessive weathering and generally occur as distinct linear depressions containing little outcrop and only occasional scattered float remnants. Individual bands are often traceable for several hundreds of meters.

#### Unit 3 - skarn

Associated with unit 2 marble horizons are localized skarn zones. The occurrences of these skarn zones are highly erratic and unpredictable with many often thick marble horizons containing little or no skarn development.

Sub-unit 3a is a massive chocolate brown to locally bright rusty orange weathering dark to medium green diopside skarn which very often contains disseminated sphalerite and galena and occasionally pods of massive and disseminated magnetite. Fracture surfaces are generally coated with black manganese stain. Thin section work revealed minor quartz as the only other non-opaque

mineral present. The rusty orange alteration, which can persist up to a centimeter below the rock surface, is due to the alteration of sphalerite and hence is a good indicator of sulphides.

Sub-unit 3b consists predominantly of fine grained quartz-rich pale green skarn. Thin sections of specimens from the sub-unit indicate intense silica replacement of a plagioclase (AN 62-AN 75)-augite rock. The term skarn has been applied mainly as a field term due to the association of this sub-unit with skarn and marble horizons at the Art Showing. Here it is found generally interbanded with sub-unit 1a as broad zones adjacent to skarn and marble horizons. The original nature of this rock is not known but the presence of augite would suggest it to be of intermediate igneous origin.

Associated with sub-unit 3a are pistachio-green weathering massive fine to medium grained epidote-quartz+garnet skarns of sub-unit 3c. Quartz occurs interstitial to euhedral to subhedral, often twinned, epidote crystals. Garnet where present occurs intermixed with epidote, locally forming up to 50% of the rock mass. No sulphides were observed in sub-unit 3c.

#### Unit 4 - amphibolite

Amphibolite rocks were not seen at either the Art or West Showings, however they do occur as minor thin bands at the Desolate showing. As reported by S. Clemmer in his report on the Desolate showing, the amphibolite is a "grey weathering dark greenish grey to black, fine grained, well foliated massive rock" probably of mafic volcanic origin.

Unit 5 - granitic rocks

The main body of granitic rocks of unit 5 occurs south of the showing areas (part of the Mount Patterson-Fox Mountain igneous complex). Within the areas mapped these rocks occur mainly as abundant, small, erratic migmatic pods and dykes within older schists and marbles.

Sub-unit 5a forms the predominant intrusive rock observed, consisting of massive to locally foliated fine to medium grained quartz-feldspar-biotite±hornblende granites and granodiorites. Mafic content is variable, ranging from 0 - 15%.

Adjacent to skarn zones are localized hybrid intrusives of sub-unit 5b, which appear to be chlorite-carbonate contaminated equivalents of sub-unit 5c. These rocks vary from dark green (chloritic) to rusty tan in color and are invariably weakly to strongly calcareous. Sphalerite, galena and pyrite were noted in these hybrid rocks at several localities at the Art Showing.

### Art Showing

The Art Showing, as located in Fig. 1 and Plate 1, contains three recognizable skarn-marble bands with sphalerite and lesser galena occurring in at least six localities. Poor outcrop exposure and thick rubble cover have limited exposure of both skarn and mineralization, and as a result three of the occurrences were found only as minor mineralized skarn boulders in rubble. The other mineral zones which are exposed in small outcrop do not appear to be extensive. The host rocks are mainly diopside skarns and adjacent intrusive rocks of sub-units 3a and 5b respectively. Sulphides locally exceed 5% sphalerite  $\pm$  galena in hand specimen, however chip sampling over the two best showings assayed less than 1.5% combined lead and zinc. Sketches of these showings, Art No. 1 and ART No. 3, along with assay results, are shown in Fig. 3.

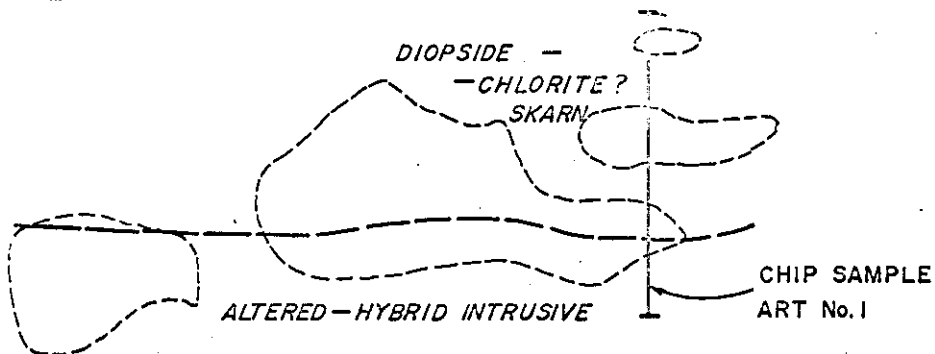
Plate 2 shows the geology and mineral locations within the Art grid area. The marble-skarn horizons are contained within inter-banded siliceous skarn (sub-unit 3b) and quartz feldspar biotite schist (sub-unit 1a) with abundant intermixed intrusive rocks (sub-unit 5a). It is believed that the lack of continuity of the marble-skarn horizons may be due in part to minor cross-cutting faults. Two such faults were mapped in the southeastern part of the grid area.

Steep to vertical jointing parallel to the northeast-trending fault was also observed elsewhere within the Art grid area.

Schistosity observed in the Art Showing area are generally

NE

SW



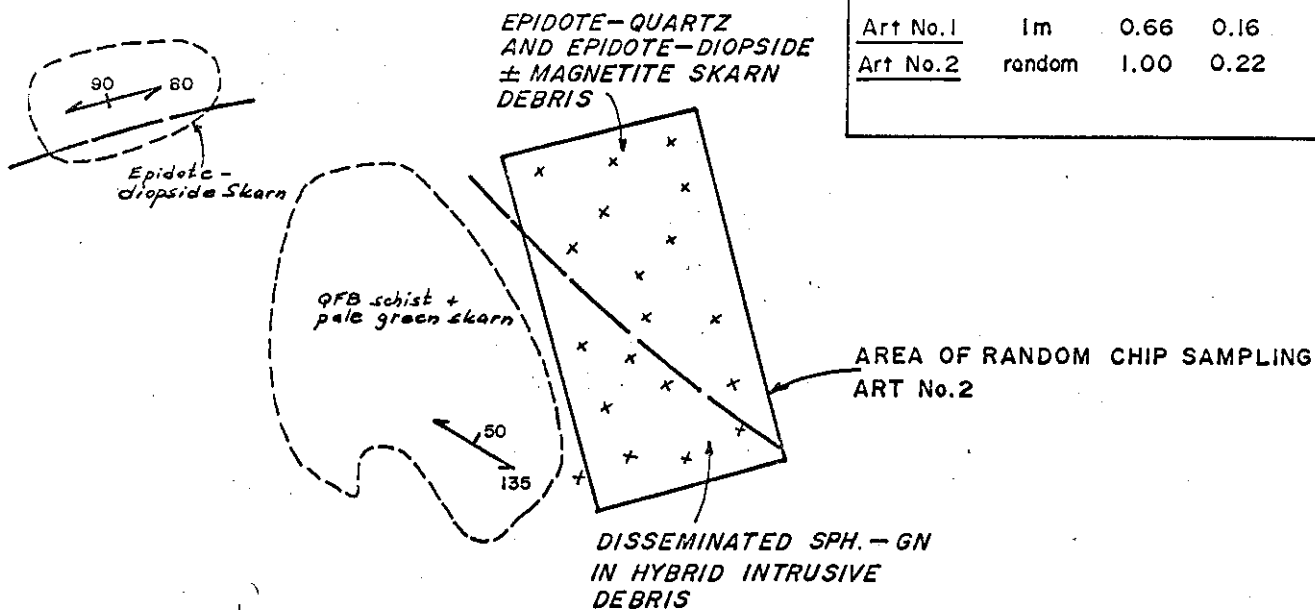
ART SHOWING No.1  
CROSS SECTION

VIEW LOOKING 130°

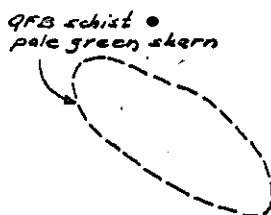
SCALE 1:25

ASSAY RESULTS

Sample No.	Width	Zn %	Pb %
<u>Art No.1</u>	1m	0.66	0.16
<u>Art No.2</u>	random	1.00	0.22



FOR LOCATION SEE PLATE 2



ART SHOWING No.2  
PLAN VIEW

SCALE 1:40

	WELCOME NORTH MINES LTD.	
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WOODSIDE PROJECT MAY MINERAL CLAIMS ART SHOWING No.1 & No.2		
Scale: <u>AS SHOWN</u>	Date: <u>NOV. 1978</u>	NTS. <u>105 K4</u>
Revised: _____	By: <u>R. HOLLAND</u>	Fig. <u>3</u>

moderately dipping ( $35^{\circ}$  to  $60^{\circ}$ ) to the northeast. Compositional layering as defined by marble-skarn horizons appear to parallel the schistosity. All three of the bands may be related by tight folding apparently about a north-dipping north-trending axis. This however is based on geometry and not on measurable bedding attitudes which appear to be absent.

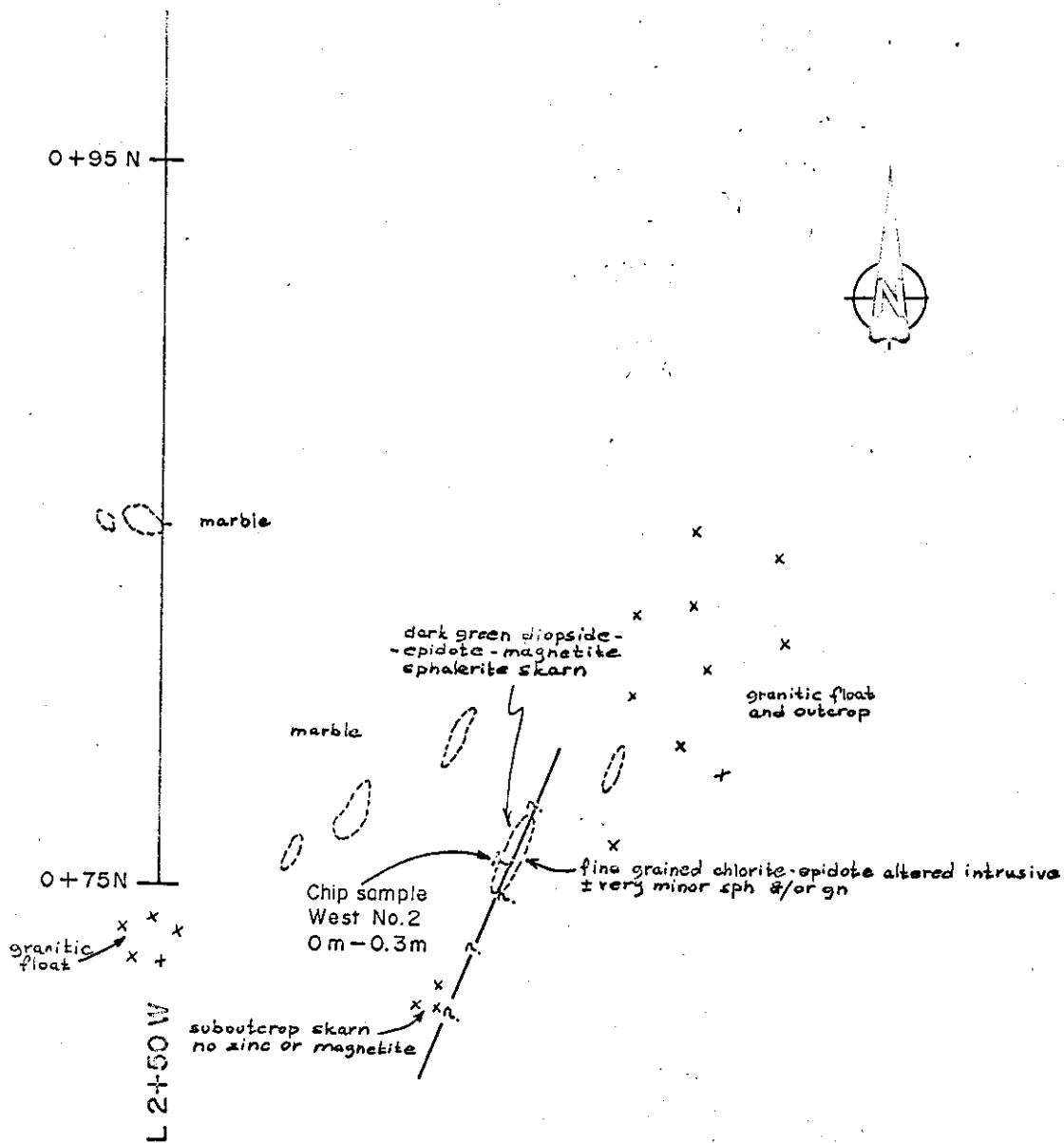
### West Showing

The geology and mineral occurrences of the West Showing, as located in Fig. 1 and Plate 1, are detailed in Plate 3. Three marble-skarn zones have been delineated and chip sampled where mineralized. All assay results have been included in showing sketches referred to below.

In the northeastern part of the grid are two relatively thick bands of marble which appear to be structurally related. The easternmost of these consists predominantly of marble with only one minor skarn-zinc occurrence (West Showing No. 1). The second band contains two skarn zones, the West Showing No. 2 and No. 3. The West Showing No. 3 consists of a skarn zone up to 3 meters thick and 80 meters long containing erratic sphalerite and localized magnetite mineralization. Assay results from the West Showing No. 3 indicate less than 1.5% zinc and no lead over the three sections sampled (Fig. 4 and 5).

Three thinner marble-skarn bands, also apparently structurally related, occur in the southern-central part of the West grid. Four zinc and lead occurrences were noted, however these were all less than 1 meter thick where exposed and were restricted to single small outcrops. Included in these occurrences are West Showing No. 4, No. 5a, and No. 5b, illustrated in Fig. 6 and 7. Assays of 17.8% zinc and 3.1% zinc and 1.34% lead were obtained from West Showings No. 5a and 5b respectively.

A third marble occurrence, covered by thick schist and intrusive rubble, was mapped in the northwestern part of the grid. Included in this marble are zones of pale green skarny marble, however no diopside skarn or mineralization were noted.




