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A SUMMARY REPORT  
on the  
CANALASK NICKEL-PLATINUM PROPERTY  
Yukon Territory  
for  
ALL NORTH RESOURCES LTD.  
by

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January 10, 1987.

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### SUMMARY & CONCLUSIONS

All-North Resources Ltd. has acquired an interest in the Canalask Nickel-Platinum Property under the terms of a working option and will be carrying out an exploration and evaluation program over the 1987 season. All-North is the operator of the Kluane Joint Venture, in which Chevron Minerals Ltd. is an equal partner. The area of interest is located in the Western Yukon Territory 200 miles northwest of Whitehorse.

The Kluane District has an attractive association of ultramafic rocks and nickel-copper sulphides over a strike length of 100 miles, and previous work has demonstrated that there is also an important content of the platinum group elements (PGE). Production from the Wellgreen Mine 50 miles to the south included substantial credits in these metals.

The Canalask Nickel-Platinum Property has a calculated mineral inventory of 550,000 tons with a grade of 1.68% nickel and 0.04% copper. Metallurgical evaluation has demonstrated a possible 90% recovery and a concentrate grade of 19.7% nickel which also contains .030 ounces of platinum and 0.019 ounces of palladium per ton. This concentration of nickeliferous sulphide is located 400 feet north of the footwall contact of a large ultramafic complex which also has a significant association of sulphide mineralization within a gabbroic phase along this contact.

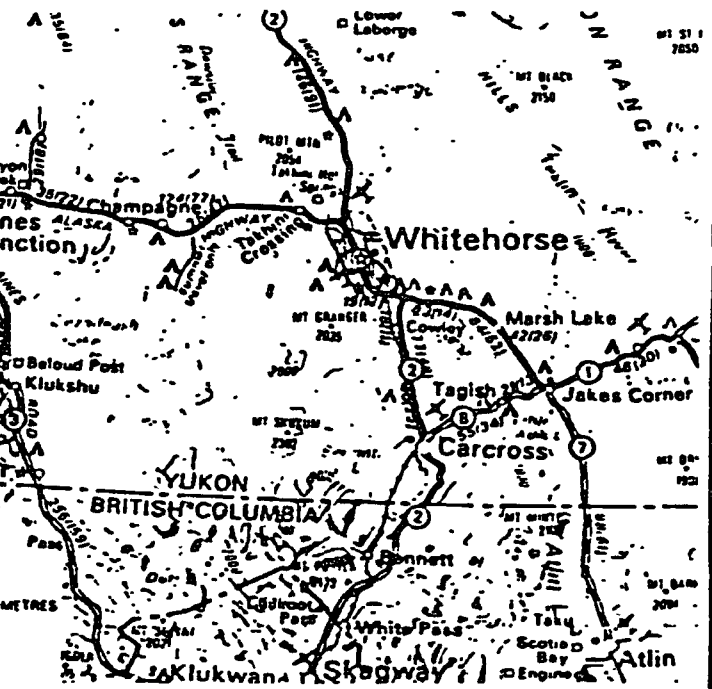
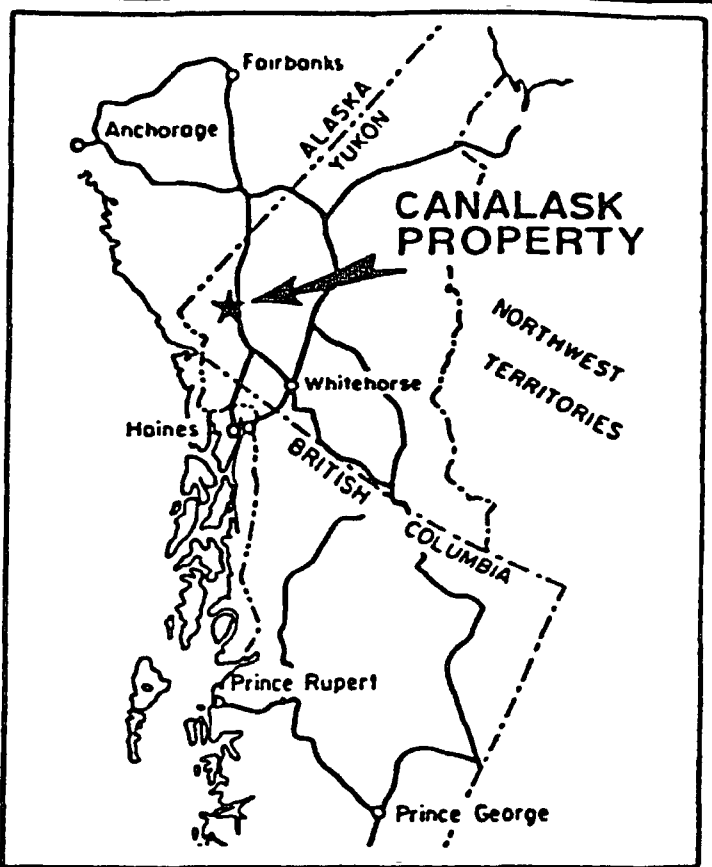
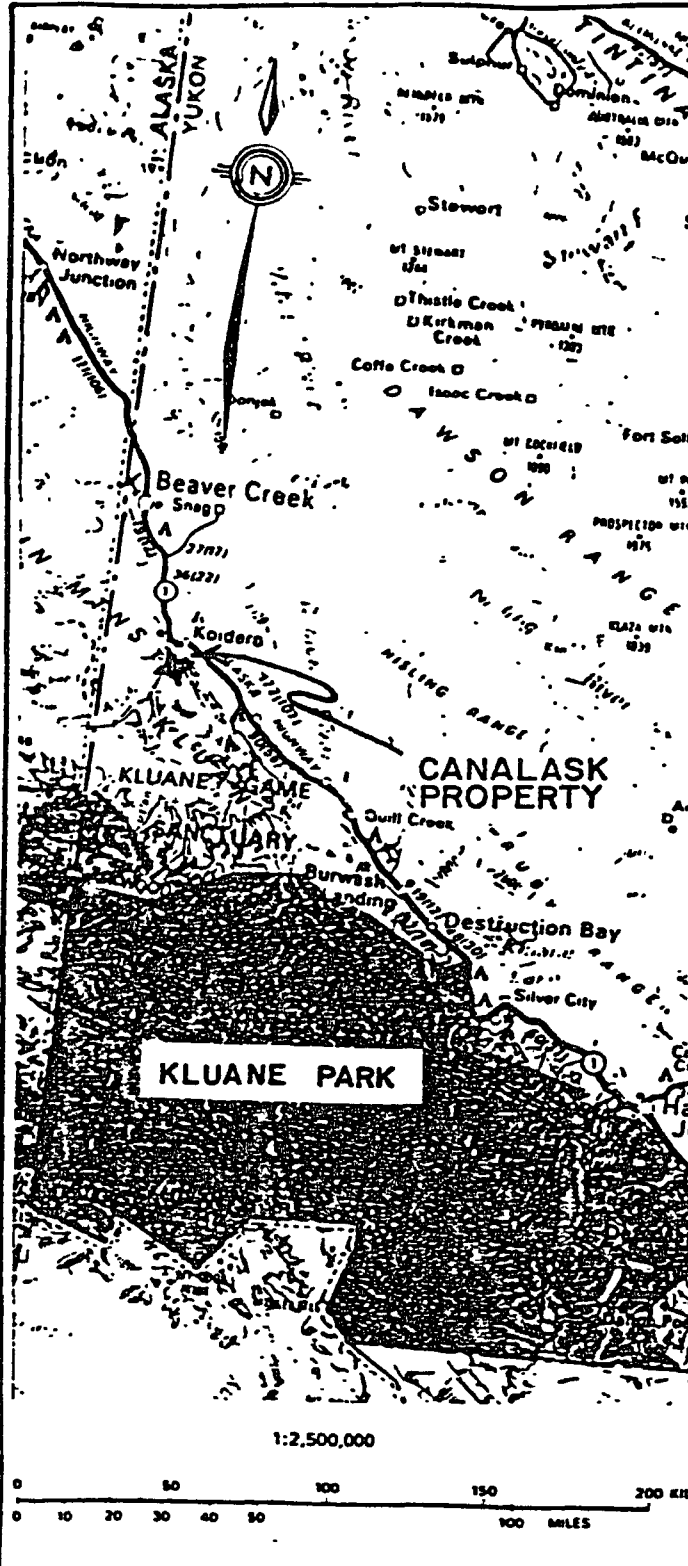
An exploration program on the Canalask property in 1972-73 discovered disseminated and interstitial nickeliferous sulphides which contain measurable quantities of platinum and palladium in a gabbroic phase of the ultramafic complex along the footwall

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contact, and a re-examination of old drill core identified similar material at depth in the deposit to the north. This host carries important amounts of the PGE at the Wellgreen, and further work is warranted to explore this potential at the Canalask.

A 2-Phase drilling program is recommended to accomplish this, with an initial phase estimated to cost \$150,000 and a follow-up phase costing \$250,000.

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ALL NORTH RESOURCES LTD.		
CANALASK PROPERTY		
LOCATION MAP		
Nov. 28, 1986		Plate: 1

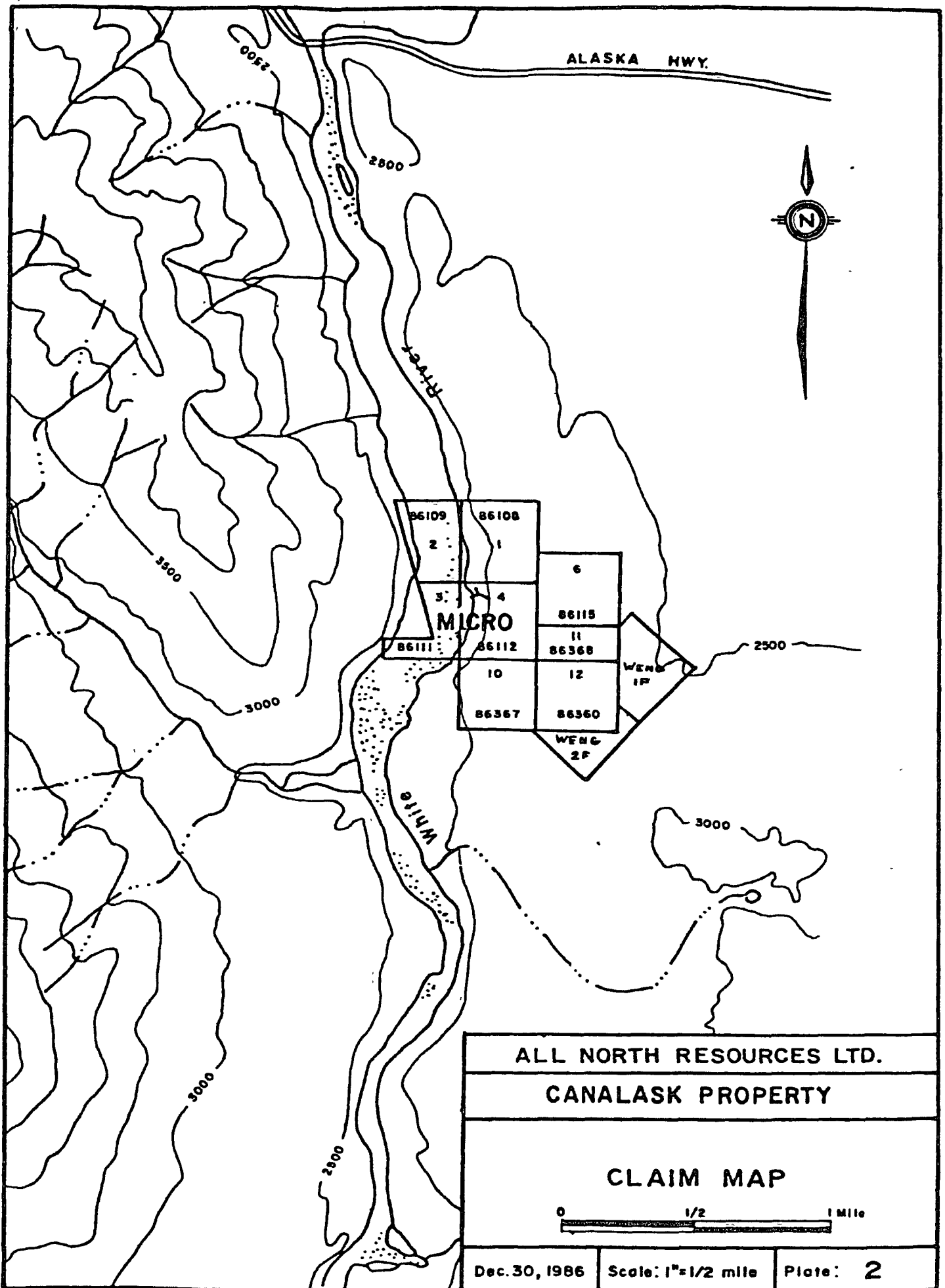
### INTRODUCTION

At the request of R.J. Cathro, P.Eng., a Director of All North Resources Ltd., the writer has prepared a summary report on the Canalask Nickel-Platinum Property in the western Yukon Territory. The nickel-copper potential has been the object of primary interest in the past, and although a platinum-palladium content in the sulphides was known, it is only recently that the overall potential of the platinum group metals in the ultramafic rocks of the Kluane District has been recognized. The Wellgreen Mine previously operated by Hudson Bay Mining and Smelting 50 miles to the southeast has a very significant PGE content, and the occurrence of nickel-copper sulphides in a similar geological environment at the Canalask strongly suggests a similar potential.

The Kluane Joint Venture conducted a preliminary evaluation of the Wellgreen during 1986, and plans a comprehensive program for 1987. Concurrent with this work the Canalask property will also be explored and evaluated. All-North Resources Ltd is 50/50 partner with Chevron Minerals Ltd. in the Kluane Joint Venture and is currently acting as the Operator.

This report is based on a review of files compiled by the property owners over the years, and on the writer's experience on the property over the 1972 and 1973 field seasons. The report takes the form of a review of past work, a description of the geology and mineralization, a review of the exploration results compiled by the writer in 1973, and a recommended work program to evaluate the platinum group element potential.

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ALL NORTH RESOURCES LTD.		
CANALASK PROPERTY		
CLAIM MAP		
0 <span style="display: inline-block; width: 100px; border-bottom: 1px solid black;"></span> 1/2 <span style="display: inline-block; width: 100px; border-bottom: 1px solid black;"></span> 1 Mile		
Dec. 30, 1986	Scale: 1"=1/2 mile	Plate: 2

### PROPERTY, LOCATION & ACCESS

The Canalask Nickel-Platinum Property is located in the western Yukon Territory 200 miles northwest of Whitehorse on the eastern bank of the White River. The small hamlet of Koidern at Mile 1170 on the Alaska Highway is the closest settlement. A 2.5 mile all-weather gravel road connects the campsite and portal area with the highway at Mile 1168.

The topography is comprised of low rolling hills separated by swampy depressions with a maximum relief of 600 feet. Slopes are forested with spruce and occasional birch and alder.

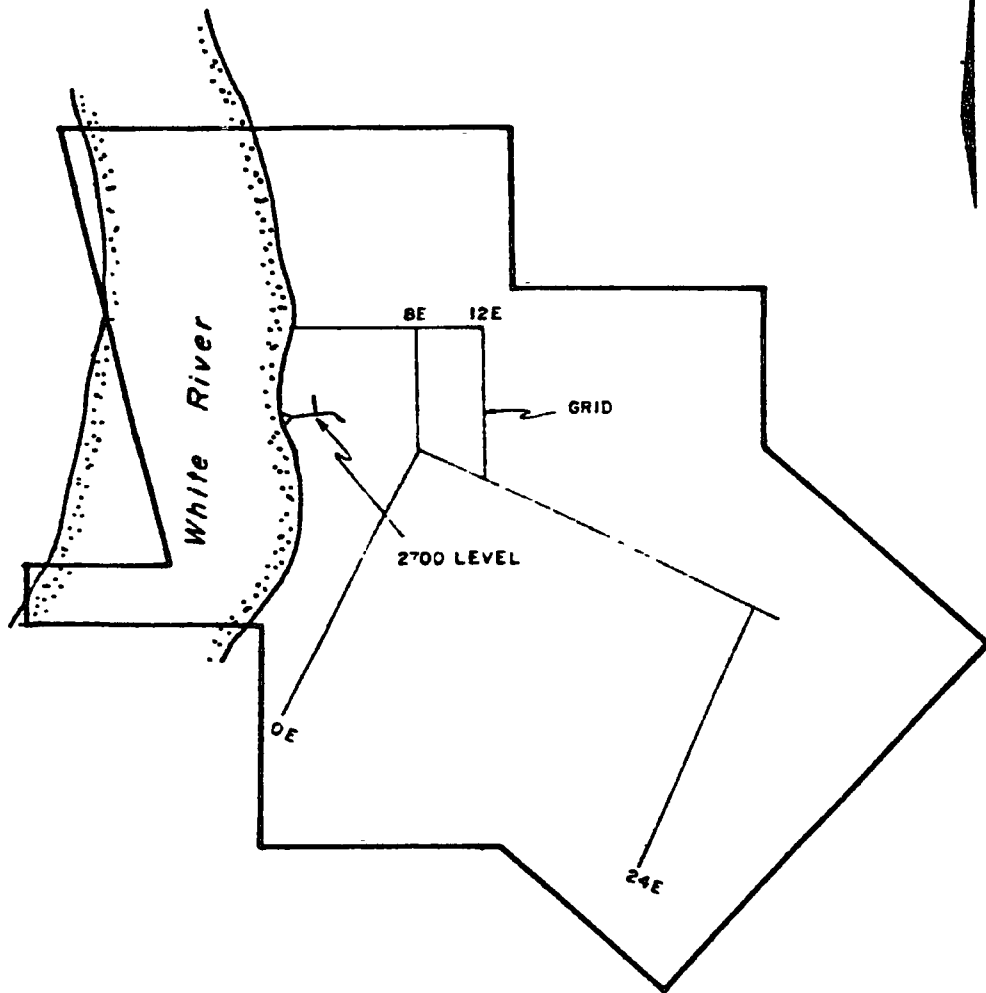
The claim package consists of 8 lode claims itemized as follows:

<u>Claim Name</u>	<u>Record No.</u>	<u>Expiry Date</u>
Micro 1	86108	Oct. 10, 1987
2	109	"
3	111	"
4	112	"
6	115	"
10	367	"
11	368	"
12	360	"

The claims are recorded in the name of Charles Gibbons and are held by the Kluane Joint Venture under the terms of an option agreement. The Kluane Joint Venture recorded the Weng 1 and 2 fractional claims on December 19, 1986, as part of the option. The writer has not searched title and current status of the claims.

