

Geology, Soil Geochemistry and Magnetic Survey  
of the

Cash Property (Bear and Fox Claims)

Lat. 62°25' North

Long. 137°39' West

NTS 115I/5

May 1, 1975

Alan R. Archer

Consulting Engineer

This report has been examined by the  
Geological Evaluation Unit and is recom-  
mended to the Commissioner to be consider-  
ed as representation work in the amount of

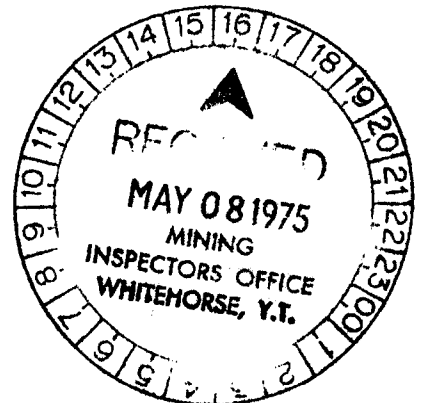
\$ 16,622.94

*D. B. Craig*

Resident Geologist or  
Resident Mining Engineer

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

*[Signature]*  
Commissioner of Yukon Territory



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AND ASSOCIATES LTD.  
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Report On  
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Pocket 1

- Figure C1 - Geology, Cash Property , Scale 1"= 1000'
- Figure C4 - Geology, Cash Property, Scale 1"= 400'
- Figure C5 - Copper Geochemistry, Cash Property, Scale 1"= 400'

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- Figure C6 - Molybdenum Geochemistry, Cash Property, Scale 1"= 400'
- Figure C7 - Lead and Zinc Geochemistry, Cash Property, Scale 1"= 400'
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## INTRODUCTION

The copper-molybdenum prospect described in this report was discovered in late July during a regional exploration program managed by Archer, Cathro and Assoc. Ltd. for Klotassin Joint Venture (Newconex Canadian Explorations Ltd., Marietta Resources International Ltd., and Molybdenum Corp. of America). Work during 1974 consisted of baseline cutting, grid soil sampling, geological mapping, hand pitting and a ground magnetic survey. The work was performed by geologists E. Jensen, assisted by field men J. West and D. Eaton, under the supervision of M.P. Phillips and the writer.

## PROPERTY, LOCATION AND ACCESS

The property, which has been named the Cash, consists of a contiguous group of 80 full size and 6 fractional mineral claims (that surround 16 previously staked Car claims) recorded at the Whitehorse Mining Recorders Office as follows:

<u>Claim Names</u>	<u>Number</u>	<u>Grant Number</u>	<u>Expiry Date</u>
Fox 1-8	8	Y80423-Y80430	26 August, 1975
Bear 1-8	8	Y80431-Y80438	26 August, 1975
Bear 9-40	32	Y91028-Y91059	20 Sept , 1975
Fox 9-40	32	Y91060-Y91091	20 Sept , 1975
Bayer 222 Fr	1	Y91489	21 Oct , 1975
Bayer 292 Fr	1	Y91490	21 Oct , 1975
Focks 1-2 Fr	2	Y91491-Y91492	21 Oct , 1975
Wombat 1-2 Fr	2	Y91493-Y91494	21 Oct , 1975

The Cash property is situated on upper Big Creek at Lat. 62°05' North and Long. 137°39' West approximately 12 miles northwest of the end of the Freegold Road at the Revenue airstrip. Access during 1974 was by helicopter from Carmacks which is some 50 miles to the southeast. Figure C1 illustrated the location in an insert on the upper right hand corner.

GEOLOGY

The geology of the Cash property is illustrated on Figures C1 and C4. In summary, the property is underlain on the uphill (south) side by altered schist, gneiss and quartzite of the Yukon Metamorphic Complex (P Psn) and granodiorite (Mgd), which are bounded to the south by unaltered hornblende syenite (My). Both the metasediments and syenite extend northwest off the claims. On the northeast side of Big Creek, granodiorite (Mgd) is the main rock type but small bodies of diorite (Pub), altered green volcanics (Tmn) and basalt flows (eTcv) are also present. To the northwest of the property, on Prospector Mountain, green volcanics, gabbro and feldspar porphyry have been noted.