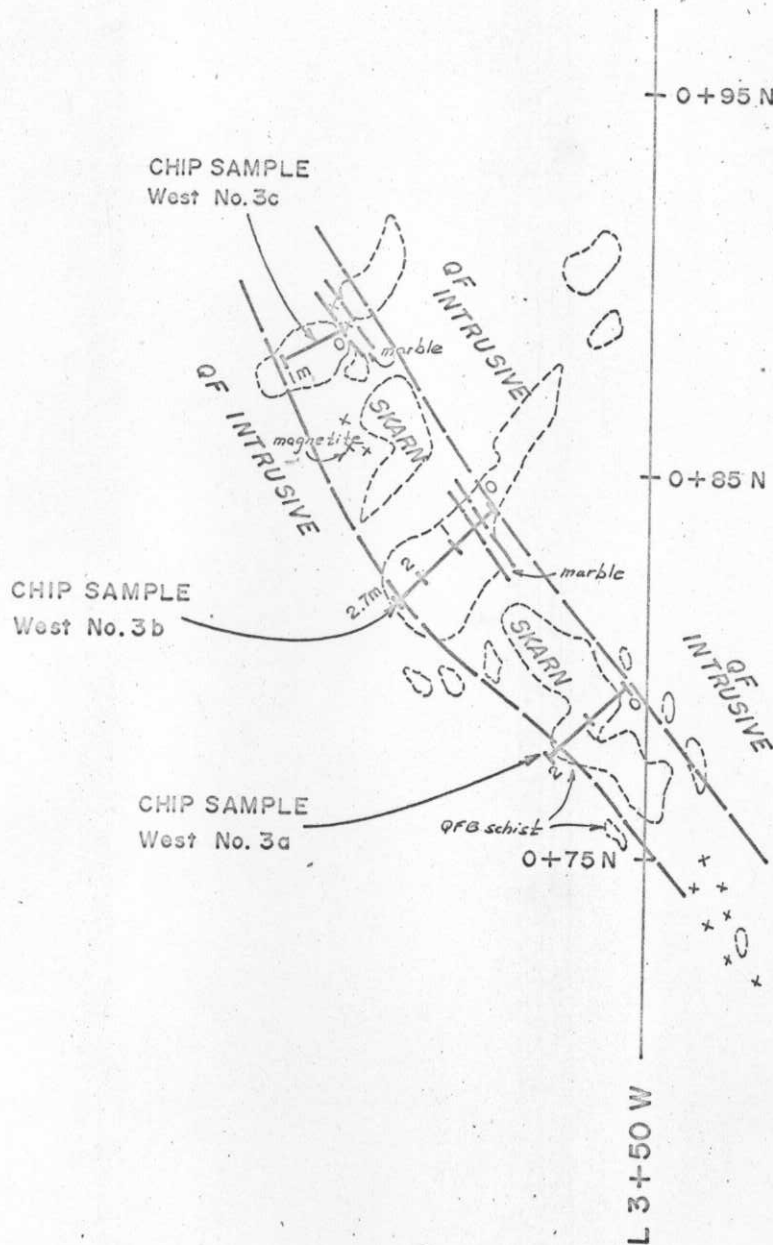
PLAN VIEW

ASSAY RESULTS

SAMPLE	WIDTH	Zn%	Pb%
West No.2	0.3m	3.30	< 0.01

FOR LOCATION SEE PLATE 3

 <b>WELCOME NORTH MINES LTD.</b>		
<b>GETTY MINING PACIFIC LTD.</b>		
WOODSIDE PROJECT MAY MINERAL CLAIMS WEST SHOWING No.2		
Scale: 1:200	Date: SEPT. 1978	N.T.S. 105 K4
Revised:	By: R. HOLLAND	Fig. 4



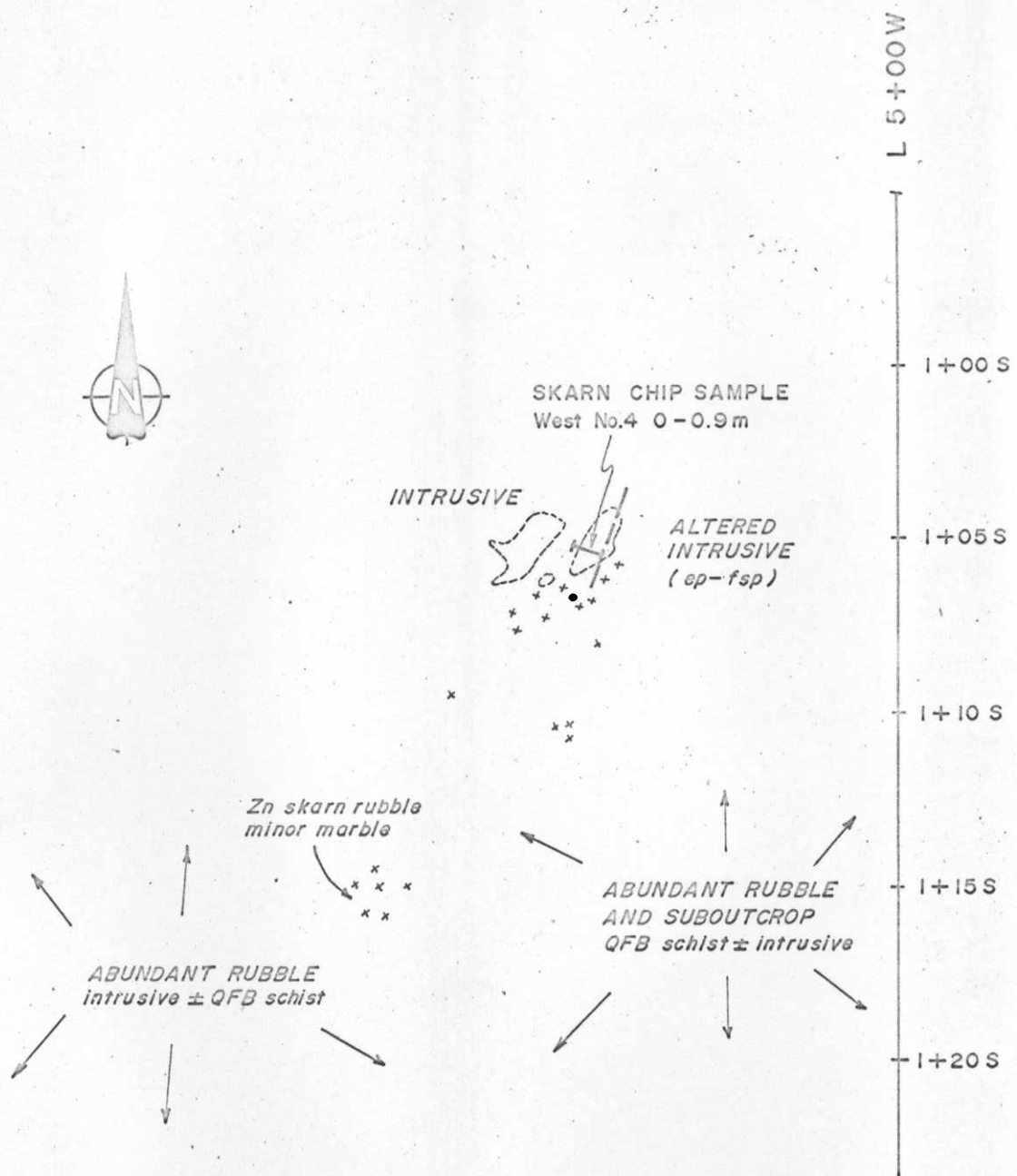
WEST SHOWING No. 3  
PLAN VIEW

ASSAY RESULTS

Sample No.	Interval	Zn%	Pb%
West No. 3a	0-1m	0.26	<0.01
	1-2m	0.94	<0.01
West No. 3b	0-1m	1.20	<0.01
	1-2m	0.56	<0.01
	2-2.7m	0.47	<0.01
West No. 3c	0-1m	0.72	<0.01

FOR LOCATION SEE PLATE 3

	WELCOME NORTH MINES LTD.	
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WOODSIDE PROJECT MAY MINERAL CLAIMS WEST SHOWING No. 3		
Scale: 1 : 200	Date: NOV. 1978	NTS. 105 K4
Revised: _____	By: B. HOLLAND	Fig. 5



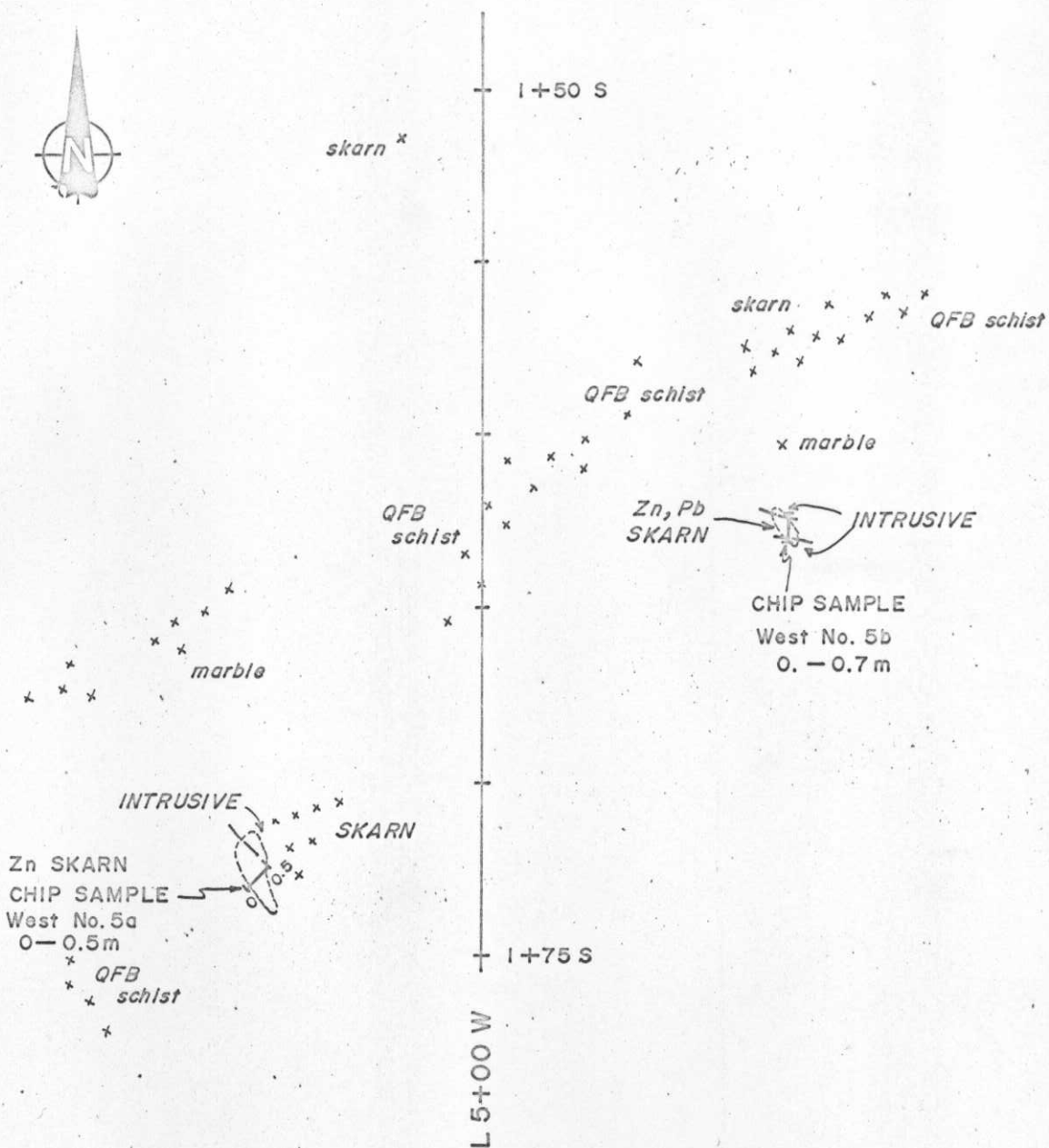
WEST SHOWING No. 4  
PLAN VIEW

FOR LOCATION SEE PLATE 3

ASSAY RESULTS

Sample No.	Width	Zn%	Pb%
West No.4	0.9m	0.21	<0.01

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WOODSIDE PROJECT MAY MINERAL CLAIMS WEST SHOWING No. 4		
Scale: 1 : 200	Date: NOV. 1978	N.T.S. 105 K 4
Revised: _____	By: R. HOLLAND	Fig. 6



WEST SHOWING No.5  
PLAN VIEW

ASSAY RESULTS

Sample No.	Width	Zn %	Pb %
West No. 5a	0.5m	17.8	0.02
West No. 5b	0.7m	3.1	1.34

FOR LOCATION SEE PLATE 3

WELCOME NORTH MINES LTD.		
GETTY MINING PACIFIC LTD.		
WOODSIDE PROJECT MAY MINERAL CLAIMS WEST SHOWING No.5		
Scale: 1 : 200	Date: NOV. 1978	N.T.S. 105 K4
Revised: _____	By: R. HOLLAND	Fig. 7

All mineralized occurrences on the West showing are hosted in sub-unit 3a diopside skarns. No sub-unit 3b or 5b rocks and only minor 3c epidote skarn rocks were noted. The schist rocks of unit 1 are very strongly migmatized, making differentiations between schist and intrusive rocks impractical if not impossible. Outcrop areas of these rocks were classified simply by the relative amounts of each unit present.

Schistosity, where measured, in the West Showing Area, are consistently east to northeast dipping at angles varying from 45° to 90°. Compositional layering in general cross-cuts the schistosity and appears to be complexly and tightly folded. The poor exposure of the marble horizons and the lack of primary structures prevents detailed structural interpretation of these units.

Other Mineral Occurrences

Other occurrences of zinc and lead were reported on the MAY Property as the result of the 1977 prospecting program (Fig. 1). For descriptions of these showings the reader is referred to the 1977 Woodside Project Report.

During 1978 an attempt was made to locate and map some of those occurrences which were in the vicinity of the Art, Desolate and West Showings. In general although numerous marble horizons were found no significant concentrations of zinc or lead were located. It is concluded therefore that many of the reported but unexamined showings on the property are of a similar nature to the showings which were assessed in 1978 and described herein. Certain of the reported showings however, particularly those described as containing banded sulphides, warrant further brief appraisals.

In addition the tungsten-zinc-lead showings which occur in the northwestern section of the MAY Property (Tungsten Zone, Fig. 1) were not examined in 1978. This area requires geological assessment in 1979.

## GEOCHEMICAL SURVEY

### Method of Survey, Analysis, and Treatment of Data

During the period August 14 to August 21, 1978 a soil sampling program was carried out in the southeastern part of the MAY claim block, in the vicinities of the Art and Desolate Showings. 28.0 line kilometers (17.3 miles) of flag-line grid were established and 560 samples collected at 50-meter intervals along 150-meter spaced lines (Plate 1). All samples were collected in brown Kraft bags with the aid of a prospector's grub hoe. Where possible samples were obtained at a depth of 15-20 centimeters below surface, however lack of good soil development and the abundance of rubble and outcrop in many places made proper sampling difficult. On the south end of lines 16+50E to 30+00E sampling was often impossible.

All soil samples were analyzed by Acme Analytical Labs in Ross River, Yukon. When the samples were received, each was dried while in its Kraft bag, then screened to 80 mesh, weighed out to 0.5 grams and digested in hot aqua regia. Rock samples were crushed and pulverized before undergoing this process. Samples were then diluted, clarified for 20 hours and then tested for lead, zinc, and silver content with an atomic absorption spectrophotometer. Accuracy of the instrument ideally is 1 percent of the amount of metal present. Individual cathode lamps were used for each element determination, a direct readout being given in parts per million of the element being tested.

Separate maps were prepared on a scale of 1:5000, showing values obtained for each of lead, zinc, and silver. All geochemical data maps were then sent to the head office of Getty Oil Ltd. in

Los Angeles where the data was subjected to statistical and trend surface analyses by means of computer which selected thresholds and contoured the maps on its own plotter system.

Results from the computer analysis were not available at the time of writing of this report. Geochemical maps included in this report have been manually contoured using partitioning values derived from 1977 data compiled on the PMJ and Angie grid areas to the east.

#### Results of Geochemical Survey

The results of the 1978 geochemical soil survey over a part of MAY Claim Group are diagrammatically presented for zinc, lead and silver (Plates 4, 5 and 6).

The multi-metal geochemically anomalous zones indicated on the plates closely coincide and demark the principal known mineral zones within the area sampled. Both the Desolate and Art Showings coincide with geochemical anomalies which include the following high values:

Desolate Showing high values in soils:

Zinc 4900 ppm, lead 205 ppm, silver 1 ppm

Art Showing high values in soils:

Zinc 700 ppm, lead 1020 ppm, silver 6.2 ppm

In addition less pronounced anomalies coincide with the lesser mineral zones in the grid area known through the 1977 prospecting program.

All the anomalies are well defined with little or no apparent dispersion effect. This probably is a reflection of the poor soil development in the area and the resistant rubbly nature of the surrounding rocks.

The geochemical survey results indicate in general that initial prospecting of the area successfully pin-pointed the surface mineral concentrations and that none of the occurrences are appreciably more extensive than their apparent surface expressions.

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1977: Geol. Surv. Can. Open File 486

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S.G. Clemmer

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Project, 1978.