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ALL NORTH RESOURCES LTD.		
CANALASK PROPERTY		
PROPERTY OUTLINE		
0 <span style="display: inline-block; width: 100px; border-bottom: 1px solid black;"></span> 1/4 <span style="display: inline-block; width: 100px; border-bottom: 1px solid black;"></span> 1/2 mile		
Dec 31, 1986	Scale 1" = 1/4 mile	Plate: 3

### HISTORY & PREVIOUS WORK

Nickel mineralization was discovered on the east bank of the White River by Prospectors Airways in 1952. They drilled 5,322 feet in 14 core holes in 1953, and the property was optioned by Canalask Nickel Mines of Toronto. Over the period 1954 to April 1958 a further 8,784 feet of surface drilling supported a reserve calculation of 550,000 tons with a grade of 1.68% nickel and 0.04% copper. Approximately 1000 feet of adit and cross-cuts were driven on the 2700 level, a 300 foot winze was sunk, and 375 feet of drift on the 2400 level was completed. About 775 feet of underground drilling was completed on each level. Work was suspended and the property lay dormant. The claims lapsed and were restaked by Peter Versluce of Whitehorse in March of 1964. They were subsequently acquired by Mr. Gibbons from the Versluce estate.

Discovery Mines of Toronto acquired the property in 1967 and carried out an evaluation program over the 1968 season which consisted of both surface and underground work. A total of 1,217 feet of underground diamond drilling and 3,276 feet of surface drilling was completed.

The Canalask Property was optioned by the Nickel Syndicate in 1972; a joint venture group formed by the writer to explore for nickel in the Cordillera of B.C. and the Y.T. Over the period 1972-1973 an exploration program was carried out in the Kluane District under the direct supervision of the writer. Studies of the Canalask and Wellgreen sulphide deposits were two important phases of this project.

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## GEOLOGY

### Regional Setting:

The Kluane Map area is bisected diagonally by the Shakwak Lineament which trends northwesterly at approximately 135°. North of the Shakwak Trench the geology is mainly intrusive in origin and is completely different from the younger extrusive and sedimentary rocks to the south. It is evident that strike-slip displacement along a major crustal break underlying the trench has been significant at various times in the past.

The regional structural fabric south of the trench is dominated by several components: the 135° trend of the Kluane Ranges and Shakwak lineament, a 115°-120° direction of bedding and thrust faults, and a northerly-trending lineation expressed by drainage patterns as established by the White and Donjek Rivers. In the vicinity of the White River there is a flexure in the stratigraphic trend from the through-going to 135° to about 120°. This may reflect drag along the White River fault zone and indicate right-hand displacement. It is also possible that the flexure is a pre-fault feature subsequently cut and displaced by the break.

The stratigraphy is comprised of greenstones and sediments generally Lower Mesozoic in age which have been intruded during the Permian and Triassic by alpine ultramafic complexes of peridotite, gabbro, and dunite. In GSC Memoir 340 Dr. Muller groups the sedimentary and volcanic rock types, and distinguishes three main volcanic packages: the Dezadeash being the oldest, the Cache Creek, and the Mush Lake as the youngest.

On a regional scale the peridotites and associated ultramafic rocks appear to be sill-like in character, generally paralleling

the stratigraphy. The bodies range in thickness to 1500 feet and have a considerable strike-length exposure relative to their width. In the White River area the peridotite cross-cuts the general strike of the hosting sediments and volcanics.

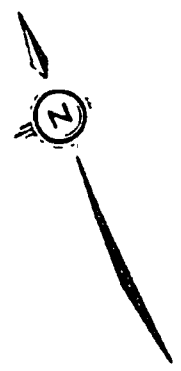
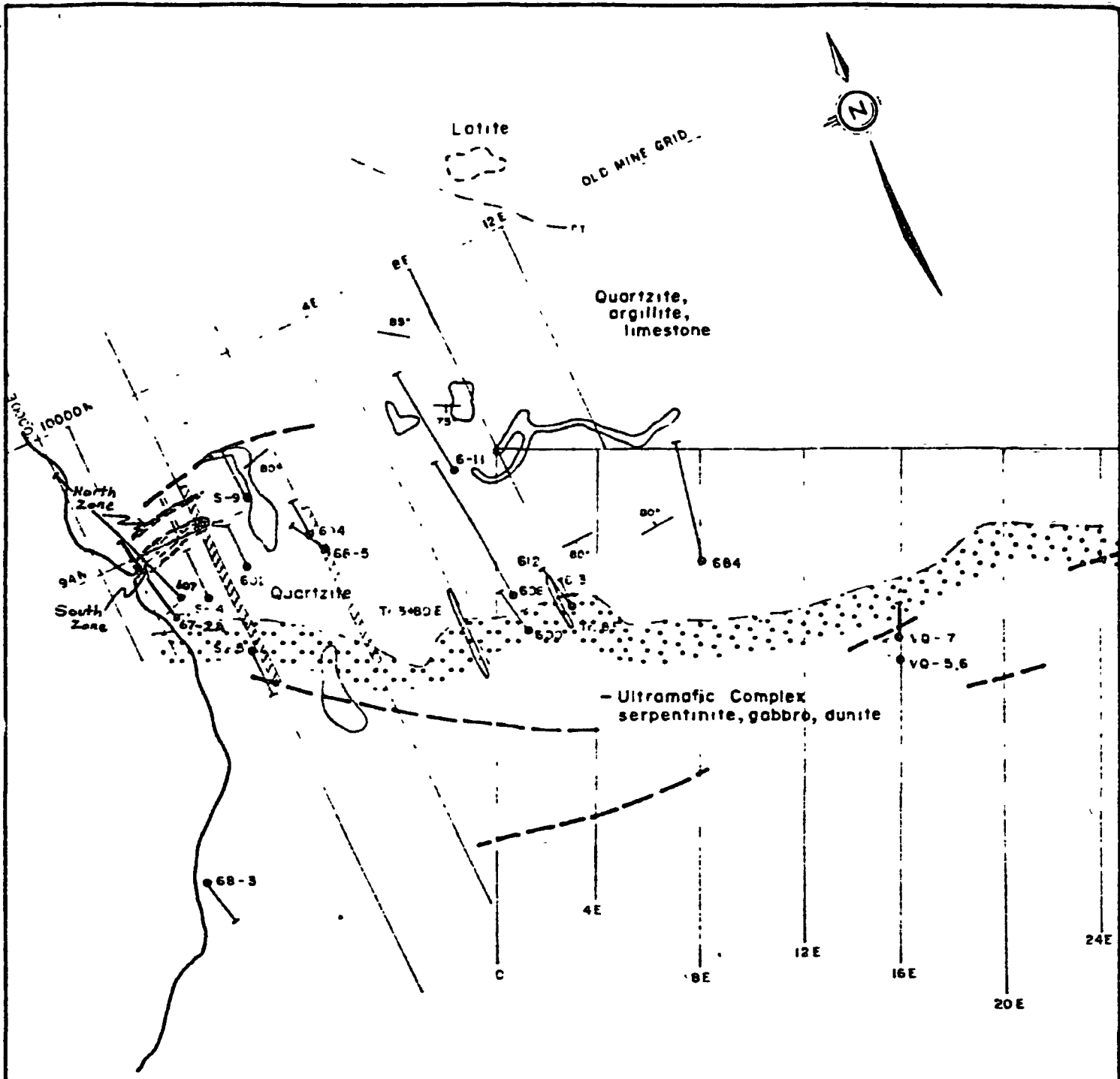
Nickel-copper occurrences are spread along a strike length of 100 miles through the Kluane District south of the Shakwak Trench. The Dickson Creek prospect in the southeast, the Wellgreen mine in the center, and the Canalask Property in the northwest of the Kluane map sheet are the discoveries of economic interest found to date. These deposits are found in a similar geologic setting in association with the ultramafics and strongly fractured quartzites or cherts. The nickeliferous sulphides occur in close association with the serpentinized peridotites and gabbros as massive accumulations, interstitial segregations and fracture fillings, and finely disseminated material.

Canalask Property:

The ultramafic body is the dominant rock unit on the property. Previous workers accepted the conclusions in F.A. Campbell's 1956 thesis study that the body was a sill injected parallel to initially flat-lying volcanics. Work carried out by the Nickel Syndicate had the benefit of further work after that time, and these results led to the interpretation that the mass is a steeply-dipping dike, probably formed as a result of multiple intrusions which post-date the sulphide-bearing structural features in the sedimentary-volcanic sequence adjacent to the north. The ultramafic mass is complex in structure and composition, and consists of phases of aphanitic serpentinite, dunite, and gabbro. Field evidence indicates that the gabbroic phase intruded the peridotite, but probably after the main period of folding. It does not appear that the gabbro

was comagmatic with the main phase of the larger ultramafic. Exposure in trenches and the attitudes as indicated by the magnetics indicate that the mass dips south at steep to moderate angles and crosscuts structural features adjacent to the north at  $30^{\circ}$ - $40^{\circ}$ .

The footwall of the intrusion is in contact to the north with a sequence of very fine grained rocks which appear to be mainly sedimentary in origin. Quartzite and chert with occasional bands of limestone and argillite predominate, although it is suspected that fine-grained tuffaceous material may be interbedded on occasion but difficult to recognize. These rocks are very fine grained to aphanitic, light greenish grey, and thinly bedded where banding is visible. North of the mineralized zones andesite and andesite agglomerate outcrop along the east bank of the river. Although the regional strike is to the northwest, a local open flexure immediately east of the river has impressed an easterly strike on the rocks for a distance of approximately 2500 feet. The dip is steep at  $80$ - $85^{\circ}$  to the south. This flexure has created a zone of fracturing 400 feet north of the peridotite contact which hosts nickel and copper sulphides which contain appreciable PGE in two parallel zones. The North and South zones appear to plunge approximately  $70^{\circ}$  to the west. It seems apparent that the ultramafic dike post-dates and crosscuts the fold at  $30^{\circ}$ - $40^{\circ}$ , and it is suggested that the nickeliferous sulphide mineralization has been emplaced in conjunction with a later intrusive phase represented by the gabbroic suite of rocks. Iron sulphides in blebs and fine disseminations are a common constituent of the sediments and volcanics, and occur in laminated bands not unlike some varieties of Precambrian sulphide iron formations. Nickel is absent and this fact seems to have confused previous workers in their effort to outline the



**NOTE.**

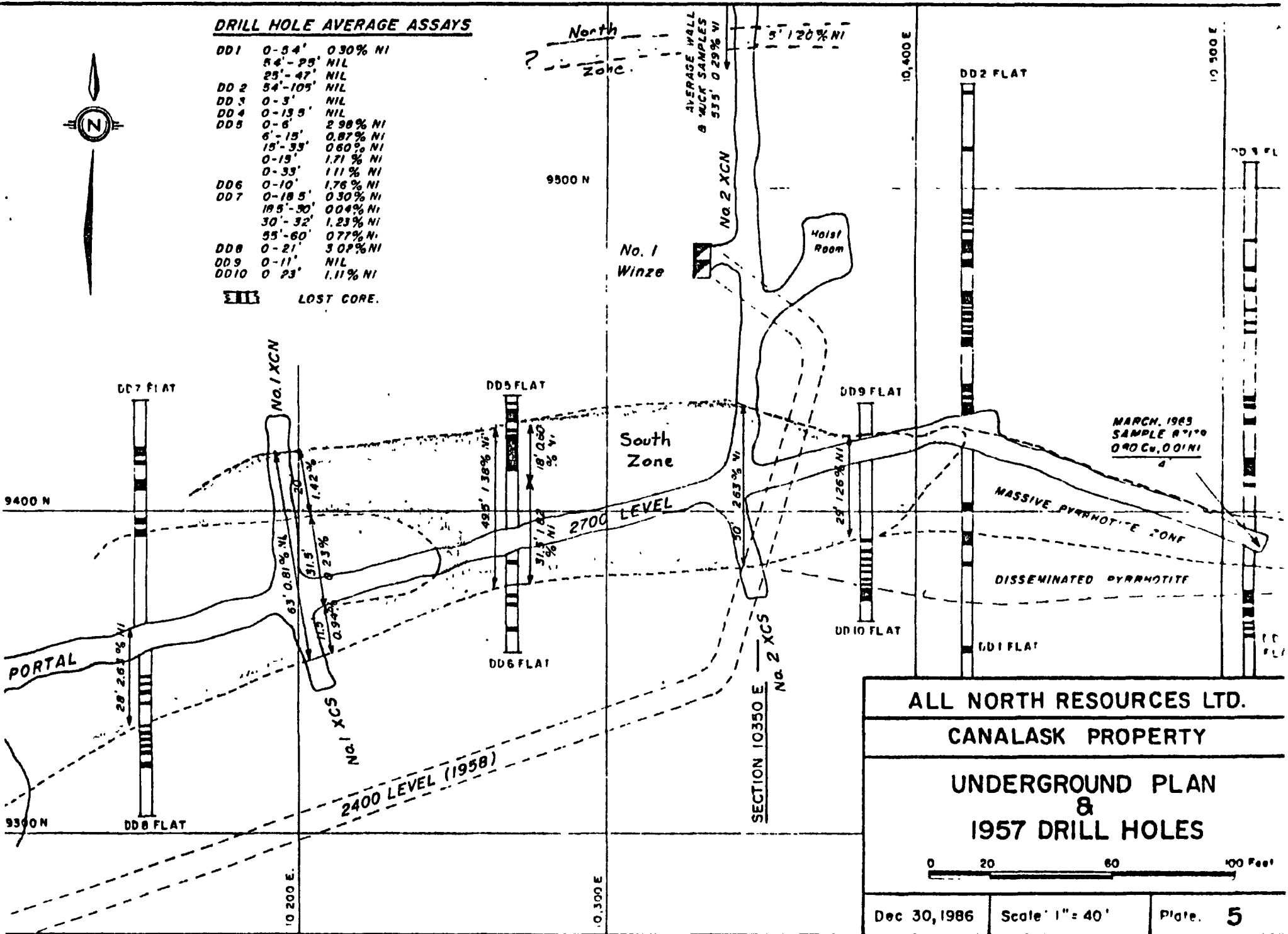
- I P chargeability > 25 ms
- E.M. conductors.
- Trace of 2700 Level
- Cat trenches
- Footwall ultramafic contact
- Diamond drill hole  
604, 68-5 - Canalask & Discovery  
VQ-5 - Nickel Syndicate
- Bedding attitude.

<b>ALL NORTH RESOURCES LTD.</b>		
<b>CANALASK PROPERTY</b>		
<b>COMPILATION SKETCH</b>		
Jan 2, 1987	Scale: 1" = 600'	Plate 4

**DRILL HOLE AVERAGE ASSAYS**

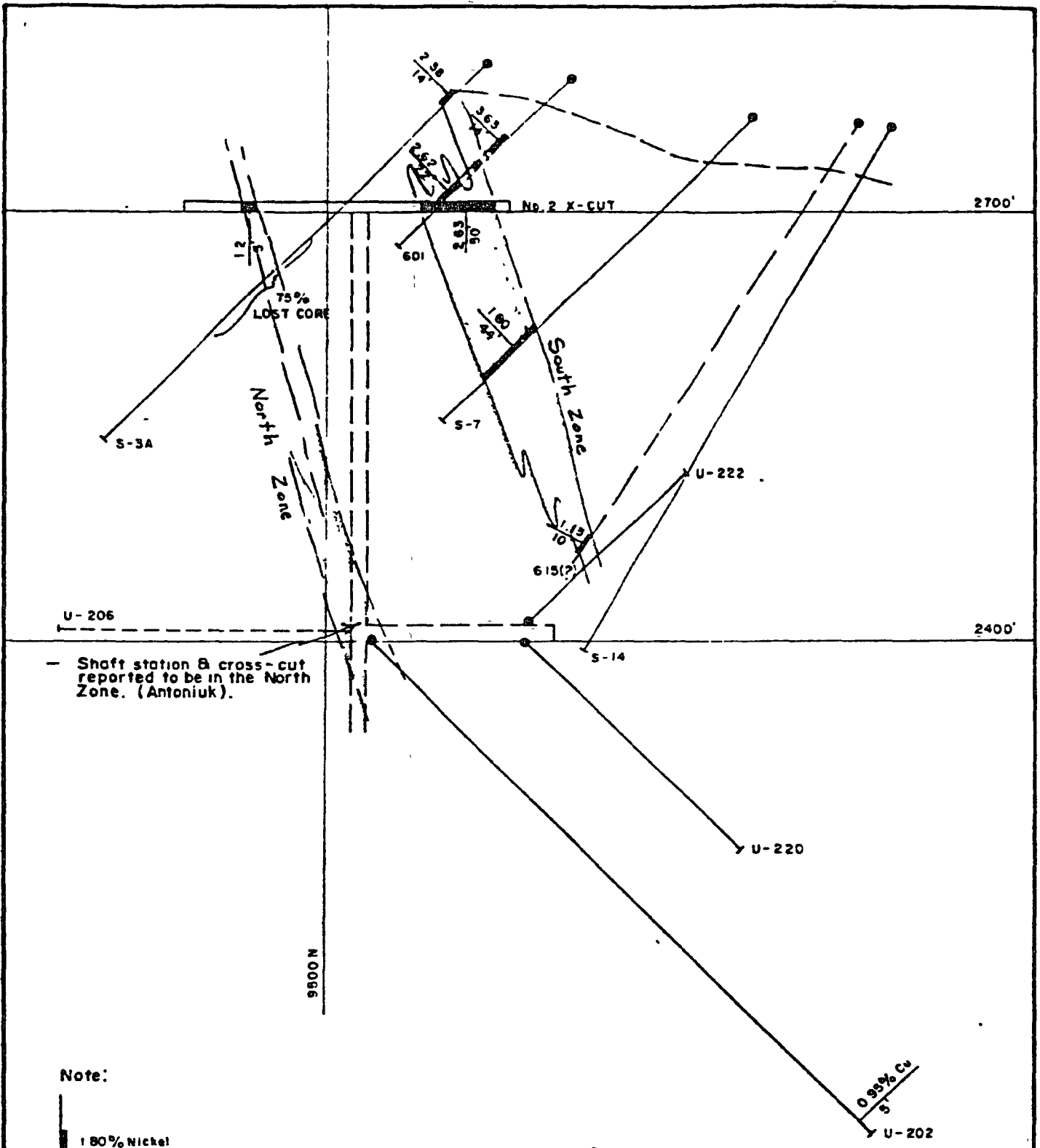
DD1	0-54'	0.30% NI
	54'-79'	NIL
	79'-47'	NIL
DD2	54'-105'	NIL
DD3	0-5'	NIL
DD4	0-13.5'	NIL
DD5	0-6'	2.98% NI
	6'-15'	0.87% NI
	15'-33'	0.60% NI
	0-15'	1.71% NI
	0-33'	1.11% NI
DD6	0-10'	1.76% NI
DD7	0-18.5'	0.30% NI
	18.5'-30'	0.04% NI
	30'-32'	1.23% NI
	55'-60'	0.77% NI
DD8	0-21'	3.07% NI
DD9	0-11'	NIL
DD10	0-23'	1.11% NI

**|||||** LOST CORE.



ALL NORTH RESOURCES LTD.  
 CANALASK PROPERTY  
 UNDERGROUND PLAN  
 &  
 1957 DRILL HOLES

0 20 60 100 Feet



Note:

180% Nickel  
44 ft.

