

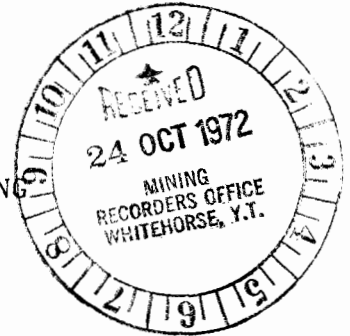
**ARCHER, CATHRO**  
AND ASSOCIATES LTD.  
CONSULTING GEOLOGICAL ENGINEERS

WHITEHORSE, Y.T. 667-4415

6TH FLOOR, TWO BENTALL CENTRE, VANCOUVER, B.C. 688-2568

POST OFFICE BOX 4127  
WHITEHORSE, Y.T.

REPORT ON  
GEOCHEMICAL SAMPLING AND GEOLOGICAL MAPPING  
ORI 1-64 Mineral Claims



Latitude 62°42' Longitude 137°16'

Whitehorse Mining Division, Yukon



NRD MINING LTD. (N.P. Inc) as representation work in the amount of  
\$ 8,360.00

*J. B. Craig*

Resident Geologist of  
Resident Mining Engineer

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

30 September, 1972

*[Signature]*  
Commissioner of Yukon Territory

Alan R. Archer

Consulting Geological Engineer

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## INTRODUCTION

The exploration program on the ORI 1-64 claims described in this report was done under contract by Archer, Cathro & Associates Ltd. for NRD Mining Ltd. (N.P.L.) from August 23 to 31, 1972. Field men were K. Carswell, D. Eaton, and J. Dickinson and supervision was provided by the writer, A.R. Archer.

The objective of the program was (1) to determine the true location of the ORI claims relative to adjoining, previously staked, claims and (2) to explore the claims by grid soil sampling and geological mapping for copper mineralization similar to that found four miles southwest of property held by Silver Standard Mines Ltd. and United Keno Hill Mines Ltd.

## PROPERTY, LOCATION AND ACCESS

The property consists of 64 mineral claims recorded at Whitehorse, Yukon Territory, as follows-

<u>Claim Names</u>	<u>Grant Numbers</u>	<u>Expiry Date</u>
ORI 1-24	Y62978-Y63001	15 October, 1972
ORI 25-64	Y63458-Y63497	20 October, 1972

Figure 1 illustrates the relative position of all claims as located in the field. The ORI claim lines were found to run N75°E rather than N60°E as shown on claim sheet 115-I-11. The three northernmost claim lines were well marked and easy to locate. However, the three southernmost lines were poorly marked and difficult to follow. With the exception of the No. 2 posts for the ORI 13 and 14 claims and three sets of posts on the ORI 9 to 16 claim line, which could not be located, claim tags were attached to all of the ORI claim posts including the claims overlapping onto previously staked ground.

Accessibility is illustrated in the insert in the lower left hand corner of Figure 1. Minto, the nearest point on the Klondike Highway, is about 150 road miles from Whitehorse.

GEOLOGY

Figure 2 illustrates areas (about ten per cent of the claims) where outcrops were noted or where "near outcrop" irregular bedrock fragments were found in soil sample pits. The predominate rock type is a Jurassic or later granitic intrusion similar to that found on the United Keno Hill and Silver Standard properties. It is medium to coarse grained with up to forty per cent quartz and ten per cent biotite and hornblende. Foliation, caused by alignment of the mafic minerals, is weakly developed in a north to northwesterly direction. A few outcrops exhibit quartz-rich banding parallel to the foliation which sometimes develops into quartz veins up to two feet wide. Aplite and simple pegmatite dikes with a high K-feldspar content are common. The quartz content of the intrusion diminished slightly from a west to east direction. Alteration in the form of weak conversion of hornblende to chlorite and minor epidote veining is common in the southern portion of the claims. Fragments of schistose hornblende-biotite rich rock, very similar in appearance to the mineral bearing zones at Dawson Range Joint Ventures property twenty-four miles to the southeast, were found near 4000 west along the zero north baseline. About 9 of the northernmost claims are underlain by Recent to Tertiary Selkirk Series volcanics. These consist of vesicular basalt with some fresh buff grey to brown breccia and tuff and occasionally contain weakly disseminated pyrite. The volcanics are well exposed in the deep canyon along Wolverine Creek and, here, are cut by northwest trending faults. Weak limonite gossans have formed from disseminated pyrite within or near the faults. The underlying intrusive is exposed in one location on the south bank of Wolverine Creek. Here, northwest trending quartz veins up to two inches wide are common and the granite contains more K-feldspar than usual.

An area of trenching was found at 800 west and 8800 south where a pit about 100 feet square had been excavated for a depth of several feet. This work was probably done in the early 1900's as spruce trees up to four inch diameter, possibly 50 to 70 years old, are growing in the trench. The pit exposes glacio-fluvial material that has obviously been transported some distance. One piece of malachite stained quartz was found in the excavated material. Several small, very old, hand pits were also noted on the hill slope south of Baseline C.