**WELCOME NORTH MINES LTD. (N.P.L.)**

1027 - 470 Granville St., Vancouver, B.C. V6C 1V5 Telephone (604) 687-1658

May 11, 1979.

Mining Recorder  
Whitehorse, YT

The following list, to be included with the assessment report entitled "Geological, Geochemical and Sampling Report on the MAY 1-144 Mineral Claims, names the MAY mineral claims on which work has been performed by Welcome North Mines Ltd. since August 4, 1978:

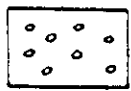
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MAY 23	YA19340
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MAY 62	YA19508
MAY 65-67 incl.	YA19511-YA19513 incl.

Robert T. Holland

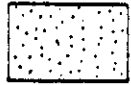
APPENDIX I

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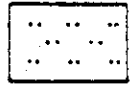
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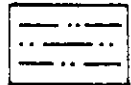
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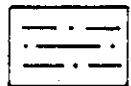
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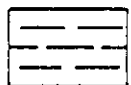
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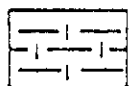
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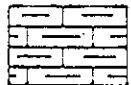
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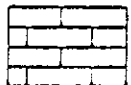
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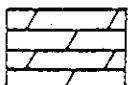
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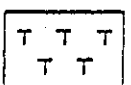
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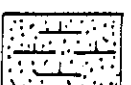
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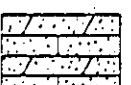
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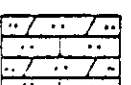
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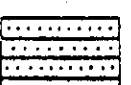
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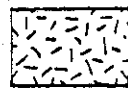
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SILTY CARBONATE



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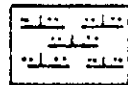
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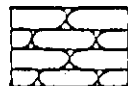
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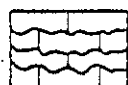
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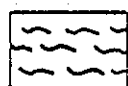
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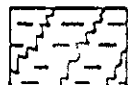
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CALCAREOUS PHYLLITE



PHYLLITE



ARGILLITE



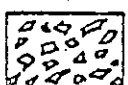
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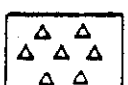
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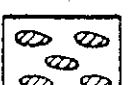
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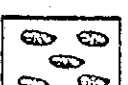
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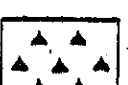
NODULAR CHERT



IRONSTONE NODULES



SEPTARIA NODULES



SILICEOUS

APPENDIX II

PETROGRAPHIC STUDIES  
SELECTED HAND SPECIMENS  
MAY PROPERTY

8HM150B (Sub-Unit 3b)

Hand specimen - pale green fine grained, foliated quartz-feldspar-pyroxene skarn with coarser grained quartz laminae. Quartz content estimated as > 50%.

Thin section

plagioclase - occurs as fine grained, irregular shaped, possibly corroded grains, often broken and altered to chlorite ± carbonate. Also occurs often as subhedral or rounded grains. The plagioclase is generally closely associated with or near pyroxene crystals and tends to be well twinned (albite). Compositions range from An62 - An75, with only minor zonation of crystals. Plagioclase forms approximately 20% of rock.

augite - low to medium birefringence, high relief, pyroxene cleavage, biaxial positive with  $2V \approx 70^\circ$ , pale greenish color, extinction inclined with respect to cleavage.

Occurs as highly irregularly shaped (corroded) large to small grains often containing rounded inclusions of quartz, feldspar and lesser carbonate. Where intensely corroded the augite tends to form poikilitic grains within larger plagioclase and quartz. Some of the larger less corroded grains appear to have at one time been subhedral or euhedral crystals. Augite makes up about 10% of section.

quartz - occurs as irregular, elongate, intimately interlocking grains forming the matrix for plagioclase and augite. The quartz laminae are composed of similar but coarser grained quartz with minor carbonate as interstitial grains and minor fracture infilling. Quartz makes up about 65% of rock.

(ii)

carbonate - probably calcite - as described above the carbonate occurs as rounded but distinctly rhombic inclusions in the other minerals (especially the augite) and also as fine irregular shaped secondary interstitial masses, often associated with chlorite, in broken altered plagioclases and occasional augites. Forms about 3% of rock.

chlorite - occurs as alteration of more intensely broken and corroded plagioclase forming approximately 1-2% of rock.

opaques - occur as minor finely disseminated grains, < 1% of section.

#### Paragenesis

It appears that an original feldspar-augite-quartz? rock possibly of intrusive origin has been largely replaced by quartz. The carbonate rhombs are probably original features with the secondary carbonate and chlorite resulting from alteration of remaining plagioclases.

#### 8HM150C (Sub-Unit 1a)

Hand specimen - fine grained, weakly foliated, grey, quartz-feldspar-biotite gneissic schist, rusty on fractures.

#### Thin section

plagioclase - occurs as interlocking grains with quartz, distinguished by a slightly higher relief and slightly dirty brown coloration. Composition difficult due to lack of twinning but appears to be approximately An 25. Estimated plagioclase content is 30%.

quartz - occurs similar to feldspar, grains slightly elongate parallel to foliation (as for feldspar also). Forms roughly 60% of rock.

(iii)

biotite - strongly pleochroic brown, grains aligned (all extinguish at same time also). Grains tend to be long and narrow and subhedral forming approximately 10% of section. Contains minor chlorite alteration.

apatite - trace - small rounded grains.

chlorite - minor alteration of biotite and locally abundant in broken zone along fine fracture. 1%.

opaques - minor disseminated interstitial opaques, locally concentrated, <1%.

8HM155A (Sub-Unit 3a)

Hand specimen - rusty orange weathering, medium green, fine grained diopside skarn, containing fine disseminated opaques? along distinct thin laminae. Weathering alteration extends to 1/2 centimeter below surface of rock and black manganese stain is common along fractures.

Thin section

diopside - high birefringence, high relief, pyroxene cleavage with inclined extinction, biaxial positive with  $2V \approx 50^\circ$ .

Occurs as dirty brown colored (alteration?) equant, anhedral to subhedral grains making up 95% of rock. The dirty brown discoloration is generally along cracks, fractures and grain boundaries and is locally more intense giving grains a weakly pleochroic green-brown color probably due to chlorite.

quartz - minor quartz (approximately 1%) occurs interstitial to diopside, obviously as a later stage in-filling of voids. It tends to be bounded by diopside crystal faces.

opaques - occur as fine disseminated rounded to euhedral, angular equant grains and grain clusters, locally concentrated in fine laminae parallel to the foliation of the rock. Makes up 2-5% of the section.

8HM155B (Sub-Unit 3c)

Hand specimen - massive, pale green weathering, pistachio green colored, fine grained epidote-quartz skarn containing occasional fine dark brown semi-opaque spots.

Thin section

epidote - high birefringence, high relief, monoclinic habit, weak to moderately pleochroic colorless to pale yellow, optically biaxial negative with high 2V, 2 cleavages as 65°, one parallel to extinction.

Occurs as equant euhedral to subhedral, occasionally long prismatic interlocking crystals. Euhedral grains show monoclinic crystal habit. Crystals often pitted with minor fine chlorite alteration. Epidote very locally intensely broken and corroded with red-brown alteration rimming fragments. (Dark brown patches in hand specimen). Epidote content is approximately 80%.

quartz - occurs interstitial to epidote forming approximately 18% of rock. Also occurs as infilling around corroded epidote fragments.

carbonate - approximately 1% as interstitial grains associated with quartz.

apatite - traces found mainly in altered epidote.

chlorite and red-brown alteration - approximately 1%.

N.B. The epidote, untypically, shows abundant twinning and growth lines, generally in low birefringent grains.

Paragenesis

Epidote appears to have formed apparently by slow growth forming well developed crystals. Quartz and carbonate later in-filled any remaining voids. Localized alteration of the epidote at this time was also in-filled by quartz. Chlorite alteration is probably retrograde.

8HM157A (Sub-Unit 5b)

Hand specimen - medium grained, dark green, strongly calcareous chlorite-feldspars-quartz intrusive rock containing minor disseminated sphalerite and galena. Appears to be a hybrid rock contaminated by nearby marbles and skarns.

Thin section

plagioclase - composition An 25 - occurs mainly as untwinned slightly dirty medium grained interlocking crystals, occasionally subhedral. Due to lack of twinning and very similar refractive indices the plagioclase is very difficult to distinguish from quartz. Plagioclase however is locally intensely altered to visible chlorite and carbonate. Plagioclase is estimated at 25% of rock.

quartz - occurs similar to plagioclase however is unaltered where plagioclase is intensely altered. Occasionally found as coarser grained subhedral sections occasionally contain disseminated sphalerite. Forms approximately 15% of section.

carbonate - occurs as fine irregularly shaped masses cross-cutting plagioclase and occasionally quartz throughout most of the section, but is most abundant where plagioclase is altered. Often the carbonate is coarser grained, apparently recrystallized into more uniform grains. Also occurs in minor fine stringers. Carbonate content of rocks is approximately 30%.

chlorite - is found associated with carbonate mainly within altered sections of rock but also disseminated throughout slide. Usually it is very fine grained occasionally euhedral forming about 20% of section.

opiques - occur as uniformly disseminated irregular, angular shaped grains, generally fine grained, with larger semi-opaque sphalerite associated with small coarser grained quartz sections. Total opaque content is about 10%.

#### Paragenesis

The rock appears to be a carbonate contaminated quartz plagioclase rock probably intrusive in origin. The feldspars locally have been almost completely replaced (altered) to fine carbonate and chlorite. Mineralization of sphalerite and galena probably occurred during the contamination process.

#### 8HM163A (Sub-unit 5b)

Hand specimen - massive fine to medium grained, strongly calcareous, chloritic feldspathic skarny intrusive with abundant disseminated sphalerite and minor galena. Cross cut by a quartz veinlet 1/2 centimeter thick.

Thin section

plagioclase - occurs as interlocking equant anhedral to subhedral grains (with negative relief). Composition as determined by albite twinning is An<sub>2</sub> (assuming high albite, An<sub>11</sub> if low albite). Plagioclase content is about 64%.

opaques - occur as abundant irregular shaped, disseminated grains both within feldspar grains and along grain boundaries (includes some sphalerite and galena generally as larger grains) which appear to have corroded and replaced the feldspar (ragged contacts).

Also occurs as abundant irregular shaped clusters of very fine to coarser grains (sphalerite tends to be coarser and semi-opaque brown) with abundant fine interstitial quartz, carbonate and minor larger subhedral feldspar. Also associated with fine to medium grained non-pleochroic biotite which is weakly to strongly altered to chlorite. Opaques form about 15% of rock.

biotite - occurs often as large masses surrounding subhedral feldspars and as finer secondary alteration product associated with opaques. Biotite content is about 5%.

Biotite also occurs within the quartz vein as interstitial and internal grains. The internal grains are locally aligned (grown) along parting planes in quartz (well developed locally). This biotite is often strongly replaced by chlorite.

quartz - occurs predominantly as coarse, subhedral interlocking grains within the quartz vein, with some inclusions and interstitial grains of biotite and carbonate; and minor disseminated opaques

(some sphalerite) associated mainly with chlorite alteration of biotite (80% of vein quartz).

Also occurs with feldspar adjacent to vein - and as mentioned above with opaques. Total quartz content excluding vein is approximately 1%.

chlorite - occurs as alteration of biotite in vein and wall rock. In coarser wall rock with biotite grains, it occurs as round radiating fibrous masses. Chlorite content is approximately 5%.

carbonate - occurs as mentioned above in vein and wall rock forming about 10% of rock.

#### Paragenesis

This rock appears to be formed as a result of contamination of feldspar-biotite rock with quartz veining and chlorite alteration of biotite.

APPENDIX III

GEOLOGY OF THE DESOLATE SHOWING, MAY CLAIMS

S.G. Clemmer

1978 PROPERTY REPORT

TITLE: GEOLOGY OF THE DESOLATE SHOWING, MAY CLAIMS

AUTHOR: S.G. CLEMMER

DATE: OCTOBER, 1978

COMMODITY: Zn, W, Sn

LOCATION: -Area: Woodside  
-Mining Division: Whitehorse  
-Coordinates: Lat. 62°01'  
Long. 133°43'  
-NTS 105K/4

GETTY MINES, LIMITED  
VANCOUVER OFFICE

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SUMMARY

The MAY claim group is located within the Whitehorse Mining District, Yukon Territory, on the NTS map sheet 105K/4 at approximately Lat. 62°01', Long. 133°41'. The MAY claim group lies within the Woodside Joint Venture Agreement area of Getty Mining Pacific, Limited (60%) and Welcome North Mines Ltd. (40%).

The MAY claims were staked over a series of parallel zinc bearing skarn zones. In order to evaluate the economic potential of this skarn related zinc mineralization a program of detailed grid controlled geological mapping and chip sampling was carried out on the Desolate Showing of the MAY claim group, August 1 to 10, 1978. The Desolate Showing was mapped at a scale of 1:500 over a grid covering an area approximately 500x300 metres.

The rocks of the Desolate Showing consist of Proterozoic and Lower Cambrian quartz-feldspar-biotite schists with lesser intercalated marble, amphibolite, skarn and Cretaceous granitic rocks that form a uniformly northeasterly dipping migmatitic complex within the aureole of the Cretaceous Mt. Patterson-Fox Mountain plutonic complex.

At least 8 separate, concordant pyroxene-epidote-amphibole, zinc bearing skarn zones were outlined within the Desolate Grid area. The skarn zones are separated from one another by 10 to 100 metres of barren metamorphic rocks. The skarn zones vary in thickness from 1 metre to 9 metres but are commonly 2 metres or less in thickness. The skarn zones can be traced from 40 to 100 metres along strike. Most of the skarn zones contain

1 to 6 percent zinc over thicknesses of 2 metres or less. One skarn zone however assayed almost 14 percent zinc over a thickness of one metre.

Most of the skarn zones contain greater than 100 ppm tin and one 0.5 metre sample interval contained 816 ppm tin.

CONCLUSIONS

1. Known skarn zones on the MAY offer little tonnage or grade potential.
2. All zinc mineralization observed by the author occurs in metamorphic skarn zones.
3. The skarn zones are closely associated with granitic rocks exposed on the Desolate Grid and marble bands are in contact with four of the skarn zones.
4. The skarn zones are enriched in tin, but not in economic quantities.

RECOMMENDATIONS

The skarn related zinc mineralization observed on the MAY has little economic potential because the narrow widths and/or low zinc values. The anomalous tin values are interesting from a regional point of view but no economic concentrations of tin are known on the MAY. Therefore it is recommended that no further work be done on the MAY.

## INTRODUCTION

### Location and Access

The MAY claim group is located within the Woodside Joint Venture Agreement area of the Yukon Territory. The location of the Woodside Joint Venture Agreement area is shown in figure 1 and the location of the MAY claim group within the Joint Venture area is shown in figure 2. The claims are located 29 miles to the southwest of the town of Faro and 10 miles to the south of the Robert Campbell Highway.

### History

The MAY claims were staked to cover a series of parallel zinc skarn occurrences within the migmatitic aureole adjacent to the Mt. Patterson-Fox Mountain Cretaceous plutonic complex. The showings were found in the course of a regionally oriented, prospecting program conducted as the Woodside Joint Venture by Getty Mining Pacific, Limited (60%) and Welcome North Mines (40%).