ALL NORTH RESOURCES LTD.		
CANALASK PROPERTY		
MINE SECTION - 10350 E.		
Jan 2, 1987	Scale . 1" = 100'	Plate 6



nickeliferous zones. Diamond drill logs and maps do not distinguish the various types of sulphide, and the numerous occurrences of barren material has no doubt influenced previous workers in their decision to terminate exploration efforts.

Mineralization consists of pyrrhotite, chalcopyrite, and pentlandite in varying proportions. The zones outlined in Figure 5 lie 400 feet north of the peridotite body within the sediments. The best evaluation of this mineralization was found on the 2700 level when the workings were accessible. Four types of sulphide mineralization are apparent:

1. Massive pyrrhotite.
2. Finely disseminated pyrrhotite, chalcopyrite, and pyrite.
3. Fine fracture fillings of pyrrhotite, chalcopyrite and pyrite.
4. Sulphides in an interstitial or network texture in a gabbroic host.

The occurrence and significance of these various types is summarized in order of apparent importance.

1. Network Texture:

The presence of this type of material is extremely significant because it demonstrates the occurrence of nickeliferous sulphides within the mafic and ultramafic rocks. Trenching in 1972 exposed this type of material along the contact zone in trench 3+80 E, Figure 4, and drill hole 67-2A drilled by Discovery Mines on mine section 10080 E returned an intersection of similar material in the lower North Zone about the 2300 elevation. A polished section of a core specimen at a footage of 538 in this hole showed a mineral composition of:

Pyrrhotite	50%	)	
Pentlandite	25%	)	of sulphides present
Pyrite	25%	)	

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The hand specimen is described as "heavily disseminated ultra-basic rock". Logs for the adjacent underground holes 24-2 and 3 drilled from the 2400 level on section 10145 E are not available. It seems reasonable to suggest that a "tongue" of the mineralized peridotite, or a related phase, as seen in trench 3+80 E 400 feet to the south may be present at depth in the North Zone area. This type of mineralization was encountered 1600 feet to the east of trench 3+80 E in drill hole VQ-7. There is geological room here to define a sizeable tonnage of material with an estimated grade of 0.75%-0.80% nickel, which could contain appreciable amounts of copper, cobalt, platinum, and palladium. Further drilling is justified to evaluate this potential.

### 2. Fracture Fillings:

Based on previous examination of sulphide intersections in the old drill core, it is apparent that fracture filling material constitutes the dominant source of nickel in the mineralized zones of initial interest north of the contact. T. Antoniuk (Discovery Mines) was essentially correct in his conclusion that: "Ore is localized in a shatter zone within the east-west striking segment of a major flexure."

The fractures are commonly very fine and some of the better nickel values, 3%-4%, are contained in 12-15% sulphide mineralization.

### 3. Disseminated:

The truly disseminated sulphides found in a re-examination of the old core in 1973 occur in finely laminated bands in tuffaceous and cherty rocks, and this material is regarded as sulphide iron formation. The volume density varies from finely disseminated through larger blebs to massive pods and stringers. The predominant sulphide is pyrrhotite, minor amounts of chalcopyrite are noted, and pentlandite is absent. This material is widespread and intimately mixed with the fine networks of

nickeliferous sulphides in the fracture zones. It appears that earlier workers did not distinguish between the two types, and as a result did not fully appreciate why significant intersections of sulphide are barren.

On surface these sulphide zones produce lively gossans, and it appears that several of these were trenched and correlated with the main nickeliferous zone.

#### 4. Massive Pyrrhotite:

The massive pyrrhotite in the North and South Zones is generally low in nickel values, although there are exceptions. Bore hole 607 has an intersection of massive sulphide grading almost 5% nickel, while sampling on the 2700 level returned only traces. It is conceivable that pyrrhotite may be represented by more than one age of which only the later is nickeliferous. The larger pod-like zones may be concentrations within the volcanic sequence similar in origin to the sulphide iron formations in the Precambrian Shield of Ontario. In the Thompson Nickel Belt of Manitoba the writer has mapped similar associations in quartzite and amphibole gneisses adjacent to the ore zones. The significance of these zones may be in the indication of volcanic centres of activity, and the fact that the associated volcanic and sedimentary rocks have a readily available sulphur budget which would be most hospitable to the intrusion of nickel-bearing ultramafic rocks.

The copper content of nickeliferous intersections is generally low; i.e. < 0.5%. Several higher and significant intersections were encountered in the footwall side of the North Zone which suggest the possibility of a copper zone. This mineralization is described as finely disseminated chalcopyrite in the "albitized tuff".

the mineralization. Further work is required to demonstrate this association.

Two types of sulphide mineralization were encountered by the Nickel Syndicate along the footwall contact interval of the ultramafic complex 400 feet south of the South Zone: one nickeliferous with PGE values and the other containing only trace amounts of nickel. The latter occurs as coatings on fracture and shear surfaces within a shear zone adjacent to the contact, and appears to account for the EM anomalies tested. The nickel-bearing sulphide with the PGE values occurs as disseminated and interstitial material in a gabbroic footwall phase in the interval 0+00 to 16+00 E. Platinum and palladium occur in measurable quantities in a similar association as described in the Wellgreen deposit. On line 3+80 E, Figure 4, a trench exposed a 10 foot section of gabbroic rock containing the previously described network texture sulphide phase which assayed 0.3% nickel. Analyses of a 127 foot section of adjacent peridotite returned up to 260 ppb platinum and 435 ppb palladium.

This lies within the general area of structural significance and adjacent to zones of known mineralization to the north. The material does not give rise to a typical EM response and it must be concluded that this exploration method has not been effective in evaluating the potential of this area.

#### MINERAL INVENTORY

##### Ore Reserve:

The reserve calculations carried out in the past focused on the nickeliferous sulphides delineated in the Main and North Zones 400 feet north of the footwall ultramafic contact. The drilling

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and underground work supported a calculation of 550,000 tons with a grade of 1.68% nickel and 0.04% copper. No determinations for the PGE were carried out.

Concurrent with the work done by Canask Nickel Mines on the North and South Zones, preliminary metallurgical studies were carried out by Quebec Metallurgical Industries on 2 bulk sample lots taken from underground drift intersections. The size of the samples is not known.

The analysis of the samples is reported as follows:

	<u>Lot No. 1</u>	<u>Lot No. 2</u>
Nickel	2.30%	1.20%
Copper	.03	.03
Cobalt	ND	ND
Arsenic	ND	ND
Sulphur	3.60	3.30
Iron	7.60	9.60

Simple flotation tests after grinding to -100 mesh produced a recovery of approximately 90% of the nickel with a concentrate grade of 18 to 20%. The small amount of copper is almost completely recovered. The concentrate had the following analysis:

Nickel	19.7%
Cobalt	.28
Copper	.34
Platinum	.030 oz per ton
Palladium	.019
Gold	.020
Silver	.496

The composition of these sulphides shows the combination of nickel-copper and the PGE in the mineralizing system. However, the gabbroic-hosted material was not encountered underground and has not been tested.

The sulphides which occur along the contact zone 400 feet south of the underground workings may well have a significantly

enhanced PGE content, as is the case in the Wellgreen deposit. Values are typically very erratic in distribution both within a deposit and at the scale of a sample. Thus, sampling requires a well designed program with particular attention directed to sample size and technique of collection.

#### GEOPHYSICS

Geophysical work has consisted of limited induced polarization surveys over the Main and North Zones by Discovery Mines in 1967, and magnetometer and electromagnetic surveying over the entire property held by the Nickel Syndicate. The two IP profiles and the EM conductors are located on Figure 4. The northern footwall contact of the ultramafic complex as traced by its magnetic signature was also located, Figure 4. The IP profiles correlate the signature with the known mineralization as delineated by the drilling and underground work. Chargeabilities to 50 ms were recorded against a background of 10 ms. In particular this may be an effective way to explore for the discontinuous disseminated and network types of mineralization.

The electromagnetic and magnetic surveys were carried out over lines spaced at 400 foot intervals layed out transverse to the strike of the ultramafic contact. The program was designed to explore for massive sulphide bodies with a geological model in mind similar to that used by the writer in the Manitoba Nickel Belt where the systematic diamond drill evaluation of magnetic conductors was rewarded with discovery.

The EM work was carried out by a geophysical contractor using horizontal loop EM 17 instrumentation: A frequency of 1600 Mz and a coil spacing of 300 feet was used which allowed effective evaluation to a depth of approximately 150 feet.

The magnetometer work effectively mapped the ultramafic body along a strike length of 2 1/2 miles and widths up to 1500 feet. Thus, the body extends well southeast of the present claim boundary. The magnetics infer that the mass dips steeply south, thus defining the north contact as the footwall. An important feature which emerged from the study was that the variety of pyrrhotite in the sulphide mix is weakly magnetic to non-magnetic in places. As a result the targeted sulphide mineralization was determined to have a minimal magnetic signature, - if any. An orientation survey over the 'mine area' did not define the anticipated response.

The compositional variation within the ultramafic may be evident from magnetic studies, and further work should be done with more sensitive instrumentation than the Fluxgate mag used in 1972.

The EM work defined the conductors located on Fig. 4, and several holes were spotted to evaluate them. Massive sulphides were not found, and it was concluded at the time that the potential for this type of mineralization was limited. However, it was also apparent that the less than massive types would not provide magnetic conductive targets. The disseminated and network-type sulphides encountered in the trench at 3+80 did not respond to either method. However, the IP signature to the west records chargeabilities in the order of 25 to 30 ms which could well reflect this type of material.

#### DRILLING

As mentioned, the earlier drilling was focused on the known mineralization 400 feet to the north of the contact. The most recent drilling by the Nickel Syndicate was located to evaluate EM conductors coincident with magnetic anomalies in the expectation that massive sulphides would be discovered. The

Footage	Description	Sample	Length		Ni	Cu		
0.0	Collar							
26.0	NW casing boulders, gravel, sand							
1 98.0	Start of core, boulders							
105.0	(RW casing) 7' below ledge							
106.0	Peridotite, massive, mg, med qy blk, weathered and sly rusty, occ slip fracture surface coated with sulphide, dk-med brn po, minor dissem po, 5-10%, LC 102-104	9989	7.4		0.34	0.07		
121.0	Perid, sly serpid, gen massive, num chunks with prom heavy coat of sf sulp, and prom dissem sulp, mainly po, poss some py in fine frags, 25-30% sulp LC 109.0-110.0, 118.8-119.6	9990	15.0		0.35	0.09		
131.0	Perid, as @ 121.0, sly more serpid & less sulp, occ sf asb occ lt qy altd sects to 0.2' 20% sulp	9991	10.0		0.25	0.02		
141.0	Perid, med qy - dk qy blk, f-mg, mainly massive to 138 some dissem po & num sulp coated frags with prom slitensides, 20%-25% sulp	9992	10.0		0.25	0.02		
151.0	Perid, dk qy - blk, f-mg, sly more shrd appearance prom sf sulp, sltmscls, occ sf asb, LC 144-147, 25%	9993	10.0		0.27	0.04		
162.0	Perid, med qy, gen more shrd & foliated 30° along core than above, prom sf sulp, almost massive in hly shrd areas over 5', occ asb rare 0.1'-0.2' fq qy strcs	9994	11.0		0.34	0.06		
171.0	Perid, med-dk qy blk, hly serpid, num sml strcs asb, prom sf and dissem sulp, 40% sulp	9995	9.0		0.34	0.06		
175.0	LC							
178.6	Perid, dk qy - blk, f-mg, chunky, lighter weight sulphide coatings & more prom dissem sulps, 25% - 30%	9996	3.6		0.54	0.12		
183.0	Perid, change of type, blotchy grey on dry surface streaky blotchy granular wide network of serpid zones on wet surf, some sf and minor dissem & sml patches suld, contact is unique, foln 30°-45°, 5-10%	9997	4.4		0.28	0.02		
198.0	Metaperidotite - qabbro, soft, yet harder than perid to this depth, mg-med qy qrn, fine dissem sulp, 5%	9998	15.0		0.22	0.01		



Footage	Description	Sample	Length		Ni	Cu
198.0						
211.0	Metapend; gabbro, med qy, mq, fo'n @ 45°, occ widely spaced serpid strks, lightly dissem po, occ sf asbestos, brassy but massive, 5%	9999	13.0		0.22	0.01
221.0	Gabbro, med qy, num widely spaced blk serpid strks @ random angles, occ fract fillings sulp as @ 212, 45° randomly scattered sulp, 5-10%	1000	10.0		0.24	0.03
234.0	Metaperid-gabbro, sly darker than above, med qy with 0.01' dk serpid strks, occ fine dissem sulp, 5%	1001	13.0		0.22	0.06
249.0	Gabbro, as @ 234, 2 0.01' lt fels veins @ 242, 243, 45° thin dk serpid. strks, occ more hly serpid brd @ 244-246 with more prom fine dissem sulp, 10%	1002	5.0		0.25	0.05
262.0	Gabbro, med qy, mq, blk serpid strks are narrower ora at random angles, occ light coating sf sulps med-lt yell brn around. 261, fine dissem sulp (p) pres related to dk serpid zones in section, 5-10%	1003	13.0		0.24	0.03
72.0	Perid, poss a more serpid var of 262.0 dk ay blk fq, qn more fo'ated, occ. frags along core with brassy yellow coating, some frags across core.	1004	10.0		0.25	0.09
80.0	Perid, as above, sly less serp, chunky, fewer sulp 10-15%	1005	8.0		0.23	0.05
90.0	Gabbro, massive, num strks serp, spres fine po, 8%	1006	10.0		0.24	0.04
06.0	Gabbro, massive, prom felds, occ serpid strk, 5%	1007	15.0		0.18	0.02
18.6	Gabbro, med qy, mq, occ, smt spic dissem sulp LT 5% occ brn mica, chlor shrs to 0.01' LC 314 315 317.6-318.6	1008	13.6		0.17	0.02
23.0	Shr zone, gouge, mainly chlorite, minor serp	1009	4.4		0.14	0.02
30.0	Gabbro, mq, med qy, occ serpid strks, occ prom chlor shrs, 30°-50°, occ smt serp & patch (0.01') lt brn po, 5%-10% Sulp	1010	7.0		0.26	0.13
34.6	Gabbro, mq-fq, med qy, occ chlor shr to 0.01' @ random angles & prom dissem po in smt patches and strks randomly scatted throughout core, 25-30%	1011	4.6		0.66	0.28

VQ - Canalsk  
Nickel Syndicate

Footage	Description	Sample	Length	Ni	Ni	Cu			
334.6									
335.0	Gabbro, mainly a 6" band of lt brn heavily dissem	1012	0.4		1.32	0.32			
340.0	Cumulate sulphide, 75%, po, py?, minor cp Gabbro, med qy mcj, generally dissem 0.01 patches med brn po, occ frags, 30° & random, gen massive, prom cp in last 0.2', 30%	1013	5.0		0.80	0.20			
342.8	Gabbro, m-fq, blocky & broken, contact zone	1014	2.8		0.15	0.00			
361.0	Tuffite-quartzite, fine grained, aphanitic, pinkish grey unit with occ prom fragmented bands, broken & blocky, LC 343.6-346.6, 347.0-348.0, 351.5-354 355-358.								
361.0	Foot of hole								
		Composite Samples		- Ounces per ton -					
				Au	Ag	Pt	Pd.		
	Date started July 11 1973	9990 -	9996	Tr	Tr	0.006oz	0.010oz		
	Date completed July 21 1973	1010 -	1013	0.005 oz	0.07oz	0.013oz	0.040oz		
	Drilled by E Canon Diamond Drilling Ltd								
	Logged by K.A. MACLEAN, John S Vincent Ltd								

results led to the conclusion that the responses were due to sulphides smeared out along slip planes and fractures.

Drill hole VQ-7, Fig. 4, tested the #2 conductive zone and encountered mineralized gabbro from 250-340 feet, with the 10 foot interval 330 to 340 averaging 0.94% nickel, and 0.33% copper. This composite sample assayed 0.005 ounces of gold per ton, 0.07 ounces of silver, 0.013 ounces of platinum, and 0.040 ounces of palladium per ton. A composite through the peridotite above, over the interval 106.0 to 178.6 feet, assayed 0.006 ounces of platinum and 0.010 ounces of palladium per ton. The sulphide was described as disseminated and network-type material. Above this intersection the rock is a lightly mineralized serpentinite which carries 0.15-0.35% nickel and trace amounts of copper. Holes 4 and 5 shown on Fig 4 were lost in heavy overburden. These results are encouraging in that the presence of the sulphide-bearing gabbroic phase has been identified 1600 feet east of the trench exposure of similar material. Further drilling through this section and along strike to the west is required.

#### GEOCHEMISTRY

Limited soil sampling was carried out by the Nickel Syndicate over the known areas of mineralization to determine its effectiveness. An analysis of 63 samples established a mean of 43 ppm nickel and 51 ppm copper with anomalous levels set at 59 and 98 respectively. However, overburden cover is highly variable, and the surprising depths and clay/boulder compositions encountered in trying to set drill casing precluded further soil surveys. Further orientation soil sampling and analyses for platinum and palladium should be carried out.