About 1/3 of the property is almost totally obscured by fluvial drift of unknown thickness that floors Big Creek valley. The lowest part of the valley consists of a muskeg up to 1500 feet wide between Big Creek on the north and a 50 foot high alluvial terrace on the south. Big Creek has been gradually shifting north and northeast in recent times, truncating spurs and exposing bedrock in several places. A narrow belt of good timber follows the creek and is bounded by thin scrubby stands of black spruce and low bushes. Outcrop is almost absent within the claim group south of Big Creek, except along ridges underlain by syenite and a small exposure of massive magnetite near the syenite contact. Hence, most of the property could only be mapped by digging relatively deep (10 to 20 inch) sample pits and collecting residual bedrock fragments in conjunction with geochemical sampling. These rock fragments were examined under binocular microscope in the office. Because of the mixing of bedrock fragments in the soil and the differential erosion of various types of rock depending

on fracturing, alteration and solubility, the material collected from the pits is not necessarily truly representative of the bedrock types and a great deal of interpretation has been necessary in compiling the geology within the claims. The most common alteration observed in the fragments consists of conversion of mafics to sericite and/or limonite and conversion of feldspars to kaolin. Minor secondary biotite was noted in a few locations. The alteration shows a gradual increase in intensity towards the north.

Two strong faults intersect the Big Creek Lineament in the vicinity of the claims. The northeast flowing segment of Big Creek follows a linear which has been interpreted as a major fault trending through the Minto deposit. A somewhat weaker fault trends north through the east side of the property along Jensen and Sharon Creek valleys, and shows clearly on airphotos. It has a measurable vertical offset on flat lying volcanic flows at the north end.

#### GEOCHEMISTRY

The claims of interest were explored by soil sampling on a grid pattern of 200 feet by 400 feet. Samples were dug from a B + C horizon using a grub-hoe and shipped to Chemex Labs Ltd, North Vancouver, B.C. Here, they were dried, screened to minus 80 mesh, digested in nitric-perchloric acid and analysed by atomic absorption spectrometry for copper, molybdenum, lead, zinc, gold and silver, and in addition, one representative line across the centre of the anomaly was analyzed for tungsten and mercury. Sampling conditions are generally good, except for the valley floor below (north) of the alluvial terrace, where a thick organic cover and frozen volcanic ash prevented sample pits proceeding deep enough to obtain soil. Geochemical assays are illustrated on Figures C5 to C8 inclusive.

The copper soil response (see Figure C5) shows a sharp contrast over a background of 10 to 20 parts per million (ppm). The area exceeding 50 ppm has been contoured and this contains three main areas exceeding 400 ppm. The largest is 6600 feet long and 500 to 1600 feet wide, extending from Styan Creek at the west end to the downhill side of the magnetite outcrop at the east end, and contains three areas exceeding 800 ppm and assaying as high as 1740 ppm. Another area 3600 feet long lies immediately downhill and extends almost to the top of the alluvial terrace, and exceeds 800 ppm for the most part, with assays as high as 2000 ppm. The third area is 1100 feet by 1500 feet and occurs on the east side of Styan Creek immediately upstream from the largest area.

The molybdenum response (see Figure C6) coincides with the copper response but is more accentuated into four areas of intense response (over 40 ppm), of which two can be considered as east and west ends of the largest copper zone. Peak values in each area exceed 160 ppm and are as high as 500 ppm. Background values are below 2 ppm and only the assays exceeding 10 ppm have been contoured.

Lead and zinc response (see Figure C7) is low but does show a weak anomaly, mainly in lead, around the copper anomaly. Lead values exceeding 24 ppm group into several well defined areas, even though most lead assays are under 50 ppm. Erratic assays as high as 4000 ppm lead and 660 ppm zinc from the margins of the property are probably derived from galena veinlets peripheral to the copper zone.

Gold assays (see Figure C8) are generally less than 30 ppb and higher assays tend to be erratically distributed near areas of best molybdenum and magnetic response, with peak gold assays of about 190 ppb.

Silver assays (see Figure C8) are uniformly low with only occasional, erratic values exceeding 1.0 ppm.

Seventeen samples on line 3600E extending across the main part of the copper anomaly were assayed for tungsten and mercury as a test. Results were 8 ppm or under for tungsten and between 32 and 76 ppb for mercury, which is more or less background for the district.

#### MINERALIZATION

Visible evidence of copper and molybdenum mineralization was only found in two areas. The first is at the northwest end of the geochemical anomaly near Styan Creek where minor malachite staining is found coating weakly altered syenite. Microscopic examination of the syenite shows a fine dusting of disseminated chalcopyrite and pyrite. A geochemical assay of the mineralized syenite returned 730 ppm Cu, 47 ppm Mo and background in lead, zinc, silver and gold. The second is in the vicinity of Pits 1 and 2 where copper mineralization was noted in five rock types:

(1) Minor malachite and copper limonite staining and a light dusting of chalcopyrite and pyrite in a weakly altered feldspar - biotite porphyry dike. A geochemical assay from the best mineralization returned 4000 ppm Cu, 100 ppm Mo, 1.5 ppm Ag, 130 ppb Au and background lead and zinc.