Other than the above mentioned area, there is little evidence of any significant Pleistocene glaciation. Topography is subdued and except for the canyon on Wolverine Creek is almost featureless. Vegetation is mainly mixed spruce and alder with spruce predominating on northern slopes and alder predominating on southern slopes. Drainage areas, except for Wolverine Creek, are swampy with spruce tangles and deadfalls.

#### GEOCHEMICAL SAMPLING

##### General

The known mineralized zones southwest of the ORI claims consist of gneissic to schistose bands, within the Jurassic or later intrusion, that vary from a few feet to several hundred feet in width. They usually strike northwest and occur in sub-parallel groups. Mineralization consists of bornite, chalcopryrite, chalcocite and traces of pyrite and molybdenite. Weathering results in conversion of copper sulfide to copper oxide with little change in grade. Mobilization of copper in ground water is minimal and stream sediment sampling is ineffective unless the stream happens to cut across a zone. Soil sampling, however, has proven to be a very effective preliminary way of detecting mineralized zones through deep residual overburden, even in areas with an additional light cover of glacial till. A soil sample grid spacing of 400 feet by 400 feet on the known properties would have located all areas of interest. The best indicator

metal is copper although weak associated silver and molybdenum values are occasionally obtained. Copper background in the district ranges from 10 parts per million (ppm) to 40 ppm. Threshold is about 40 ppm and values of at least 100 ppm and often more than 1000 ppm are obtained over or near mineralized areas, providing a strong contrast. Swampy or organic rich areas have a tendency to act as copper collectors and sometimes return values 10 to 30 ppm higher than regional background.

#### Technique

The corner posts of the ORI 53-56 claims was chosen as zero north and zero east. A zero east tie line was chained at S30°E from this point to establish zero points on the four claim lines further south. The ORI claim lines were then designated Baselines A to F respectively from a north to south direction. Baseline B is zero north on the tie line. Baseline C is 32S (3200 feet south), Baseline D is 42S (4200 feet south), Baseline E is 68S (6800 feet south) and Baseline F is 103S (10,300 feet south) at its starting point. Baseline A was established along the northernmost ORI claim line and was located by tie lines run north from Baseline B. The claim baselines were chained east and west of the zero tie line and three foot lath pickets established at 400 foot intervals. Each lath was marked with the appropriate co-ordinate in multiples of 100 feet. For example, a lath on Baseline B located 4000 feet west of the zero tie line would be marked BL B, 40W. The field position of claim posts was determined while chaining the baselines and the appropriate claim tag was affixed to each post. Additional chained tie lines were established at various intervals (see Figures in pocket) to determine the exact degree of convergence of Baselines A to F. Ground control was provided by government

airphotos enlarged to 1000 feet to the inch.

Soil samples were taken at 400 foot intervals by pace and compass between the 400 foot stations on the baselines. Soil sample locations were marked with an 18 inch lath picket with the appropriate co-ordinate (i.e. - a soil sample picket 800 feet north of station 40W on Baseline B would be marked 40W8N) and the soil sample bag number printed on the lath with a black felt marking pen. Figure 3 shows the soil sample bag number for each point and this map would provide the simplest method of relocating the relative position of any soil sample picket in the field. The soil sample point on Figure 3 and 4 are shown as best possible in their true location. A pace and compass traverse that wandered slightly between baselines is drawn in a straight line from the starting position to the actual finishing position. The tie lines, baselines and soil sample lines were well marked with orange glow flagging.

Soil samples were obtained by digging to a B or B plus C horizon with a mattock. Samples were collected in pre-numbered Kraft envelopes and air expressed to Chemex Labs Ltd., North Vancouver, B.C. Each sample was assayed for copper, molybdenum and silver by atomic absorption spectrometry of a nitric-perchloric extraction of a minus 80 mesh fraction. Sample splits will remain in storage at Chemex for five years in the event that analyses for additional elements are required in the future. Occasionally, sample pits could not be dug to a good B horizon due to a combination of permafrost and thick peat or black muck in swampy areas. These points are marked on Figures 3 and 4.

#### Interpretation

Other than a few swampy areas in the northern portion of the claims, soil sample conditions were good. Most of the samples were obtained from a B horizon that varied from a buff to red brown color. Samples near areas of outcrop were

usually obtained from a B plus C horizon. A typical soil profile is several inches of moss and/or organic debris underlain by one to twelve inches of peaty material above the B horizon. There was no evidence of the recent volcanic ash that occurs further south in the district.

Figure 4 illustrates soil sample analyses for copper in parts per million. Values for molybdenum and silver are not plotted as no sample assayed above the detection limit of 1 ppm molybdenum and 0.5 ppm silver. Copper assays with threshold values of 40 ppm or greater are contoured. There are no anomalous copper values and only a few isolated areas where two or more adjoining sample points returned above threshold values. Most of these occur in the portion of the claims underlain by the Selkirk volcanics and are probably due to a slightly higher copper background associated with the faulting and weak pyritization described under geology. Only a few isolated, single point, above threshold values are found near the area of old trenching. This work was most likely directed toward exploration for placer gold.