#### RECOMMENDATIONS

It is recommended that exploration be continued to evaluate the potential for continuity of the sulphide mineralization within the mine area, and to delineate the gabbroic-hosted disseminated

*John S. Vincent, P. Eng.*

and network texture material encountered in the 1973 drilling campaign by the Nickel Syndicate. A 2-phase program is outlined to accomplish this as follows:

Phase 1: It should be possible to relocate the grid shown on Fig.4 and make use of the data on hand from the Nickel Syndicate programs. This will allow 600 meters of drilling to be done in the initial phase to evaluate the gabbroic-hosted sulphide mineralization. An orientation magnetic survey with a gradiometer should be run over selected lines to determine what type of signature this type of mineralization can generate. Soil sampling on the same lines can be done to determine the platinum-palladium response.

Phase 2: Contingent on positive results from the above, a further 1800 meters of drilling should be planned to continue the evaluation.

**COST ESTIMATE**

Phase 1:

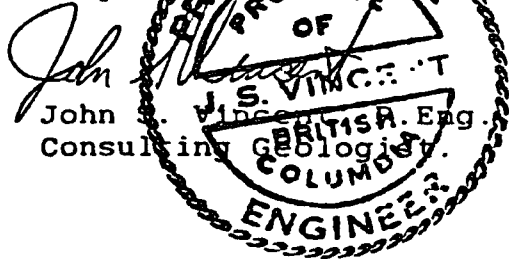
a) Gradiometer-geochemical study and grid	\$22,000
b) Allow for 800 meters of BQ diamond drilling at \$160 per meter, all in cost	<u>128,000</u>
Total	\$150,000

Phase 2:

Allow for 1600 meters of BQ diamond drilling at \$156 per meter, all in cost.	\$249,600
Total Phase 1 & 2	<u>\$399,600</u>

Allow \$400,000

Respectfully,  
PROFESSIONAL



John S. Vincent  
Consulting Geologist

January 10, 1987.

*John S. Vincent, P. Eng.*

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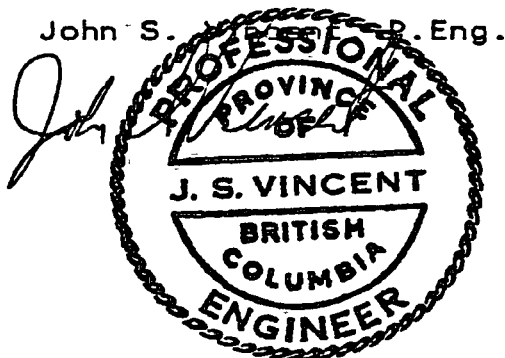
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- Miscellaneous reports on the Canalask Property prepared over the 1972-1973 work program; Private Files

CERTIFICATE

I, John S. Vincent, P. Eng., of Vancouver, British Columbia, do hereby certify that:

1. I am a Consulting Geologist with offices located at 530-800 West Pender St., Vancouver, B.C.
2. I am a graduate of Queen's University, Kingston, Ont., B.Sc. 1959, and a graduate of McGill Univ. in Montreal, M.Sc. 1962. Both degrees being in Mining Geology.
3. I have practiced my profession continuously for 27 years. I am a member in good standing of the Professional Engineers of British Columbia, and a Fellow of the Geological Association of Canada.
4. The data upon which this report has been prepared is based on the writer's direct field experience in the area over the period 1970-1973.
5. I have no interest direct or indirect in the securities or properties of All-North Resources Ltd.

Vancouver, B.C.,  
January 10, 1987.



*John S. Vincent, P. Eng.*

87-022

# ARCHER, CATHRO

& ASSOCIATES (1981) LIMITED

CONSULTING GEOLOGICAL ENGINEERS

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REPORT ON  
1987 EXPLORATION

CANALASK JOINT VENTURE  
Latitude  $61^{\circ}57'N$ ; Longitude  $140^{\circ}32'W$   
NTS 115F/15

Performed for  
Rockridge Mining Corporation and  
Kluane Joint Venture

R.J. Cathro, B.A.Sc., P.Eng.  
December 30, 1987

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## INTRODUCTION

The Canalask Property, which has an extensive history of surface and underground exploration extending back to 1952, was optioned by Kluane Joint Venture (Chevron Minerals Ltd. and All-North Resources Ltd.) from its owners, prospectors P. Versluce and C. Gibbons, in December, 1986. Following a preliminary investigation and a review of previous results, a farm-out option was subsequently negotiated between Kluane Joint Venture and Rockridge Mining Corporation which funded the 1987 program.

Previous work had been directed toward the nickel-copper potential and had identified a small nickel deposit with measured reserves of 450,000 tonnes grading 1.68% Ni and 0.04% Cu. The 1987 program was stimulated by encouraging results at the former Wellgreen Mine, 80 km southeast by Kluane Joint Venture. It was directed toward the platinum potential of the property and drew on the extensive files in the possession of the owners, as well as consulting geologist J.S. Vincent, who had supervised the most recent program of substantial work in 1972-73. The 1987 field work, performed between May 19-29 and June 25-July 25, consisted of claim staking and location surveys, 10 km of grid linecutting and geophysical surveys, a small amount of soil and rock sampling, two km of bulldozer trail construction and diamond drilling (602.9 m in five holes). The work was supervised in the field by M. Boulding, assisted by K. Sax. Report preparation was directed by L. Cymbalisty. The program was conducted under the overall supervision of R.J. Cathro and R.C. Carne.

PROPERTY, LOCATION AND ACCESS

The Canalask Property is located in southwest Yukon Territory on the east bank of the White River, 375 km northwest of Whitehorse (Figure 1), at latitude 61°57', longitude 140°32', within NTS claim map 115F/15. A 4 km all-weather gravel road in good condition connects the property with the Alaska Highway at km 1880. Meals, lodging, telephone service and fuel supplies are available within a few kilometres at White River Lodge and Koidern Motel.

Topography is typified by low rolling hills separated by swampy depressions. Slopes are forested by spruce interspersed with occasional birch and alder.

The property consists of 25 contiguous claims registered with the Whitehorse Mining Recorder as follows:

<u>Claim Name</u>	<u>Record No.</u>	<u>Expiry Date</u>
Micro 1-2	86108-86109	October 10, 1991
Micro 3-4	86111-86112	October 10, 1991
Micro 6	86115	October 10, 1991
Micro 10-11	86367-86368	October 10, 1991
Micro 12	86360	October 10, 1991
Weng 1F-2F	YA96585-YA96586	October 10, 1992
Weng 3-10	YA96732-YA96739	October 10, 1992
Weng 11	YB06099	October 10, 1992
Cana 1-6	YA97083-YA97088	October 10, 1992

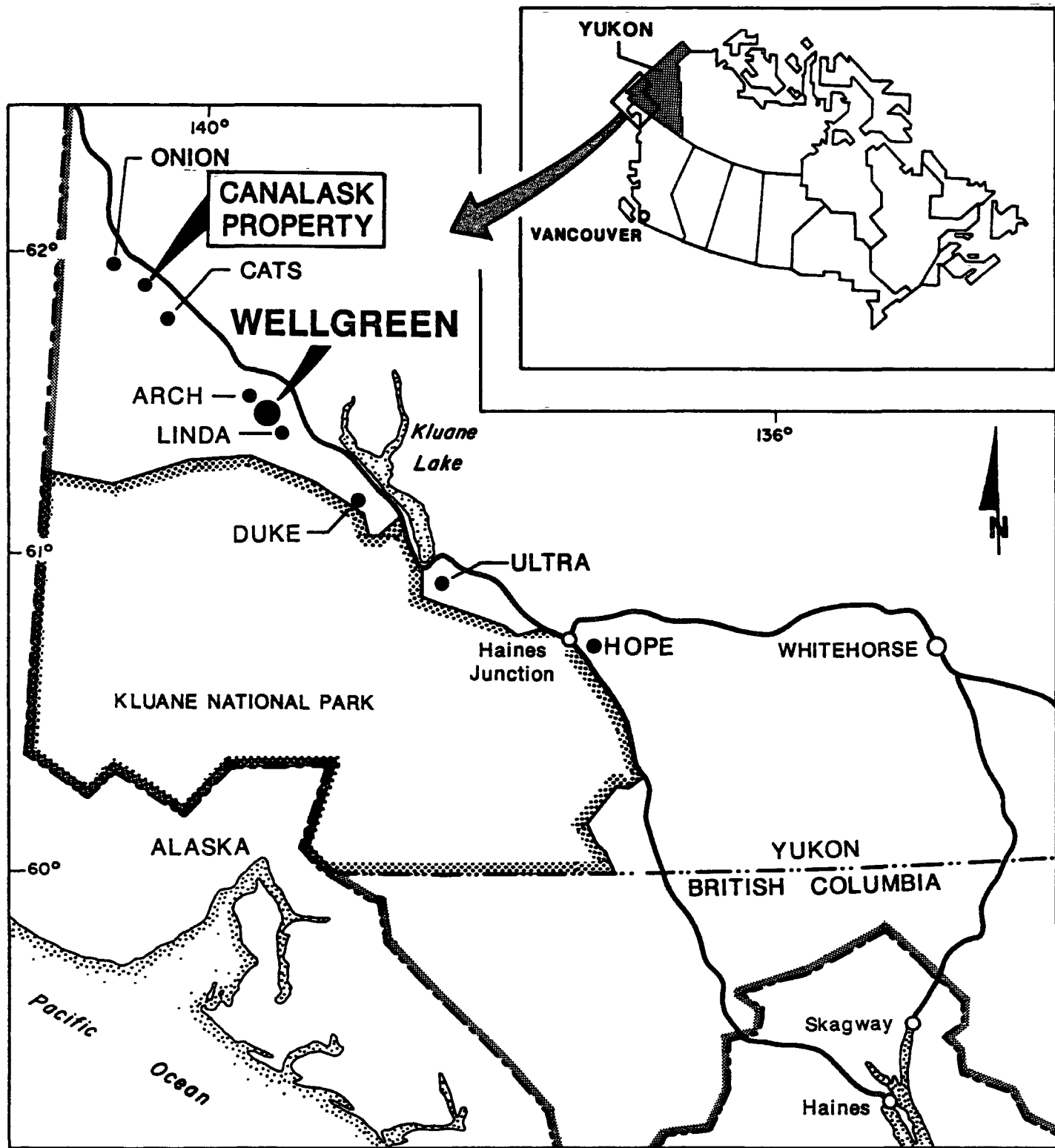


Figure 1

**LOCATION**  
**CANALASK PROPERTY**  
 KLUANE DISTRICT, YUKON

ROCKRIDGE MINING CORPORATION  
 KLUANE JOINT VENTURE



### HISTORY AND PREVIOUS WORK

Nickel mineralization was discovered on the east bank of the White River in 1952 and staked by P. Eikland, W. Theriault and F. Hickey. The property was optioned by a syndicate composed of Prospectors Airways Ltd., Noranda Mines Ltd. and Kerr Addison Gold Mines Ltd., which drilled 1622 m in 4 holes during 1953 before dropping the option in March, 1954. In May of 1954, the property was optioned by Canalask Nickel Mines Ltd., a new company formed by Ontario Nickel Mines Ltd. and Frobisher Ltd. to develop the property. Frobisher's interest was later transferred to Quebec Metallurgical Industries Ltd. Between 1954 and 1958, Canalask completed 518 m of drifting on two levels connected by a 107 m winze and drilled 2677 m on surface and 463 m underground.

The claims were allowed to lapse before being restaked as the Micro claims in March, 1964 by P. Versluce, H. Versluce and C. Gibbons of Whitehorse. These were optioned by a syndicate composed of Discovery Mines Limited, Rayrock Mines Limited, and Consolidated Canadian Faraday Mines Limited, which conducted induced polarization, ground magnetometer and EM-16 geophysical surveys, bulldozer trenching, 400 m of surface diamond drilling and 371 m of underground drilling in 1967 and 1968.

The owners performed more trenching in 1970 before optioning the property in February, 1972 to the Nickel Syndicate (Canadian Superior Exploration Ltd., Aquitaine Co. Canada Ltd., Home Oil Limited and Getty Mines, Limited) which performed geological mapping, magnetometer and shootback EM geophysical surveys in 1972, and detailed magnetometer and EM-17 surveys and 5 holes (643 m) in 1973.

The property was then idle until it was briefly examined for its platinum potential in 1984 by Mammoth Resources Limited.

### REGIONAL GEOLOGY

The Kluane ultramafic belt is bounded on the northeast by the Shakwak Fault, a major terrane boundary with latest movement in a right lateral sense. The southeast boundary of the belt is formed by the sinusoidal trace of a series of interconnected faults which roughly parallels the Shakwak Fault. All known ultramafic bodies in the Kluane Range lie within this 10 to 17 km wide belt.

Geology is summarized in Table I on the following page. Oldest exposed bedrock is Pennsylvanian to Permian Skolai Group andesitic volcanic and volcanoclastic rocks (Station Creek Fm) grading upward to clastic sedimentary rocks and limestone (Hasen Creek Fm). These are overlain unconformably by Upper Triassic Nikolai Group basalt and limestone with infrequent gypsum horizons. All are intruded by Cretaceous granodiorite plutons and Oligocene porphyritic latite to trachyte dykes and small stocks.

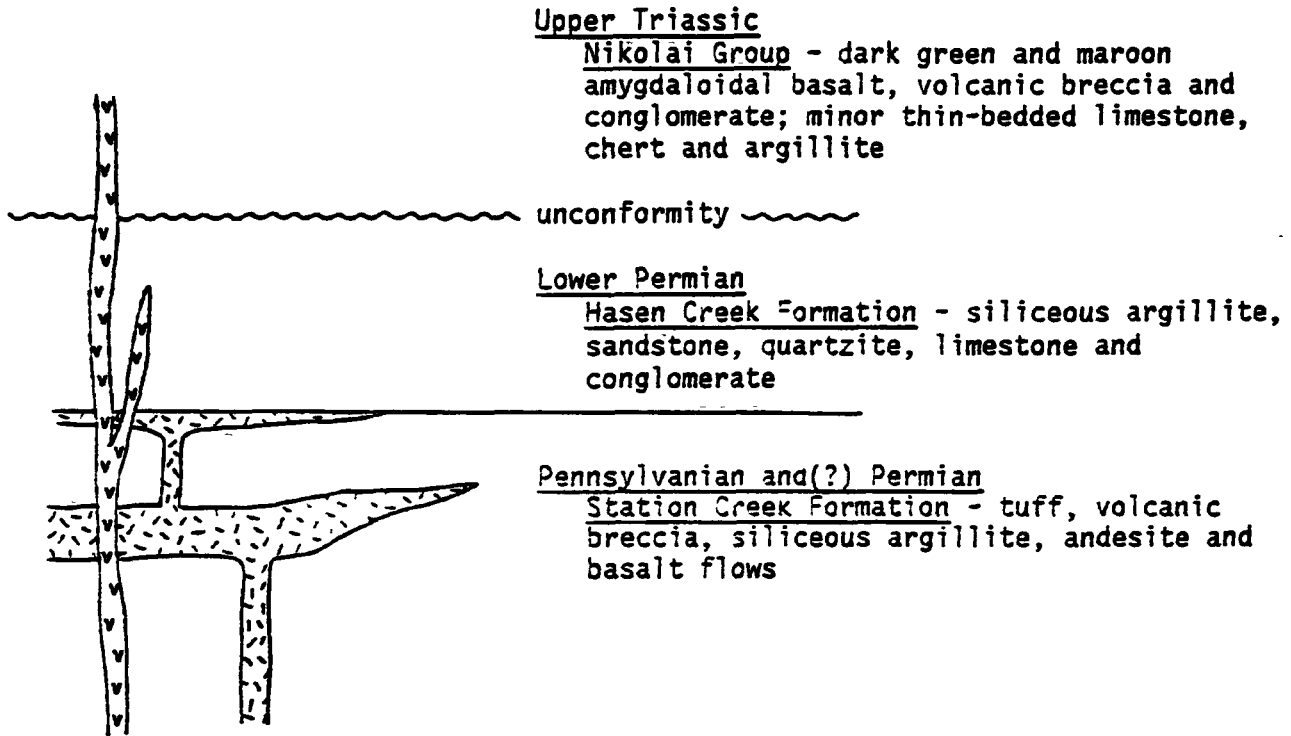
Two types of mafic and ultramafic intrusions are present:

- i) the White River, Quill Creek and Tatamagouche Creek Ultramafic Complexes are differentiated Lower Triassic sills that intrude Station Creek Fm and Hasen Creek Fm sedimentary and volcanoclastic rocks. They typically consist of strongly serpentized dunite, peridotite and lesser marginal facies gabbro. The complexes are folded and dismembered by faults, reaching a maximum thickness of about 250 m and a length up to 25 km.

Mineral constituents in the ultramafic rocks are olivine, clinopyroxene, orthopyroxene, biotite, plagioclase, amphibole and minor magnetite and sulphides. The gabbro phases consist of clinopyroxene, plagioclase, minor olivine and amphibole and trace amounts of magnetite and sulphides.

TABLE I


TABLE OF FORMATIONS - KLUANE ULTRAMAFIC BELT




INTRUSIVE ROCKS

not shown Oligocene biotite quartz latite porphyry to trachyte dykes and small stocks

not shown Cretaceous biotite-hornblende granodiorite, biotite-hornblende diorite and hornblende-biotite quartz diorite stocks

 Upper Triassic medium-grained diabasic gabbro dykes and small stocks; probably feeders for Nikolai Group basalts

 Lower Triassic differentiated ultramafic sills consisting mainly of peridotite with lesser dunite and gabbro

Cumulate textures are common in the dunites and peridotite while gabbro phases are compact and massive. Most nickel-copper-platinum occurrences in the Kluane Ranges are spatially associated with the gabbroic marginal facies of the intrusion.

Chemically the mafic-ultramafic sills have high  $TiO_2:MgO$  ratios, low Fe/Mg ratios and anomalously high MgO, Ni and Cr backgrounds. According to S. Campbell (1981 Ph.D. Thesis, University of British Columbia), the compositions fall very close to the fields for komatiites. Primary phlogopite biotite from the Quill Creek Complex yielded a potassium argon age determination of  $224 \pm 8$  Ma (Lower Triassic); and,

- ii) dykes and small stocks of medium-grained diabasic gabbro occur throughout Station Creek and Hasen Creek Fm and Nikolai Group. They consist of augite and plagioclase with minor orthopyroxene, hornblende and magnetite. Field evidence supports an Upper Triassic age for the gabbros as remnants of feeder systems for the Nikolai Group basaltic flows. No known nickel-copper-platinum mineralization is associated with the younger gabbros.