(2) Minor malachite and tenorite coating a very fine grained biotite (secondary?) rich rock. The best mineralized fragment returned 2080 ppm Cu, 34 ppm Mo, 160 ppb Au and background in silver, lead and zinc.

(3) An altered rock composed of quartz and feldspar with occasional flecks of fresh biotite (secondary?) that is weakly malachite stained and contains fine dissemination of chalcopyrite, usually partially altered to copper limonite. The best assay returned 2520 ppm Cu, 41 ppm Mo, 50 ppb Au and background in silver, lead and zinc.

(4) A few fragments of rock type (3) above were found containing vein filling of calcite and drusy quartz with malachite and chalcopyrite.

(5) Unaltered granodiorite from Pit 2 contains traces of finely disseminated chalcopyrite. The best mineralized piece assayed 374 ppm Cu, 34 ppm Mo, 50 ppb Au and background in silver, lead, and zinc.

All of the above rock types exhibit weak dry fracturing in one direction and weak quartz veining in one or, very occasionally, two directions. The only molybdenite seen on the property consisted of oxide-coated rosettes in two fragments of quartz veining. Chalcopyrite appears to be finely disseminated throughout the rock rather than concentrated along fracturing or quartz veining, although secondary copper minerals coat fractures.

No copper or molybdenum mineralization was noted in rock fragments from the soil sample pits. Fragments from the altered zone, which underlies most of the geochemical anomaly, are highly leached. The porosity produced by leaching varies from less than 1 per cent to about 3 per cent on average. Leached cavities are usually thinly coated by a yellow oxide (jarosite?) and occasionally by a light brown limonite. The rock fragments exhibit weak quartz veining and dry fracturing. Pyrite was only observed in rock

fragments of altered volcanics from the southwest side of the geochemical anomaly, near Styan Creek, and in pyritic gossans in schist that outcrop on the north bank of Big Creek. It forms up to 5 per cent of the rock and occurs as rounded, weakly oxidized clusters or rosettes. Magnetite was noted in rock fragments from the upper south portion of the geochemical anomaly. It occurred as small fragments of highly oxidized massive magnetite, disseminated grains in or associated with calc-silicates and very occasionally as thin veinlets. The most abundant disseminated magnetite was found in altered Yukon Group metasediments east of Jensen Creek. The magnetite outcrop appears to be a flat-lying lens or tabular zone occurring in a weakly altered skarn horizon. No other minerals were seen in it and a sample assayed only trace gold.

#### MAGNETIC SURVEY

This survey was performed with a Sharpe MF-2 Fluxgate magnetometer (Serial Number 002217) rented from Scintrex Ltd., Toronto. As illustrated on Figure C9, it outlined four large areas and one small area with magnetic response exceeding 500 gammas above background. The most intense anomaly consists of an area more than 2000 feet long, most of which exceeds 1000 gammas, extending along Big Creek west of the diorite outcrop. An area 2400 feet by 900 feet more or less corresponds to granodiorite float at the east end of the main copper anomaly. About 1000 feet south, an anomaly 1000 feet by 600 feet is associated with the magnetite outcrop and has peak readings of 3000 and 9950 gammas. A small anomaly about 400 feet in diameter with a peak reading of 1025 gammas occurs about 2000 feet southeast. The other anomaly occurs on Styan Creek and is about 1000 feet by 200 feet. The last three anomalies are associated with areas in which magnetite has been seen in outcrop or rock float, usually metasediments of the Yukon

Metamorphic Complex. Within the zone of best geochemical response, the lowest magnetic response occurs along the north side of the copper anomaly and extends north to Big Creek.