CONCLUSIONS AND RECOMMENDATIONS

Neither geological mapping nor geochemical sampling has indicated evidence of significant copper, molybdenum or silver mineralization on the ORI claims. Several of the above threshold values in the vicinity of the old trenching would justify a bulldozer cut if the total cost including supervision, is not allowed to exceed \$1,000.00.

Respectfully submitted,  
R. ARCHER  
ARCHER, CATHRO & ASSOCIATES LTD.  
GEOLOGICAL  
Archer R. S.  
ENGINEER, S. Eng.  
Association of Professional Engineers of the Yukon Territory

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AFFIDAVIT

I, Michael P. Phillips of Whitehorse make oath and say:

That to the best of my knowledge and belief the financial statement of Archer, Cathro and Associates Ltd with N.R.D Mining Limited for contract soil sampling and mapping on the OIL 1-64 mineral claims located in claim sheet 115-I-11 is true and accurate.

Sworn and subscribed to  
at Whitehorse this ....  
day of ..... 1972

A handwritten signature in cursive script that reads "M.P. Phillips".

Notary, Yukon.

ARCHER, CATHRO  
AND ASSOCIATES LTD.  
CONSULTING GEOLOGICAL ENGINEERS



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POST OFFICE BOX 4127  
WHITEHORSE, Y.T.

In Account With  
NRD Mining Limited  
October 10, 1972

ORI 1-64 Claims, Yukon

Contract soil sampling and mapping 64 ORI claims at flat  
rate of \$140.00 per claims .....\$ 8,960.00

Total owing ---- \$ 3,500.00  
\$ 5,460.00

Respectfully submitted,  
ARCHER, CATHRO & ASSOCIATES LTD.