The 1977 exploration program carried out by Welcome North Mines involved:

- i. prospecting of claim group
- ii. preliminary geological mapping of showings
- iii. minor chip sampling of selected skarn zones

The results of this program are summarized in the 1977 Woodside Report by Welcome North Mines. The location of the zinc and tungsten showings found in the 1977 program are shown in figure 3. The WEST, ART and DESOLATE Showings are all

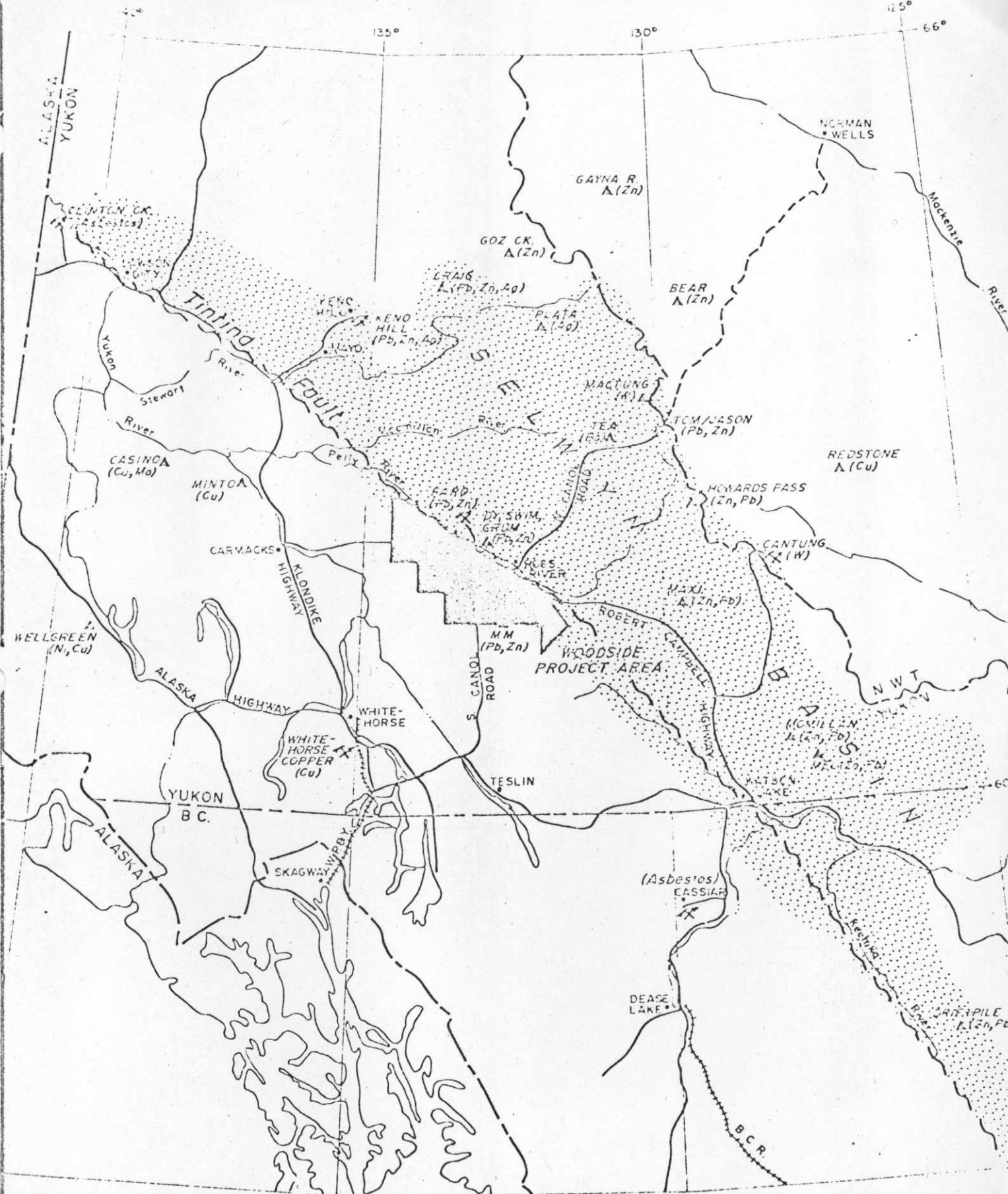
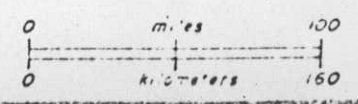
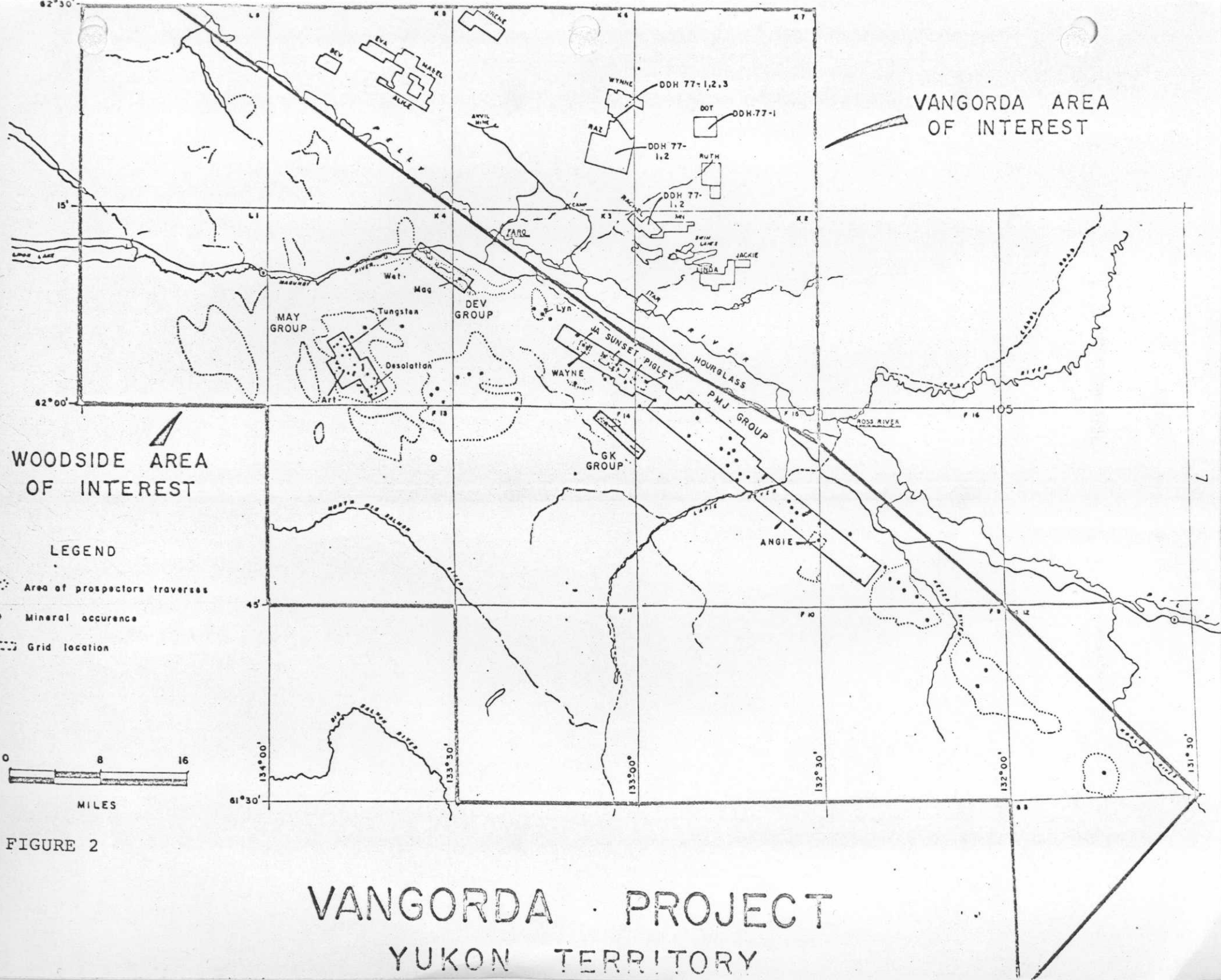


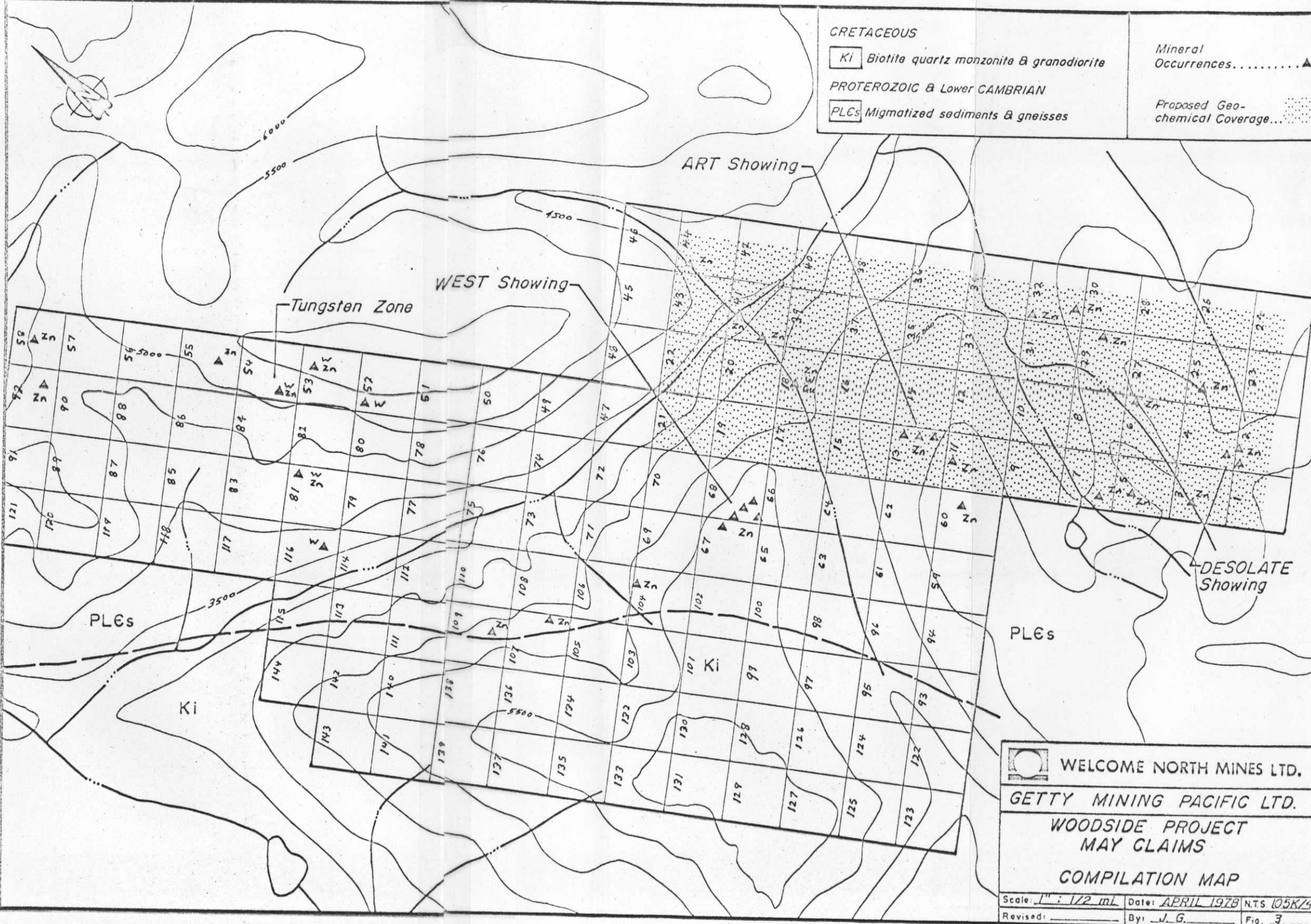
FIG. 1 : WOODSIDE PROJECT LOCATION MAP  
 SHOWING SELWYN BASIN and MAJOR MINERAL OCCURRENCES

Producing Mine . . . . ✕

Mineral Occurrence . . . . ▲







CRETACEOUS


**Ki** Biotite quartz monzonite & granodiorite

PROTEROZOIC & Lower CAMBRIAN

**PLEs** Migmatized sediments & gneisses

Mineral Occurrences.....▲

Proposed Geo-chemical Coverage.....

 <b>WELCOME NORTH MINES LTD.</b>		
<b>GETTY MINING PACIFIC LTD.</b>		
<b>WOODSIDE PROJECT MAY CLAIMS</b>		
<b>COMPILATION MAP</b>		
Scale: 1" = 1/2 mi	Date: APRIL 1978	N.T.S. 105K74
Revised:	By: J. G.	Fig. 3

areas of zinc bearing skarn zones. The only significant tungsten occurrences are seen in the vicinity of the Tungsten Zone (see figure 3). However, discussions with geologists of Welcome North Mines Ltd. suggest the tungsten occurrences of the Tungsten Zone are minor and of little economic interest. Atlas Exploration Ltd. is believed to have formally held property, staked in 1969, in the vicinity of the MAY claims. Archer Cathro (1977) state that Atlas discovered and did preliminary work on a sphalerite-skarn showing 15 feet in width and 200 feet long, grading up to 5 percent zinc.

#### Claims

The MAY claim group consists of 144 contiguous claims within the Whitehorse Mining District of the Yukon Territory.

Claims	Grant Numbers	Date Due
MAY 1 - 44	YA19318 - YA19361	Aug. 4, 10, 1979
MAY 45 -144	YA19491 - YA19590	Aug. 4, 10, 1979

1978 FIELD PROGRAM

As part of the 1978 exploration program of the MAY Claims, the Desolate Showing was mapped, prospected and sampled. The 1978 exploration program included:

- i. placing of a grid over the Desolate Showing covering an area approximately 300x500 metres. A total of 2.025 km of picketed line was chained over the Desolate Grid using compass and line of sight methods. The grid is shown in figure 4.
- ii. The Desolate Grid was geologically mapped in detail at a scale of 1:500.
- iii. All significant zinc bearing skarn zones located within the Desolate Grid were chip sampled. This involved the collection of 37 0.5 metre chip samples that were analysed for Zn, Pb, Ag, Sn and W.
- iv. The immediate area around the Desolate Showing was prospected. No new important mineral occurrences were found.

The author also visited the WEST and ART zinc-skarn showings on the MAY claim group. No significant zones of zinc bearing material were observed by the author on either of these showings. Robert Holland, a geologist for Welcome North Mines Ltd., mapped both the WEST and ART Showings in the 1978 field season and is filing a separate report on these showings.

GEOLOGYRegional Geology

The MAY claim group straddles the transitional contact between a Cretaceous plutonic complex (Ki) underlying the southwestern edge of the property composed of biotite-quartz monzonite and Proterozoic and Lower Cambrian sedimentary and metamorphic sequences (PL(s) to the northeast.

Known mineral occurrences on the property occur within an irregular and transitional migmatitic aureole adjacent to the Mt. Patterson-Fox Mountain igneous complex. The complex consists of a core of intrusive rock with a domal aureole of migmatized country rock. The migmatite includes fine-grained quartz-feldspar-biotite schists (pelitic metasediments), impure metaquartzites, light coloured marbles, hornfels, skarn and light coloured granitic rocks. The granitic rocks occur predominantly as sills or lenses and to a lesser extent as dykes.

Geology of the Desolate Showing

Five map units were outlined during the mapping of the Desolate Grid and these are listed in Table 1 on the next page. The distribution of these rock units is shown on the geological map of the Desolate Showing (figure 5) at the back of this report. The metasediments of the Desolate Showing were originally a sequence of pelitic sediments with lesser intercalated limestone and mafic volcanics.

The migmatitic complex of the Desolate Grid strikes northwest-southwest and dips moderately to the northeast.

The five map units are now described separately below.

TABLE 1: Table of Formations

## Cretaceous (Ki)

## Unit 5: Granitic intrusions and gneisses

- a. granitic gneisses
- b. granitic sills and dykes
- c. hybrid altered granitic rocks

## Proterozoic or Lower Cambrian (PL(s))

## Unit 4: Amphibolite

## Unit 3: Skarn Unit

## Unit 2: Marble Unit

## Unit 1: Schist Unit

- a. Qtz.-Feld.-Bio. Schist, less than 10 percent contained granitic rocks
- b. Qtz.-Feld.-Bio. schist, more than 19 percent contained granitic rocks
- c. Light brown qtz.-feldspar schist
- d. Hornfels

Schist Unit (Unit 1)

The rocks of unit 1 are extensively exposed over the entire Desolate grid area forming the bulk of the exposed rock.