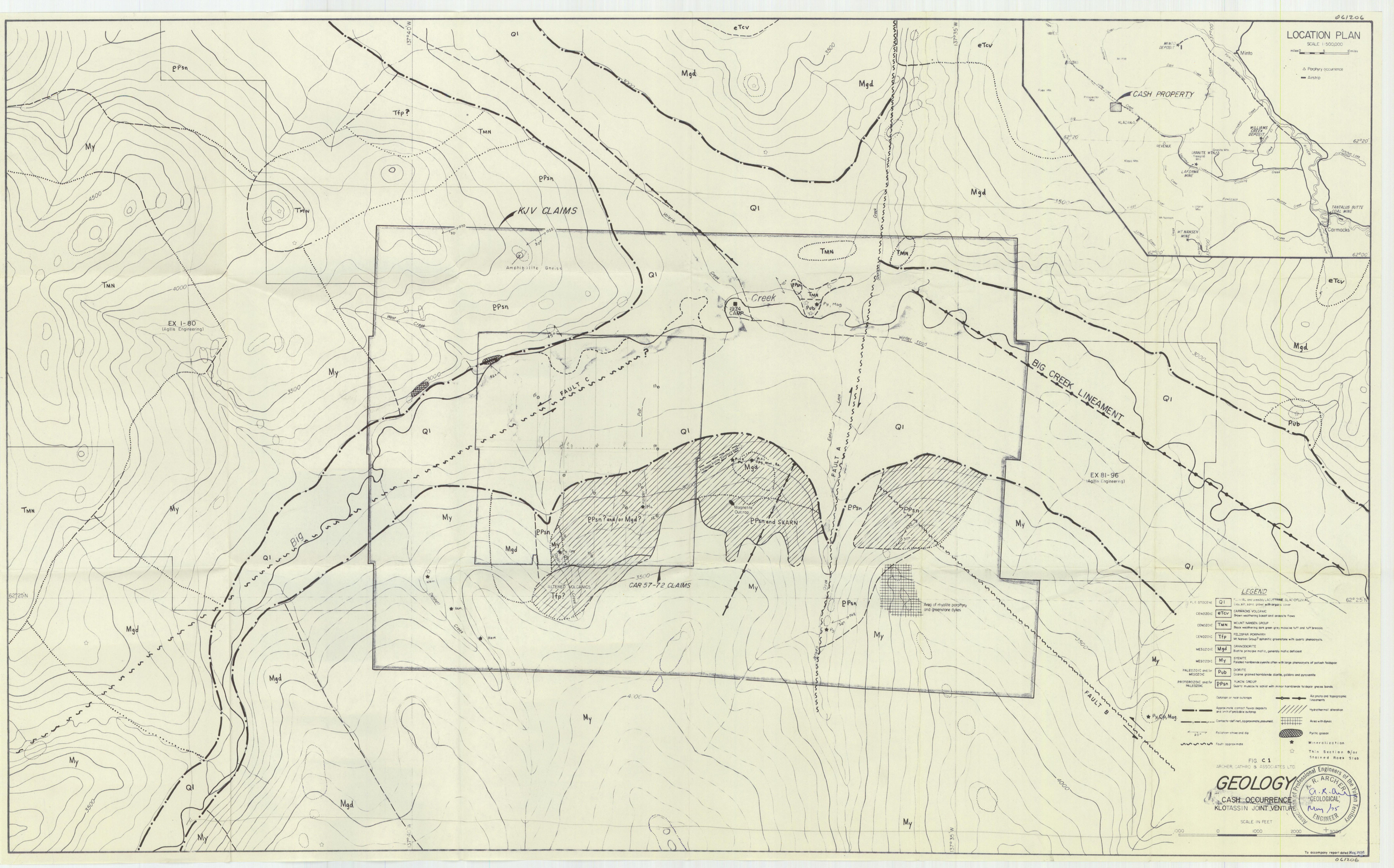
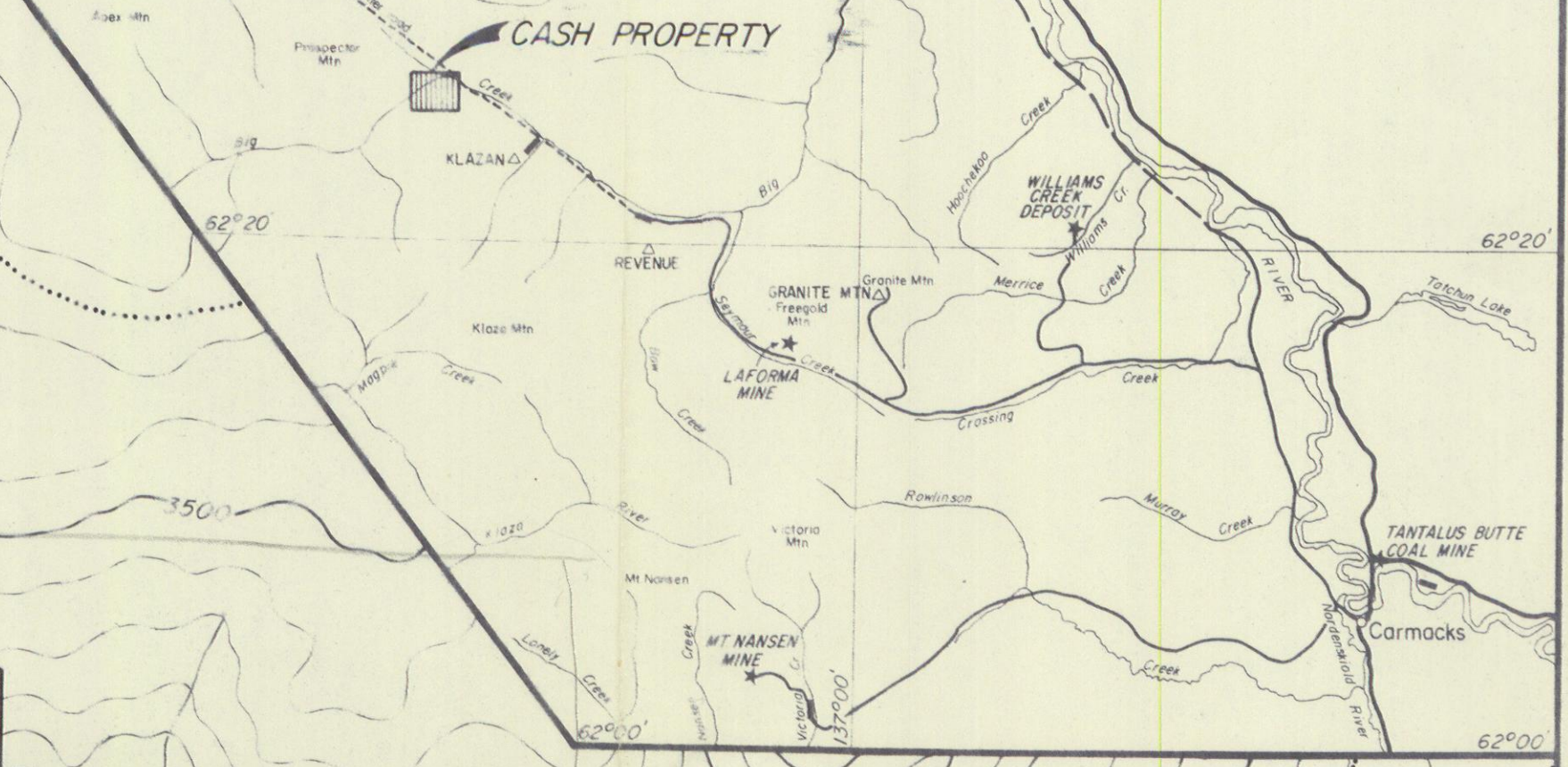
#### SUMMARY AND RECOMMENDATIONS