### PROPERTY GEOLOGY

The geology of the property is plotted on Figures 2 and 3 (in pocket). The dominant rock unit is a steeply south-dipping, mafic-ultramafic sill of complex structure and composition, probably formed as a result of multiple intrusions. This body, which has an approximate thickness of about 110 m, intrudes the contact between deformed Pennsylvanian and Permian Station Creek Fm shale, chert, limestone, volcanic tuffs and volcanic breccias and overlying Lower Permian Hasen Creek Fm greywacke, argillite and chert. The ultramafic mass consists of a basal section of dunite that is overlain, in turn, by peridotite and a thin anorthositic gabbro phase. The section exposed on the Canalask property is the central part of the much larger White River Ultramafic Complex.

The northern (footwall) edge of the northwest-trending ultramafic complex is in contact with a sequence of very fine-grained rocks, mainly sedimentary in origin. Quartzite and chert predominate, with occasional bands of limestone and argillite. Some fine-grained tuffaceous material may be interbedded on occasion. Andesite and andesitic agglomerate outcrop along the east bank of the White River, north of the mineralized zones. A local open flexure east of the river has induced an easterly strike for a distance of approximately 750 m. The dip is steep at 80-85° to the south. This flexure has created a zone of fracturing, 120 m north of the peridotite contact, that hosts nickel and copper sulphides. Previous workers have interpreted the nickel-copper mineralization as being emplaced in conjunction with a later intrusive phase of discontinuous bodies of olivine gabbro.

The main emphasis in both 1973 and 1987 was toward exploration of the overburden-covered extension of the sill east of the Canalask deposit. Bedrock in this part of the property has only been exposed in trenches and drill holes. Core from three of the 1973 holes (1 to 3) was found at the drill sites while a fourth (hole 7) was found stored in the Bostock Core Library, Whitehorse. Core from 1973 holes 1 to 3 was moved with the 1987 core to the Wellgreen camp for storage, where it was logged by geologists M.P. Phillips and B. Fletcher. Hole 73-7 was relogged by Phillips in Whitehorse.

Where seen in holes 73-1 to 73-3, the ultramafic sill is a fairly uniform dunite. Postcumulus feldspar and clinopyroxene is very rare to absent. The dunite in the 1987 holes contains up to 20% postcumulus feldspar and minor phlogopite. Overall pervasive serpentinization is weak to fair in holes 73-1 to 73-3 and moderate in all the 1987 holes. Where fracturing is well developed, fracture serpentinization is moderately developed in holes 73-1 to 73-3 and strongly developed in the 1987 holes. The most common alteration in holes 73-1 to 73-3 is pervasive to intense carbonatization. Carbonatization, which often results in the decomposition of the dunite to an olivine sand, was not present in the 1987 holes. The sill is more complex in Hole 73-7, which is described on Page 10.

The footwall of the ultramafic sill in all the 1973 holes is a light to medium grey, usually calcareous volcanoclastic containing up to 7 m wide beds of white to grey limestone. The volcanoclastic is a coarse ash - small lapilli tuff. In holes 87-2 to 87-4, the sill is underlain by a light to medium grey, interbedded quartzite and argillite sequence. The quartzite and argillite are evenly fine grained. Hole 87-5 was stopped within the ultramafic sill.

About 1 m wide, light coloured porphyry dykes cut the dunite. The porphyry has chilled contacts and contains fine feldspar and mafic phenocrysts in a very fine-grained matrix. Some of the dykes are weakly amygdaloidal. In addition to the dykes, the dunite in hole 87-5 is cut by several 10 to 60 cm skarn bands composed of coarse-grained feldspar, diopside and phlogopite and trace amounts of magnetite and garnet.

### MINERALIZATION

According to previous workers, mineralization in the discovery zone consists of fracture fillings and disseminated to massive pyrrhotite, pyrite, marcasite, chalcopyrite and pentlandite in tuffaceous rocks in the footwall of the sill.

Disseminated pyrite, pyrrhotite and chalcopyrite is widespread as bands of disseminated sulphides and as laminae or thin beds of massive sulphide within tuffaceous rocks of the Station Creek Fm. The stratiform nature of this mineralization led early workers to assume a syngenetic origin for the sulphides.

The Canalask deposit comprises two parallel and tabular shatter zones within intensely albitized and silicified tuffaceous rocks about 125 m north of the footwall contact of the mafic-ultramafic complex. It lies near the east bank of the White River and was explored with an adit collared on the river bank. The shatter zones plunge southwest at about 75° and were interpreted to intersect with the steeper-dipping sill at depth. Fractures are filled with pyrrhotite and minor chalcopyrite, pyrite and pentlandite and occasional magnetite. Similar mineralization also occurs as pods along shear zones. Only those sulphides that occur in fractures and shears are nickeliferous. Disseminated and laminar banded sulphides in the altered and fractured host rocks carry no nickel values and are probably part of a syngenetic suite of mineralization.

The two shatter zones provide the bulk of the mineral inventory, which was defined by surface and underground exploration as 450,000 tonnes with a grade of 1.68% Ni and 0.04% Cu. A bulk sample collected underground for

metallurgical testing returned a concentrate grade of 19.7% Ni, 0.030 opt Pt and 0.019 opt Pd, with a nickel recovery of 90%. Specimens of this type of mineralization assayed in 1986 gave very low platinum values although a palladium content of 0.047 opt was recorded from a composite sample of mineralization from the adit dump.

Mineralization encountered in the drill holes typically consists of weakly disseminated and fracture filling pyrrhotite. A wide interval at the top of hole 73-3 contains up to 2% finely disseminated chromite. The most interesting results were obtained in hole 73-7, where the sill is differentiated into upper and basal gabbros at the footwall margin of moderately to complexly serpentinized dunite containing 3 to 7% postcumulus feldspar, minor phlogopite and traces of clinopyroxene (augite). Mineralization consists of 0.5 to 2% coarse net texture pyrrhotite and minor fine disseminated chalcopyrite. Pyrrhotite content appears to increase towards the bottom contact. Between the upper gabbro and the dunite is a 9 m wide band of mottled, very weakly mineralized peridotite.

The 16 m wide upper gabbro is fine grained and diabase textured. Cutting the gabbro are up to 5 mm wide serpentine stockwork veinlets. Up to 1% pyrrhotite and chalcopyrite is present. Sulphide content appears to be slightly better developed in and around the serpentine veinlets. Separating the upper and basal gabbro is a 7 m wide section of weakly spotted harzburgite and feldspathic peridotite.

The 17 m wide basal gabbro consists of an upper 11 m section of olivine gabbro and lower 6 m wide band of gabbro. The gabbro is only weakly mineralized, except for a 3.05 m section near the base, which was assayed

previously and is now missing from the core box. The Nickel Syndicate log for this section indicated that mineralization, predominantly pyrrhotite and minor chalcopyrite, occurs in amounts estimated to average 35% and reach to 75%. Three samples from this strongly mineralized section assayed by the Nickel Syndicate averaged 0.76% Ni and 0.24% Cu over a 12 m width. A composite including these three samples and a 2.13 m section above this interval assayed 0.013 opt Pt and 0.04 opt Pd.

#### GEOCHEMISTRY

Test soil sampling was carried out between 480 m west and 2440 m east of 0+00 on the old baseline. Thirty-five soil samples were collected on high ground where glacial till was minimal. The area sampled lies at the westerly end of the grid and near the old mine workings, just east of the White River. Samples were collected at 50 m spacing on lines 120 m apart. Each sample location was marked with a 1/2 m lath picket with soil sample number and grid coordinates written on the picket.

Individual soil sample values are plotted at 1:2500 scale on Figure 4 (in pocket). All soil samples were sent to Bondar-Clegg & Company Ltd., North Vancouver, B.C. where they were prepared by crushing and pulverizing the entire sample to -150 mesh prior to fire assay preconcentration for atomic absorption (FA-AA) determination of platinum and palladium. No anomalous values were obtained.

### GEOPHYSICS

A detailed grid VLF/EM and proton gradiometer survey was performed under contract by Delta Geoscience Ltd., whose report is appended. The results are summarized on Figures 2 and 3 (in pocket). Readings were collected at 20 m intervals on lines spaced about 120 m apart. To provide control, a previous grid was brushed out, picketed and slope chained where possible. Approximately 9 km of new lines was cut to extend the old grid. The Delta coverage consisted of about 10 km of survey.

### TRENCHING

Trenching in 1987 was restricted to deepening two trenches dug in 1972. The trenches were situated at 0+75E 1+60S and 0+60W 2+00S (see Figures 5 and 6 in pocket). A Caterpillar D-6 bulldozer contracted from E. Caron Diamond Drilling Ltd., Whitehorse for moving the diamond drill was used for this work.

The trenches were resampled by collecting rock chips from a continuous channel in the floor of each trench. Samples were sent to Bondar-Clegg where they were crushed and pulverized to -150 mesh, then geochemically analyzed for nickel, cobalt and copper using a hot HNO<sub>3</sub>-HCl extraction and atomic absorption, and platinum, palladium by fire assay.

Both trenches straddled the footwall contact of the ultramafic sill. A sample taken in Trench 0+75E 1+60S returned assays of 0.009 opt Pt, 0.023 opt Pd, 0.12% Cu and 0.22% Ni over 3 m. Trench 0+60W 2+00S returned a weighted average of 0.006 opt Pt, 0.012 opt Pd, 0.05% Cu and 0.25% Ni over 42 m, within which the highest values were 0.012 opt Pt, 0.340 opt Pd, 0.11% Cu and 0.42% Ni from a 3 m long sample.

## DRILLING

### General

Drilling was contracted to E. Caron Diamond Drilling Ltd. of Whitehorse and was performed with a wireline-equipped, hydraulic Longyear Super 38 drill housed in a unitized drill shack and powered by a diesel engine. Work commenced on July 3 and was completed on July 25. Five NQ holes (602.9 m) were drilled with HWL casing installed to depths of 3 to 15 m. Hole 87-1 was abandoned at 18.3 m with 6 m of H casing, adapter and a tricone left in the hole because of difficult overburden. Recovery in the other holes averaged better than 95%. Drill water was obtained from the White River. Drill products consumed consisted of Maytex 2000 mud, Qwik-Gel and Qwik-Trol.

Mud, swamp and generally wet ground conditions severely hampered access to the drill sites and movement of the drill between sites. The 1987 and 1973 drill hole locations are shown on Figures 2 and 3 (in pocket). Several drill sites spotted further east were not drilled because of the difficult ground conditions. This part of the property should be drilled when the surface is frozen.

The drill was moved by a D-6 bulldozer contracted from E. Caron Diamond Drilling Ltd. A total of 110 hours of D-6 and 12.5 hours of D-7 work was performed building access roads, preparing drill sites and trenching.

Sections of each hole are presented on Figures 7 to 14. Drill hole depths and coordinates for the 1987 holes are as follows:



<u>Hole No.</u>	<u>Depth (m)</u>	<u>Grid Location</u>
87-1	18.3	2+15W 3+15S
87-2	185.0	2+15W 3+05S
87-3	183.8	1+20W 3+30S
87-4	71.6	0+20W 2+70S
87-5	<u>144.2</u>	1+00E 3+00S
	<u>602.9</u>	

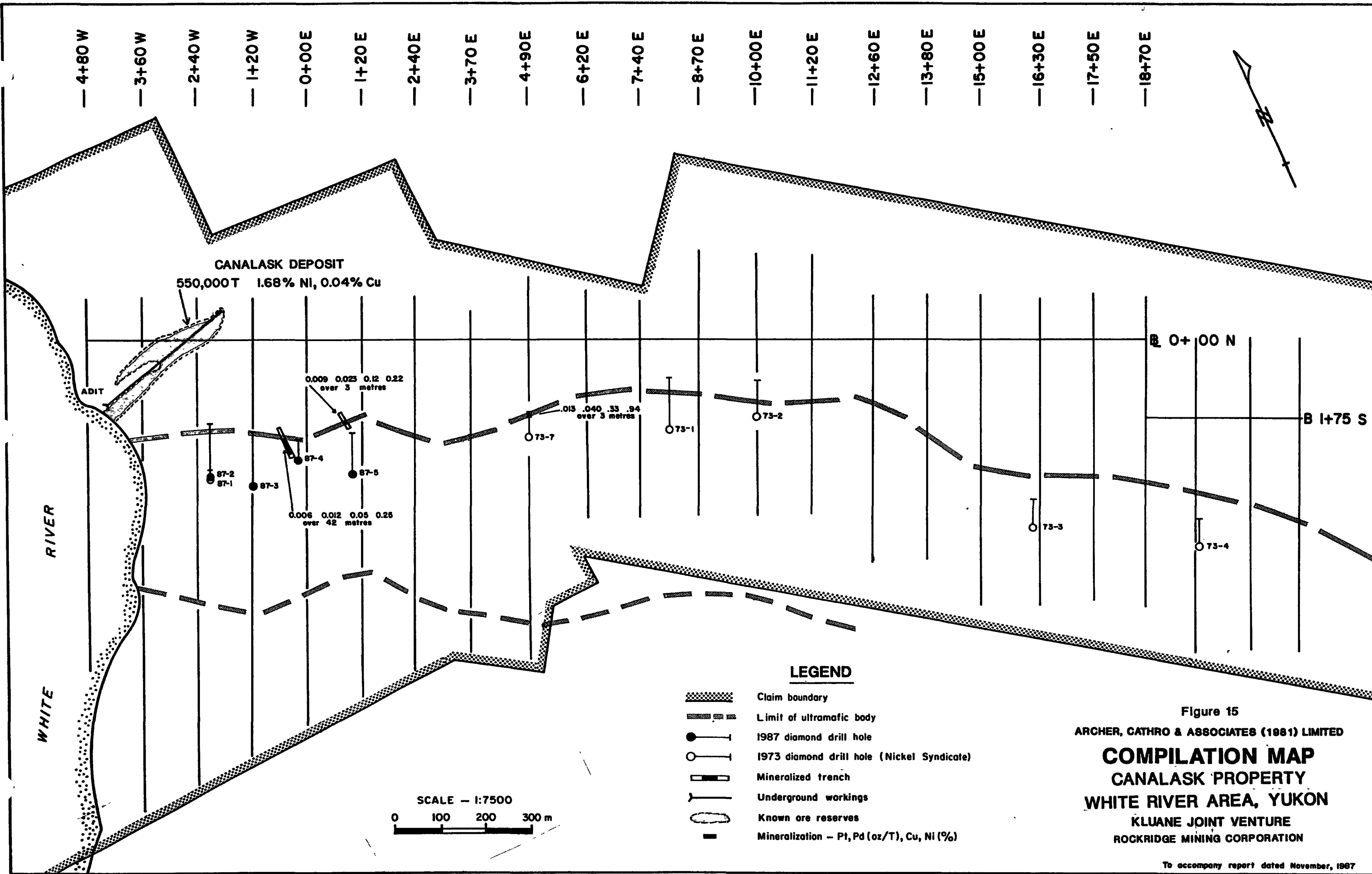
Split core was sent to Bondar-Clegg for geochemical analysis by the "Platinum + 4" technique, which consists of fire assay and direct coupled plasma-atomic emission spectroscopy for platinum, palladium and gold and atomic absorption spectroscopy for nickel and copper.

### SUMMARY AND RECOMMENDATIONS

An exploration program consisting of five NQ drill holes (602.9 m), grid linecutting, a combined VLF/EM and proton gradiometer survey, and limited bulldozer trenching and geochemical sampling was conducted on the Canalask Property between May 19 and July 25, 1987. The work was funded by Rockridge Mining Corporation under a joint venture agreement with Chevron Minerals Ltd. and All-North Resources Ltd. (Kluane Joint Venture). The claims are held under an option from the owners, P. Verslucce and C. Gibbons of Whitehorse.

The property hosts the Canalask mineral deposit, which is associated with White River Metamorphic Complex. It has received extensive exploration since the discovery of a mineral showing on the bank of White River in 1952. To the end of 1973, 518 m of drifting on two levels connected by a 107 m shaft, 6176 m of surface and underground drilling, construction of a road to the Alaska Highway and bulldozer trenching was performed. This work, which was directed toward the nickel-copper potential, identified measured reserves of 450,000 tonnes grading 1.68% Ni and 0.04% Cu that lie in volcanoclastic rocks in the footwall of an ultramafic sill. The only significant platinum assay obtained from the property was 0.013 opt Pt, 0.040 opt Pd with 0.94% Ni and 0.33% Cu across a 3.05 m interval in hole 73-7. This intersection, situated about 750 m east of the Canalask deposit, was obtained from a gabbro phase at the footwall (north) margin of the sill (see Figure 15).

The 1987 program was directed toward the platinum potential and drew on the extensive files in the possession of the owners and consulting geologist J.S. Vincent, who supervised the 1972-73 exploration. Initial emphasis was on defining the position of the ultramafic sill under extensive overburden to the



east of the deposit, with geophysical surveys, carrying out a test geochemical survey to determine if it would detect bedrock response through the overburden, resampling some old bulldozer trenches, and drill testing the footwall of the sill.

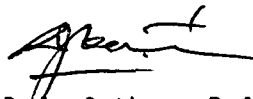
The 1987 drilling tested a strike length of about 450 m east of the river. An interval another 400 m east to hole 73-7 is untested. From there to the east end of the property, which is over 2 km, the contact of the sill has only been tested twice in holes 73-1 (300 m east of hole 7) and 73-2 (500 m east of hole 7). The other two holes drilled in 1973 (3 and 4) tested geophysical targets inside the sill and were not extended far enough to reach the footwall contact.

Although the results of the 1987 trench sampling and drilling gave disappointment results, the 1973 intersection in hole 73-3 has shown that significant platinum-bearing nickel-copper mineralization is associated with a gabbro phase along the footwall of the ultramafic sill. This is not only the same geological setting that hosts the Wellgreen deposit 75 km to the southeast, it is significantly different from the non-platinumiferous deposit on the bank of the river, toward which most of the previous exploration was directed.

The footwall contact should be further explored with approximately 1000 m of shallow drilling (10 holes) spaced at roughly 200 m intervals. Three of these holes should be drilled in the vicinity of hole 73-7. Because this area is swampy, drilling should be performed when the ground is frozen (between late October and mid-May).