Sub-units 1a and 1b are a grey to rusty brown weathering, grey to purple grey, fine to coarse grained quartz-feldspar-biotite schist. The biotite content varies from less than 5 percent to 30 percent. Locally, 5-10 cm thick layers are very rich in quartz ( 50%) and these quartz rich schists contain accessory pyrrhotite (approximately 1 percent) giving the rock a rusty appearance. The distinction between sub-units 1a and 1b is made on the basis of visually estimated volume of granitic rocks contained in the schist. Sub-unit 1a contains less than 10 percent granitic material and sub-unit 1b contains more than 10 percent granitic material. The granitic material occurs as concordant sills or lenses, generally less than 1 metre thick. Mapable bodies of granitic rock are placed in unit 5. The granitic rocks contained in unit 1 are very similar to the granitic rocks described under unit 5 below.

Sub-unit 1c is similar to sub-unit 1a and 1b except it contains little biotite and is more massive. The rock is a light brown weathering, brown, fine grained, quartz-feldspar fel with 1 to 2 percent biotite. The unit is only mapable just west of line 0+50W, north of the baseline.

Sub-unit 1d is a light grey to brown weathering, grey to greyish green siliceous to quartzitic hornfels. The sub-unit is exposed near the baseline at line 0+50W, 0+50E and 1+00E.

The schists of unit 1 were originally a thick sequence of shales and/or siltstones containing minor interbedded quartz rich layers.

#### Marble Unit (Unit 2)

The most extensive outcropping of the marble unit is in the western grid area, near the baseline. In this area the marble occurs as discontinuous lense shaped bodies, traceable for up to 100 metres along strike. Actual marble outcrops are uncommon and these marble bands were mapped by using the distribution of marble rubble. The marble lenses are probably not more than 5 metres thick.

Other marble bodies occur in the eastern and northeastern corner of the grid. The marble occurrences in this area are generally less than 1 metre wide, but appear to be laterally persistent, being traceable up to 50 metres along strike.

The marble is white, light pink to grey weathering, white to yellow, medium grained rock composed primarily of crystalline calcite. Accessory minerals include biotite, pyroxene and dolomite.

The marble of Unit 1 was originally a relatively pure limestone.

Generally wherever marble of unit 2 occurs, in the area of the Desolate grid, skarn rocks of unit 3 are also present.

### Skarn Unit (Unit 3)

The skarn rocks of Unit 3 are described in detail in the economic geology section below.

### Amphibolite (Unit 4)

Amphibolite outcrops at two locations on the grid:

- i. as a 5 metre wide band at the northern end of line 1+00E.
- ii. a narrow 1 metre wide band between lines 1+00E and 1+50E and 160 metres north of the base line.

The amphibolite is a grey weathering, dark greenish grey to black, fine grained, well foliated massive rock.

The amphibolite was probably originally a mafic volcanic although it could also originally have been a mafic intrusive rock.

### Granitic Rocks (Unit 5)

Granitic rocks are widespread over the Desolate Grid but only the larger bodies were mapable. The granitic rocks occur predominantly as concordant lenses or sills varying in width from less than 1 metre to over 10 metres. A few dykes were also recognized.

Sub-unit 5a is a massive, well foliated, light yellow to white weathering, light brown to white quartz-feldspar-biotite gneiss. The feldspar commonly occurs as 0.2-0.5 cm augen and the biotite content is variable (5-10 percent) between adjacent bands (bands 41-4 cm thick).

Sub-unit 5b is a white weathering, white granitic intrusive rock containing predominantly feldspar with 5 to 10 percent quartz and 1 percent biotite.

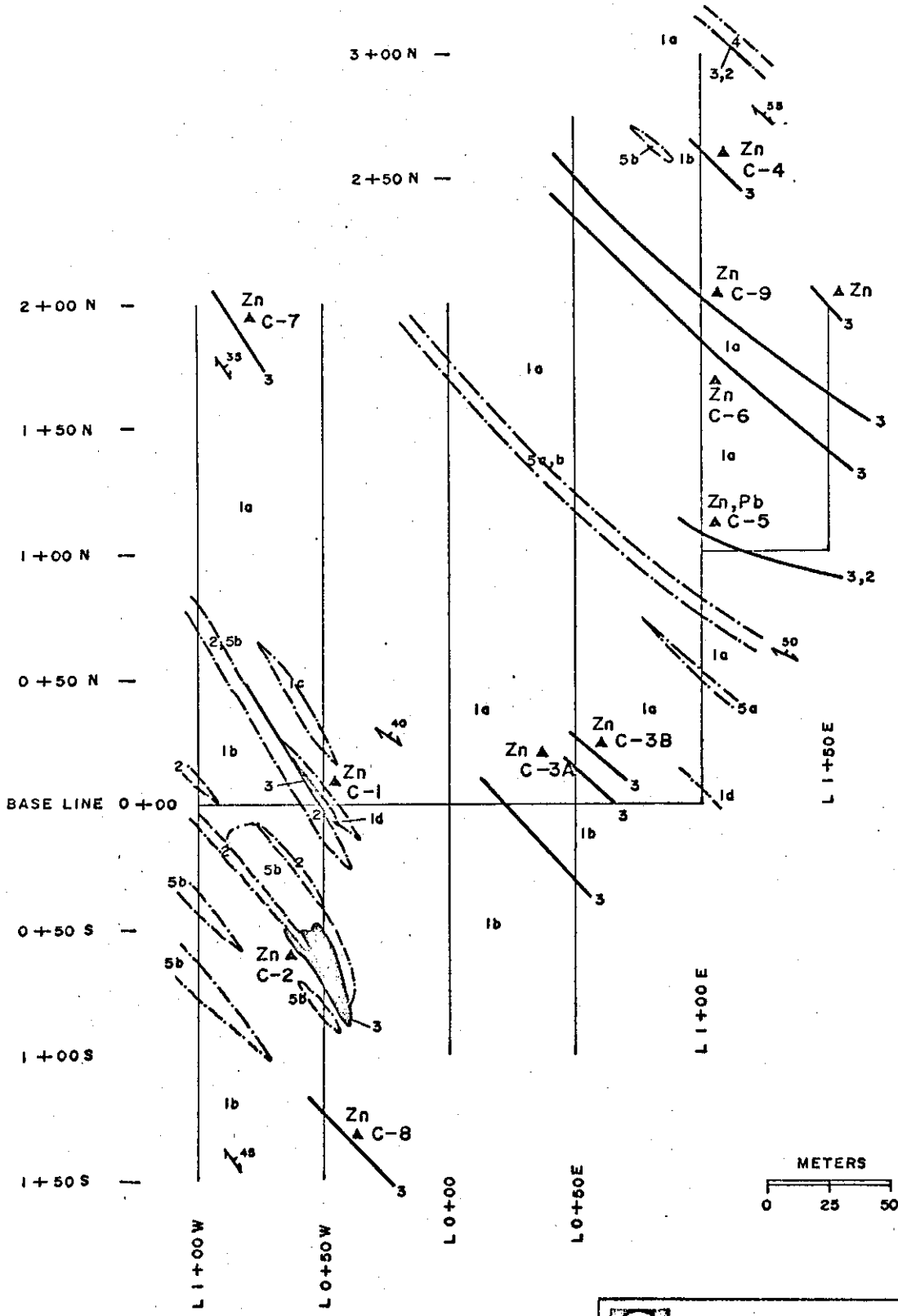
Sub-unit 5c includes a group of granitic rocks that represent contaminated granitic melts. These hybrid granitic rocks are white weathering, white to light grey feldspar-quartz-mafic mineral (less than 5 percent pyroxene or amphibole) fels and gneisses. These rocks are locally calcareous and minor, 0.2 mm pink garnets are locally present. These hybrid granitic rocks are often present in the vicinity of the skarn rock of unit 4.

ECONOMIC GEOLOGY

At least 8 separate skarn zones were outlined within the Desolate Grid. The location of these skarn zones and the geology of the Desolate Grid is summarized in figure 4. All the observed skarn zones are concordant with the regional foliation. The skarn rock varies from a dark green pyroxenite to a light green epidote-pyroxene-amphibole skarn rock. Grain size varies from fine (1mm) to coarse (5 mm) and most of the skarn rocks observed are manganese stained. Sphalerite is widespread, but rarely composes more than 5 percent of the skarn zone. The sphalerite commonly occurs as 1-3 mm disseminated grains and less commonly as 1-5 cm thick semi-massive layers or lenses. The sphalerite rich areas of the skarn zones weather easily and are light brown in colour.

The dimensions of the skarn zones and a summary of the chip sampling is given in table 2. Skarn zones observed on the Desolate Grid are separated by 10 to 100 metres of barren schists of unit 1. The skarn zones are commonly 2 metres or less in thickness. The only exception to this is skarn zone C-2 that reaches a maximum thickness of 9 metres. The skarn zone can often be traced for 100 metres along strike and may persist up to 200 metres.

The assays from the chip sampling vary from less than 1 percent to almost 14 percent zinc. Most of the skarn zones assayed from 1 to 6 percent zinc, generally over a thickness of 1 metre or less. The highest assay was 13.85 percent zinc over 1 metre at skarn zone C-4. Skarn zone C-2, the largest skarn



NOTE : FOR LEGEND SEE TABLE 2


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<b>DESOLATE GRID - GEOLOGY</b>		
Scale 1:2500	Date NOV. 1978	NTS 105.K.4
Revised:	By S. Clemmer	Fig. 4

TABLE 2: Summary of skarn zone dimensions and chip sample assays

Showing Number	Location	Observed Maximum Thickness	Observed Exposed Strike Length	Inferred Strike Length	Assay				
					Thickness of sample interval	Zn%	Pb%	Ag oz./ton	Sn p.p.m.
C-1	BLO, 0+50W	3.0 m	15 m	50 m	2.0 m	2.49	<0.01	<0.05	268
C-2	0+50S-0+75S 10+50W	9.0 m	25 m	40 m	3.0 m	0.66	"	"	140
					4.5 m	0.38	"	"	280
					1.5 m	0.23	"	"	193
C-3A	0+10N,0+55E	1.0m	10m	200m?	1.0m	6.03	"	"	59
C-3B	0+10,0+60E	+1.0m	10m	200m?	0.5m	1.20	"	"	120
					0.5m	1.29	"	"	147
C-4	2+55N,1+10E	+2.0M	10m	60m	1.0m	13.85	"	"	108
C-5	1+10N,0+90E	1.0	5m	90m	0.5m	1.05	0.56	0.57	ND
C-6	1+43N,1+42E	<2.0	5m	100m?	0.5m	5.95	<0.01	<0.05	66
C-7	1+90N,0+85W	1.0m	5m	200m	0.5m	3.63	"	"	553
C-8	1+40S,0+30W	2.0m	20m	50m	0.5m	1.68	"	"	124
C-9	1+50N,1+75E to 1+90N,1+15E	2.0	<5m at 3 localities	100m	-	-	-	-	

Table 3: Legend for figure 4

Foliation, strike and dip



Mineral Occurrence and Showing Number Zn ▲ C-2

Rock Units

## 5) Granitic intrusions and gneisses

- a. granitic gneiss
- b. granitic sills and dykes
- c. hybrid altered granitic rocks

## 4) Amphibolite

## 3) Skarn Unit

## 2) Marble

## 1) Schist Unit

- a. Qtz-Feld-Bio schist, less than 10% contained granitic rocks
- b. Qtz-Feld-Bio schist, greater than 10% contained granitic rocks
- c. Light brown qtz-feldspar schist
- d. Hornfels

zone, contains less than 1 percent zinc.

The skarn zones contain anomalous quantities of tin. Generally the skarn zones contain more than 100 ppm tin and one 0.5 metre sample interval of skarn zone C-2 contained 816 ppm tin.

The skarn zones are described in detail in Appendix 1 at the back of this report.

## APPENDIX 1

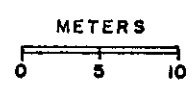
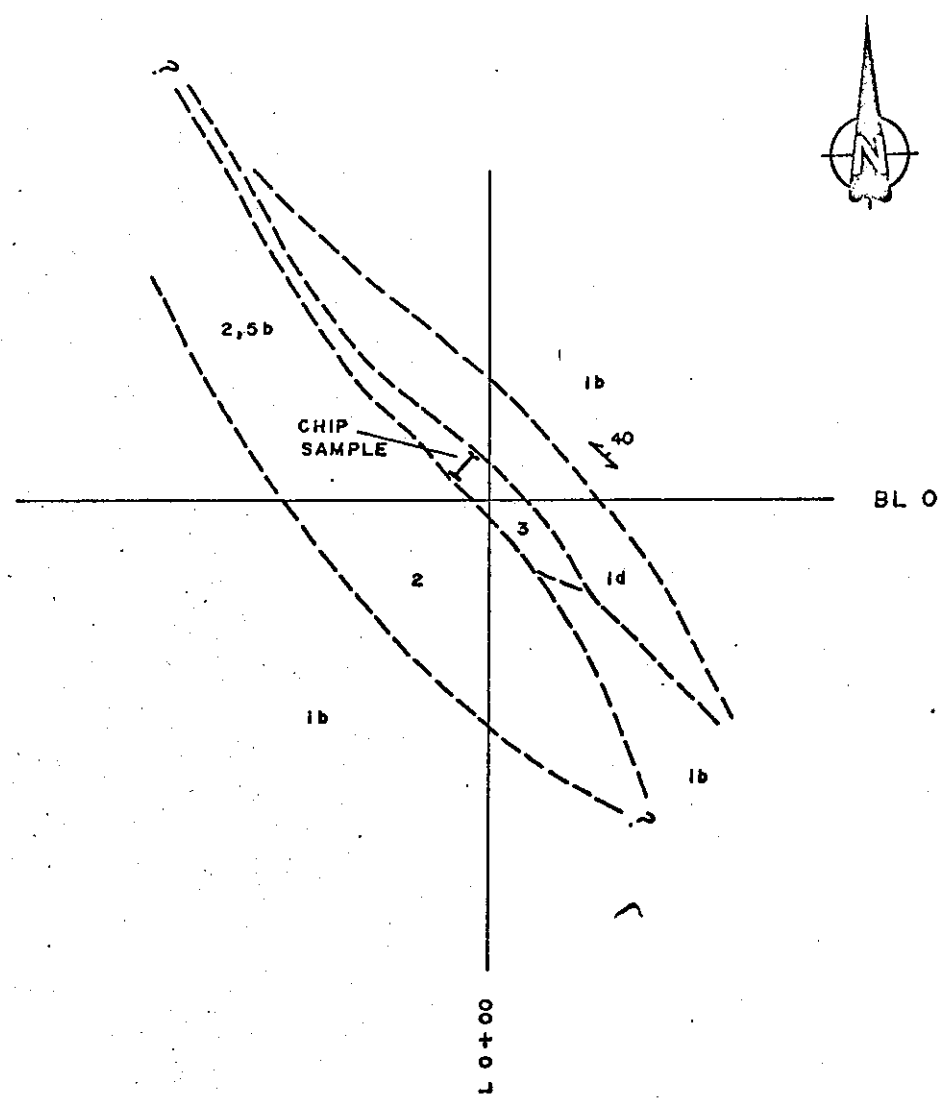
Showing C-1