A.R. Archer

ARA:st

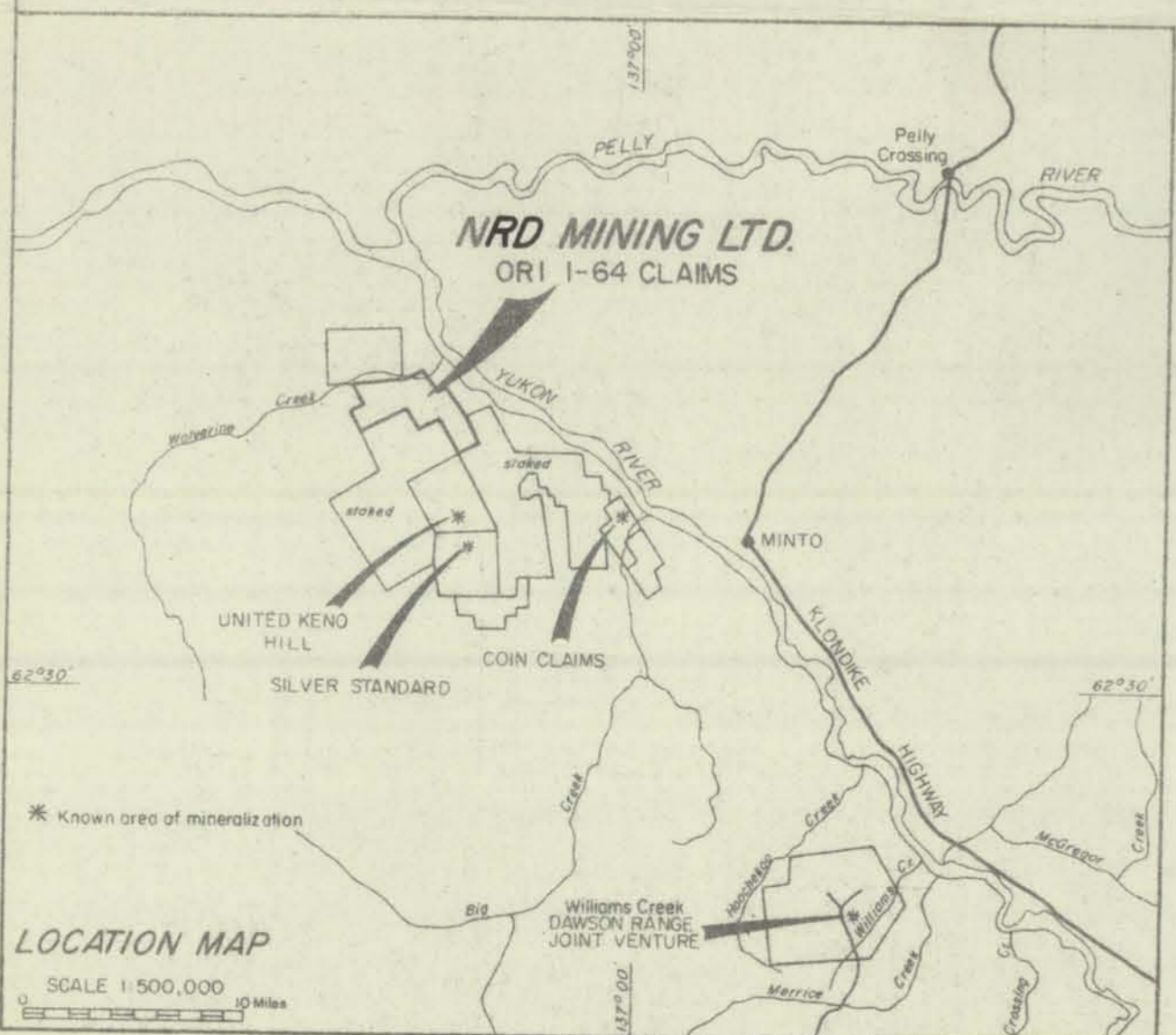


CONSOLIDATED STANDARD MINES LTD.  
A & D CLAIMS



CONSOLIDATED STANDARD MINES LTD.  
B & SEE CLAIMS

UNITED KENO HILL MINES LTD.  
DEF CLAIMS



LOCATION MAP  
SCALE 1:500,000

LEGEND

- ORI claim post located in field
- ? Possible position ORI claim post not found in field
- Claim post location of previously staked adjoining claims

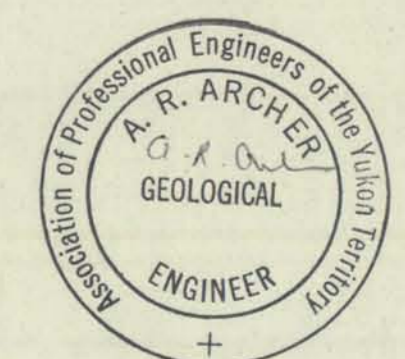
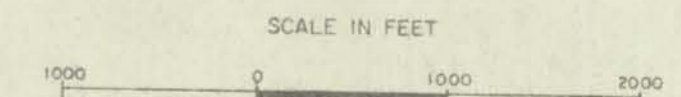