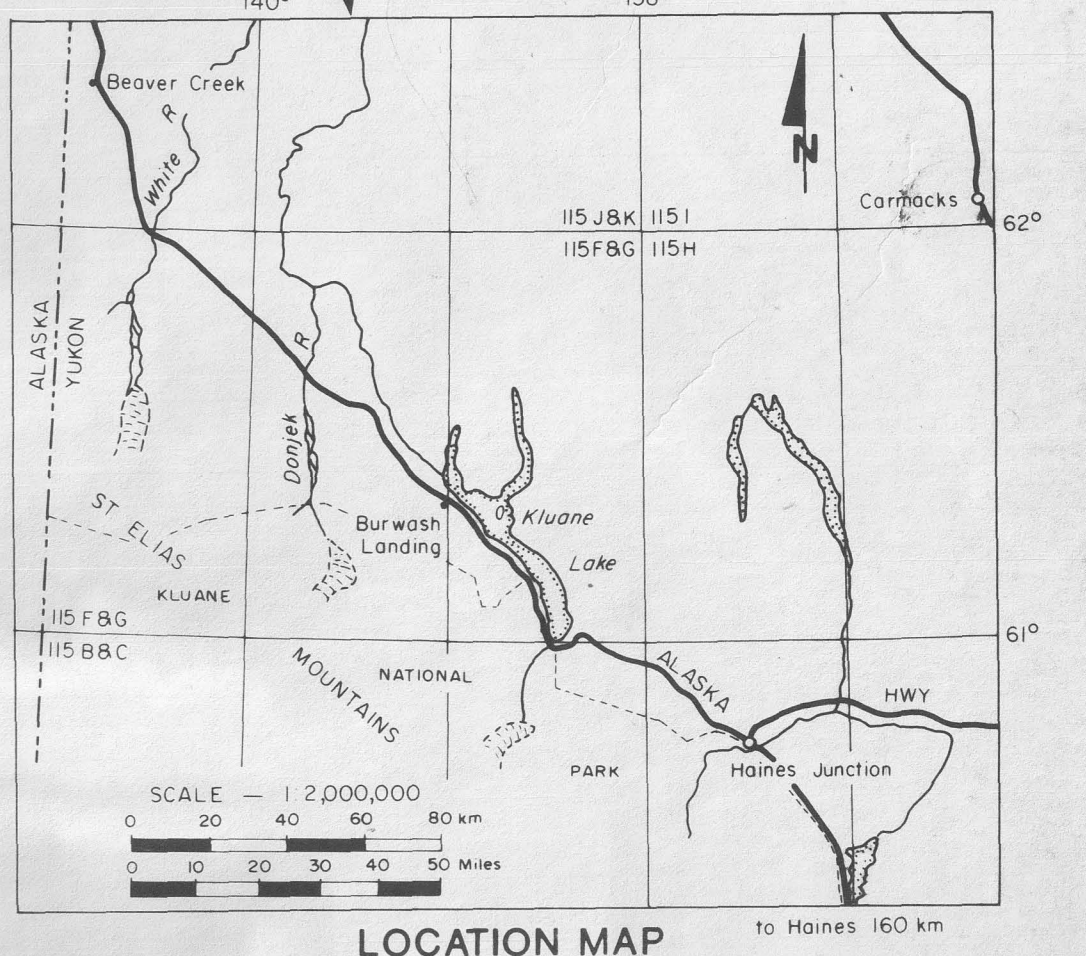
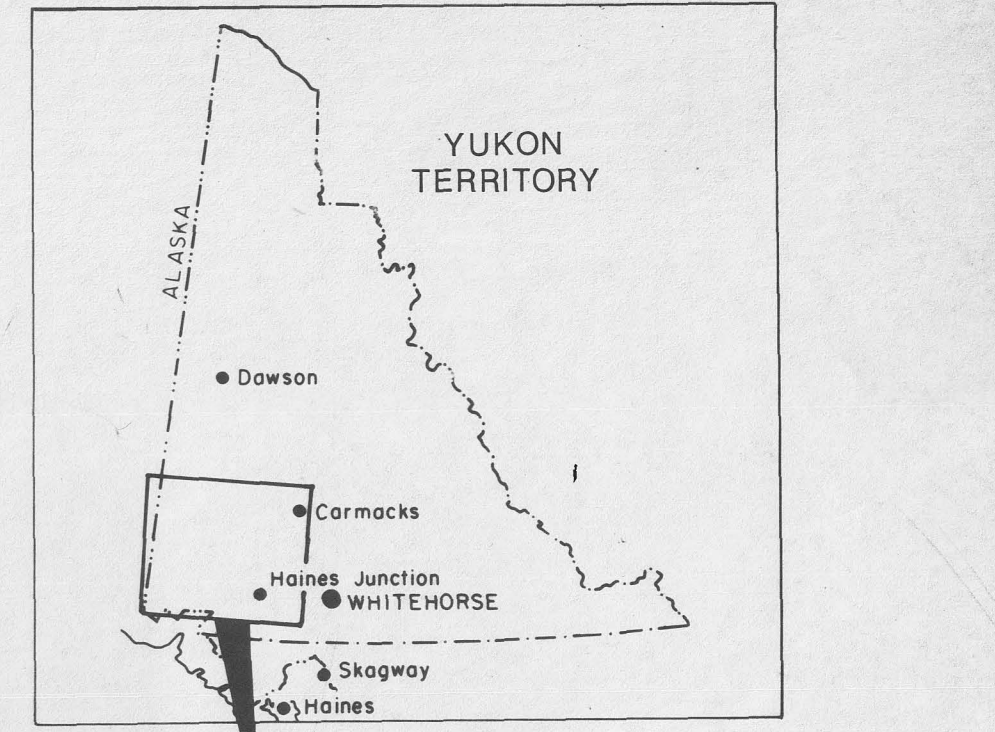
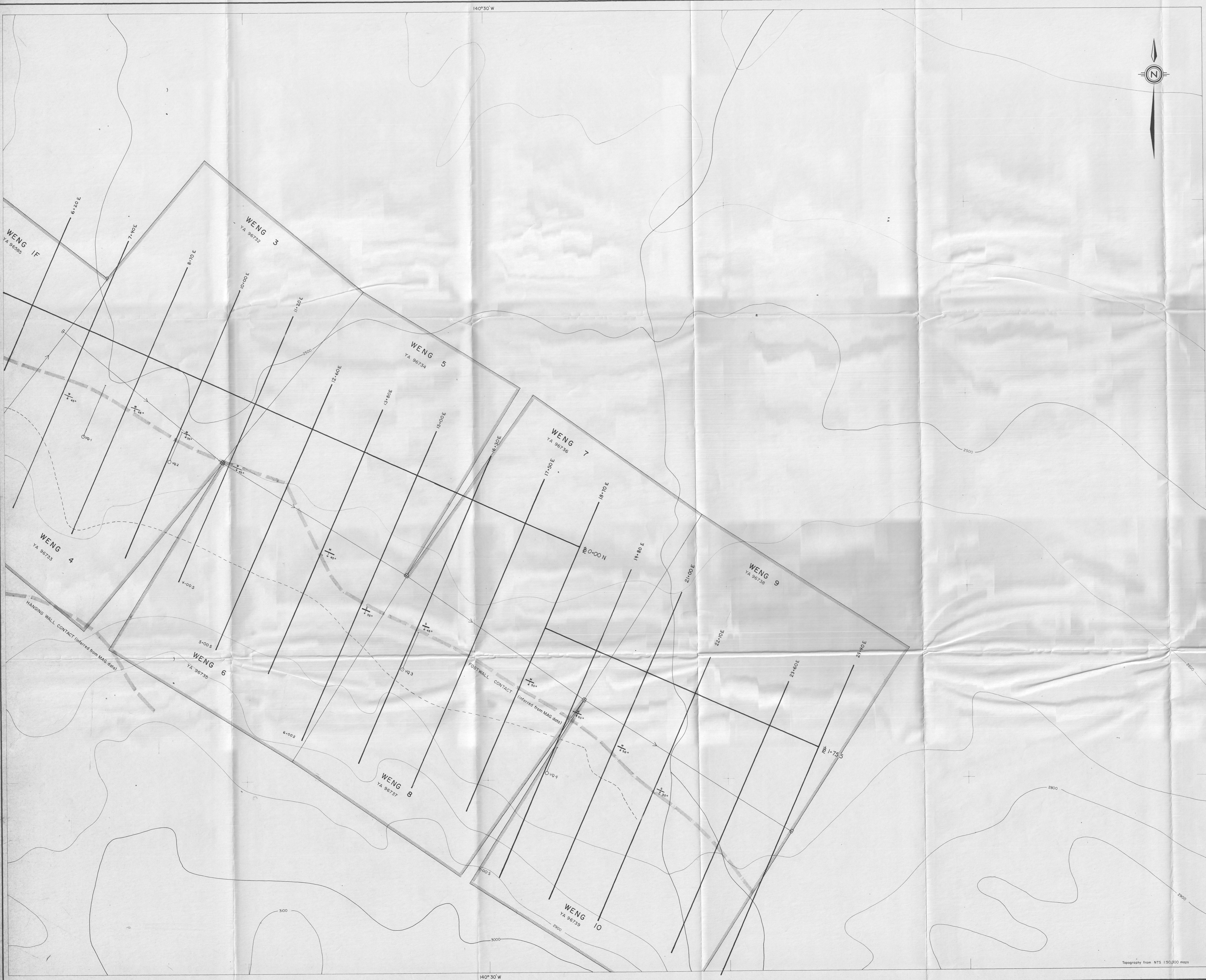
Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED



R.U. Cathro, B.A.Sc., P.Eng.

/mc

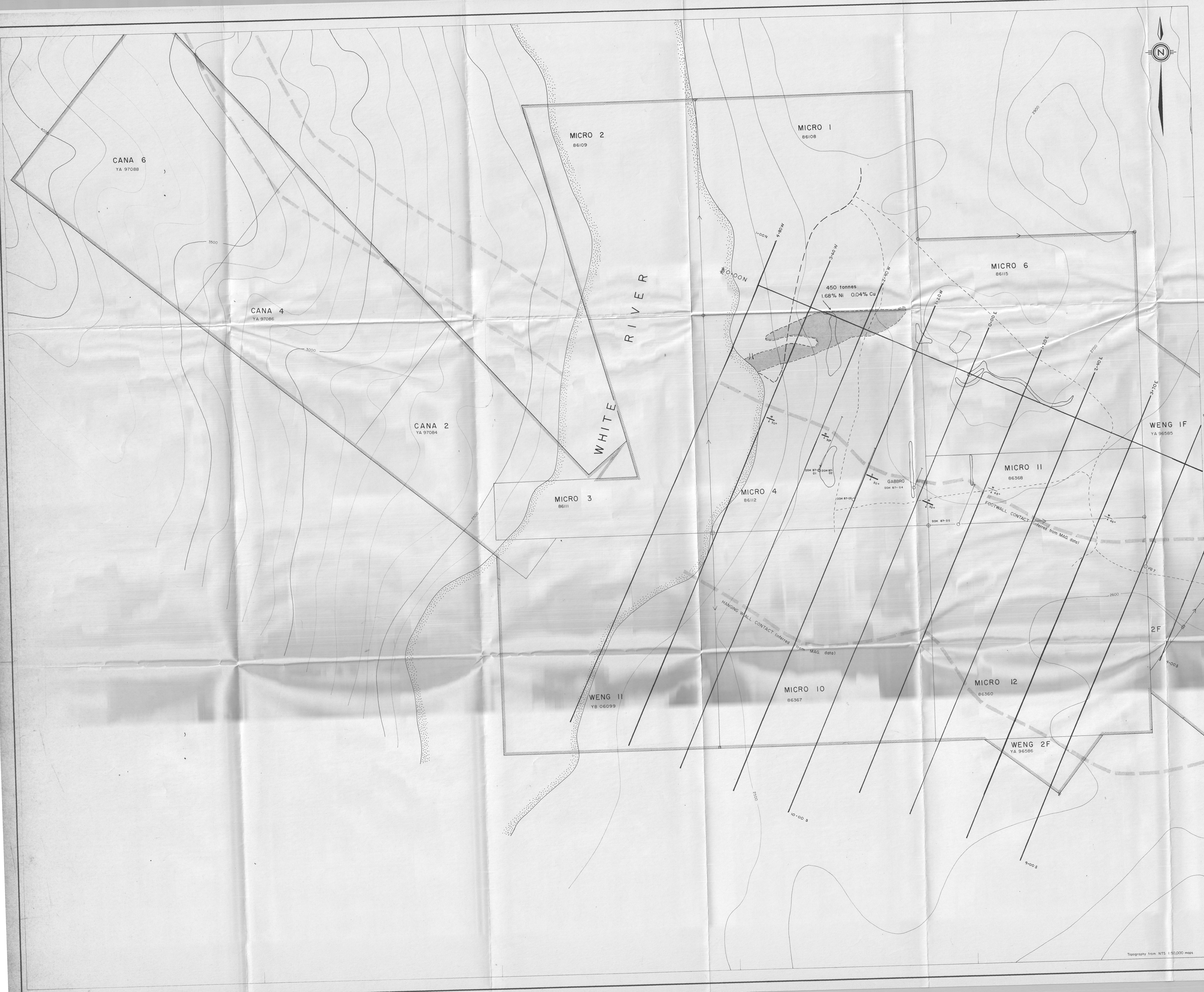
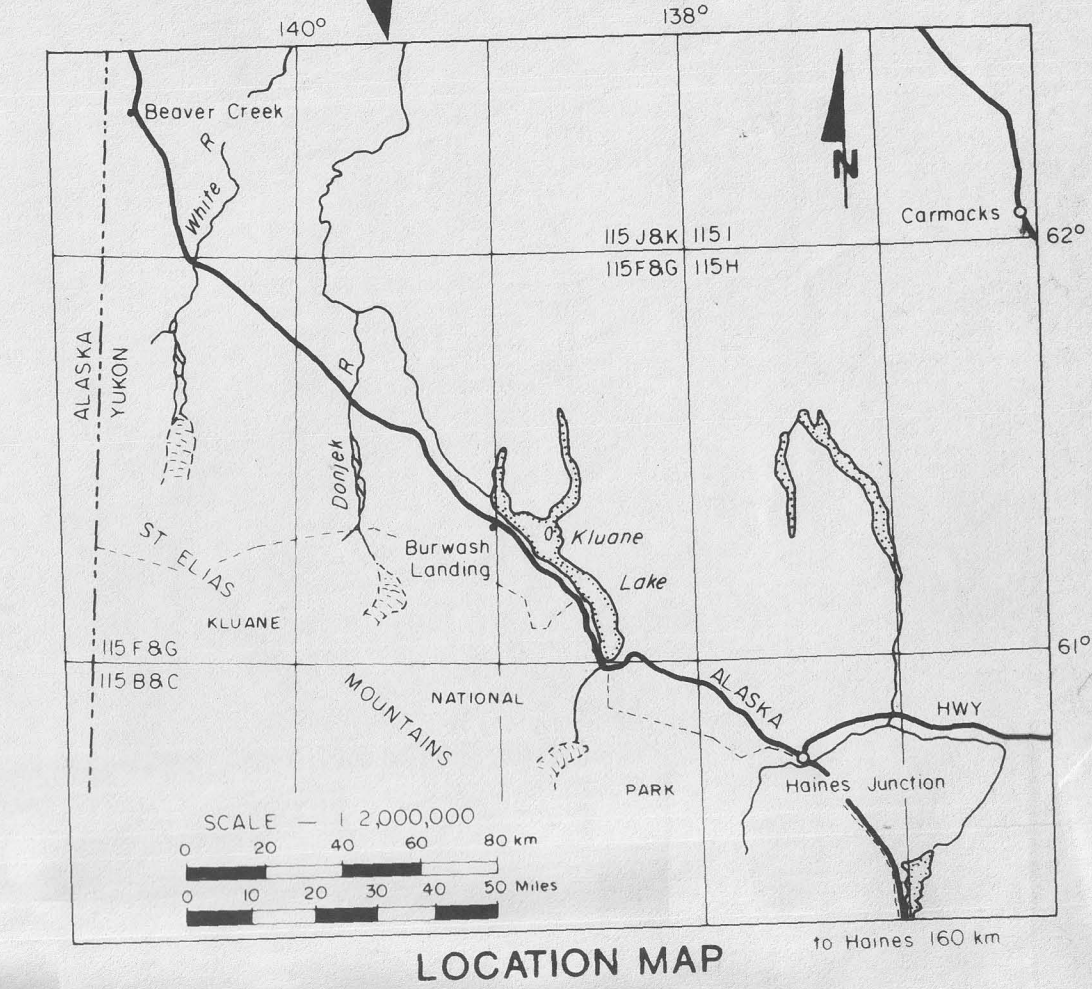
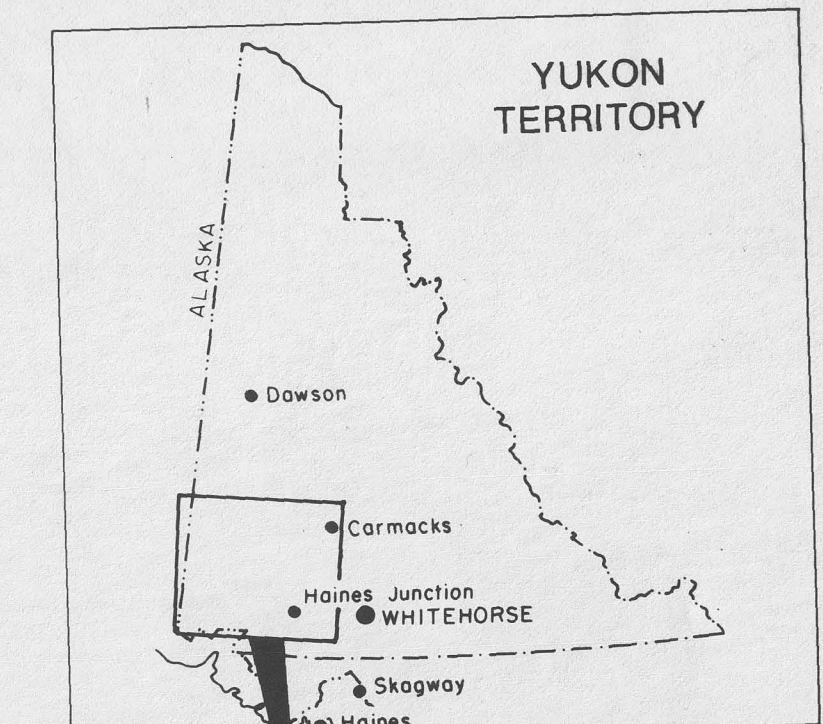