Sample No. 8MC-4

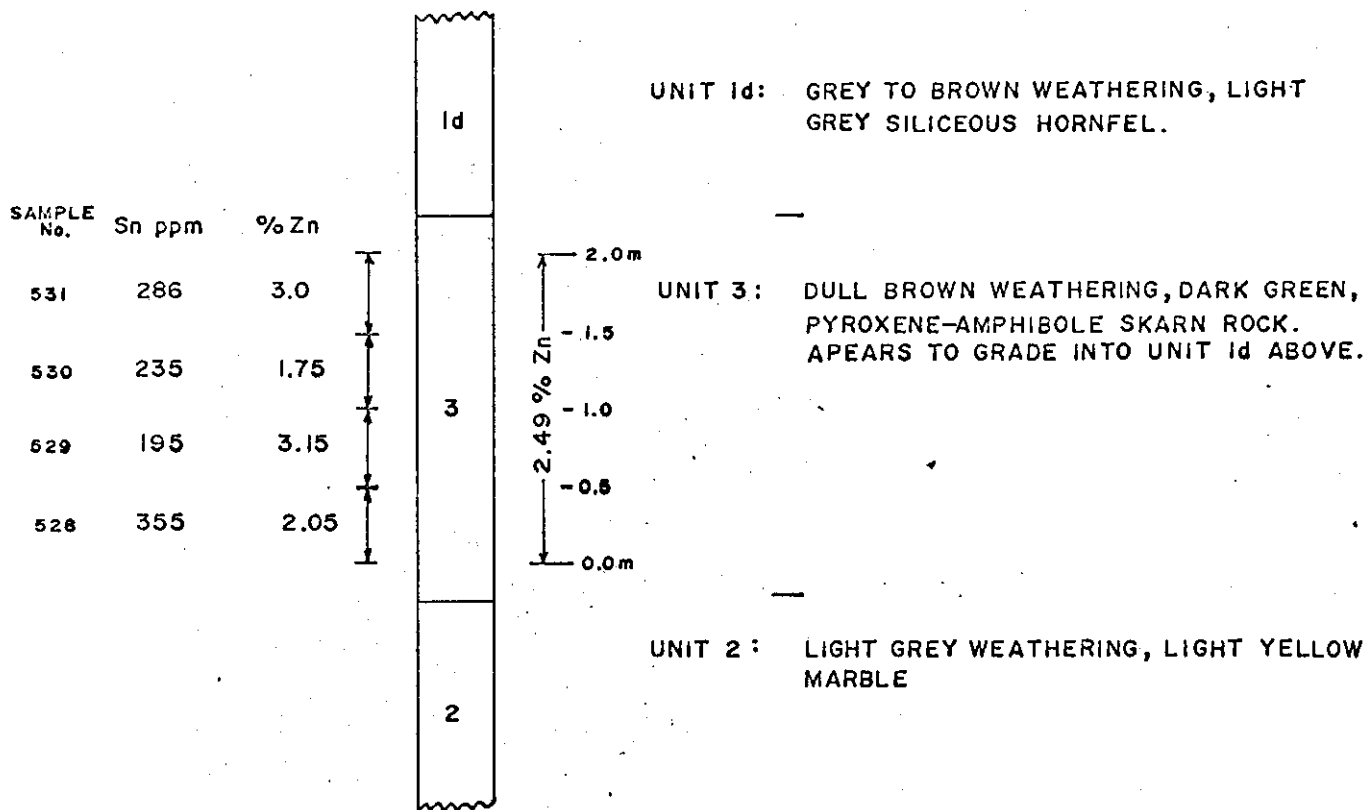
Location BLO, 0+50W

The skarn zone at this locality is at most 3 metres thick and outcrops for 15 metres along strike. The skarn zone cannot be traced any further toward the southeast and apparently pinches out. Toward the northwest, a few pieces of skarn float suggest the skarn zone may continue for 50 metres to the northwest but is probably much narrower.

The geology of showing C-1 and the location of the chip sample are shown in figure 6. The footwall is composed of marble and the occurrence of granitic rubble of sub-units 5b and 5c suggest granitic rocks are present in the footwall also. The skarn zone is composed of a manganese stained, dull green pyroxene-amphibole rock. Sphalerite occurs as 1-3 mm dissemi-




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	GEOLOGY OF SHOWING C-1	
Scale 1: 500	Date: NOV. 1978	NTS 105 K4
Revised:	By: S. Clemmer	Fig. 6



GENERAL STRATIGRAPHY OF SHOWING C-1 AS DETERMINED FROM SUB-CROP AND OUTCROP.



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STRATIGRAPHY OF SHOWING C-1		
Scale 1:50	Date NOV 1978	NTS 105 K 4
Revised:	By: S. Ciemmer	Fig. GA

ated grains confined to certain laminae within the skarn zone. A 2 metre chip sample across the skarn zone assayed 2.49 percent zinc and 268 ppm Sn. The hanging wall consists of a grey weathering, light grey siliceous hornfels of sub-unit ld.

Showing C-2

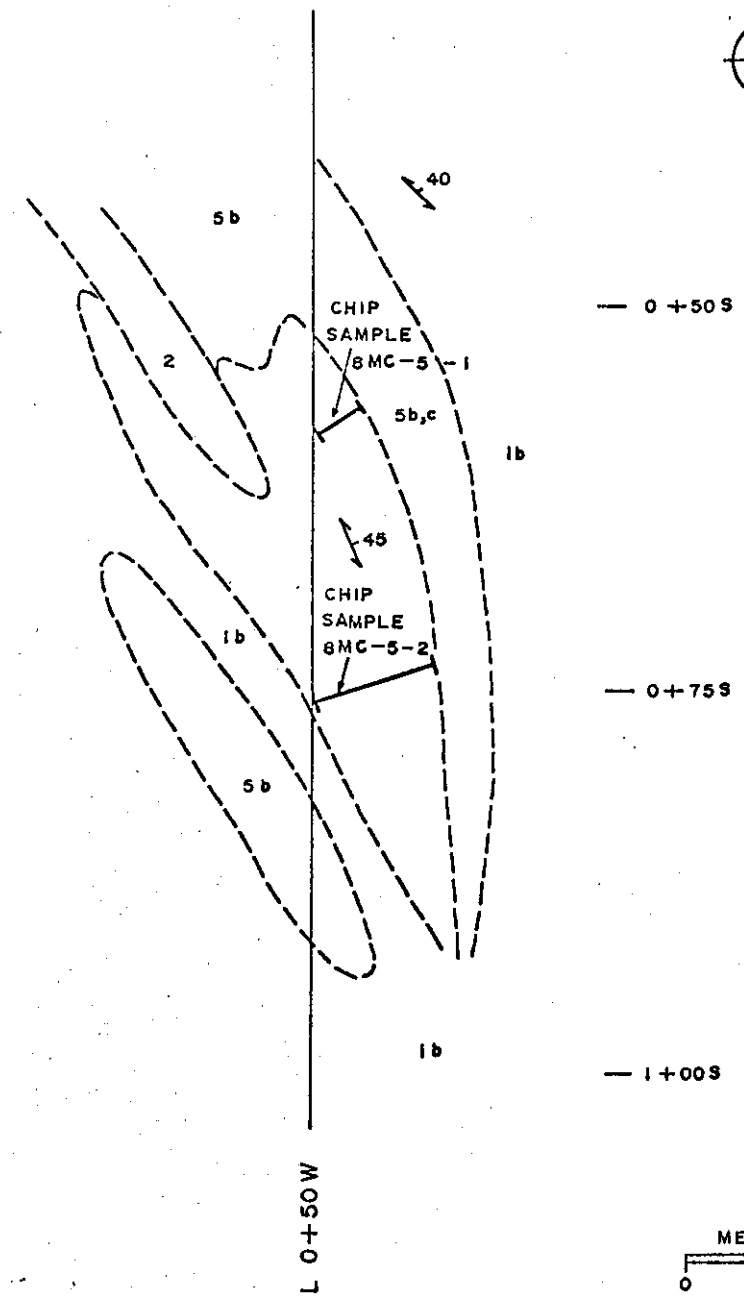
Sample No. 8MC-5


Location 0+50S to 0+75S, L0+50W

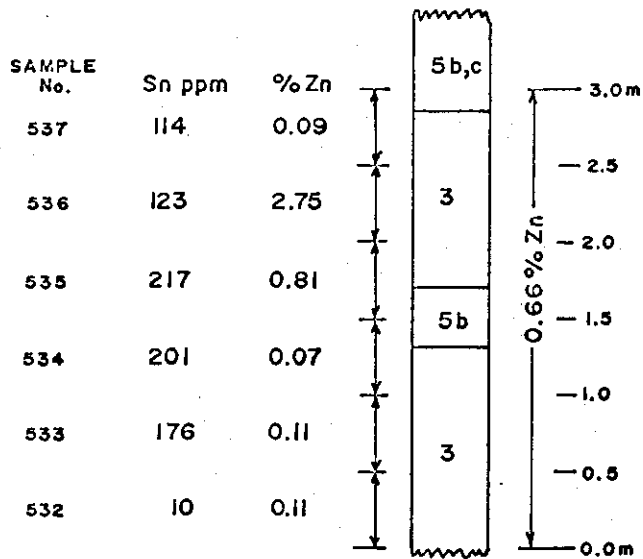
The skarn zone at this locality is up to 9 metres thick and outcrops for 25 metres along strike. The skarn zone however appears to pinch out and is probably not more than 40 metres long. The general geology of this skarn zone and the location of the two chip samples are shown in figure 7. The hanging wall is composed of granitic rocks of sub-units 5b and 5c. The footwall is composed of schist and granitic rocks of sub-unit lb. To the northwest the skarn zone is in contact with a lense of marble that apparently terminates at the skarn zone. The skarn zone is also cut by two 40 cm wide granitic dykes of sub-unit 5b.

The skarn rock is composed predominantly of dark green pyroxene with minor epidote and sphalerite forming a fine to coarse grained rock that weathering a manganese brown.

Chip sample 8MC-5-1 assayed 0.66 percent zinc over 3 metres. Chip sample 8MC-5-2 assayed 0.38 percent zinc from 0.0 to 4.5 metres and 0.23 percent zinc from 7.5 to 9.0 metres. The chip sampling suggests the skarn zone contains 219 ppm Sn



		
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SHOWING C-2 - GEOLOGY		
Scale <u>1 : 500</u>	Date: <u>NOV. 1978</u>	NTS. <u>105 K 4</u>
Revised: _____	By: <u>S. Clemmer</u>	Fig. <u>7</u>




UNIT 5b,c : WHITE WEATHERING, GRANITIC ROCK AND HYBRID GARNET BEARING GRANITE.

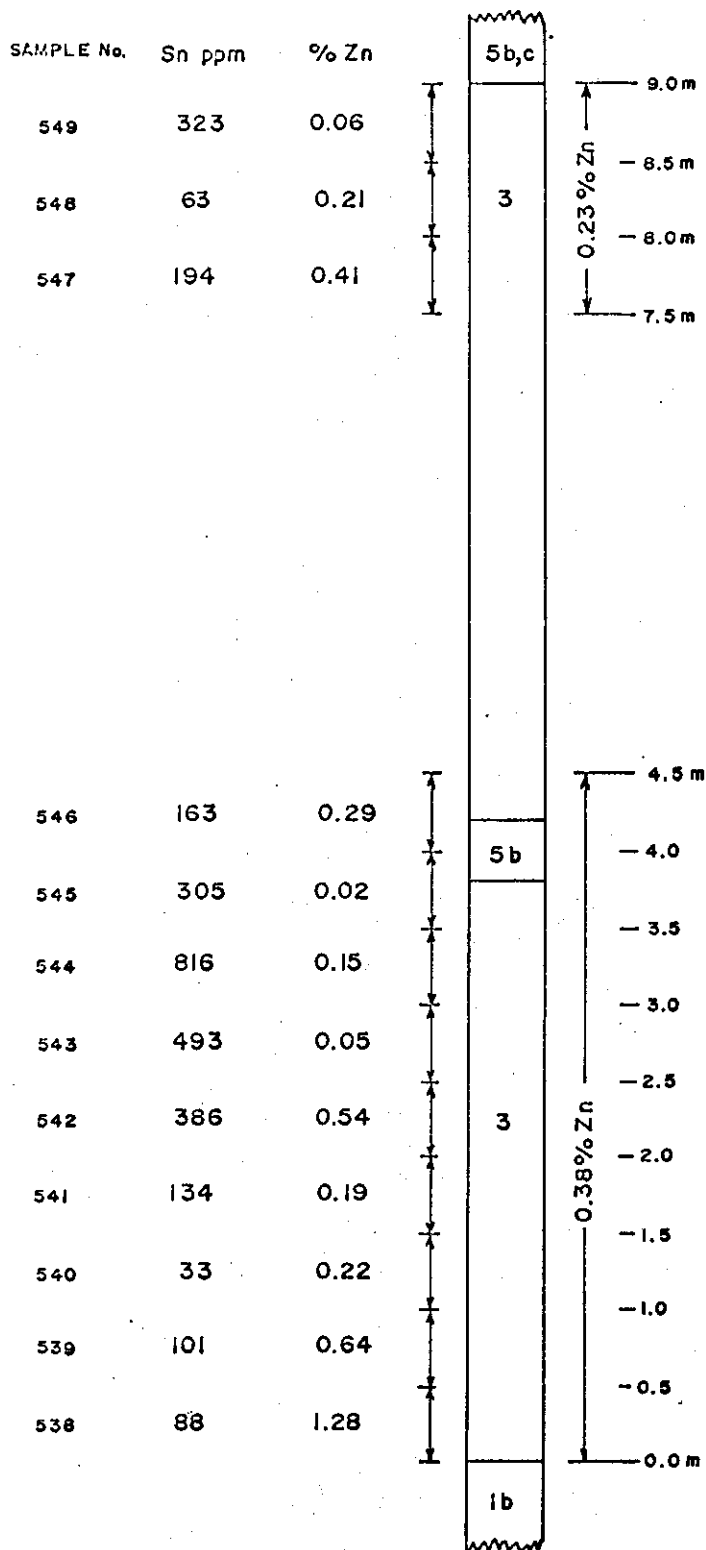
UNIT 3 : DARK GREEN PYROXENITE WITH MINOR EPIDOTE AND SPHALERITE.

UNIT 5b : WHITE GRANITIC DYKE OR SILL.

UNIT 3 : SAME AS ABOVE




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MAY CLAIMS - DESOLATE SHOWING		
GEOLOGY OF CHIP SAMPLE 8 MC-5-1 (C2-1)		
Scale <u>1:50</u>	Date: <u>NOV. 1978</u>	NTS <u>105 K4</u>
Revised: _____	By: <u>S. Clemmer</u>	Fig. <u>7A</u>



SKARN IS GENERALLY A DARK GREEN PYROXENITE WITH MINOR SPHALERITE AND EPIDOTE. NO SAMPLE WAS TAKEN FROM 4.5m TO 7.5m BECAUSE OF HEAVY COVER.



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<b>GEOLOGY OF CHIP SAMPLE 8MC-5-2(C2-2)</b>		
Scale <b>1 : 50</b>	Date: <b>NOV. 1978</b>	NTS <b>105 K 4</b>
Revised: _____	By: <b>S. Clemmer</b>	Fig. <b>7B</b>

overall and chip sample C2-2 contains 816 ppm Sn over 0.5 metres from 3.0 to 3.5 metres.

Showing C-3A, B

Sample No. 8MC-27B,D

Location 0+60E, 0+15N

Two parallel, concordant skarn zones, 5 metres apart, occur within the schist of sub-unit 1a at this locality.

Skarn zone C-3A is about 1 metre thick with a 20 cm thick sphalerite rich band. The skarn rock is a manganese stained, dark green pyroxenite. A chip sample over an interval of 1 metre assayed 6.03 percent zinc (see figure 8).

Skarn zone C-3B is a manganese stained pyroxenite with minor epidote and the skarn zone is over 1 metre wide. A chip sample across the skarn zone assayed 1.2 percent zinc and 1.29 percent zinc over two 0.5 metre intervals (see figure 5).