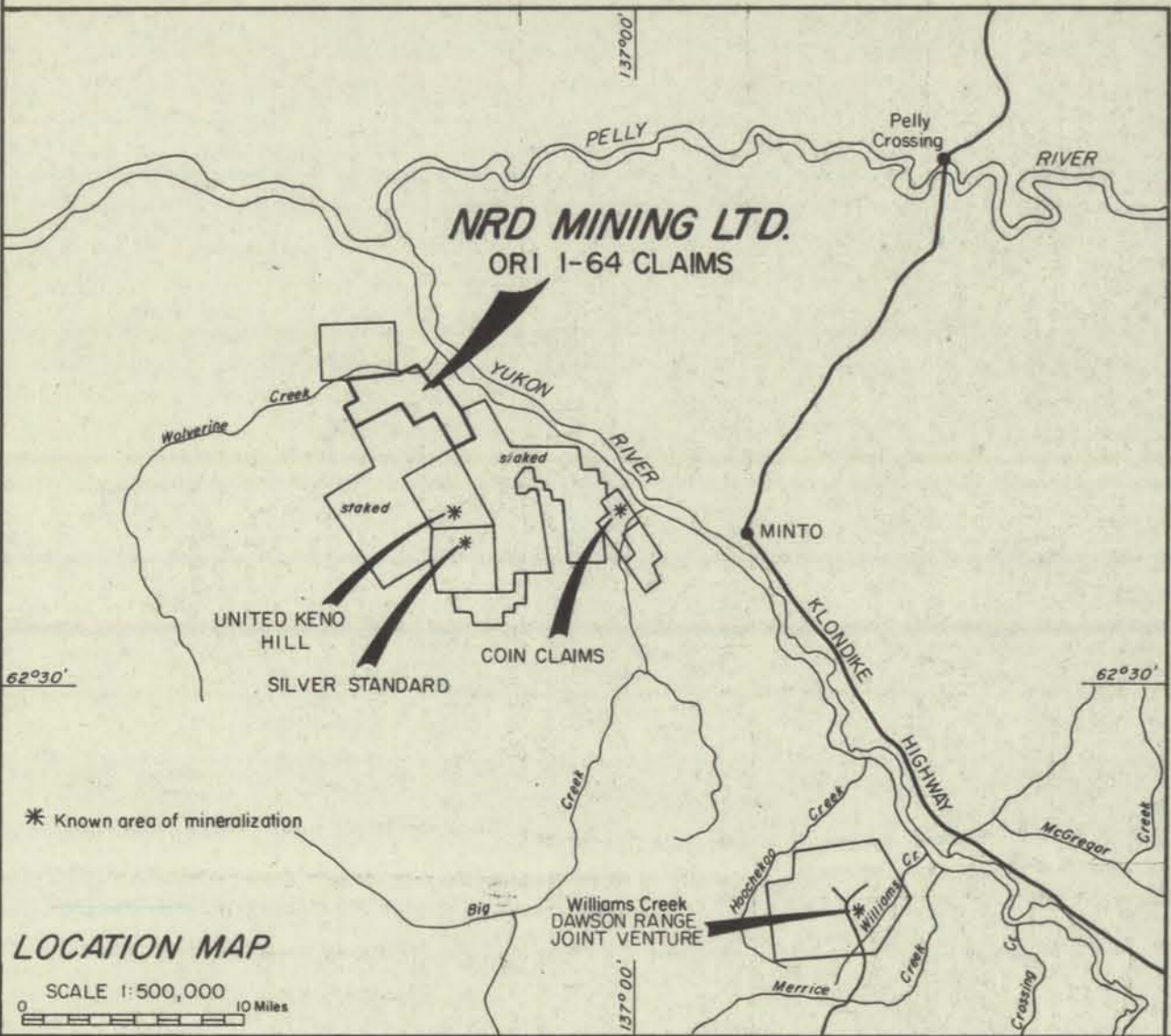
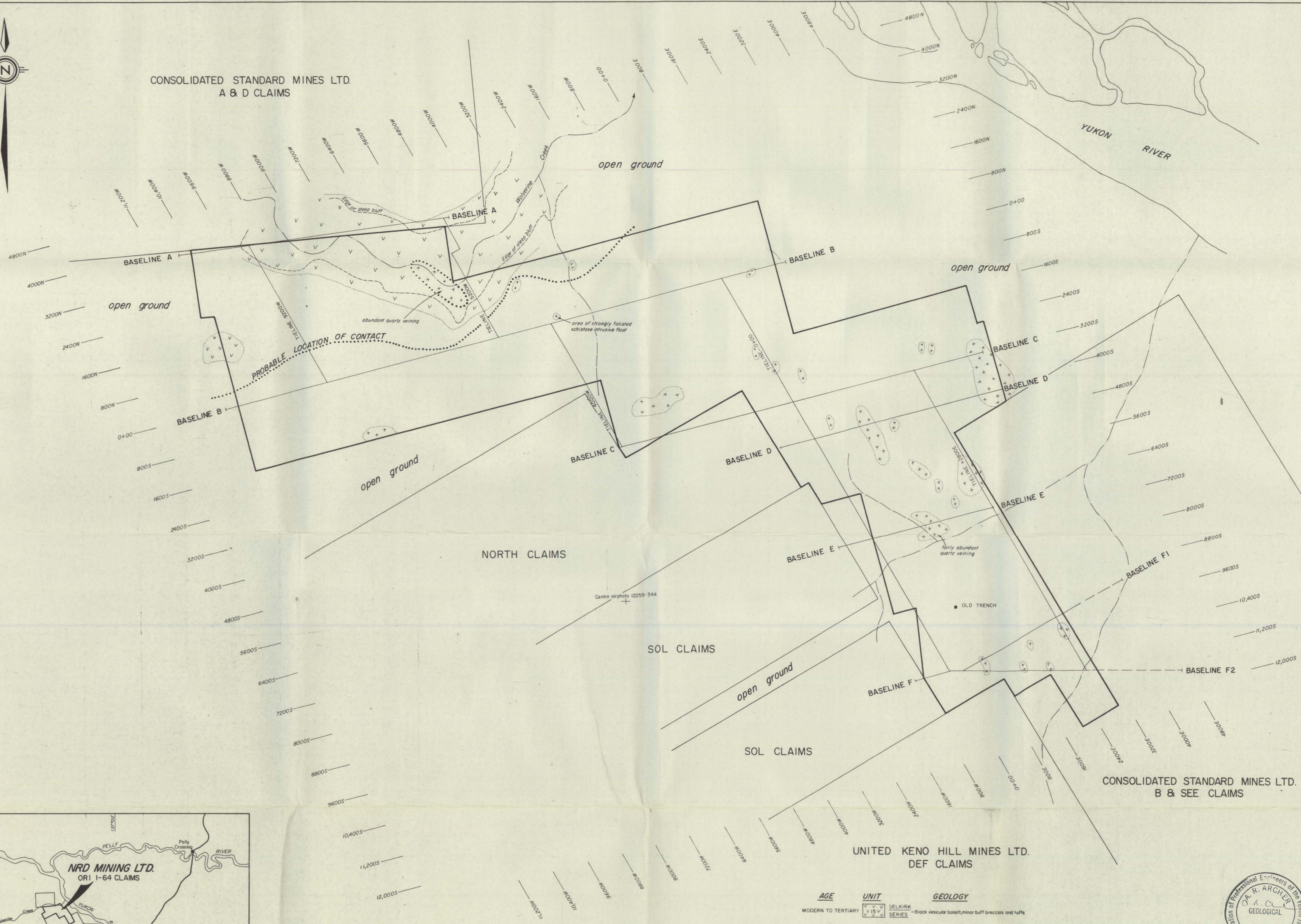
FIG. 1  
ARCHER, CATRO & ASSOCIATES LTD.  
**CLAIM LOCATION MAP**  
ORI 1-64 CLAIMS  
NRD MINING LTD.