- Approximate contact of ultramafic body
- Diamond drill hole (VQ 1 to 7-1972), (87-01 to 05-1987)
- Bulldozer trench
- VLF-EM anomaly with angle and dip direction of apparent conductor (W=weak, M=moderate, S=strong)
- Outline of Canalask Property
- Claim boundary with located claim posts
- Claim boundary with claim posts not located
- Cut line
- Bulldozer road

Figure 2  
 ARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
**GEOLOGY AND CLAIM DATA**  
 CANALASK PROPERTY - EAST  
 WHITE RIVER AREA, YUKON  
 KLUANE JOINT VENTURE  
 ROCKRIDGE MINING CORPORATION  
 SCALE 1:2500  
 0 25 50 100 150 200 m

Topography from NTS 1:50,000 maps

To accompany report 62162 November, 1987

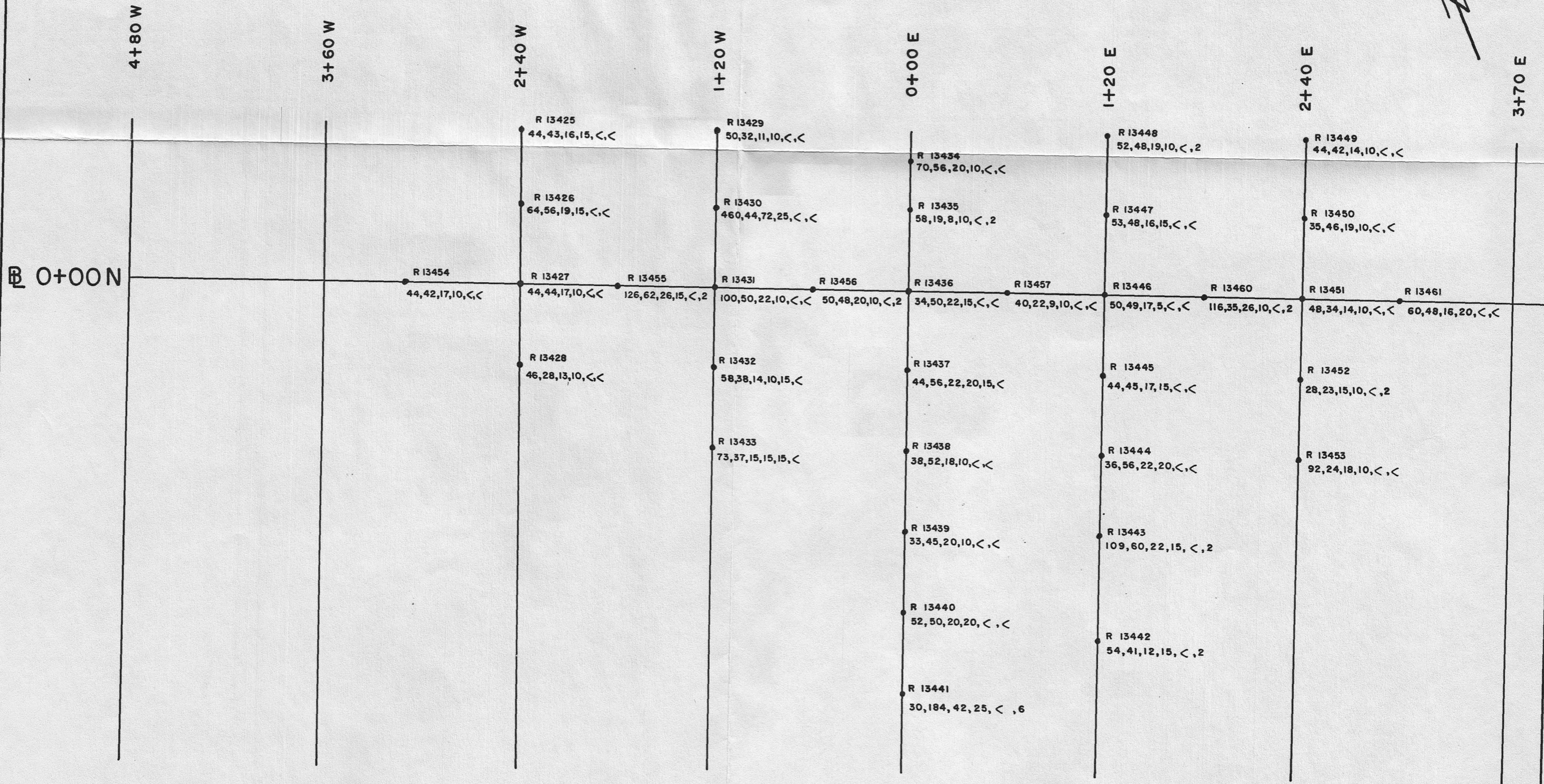


- Approximate contact of ultramafic body
- Diamond drill hole (VQ 11 to 7-1972), (87-01 to 05-1987)
- Bulldozer trench
- VLF-EM anomaly with angle and dip direction of apparent conductor (W=weak, M=moderate, S=strong)
- Outline of Canalask Property
- Claim boundary with located claim posts
- Claim boundary with claim posts not located
- Cut line
- Four-wheel drive road
- Bulldozer road
- Known ore reserves
- Adit

Figure 3  
 ARCHER, CATHRO & ASSOCIATES (1987) LIMITED  
**GEOLOGY AND CLAIM DATA**  
 CANALASK PROPERTY - WEST  
 WHITE RIVER AREA, YUKON  
 KLUANE JOINT VENTURE  
 ROCKRIDGE MINING CORPORATION  
 SCALE 1:2500  
 0 25 50 100 150 200 m

Topography from NTS 1:50,000 maps

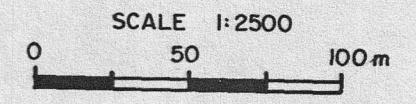
To accompany report dated December, 1987



**LEGEND**

- 44, 43, 16, 15, << Soil sample location — Cu (ppm), Ni (ppm), Co (ppm), Au (ppb), Pt (ppb), Pd (ppb)
- < 15 ppb or less Pt
- < 2 ppb or less Pd

Figure 4  
 ARCHER, CATHRO & ASSOCIATES (1981) LIMITED  
**SOIL GEOCHEMISTRY**  
 CANALASK PROPERTY  
 KLUANE JOINT VENTURE  
 ROCKRIDGE MINING CORPORATION

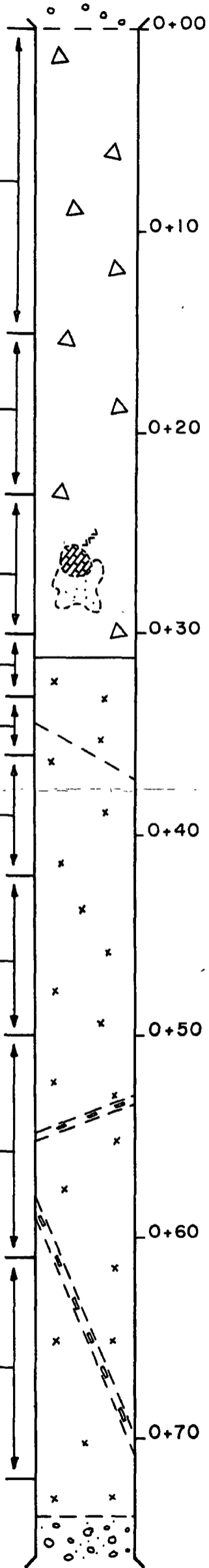


To accompany report dated November, 1987



Cu (ppm) Ni (ppm) Co (ppm) Cr (ppm) Pt (ppb) Pd (ppb)

500	340	60	34	<15	4
420	99	24	38	<15	6
640	640	47	82	40	460
1050	4200	143	525	400	1150
680	2700	100	570	200	320
500	3000	106	550	240	600
440	2900	102	750	200	460
590	2200	84	525	200	320
285	1900	78	600	100	220



**LEGEND**

- Overburden (glacial till)
- Chert
- Felsic dike
- Limestone
- Tuffaceous rocks
- Shear zone
- Ultramafic rocks

**Figure 6**

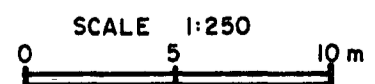
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**TRENCH 0+60W. 2+00S**

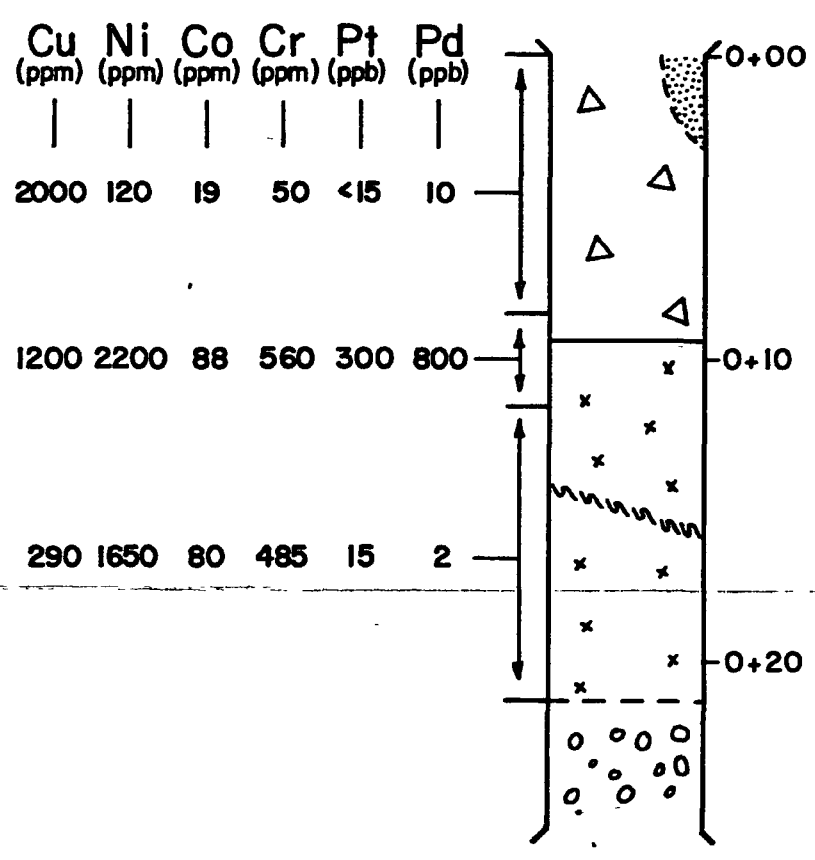
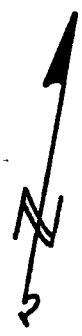
**CANALASK PROPERTY**

**KLUANE JOINT VENTURE**






**ROCKRIDGE MINING CORPORATION**



To accompany report dated November, 1987



**LEGEND**

-  Tuffaceous rocks
-  Chert
-  Ultramafic rocks
-  Fault gouge
-  Overburden (glacial till)

**Figure 5**

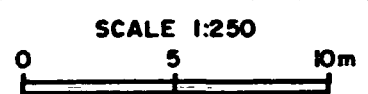
**ARCHER, CATHRO & ASSOCIATES (1981) LIMITED**

**TRENCH 0+75E 1+60S**

**CANALASK PROPERTY**

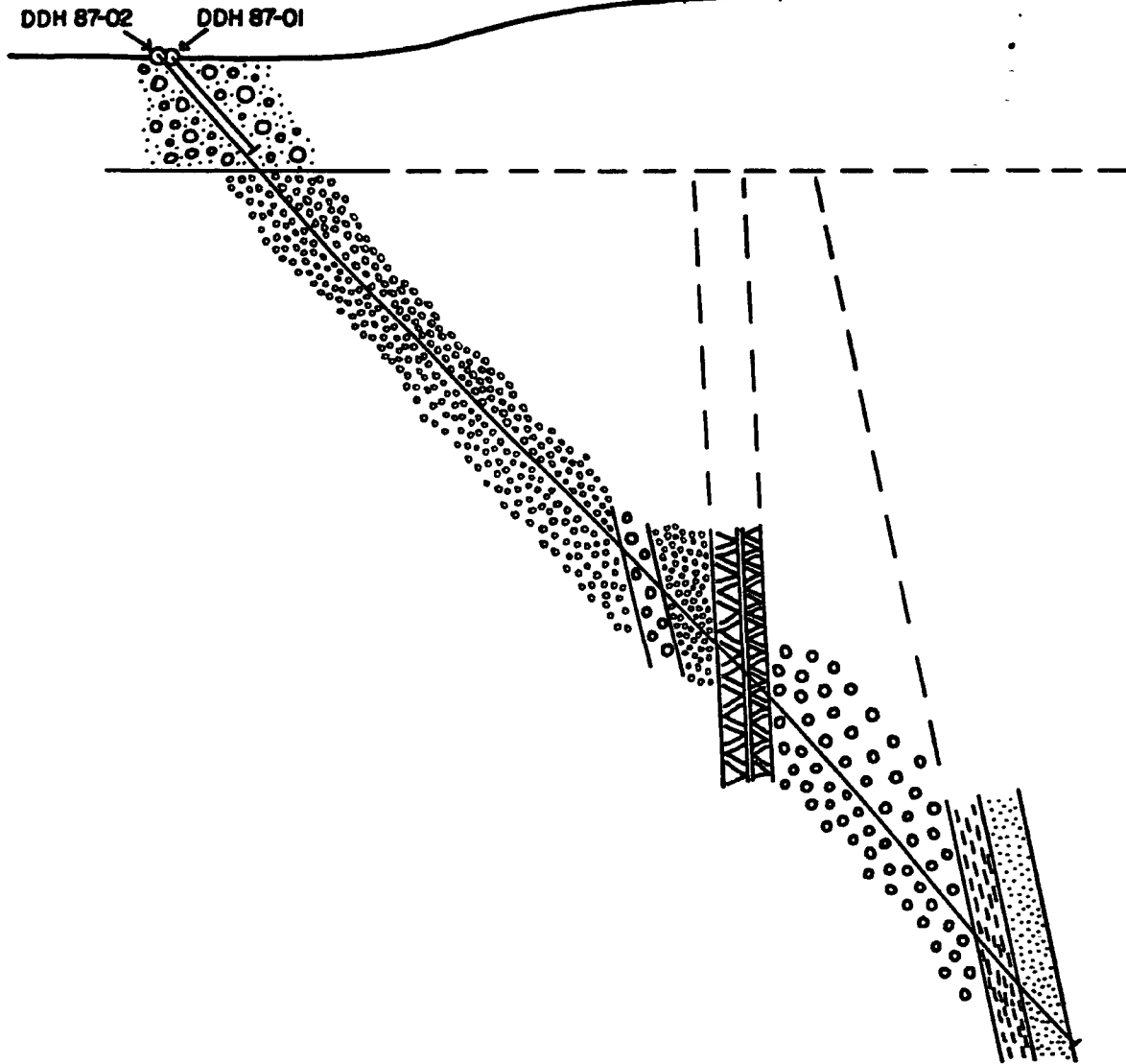
**KLUANE JOINT VENTURE**

**ROCKRIDGE MINING CORPORATION**



To accompany report dated November, 1987

AZIMUTH 024°



**LEGEND**







-  Argillite
-  Quartzite
-  Shear zone
-  Peridotite
-  Dunite
-  Overburden

Figure 7

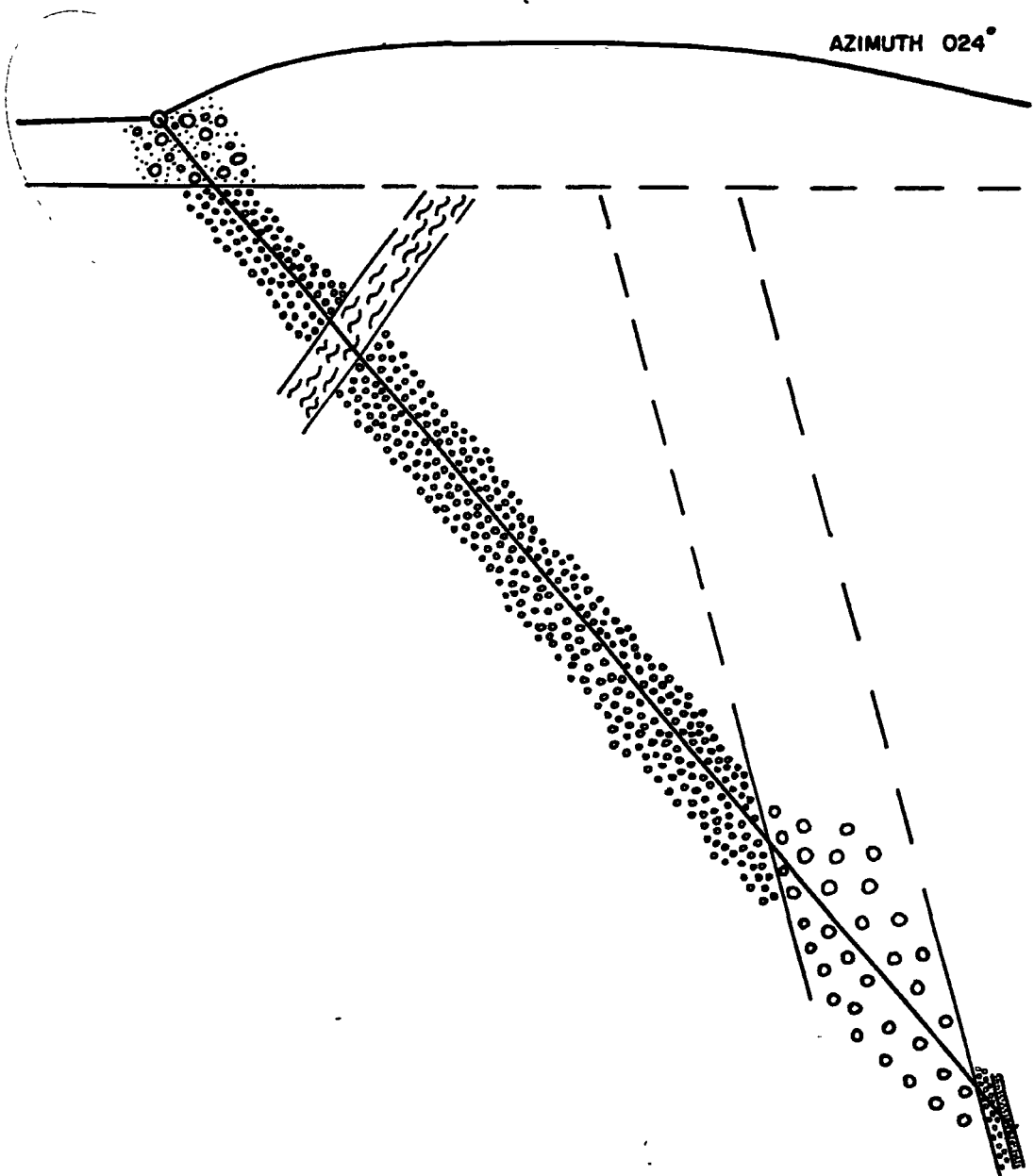
ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**DDH 87-01, 87-02**  
**CANALASK PROPERTY**  
**WHITE RIVER AREA, YUKON**  
**KLUANE JOINT VENTURE**  
**ROCKRIDGE MINING CORPORATION**