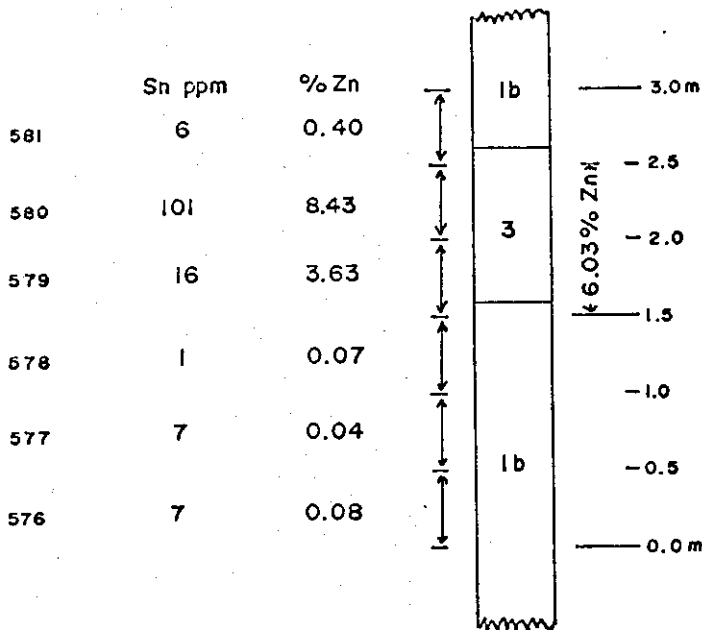
The skarn zones are traceable for less than 10 metres along strike before becoming obscured by overburden. The skarn zones at this locality may persist across the ridge to northwest and connect with skarn zone C-7. If this is the case a strike length of 200 metres is suggested.

Showing C-4

Sample No. 8MC-23

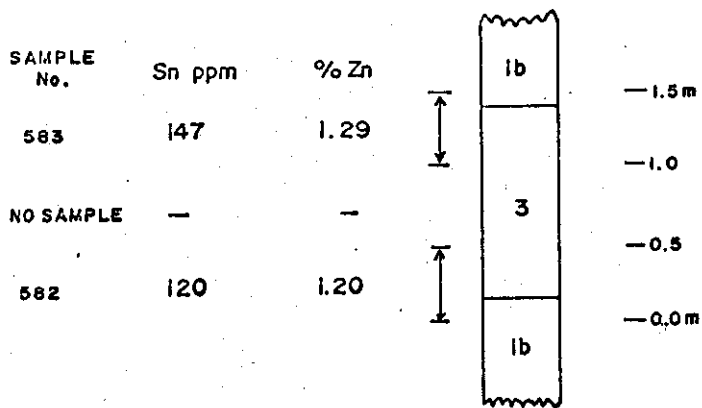
Location 2+55N, 1+10E

The skarn zone at this locality is composed of a medium to coarse grained, manganese stained, epidote-pyroxene-sphalerite skarn rock. The skarn zone appears to be at least 1 metre wide and contains patches of massive sphalerite. The skarn zone is



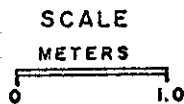
SKARN ZONE IS A DARK GREEN PYROXENITE WITH DISSEMINATED SPHALERITE.

GEOLOGY OF CHIP SAMPLE C3A



SKARN ZONE IS A DARK GREEN PYROXENITE WITH MINOR EPIDOTE.

GEOLOGY OF CHIP SAMPLE C3B



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GEOLOGY OF CHIP SAMPLES C3A AND C3B		
Scale 1:50	Date NOV. 1978	NTS 105 K4
Revised:	By: S. Clemmer	Fig. 8

enclosed in schist of sub-unit 1b and is directly overlain by a narrow (50 cm) band of slightly calcareous hybrid granitic rock of sub-unit 5c.

A chip sample over an interval of 1 metre assayed 13.85 zinc as shown in figure 9.

The skarn can be traced for less than 10 metres along strike but a skarn zone to the southeast at 2+00N, 1+50E suggests a potential strike length of 60 metres. However, this second skarn zone is visually much lower in grade and was not sampled.

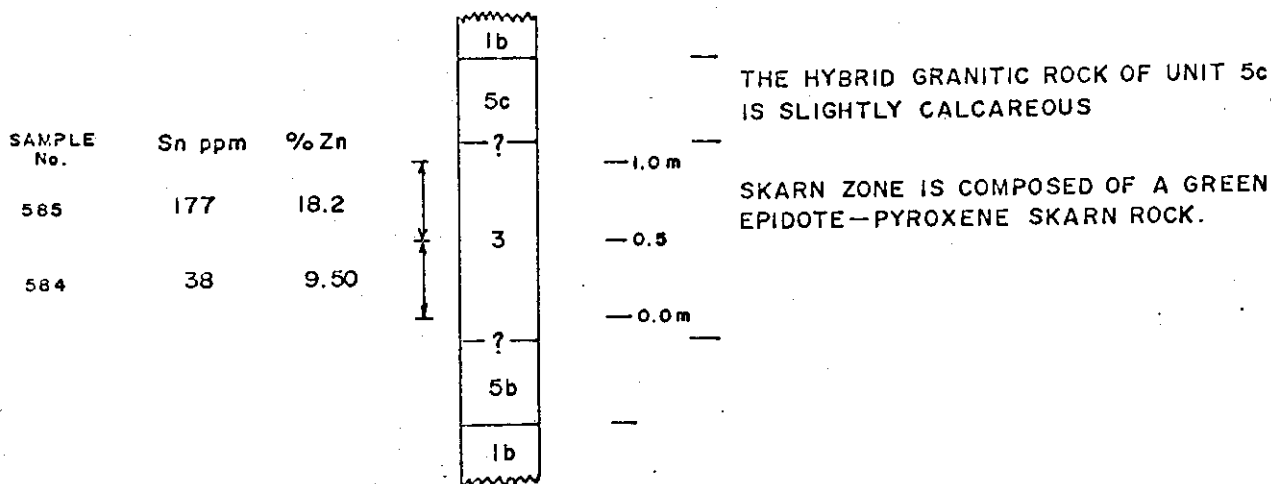
Showing C-5

Sample No. 8MC-11A

Location 0+90E, 1+10N

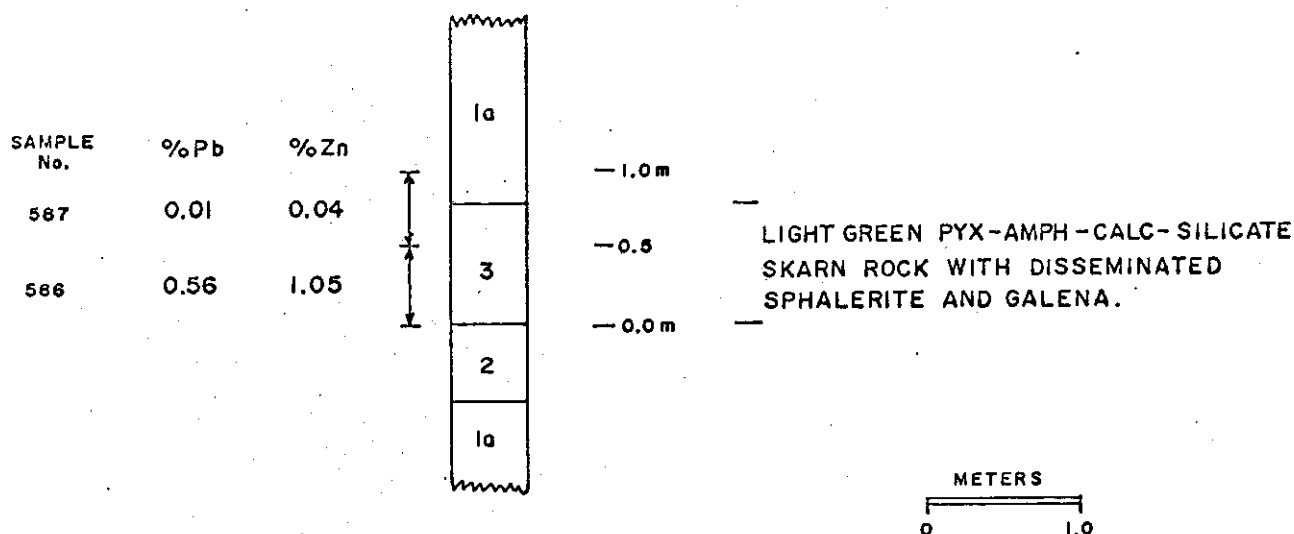
A less than one metre wide, light green, pyroxene-amphibole-calc-silicate skarn zone occurs at this locality. The skarn zone is in contact with a narrow (less than one metre) marble band. The marble band is a distinctive yellow weathering rock and can be traced 50 metres along strike to the southeast. The skarn rock contains disseminated sphalerite and galena and assayed 1.05 percent zinc, 0.56 percent lead and 0.57 oz./ton silver over a 0.5 metre interval. The skarn zone is illustrated in figure 9.

The apparent curving of this skarn zone is in part a topographic effect.




NOTE : THE VERTICAL SCALE IS SOMEWHAT APPROXIMATE AS MUCH OF THE MATERIAL OBSERVED AT THIS LOCALITY OCCURS AS SUB-OUTCROP AND RUBBLE.

#### CHIP SAMPLE C4



#### CHIP SAMPLE C5

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GEOLOGY OF CHIP SAMPLES C4 AND C5		
Scale 1:50	Date NOV. 1978	NTS 105.K.4
Revised:	By: S. Clemmer	Fig. 9

Showing C-6

Sample No. 8MC-15

Location 1+42E, 1+43N

A fine grained, light green pyroxene-amphibole-epidote garnet skarn rock occurs at this locality. The skarn zone is less than 2 metres wide with a 20 cm sphalerite rich band. The skarn zone is enclosed in the schists of sub-unit 1a and minor discontinuous bands and lenses of marble occur in the schist. A chip sample over a 0.5 metre interval assayed 5.95 percent zinc.

The occurrence of skarn rubble to the northwest suggests the skarn zone is 30 metres long and possibly up to 100 metres long.

Showing C-7

Sample No. 8MC-30B

Location 1+90N, 0+85W

A one metre wide, manganese stained, green epidote-pyroxene-sphalerite skarn zone occurs at this locality. The skarn zone is enclosed in the schists of sub-unit 1a and contains a 20 cm thick sphalerite rich band. A chip sample over a 0.5 metre interval assayed 3.63 percent zinc and 553 ppm tin.

As discussed under showing C-3 this skarn zone may be laterally persistent for 200 metres across the ridge to the southeast if it connects with showing C-3.

Showing C-8

Sample No. 8MC-36

Location 0+30W, 1+40S

A two metre wide manganese stained, dark green pyroxenite skarn zone occurs at this locality. The skarn zone is enclosed in the schist of sub-unit 1b and is traceable for 20 metres to the northwest. Skarn rubble to the southeast suggests the skarn zone is at least 50 metres long. A chip sample over a 0.5 metre interval assayed 1.68 percent zinc.

Showing C-9

Sample Nos. 8MC-17, 18, 21

Location 1+50N, 1+75E to 1+90N, 1+15E

Three separate occurrences of angular epidote-pyroxene skarn rubble suggest a 100 metre long and possibly 2 metre wide skarn zone occurs at this locality. The skarn zone was not sampled, but visual estimates suggest the skarn zone does not contain more than 2 percent zinc.

Showing C-10

Sample No. 8MC-6

Location: See figure 10

Minor sphalerite occurs in a siliceous skarn zone adjacent to granitic gneiss. Geochemical analysis of the skarn material gave 2500 ppm Zn.




50'

133° 45'  
Joins 105 F/13

MAP REPRODUCED FROM PART OF 105 K/4,  
MOUNT ATHERTON.

- x FLOAT OCCURENCE
- w TUNGSTEN
- Zn, Pb ZINC, LEAD
- ▲ SHOWING LOCATION

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	LOCATION OF SHOWINGS C10, C11, C12	
Scale 1:50,000	Date NOV. 1978	N.T.S. 105 K/4
Revised: _____	By S. Ciemmer	Fig. 10

Showing C-11

Sample No. 8MC-1

Location: See figure 10

A pyroxene-epidote skarn zone occurs at this locality and is at least 1 metre thick and 10 metres long. A grab sample of this material assayed 1.99 percent zinc, 0.27 percent lead and 0.53 oz./ton silver.

Showing C-12

Sample No. 8MC-16

Location: See figure 10

A narrow amphibole-pyroxene-garnet-magnetite-pyrrhotite-chalcopyrite-scheelite skarn zone occurs at the contact between a marble band and granitic rock. The skarn zone is only 20 cm wide. Analysis of grab samples of this skarn material gave the following results:

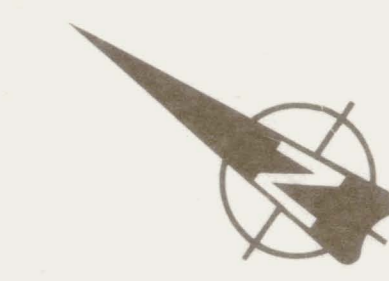
Cu - 0.55%

W - 0.046%

## APPENDIX 2: ANALYTICAL RESULTS OF CHIP SAMPLING

Sample Number	Showing Number	Interval (metres)	Assay and Geochem.				
			Zn %	Pb %	Ag oz./ton	Sn ppm	W ppm
528	C1	0-0.5	2.05	0.01	<0.05	355	2
529		0.5-1.0	3.15	<0.01	<0.05	195	2
530		1.0-1.5	1.75	<0.01	<0.05	235	2
531		1.5-2.0	3.0	<0.01	<0.05	286	2
532	C2-1	0.0-0.5	0.11	<0.01	<0.05	10	2
533		0.5-1.0	0.11	<0.01	<0.05	176	2
534		1.0-1.5	0.07	<0.01	<0.05	201	2
535		1.5-2.0	0.81	<0.01	<0.05	217	3
536		2.0-2.5	2.75	<0.01	<0.05	123	3
537		2.5-3.0	0.09	<0.01	<0.05	114	3
538		C2-2	0.0-0.5	1.28	<0.01	<0.05	88
539	0.5-1.0		0.64	<0.01	<0.05	101	2
540	1.0-1.5		0.22	0.02	0.07	33	2
541	1.5-2.0		0.19	<0.01	<0.05	134	2
542	2.0-2.5		0.54	<0.01	<0.05	386	3
543	2.5-3.0		0.05	<0.01	<0.05	493	2
544	3.0-3.5		0.15	0.02	0.09	816	2
545	3.5-4.0		0.02	<0.01	<0.05	305	
546	4.0-4.5		0.29	<0.01	<0.05	163	3
547	7.5-8.0		0.41	<0.01	<0.05	194	2
548	8.0-8.5		0.21	<0.01	<0.05	63	2
549	8.5-9.0	0.06	<0.01	<0.05	323	3	
576	C3A	0.0-0.5	0.08	<0.01	<0.05	7	3
577		0.5-1.0	0.04	<0.01	<0.05	7	2
578		1.0-1.5	0.07	<0.01	<0.05	1	2

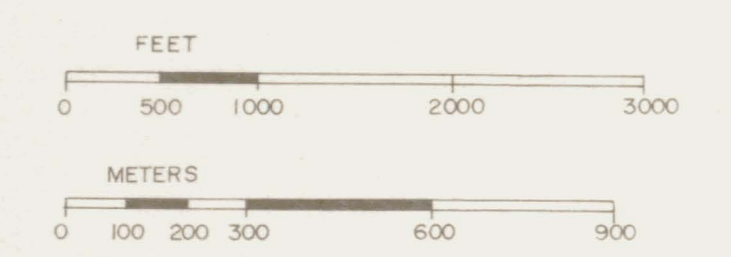
Sample Number	Showing Number	Interval (Metres)	Assay and Geochem.				
			Zn %	Pb %	Ag oz./ton	Sn ppm	W ppm
579	C3A	1.5-2.0	3.63	<0.01	<0.05	16	<2
580		2.0-2.5	8.43	<0.01	<0.05	101	3
581		2.5-3.0	0.40	<0.01	<0.05	6	3
582	C3B	0.0-0.5	1.20	<0.01	<0.05	120	3
583		1.0-1.5	1.29	<0.01	<0.05	147	2
584	C4	0.0-0.5	9.50	<0.01	<0.05	38	2
585		0.5-1.0	18.2	<0.01	<0.05	177	2
586	C5	0.0-0.5	1.05	0.56	0.57	ND	38
587		0.5-1.0	0.04	<0.01	<0.05	3	3
588	C6	0.0-0.5	5.05	<0.01	<0.05	66	3
589	C7	0.0-0.5	3.63	<0.01	<0.05	553	3
590	C8	0.0-0.5	1.68	<0.01	<0.05	124	5