DRAINAGE FROM AIRPHOTO ENLARGEMENT.



CONSOLIDATED STANDARD MINES LTD.  
A & D CLAIMS



AGE	UNIT	GEOLOGY
MODERN TO TERTIARY	V V V V V V V V V V	SELKIRK SERIES - Block vesicular basalt, minor buff breccias and tuffs
JURASSIC OR LATER	+ + + + + + + + + +	GRANITE ID. GRANODIORITE - Medium to coarse grained, weakly foliated. Aplite dykes common.

**LEGEND**

○ Area of outcrop or near outcrop bedrock float

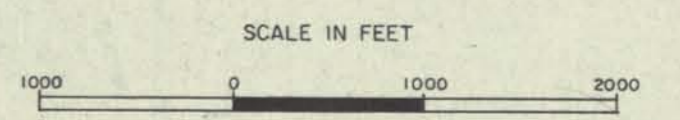
..... Estimated location of contact

**NOTE**

Geology unit number and names from G.S.C. maps 340 A by H.S. Bostock.



FIG. 2  
ARCHER, CATIRO & ASSOCIATES LTD.  
**GEOLOGY**  
ORI 1-64 CLAIMS  
NRD MINING LTD.

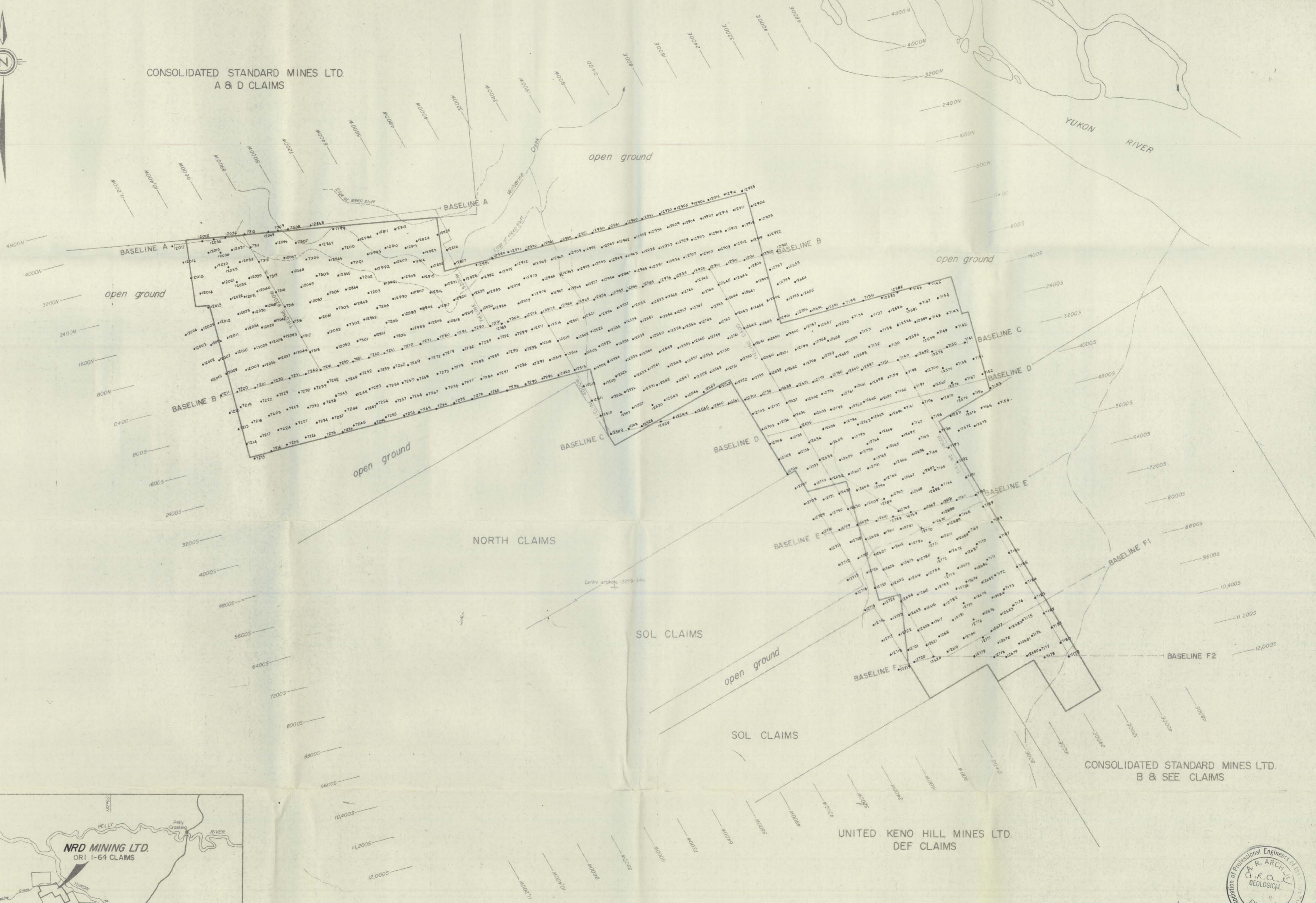


DRAINAGE FROM AIRPHOTO ENLARGEMENT.