SCALE 1:1000



FACING GRID-WEST



AZIMUTH 024°

**LEGEND**






-  Overburden
-  Dunite
-  Fracture zone
-  Peridotite
-  Quartzite

Figure 8

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**DDH 87-03**

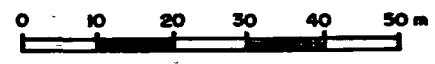
**CANALASK PROPERTY**

**WHITE RIVER AREA, YUKON**

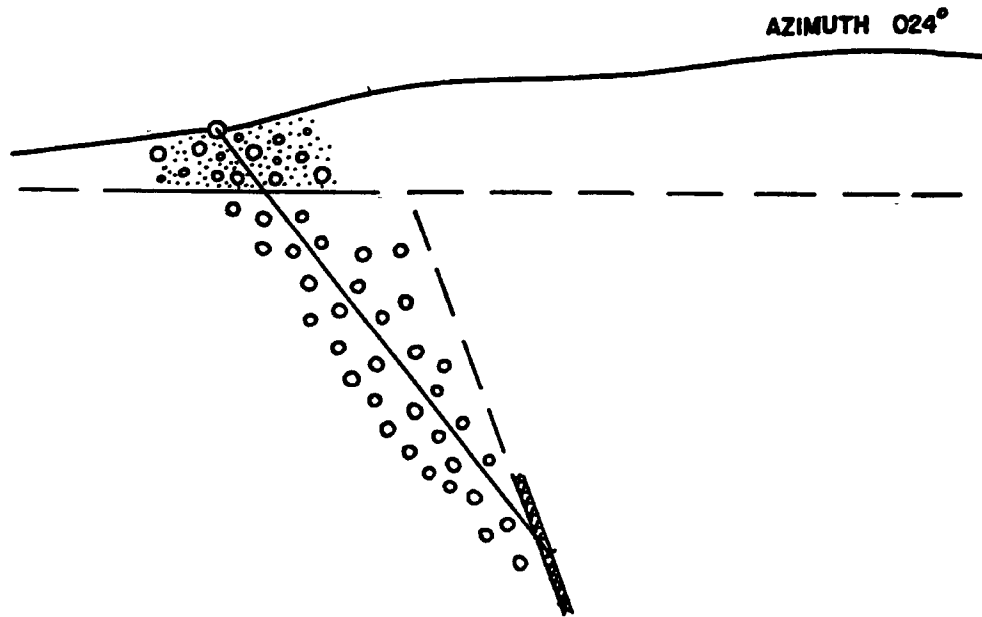
**KLUANE JOINT VENTURE**

**ROCKRIDGE MINING CORPORATION**

SCALE 1:1000



FACING GRID-WEST



**LEGEND**




-  Skarn
-  Peridotite
-  Overburden

Figure 9

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**DDH 87-04**

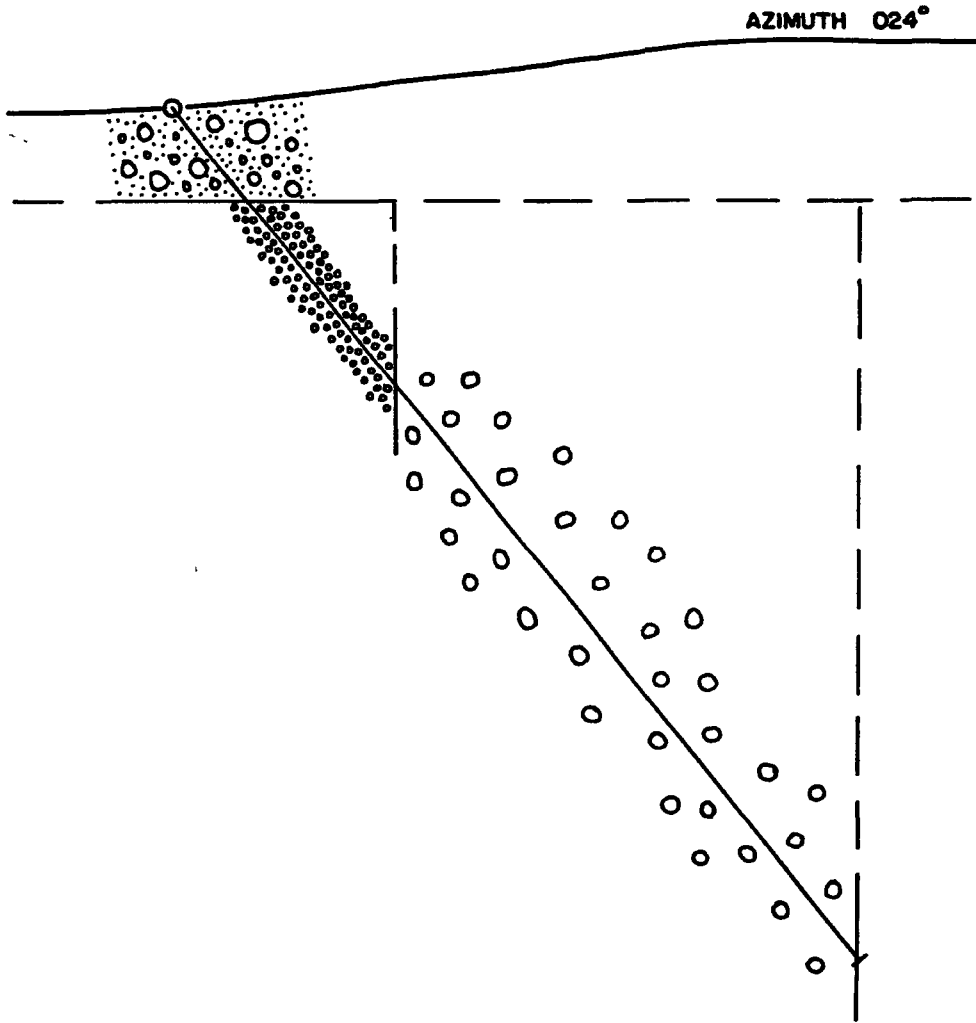
**CANALASK PROPERTY  
WHITE RIVER AREA, YUKON**

**KLUANE JOINT VENTURE  
ROCKRIDGE MINING CORPORATION**

SCALE 1:1000



FACING GRID-WEST



AZIMUTH 024°

**LEGEND**




-  Peridotite
-  Dunite
-  Overburden

Figure 10

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**DDH 87-05**

**CANALASK PROPERTY**

**WHITE RIVER AREA, YUKON**

**KLUANE JOINT VENTURE**

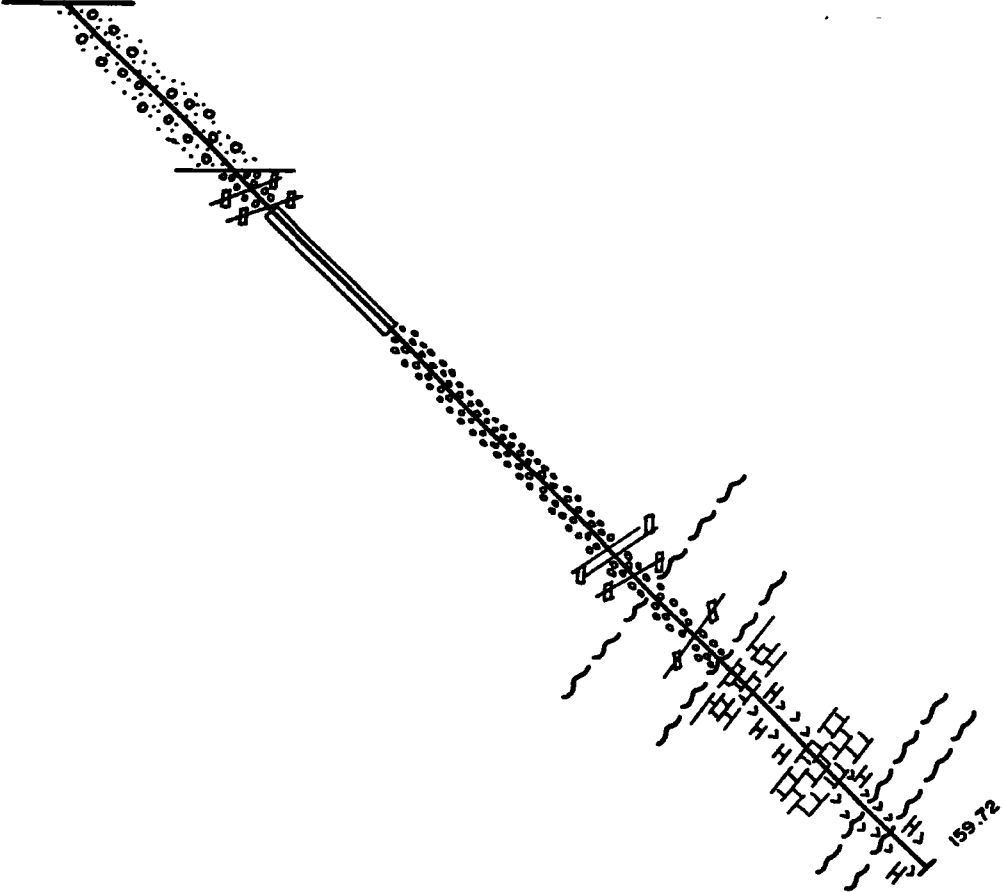
**ROCKRIDGE MINING CORPORATION**

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FACING GRID-WEST

**DDH 73-01**



**LEGEND**









-  Overburden
-  Dunite
-  Porphyry dyke
-  Limestone
-  Volcaniclastic
-  Volcaniclastic - calcareous
-  Core lost
-  Fault

Figure 11

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**DDH 73-01**

**CANALASK PROPERTY**

**WHITE RIVER AREA, YUKON**

**KLUANE JOINT VENTURE**

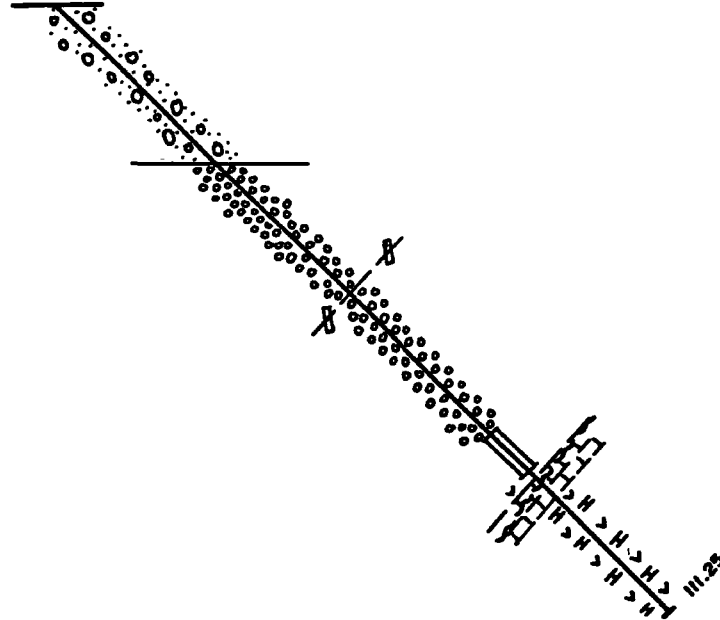
**ROCKRIDGE MINING CORPORATION**

**SCALE 1:1000**



**FACING GRID-WEST**

DDH 73-02



**LEGEND**







-  Overburden
-  Dunite
-  Limestone
-  Volcaniclastic - calcareous
-  Core lost
-  Fault
-  Porphyry dyke

Figure 12

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**DDH 73-02**  
**CANALASK PROPERTY**  
**WHITE RIVER AREA, YUKON**  
**KLUANE JOINT VENTURE**  
**ROCKRIDGE MINING CORPORATION**

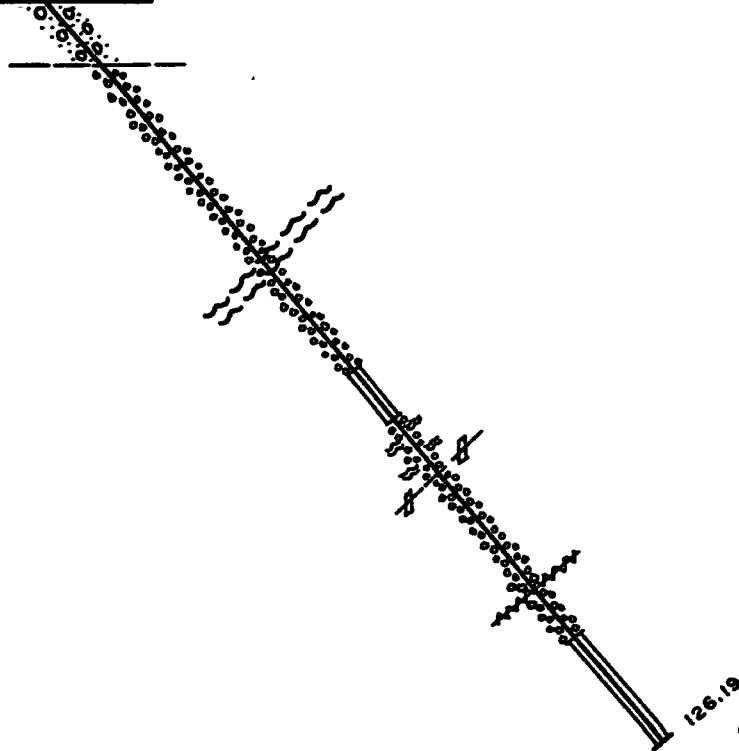
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FACING GRID-WEST



DDH 73-03



**LEGEND**







-  Overburden
-  Dunite
-  Core lost
-  Porphyry dyke
-  Fault
-  Skarn

Figure 13

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**DDH 73-03**

**CANALASK PROPERTY**

**WHITE RIVER AREA, YUKON**

**KLUANE JOINT VENTURE**

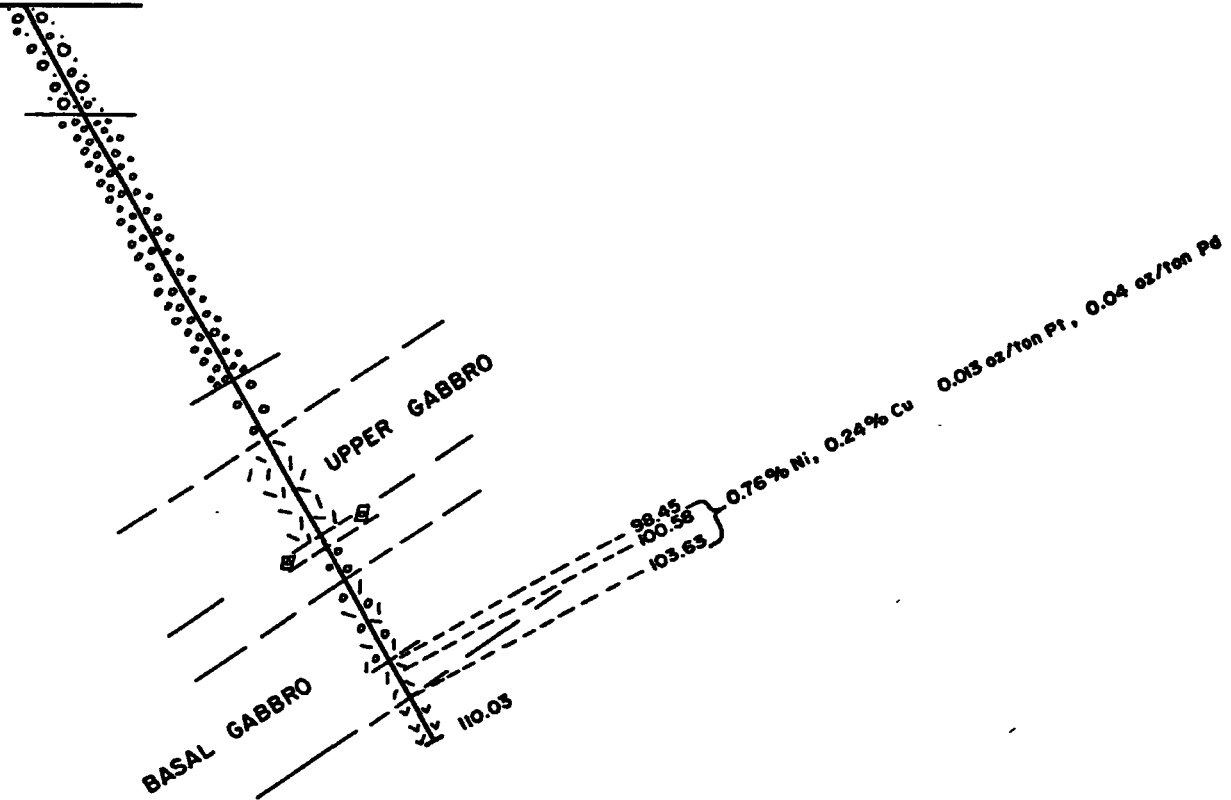
**ROCKRIDGE MINING CORPORATION**

**SCALE 1:1000**



**FACING GRID-WEST**

DDH 73-07



**LEGEND**








-  Overburden
-  Dunite
-  Peridotite
-  Harzburgite - spotted peridotite
-  Olivine gabbro
-  Gabbro
-  Volcaniclastic

Figure 14

ARCHER, CATHRO & ASSOCIATES (1981) LIMITED

**DDH 73-07**  
**CANALASK PROPERTY**  
**WHITE RIVER AREA, YUKON**  
**KLUANE JOINT VENTURE**  
**ROCKRIDGE MINING CORPORATION**

SCALE 1:1000



FACING GRID-WEST