**LEGEND**

PROTEROZOIC AND LOWER CAMBRIAN	
SKARN	
3b	PALE GREEN, MASSIVE TO BANDED SILICEOUS SKARN
MARBLE	
2	GREY WEATHERING SILICEOUS MARBLE
SCHIST	
1	QUARTZ-FELDSPAR-BIOTITE SCHIST, GNEISSIC SCHIST AND MIGMATITE (UNDIFFERENTIATED)

- OUTCROP
- LIMIT OF OUTCROP AND SUBOUTCROP
- FLOAT
- GEOLOGIC CONTACT (DEFINED/APPROXIMATE/ASSUMED)
- SCHISTOSITY (INCLINED/VERTICAL)
- FAULT



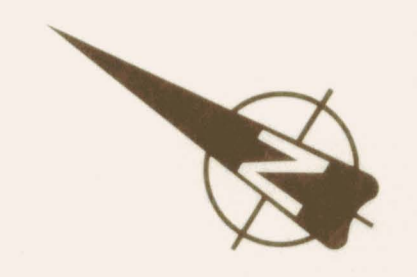
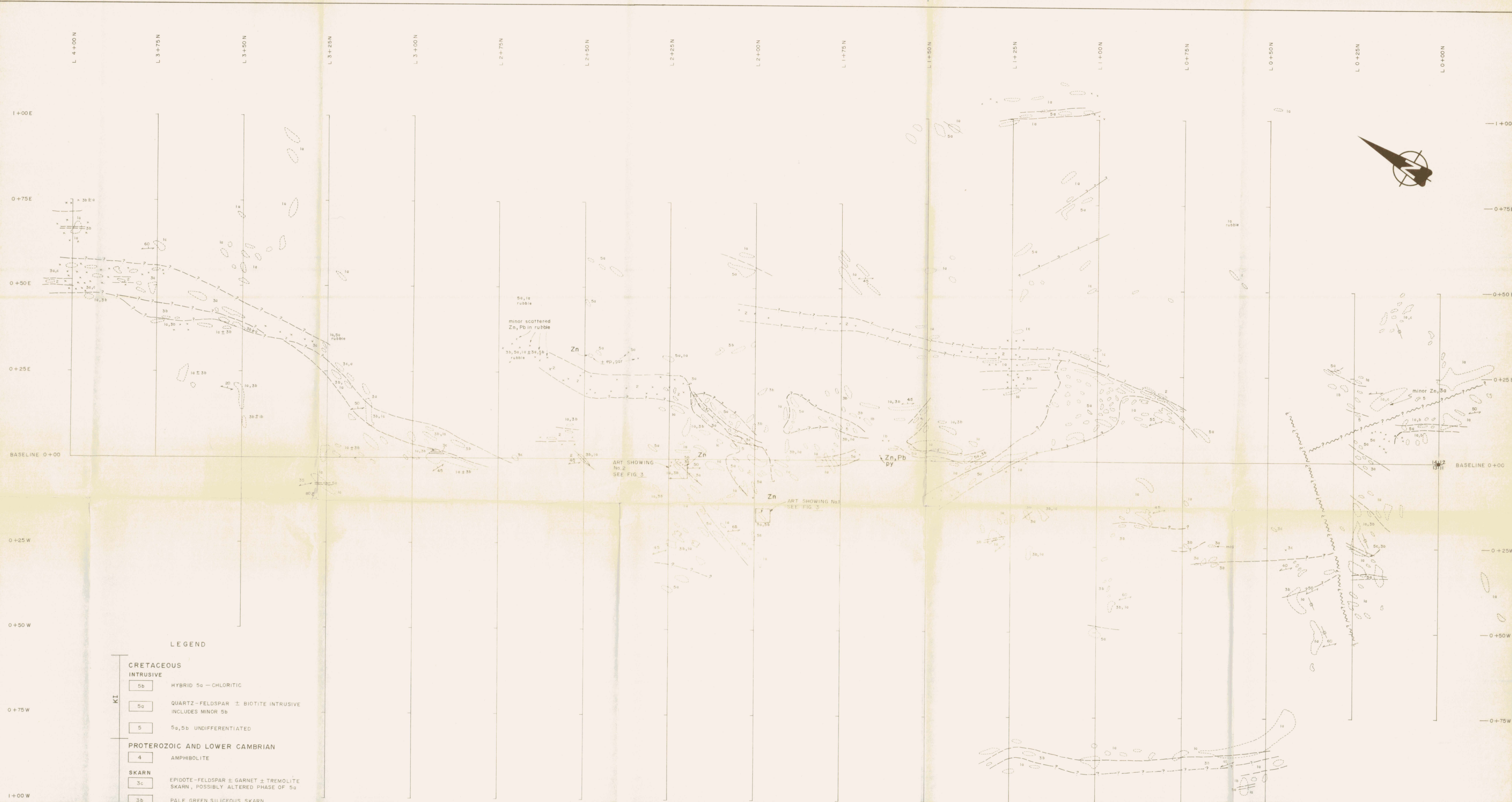
**WELCOME NORTH MINES LTD.**

**GETTY MINING PACIFIC LTD.**

**WOODSIDE PROJECT**  
**MAY MINERAL CLAIMS**

**REGIONAL GEOLOGY AND GRID LOCATIONS**

Scale: 1:12,000    Date: OCT. 1978    NTS. 105 K/4  
 Revised:            By: R. Holland    Plate 1



LEGEND

KI	CRETACEOUS INTRUSIVE	
	5b	HYBRID 5a - CHLORITIC
	5a	QUARTZ-FELDSPAR ± BIOTITE INTRUSIVE INCLUDES MINOR 5b
	5	5a, 5b UNDIFFERENTIATED
PLES	PROTEROZOIC AND LOWER CAMBRIAN	
	4	AMPHIBOLITE
	SKARN	
	3c	EPIDOTE-FELDSPAR ± GARNET ± TREMOLITE SKARN, POSSIBLY ALTERED PHASE OF 5a
	3b	PALE GREEN SILICEOUS SKARN
	3a	DARK BROWN WEATHERING, DARK GREEN, DIOPSIDE ± SPHALERITE ± MAGNETITE SKARN, MAY INCLUDE SOME 3c
	3	3a, 3b, 3c UNDIFFERENTIATED
SCHIST	MARBLE	
	2	GREY SANDY WEATHERING SILICEOUS MARBLE
	SCHIST	
	1c	QUARTZ-FELDSPAR-CHLORITE SCHIST, GNEISSIC SCHIST ALTERED EQUIVALENT OF 1a
	1b	SILICEOUS-BIOTITE POOR SCHIST
	1a	QUARTZ-FELDSPAR-BIOTITE SCHIST, GNEISSIC SCHIST MAY INCLUDE SOME 1b AND 1c
	1	1a, 1b, 1c UNDIFFERENTIATED

SYMBOLS	
	OUTCROP
	LIMIT OF OUTCROP AND SUBOUTCROP
	FLOAT
	GEOLOGIC CONTACT (DEFINED / APPROXIMATE / ASSUMED)
	SCHISTOSITY (INCLINED / VERTICAL)
	JOINTING (INCLINED / VERTICAL)
	CLAIM POST

**WELCOME NORTH MINES LTD.**

**GETTY MINING PACIFIC LTD.**

**WOODSIDE PROJECT  
MAY MINERAL CLAIMS  
ART SHOWING  
GEOLOGY**

Scale: 1:500      Date: OCT 1978      NTS 105 K/4  
 Revised:      By: R. Holland      Plate 2



LEGEND

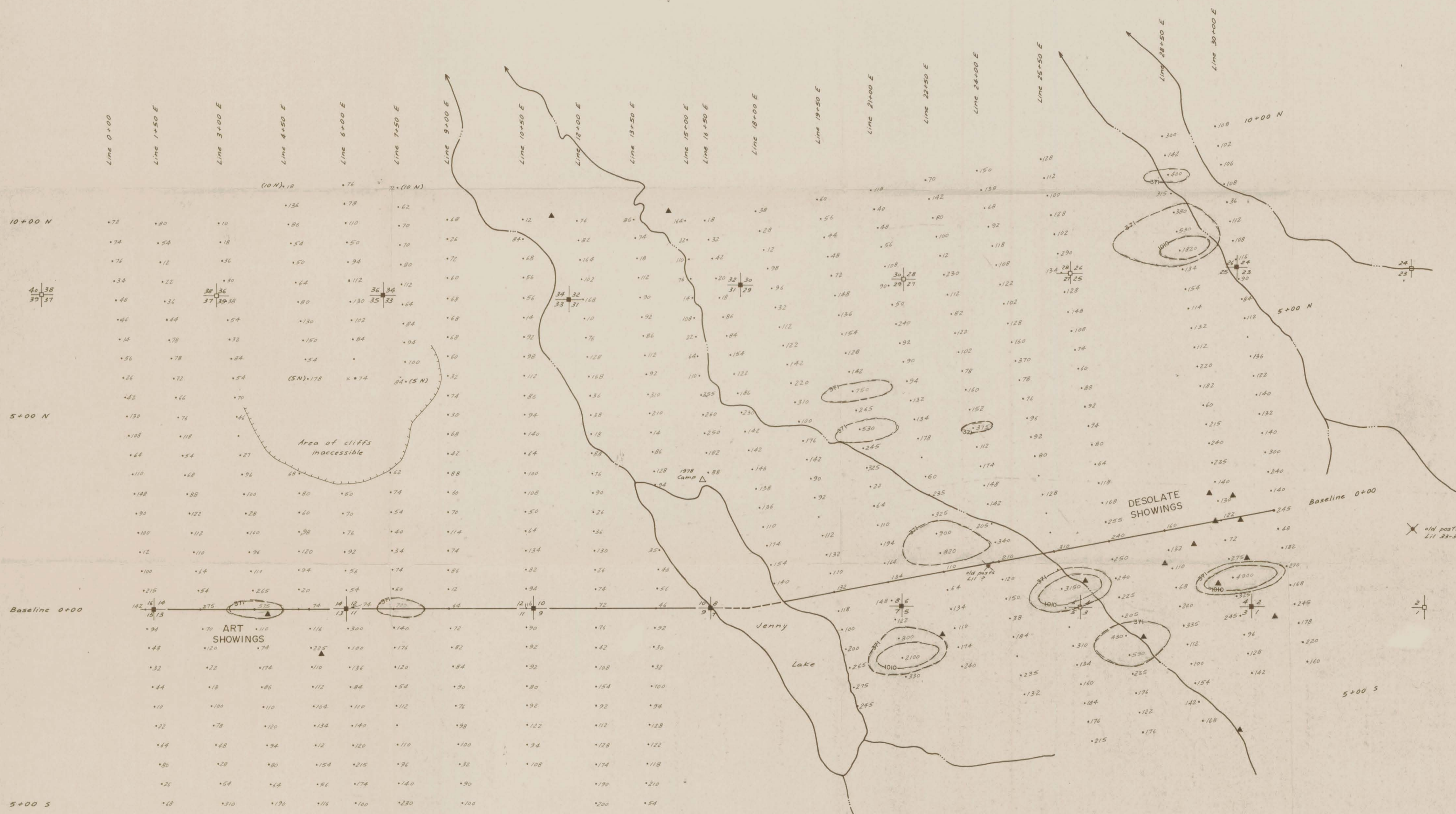
KI	CRETACEOUS INTRUSIVE	
	5a	QUARTZ-FELDSPAR ± BIOTITE INTRUSIVE AND MIGMATITE
PL 6 S	PROTEROZOIC AND LOWER CAMBRIAN	
	4	AMPHIBOLITE
	SKARN	
	3b	PALE GREEN, MASSIVE TO BANDED SILICEOUS SKARN
	3a	DARK BROWN WEATHERING DIOPSIDE ± SPHALERITE ± MAGNETITE SKARN
	3	3a, 3b UNDIFFERENTIATED
	MARBLE	
	2	GREY WEATHERING SILICEOUS MARBLE
	SCHIST	
	1a	QUARTZ-FELDSPAR-BIOTITE SCHIST, GNEISSIC SCHIST AND MIGMATITE

SYMBOLS

	OUTCROP
	LIMIT OF OUTCROP AND SUBOUTCROP
	FLOAT
	GEOLOGIC CONTACT (DEFINED/APPROXIMATE/ASSUMED)
	SCHISTOSITY (INCLINED/VERTICAL)



WELCOME NORTH MINES LTD.		
GETTY MINING PACIFIC LTD.		
WOODSIDE PROJECT		
MAY MINERAL CLAIMS		
WEST SHOWING		
GEOLOGY		
Scale 1:1,000	Date OCT. 1978	NTS. 105.K/4
Revised	By: R. Holland	Plate 3



**SYMBOLS**

- CLAIM POST
- MINERAL OCCURRENCE
- 1010 ppm ANOMALOUS POPULATION
- 371-1010 ppm THRESHOLD POPULATION
- 0-370 PPM BACKGROUND POPULATION

**WELCOME NORTH MINES LTD.**

GETTY MINING PACIFIC LTD.

WOODSIDE PROJECT  
MAY CLAIMS

PROVISIONAL ZINC GEOCHEMISTRY

Scale: 1:5000 Date: Sept 1978 NTS 105K-4  
Revised: By: R.H. Plate 4





**SYMBOLS**

- CLAIM POST
- MINERAL OCCURRENCE
- > 2.1 ppm ANOMALOUS POPULATION
- 0.75 - 2.1 ppm THRESHOLD POPULATION
- 0 - 0.75 BACKGROUND POPULATION

**WELCOME NORTH MINES LTD.**

GETTY MINING PACIFIC LTD.

WOODSIDE PROJECT  
MAY CLAIMS

PROVISIONAL SILVER GEOCHEMISTRY

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Scale: 1:5000      Date: Sept. 1978      NTS 105K-4  
 Revised:              By: R.H.              Plate 6



LEGEND

- CRETACEOUS**
- INTRUSIVE**
- 5c HYBRID ALTERED GRANITIC ROCKS
- 5b GRANITIC SILLS AND DYKES
- 5a GRANITIC GNEISS
- PROTEROZOIC AND LOWER CAMBRIAN**
- 4 AMPHIBOLITE
- 3 SKARN UNIT
- 2 MARBLE
- SCHIST**
- 1c LIGHT BROWN QUARTZ-FELDSPAR SCHIST
- 1b QUARTZ-FELD-BIO SCHIST, GREATER THAN 10% CONTAINED GRANITIC ROCKS
- 1a QUARTZ-FELD-BIO SCHIST, LESS THAN 10% CONTAINED GRANITIC ROCKS
- 1 1a, 1b, 1c, 1d UNDIFFERENTIATED

SYMBOLS

- OUTCROP
- SUBCROP
- xxx FLOAT
- GEOLOGICAL CONTACT (Defined / Approximate / Assumed)
- ↔ FOLIATION (Strike & Dip)
- ▲ Zn MINERAL OCCURENCE
- #MC-7 SAMPLE (Station No. & Location)

**WELCOME NORTH MINES LTD.**

**GETTY MINING PACIFIC LTD.**

**WOODSIDE PROJECT  
MAY MINERAL CLAIMS  
DESOLATE SHOWING  
GEOLOGY**

Scale: 1:500 Date: OCT. 1978 NTS 105 K/4  
 Revised: By: S. Clemmer Plate