To accompany a report by A.R. Archer dated Sept. 30/72.



CONSOLIDATED STANDARD MINES LTD.  
A & D CLAIMS



CONSOLIDATED STANDARD MINES LTD.  
B & SEE CLAIMS

UNITED KENO HILL MINES LTD.  
DEF CLAIMS

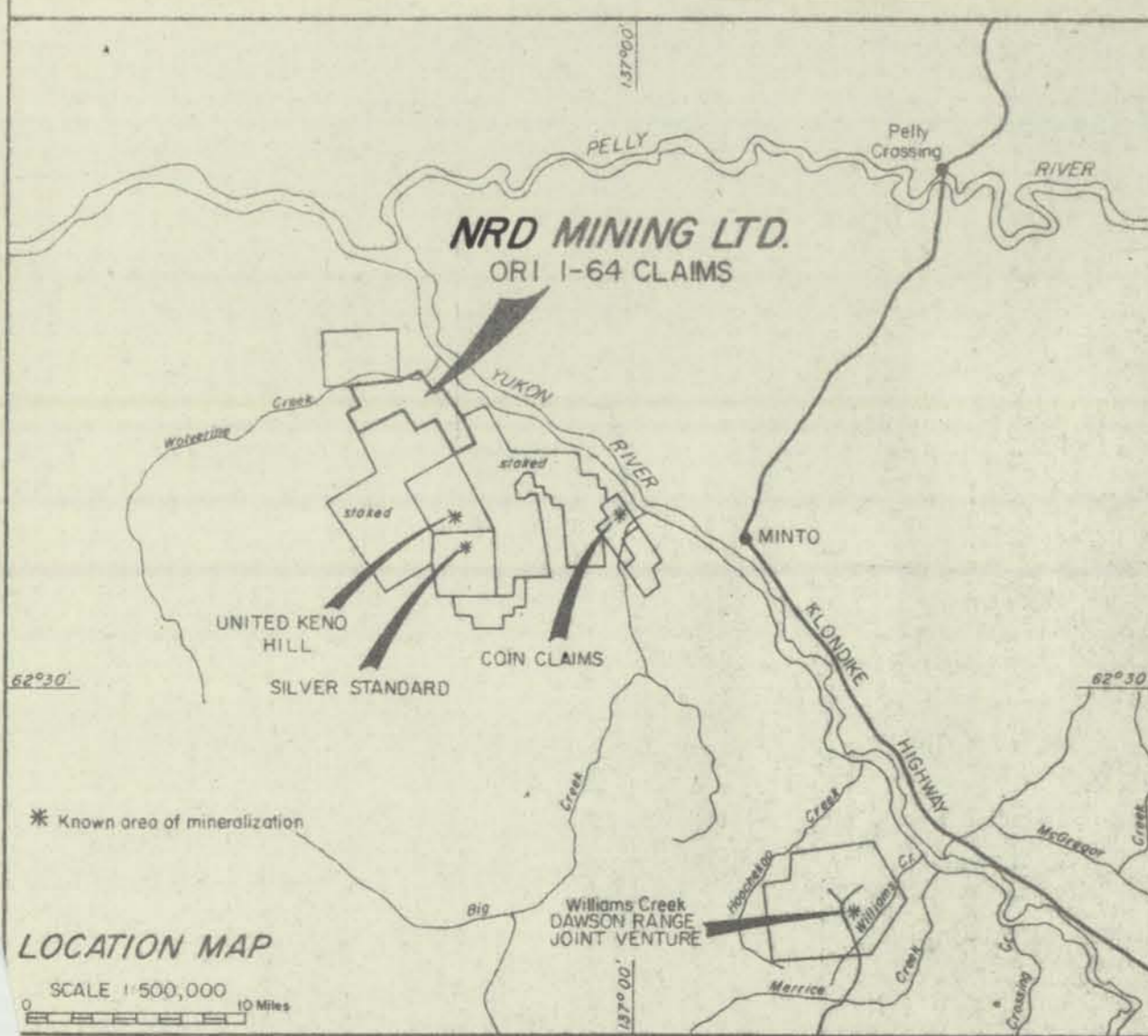


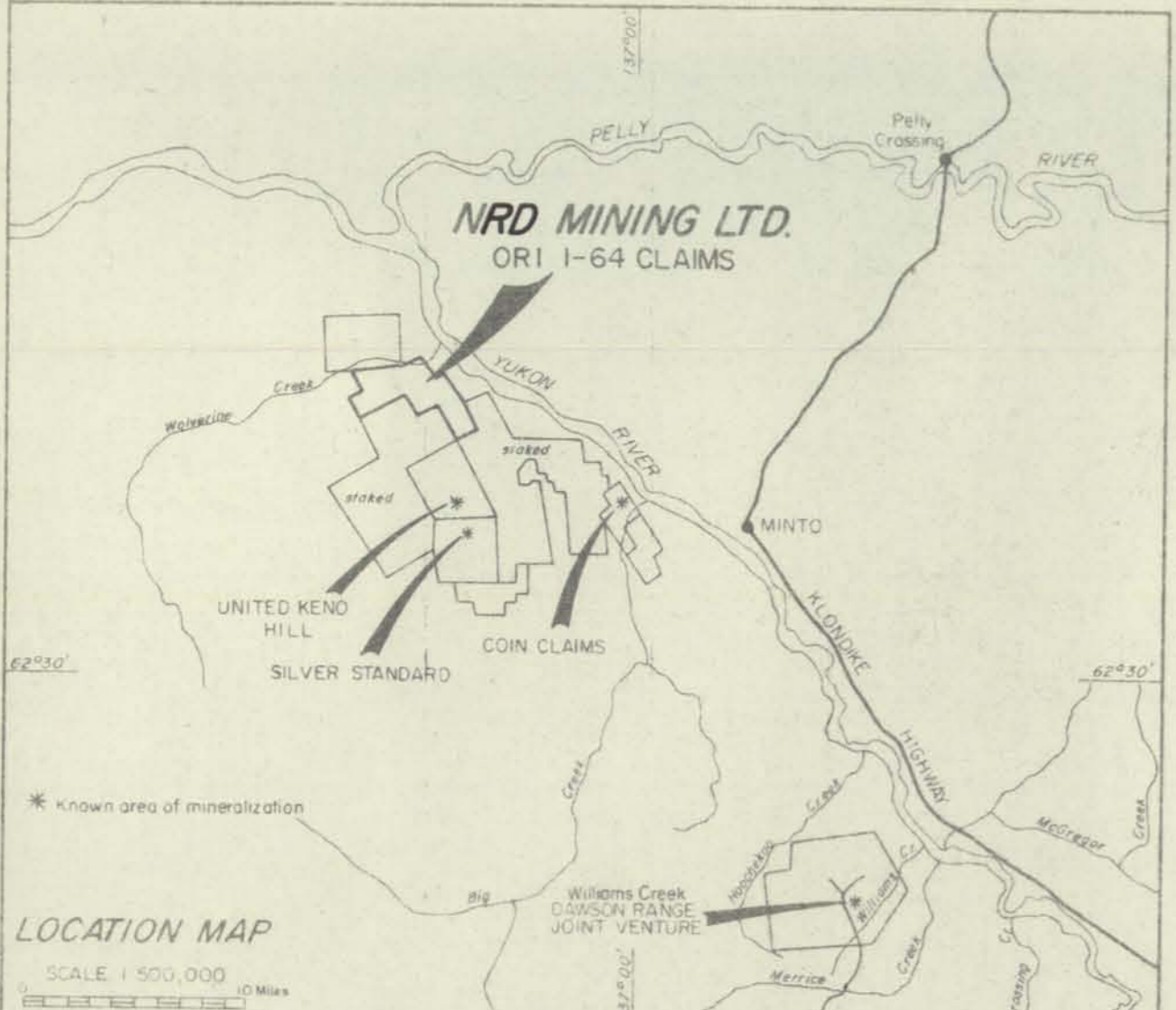
FIG. 3  
ARCHER, CATHRO & ASSOCIATES LTD.  
**SAMPLE LOCATIONS**  
ORI 1-64 CLAIMS  
NRD MINING LTD.

SCALE IN FEET  
0 1000 2000  
To accompany a report by A.R. Archer dated Sept. 30/72

DRAINAGE FROM AIRPHOTO ENLARGEMENT.



CONSOLIDATED STANDARD MINES LTD.  
A & D CLAIMS



**LEGEND**

• Sample value for copper in parts-per-million

**NOTE** — All samples were assayed for molybdenum and silver but none exceeded the limits of detection—4ppm Mo and 100 ppm Ag respectively.

⊙ Copper values above threshold for area

⊕ Sample difficult to obtain

Samples assayed by Chemex Labs. Ltd analyses by atomic absorption spectrometry of a nitric-perchloric extraction.

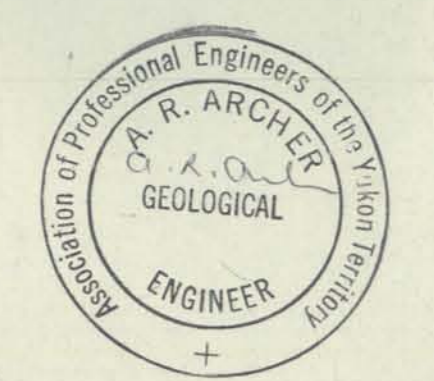


FIG. 4  
ARCHER, CATHRO, & ASSOCIATES LTD.  
**COPPER, MOLYBDENUM & SILVER GEOCHEMISTRY**  
ORI 1-64 CLAIMS  
NRD MINING LTD.

SCALE IN FEET  
0 1000 2000