A significant copper and molybdenum soil anomaly is found on the Cash property. Outcrop is virtually absent within the anomaly but examination of residual bedrock fragments collected from deep soil sample pits indicates that hydrothermal alteration increases in a downhill direction and reveals that the anomaly is underlain by a contact zone between a metasedimentary (schist, quartzite, skarn) roof pendant and younger granodiorite and related intrusive rocks of Triassic or younger age. Several varieties of porphyritic rock or subvolcanics have been seen and these are interpreted as dikes.

Little mineralization or evidence of porphyry type fracturing or brecciation has been found but leaching is fairly strong within the anomaly. Along the uphill side of the anomaly, overburden is probably less than five feet thick and soil response may be lower than bedrock grade if enough pyrite was originally present to totally remove copper from the jarosite and limonite coating the leached rock. However, if the pyrite content is relatively low, copper may be fixed in these oxides, as at the William's Creek and Minto deposits, and the bedrock grade may be lower than the soil grade. At the downhill side of the anomaly, it is impossible to estimate overburden thickness or origin and there is no way, short of drilling or possibly deep bulldozer trenching, to determine the nature and grade of the source of the anomaly.

Further work should consist of an Induced Polarization Survey followed by shallow diamond drilling.

Respectfully submitted,  
R. ARCHER  
ARCHER, CATHRO & ASSOCIATES LTD.  
GEOLOGICAL  
R.A.G.  
R. Archer  
ENGINEER  
+  
Regional Engineers of the Yukon Territory



LEGEND

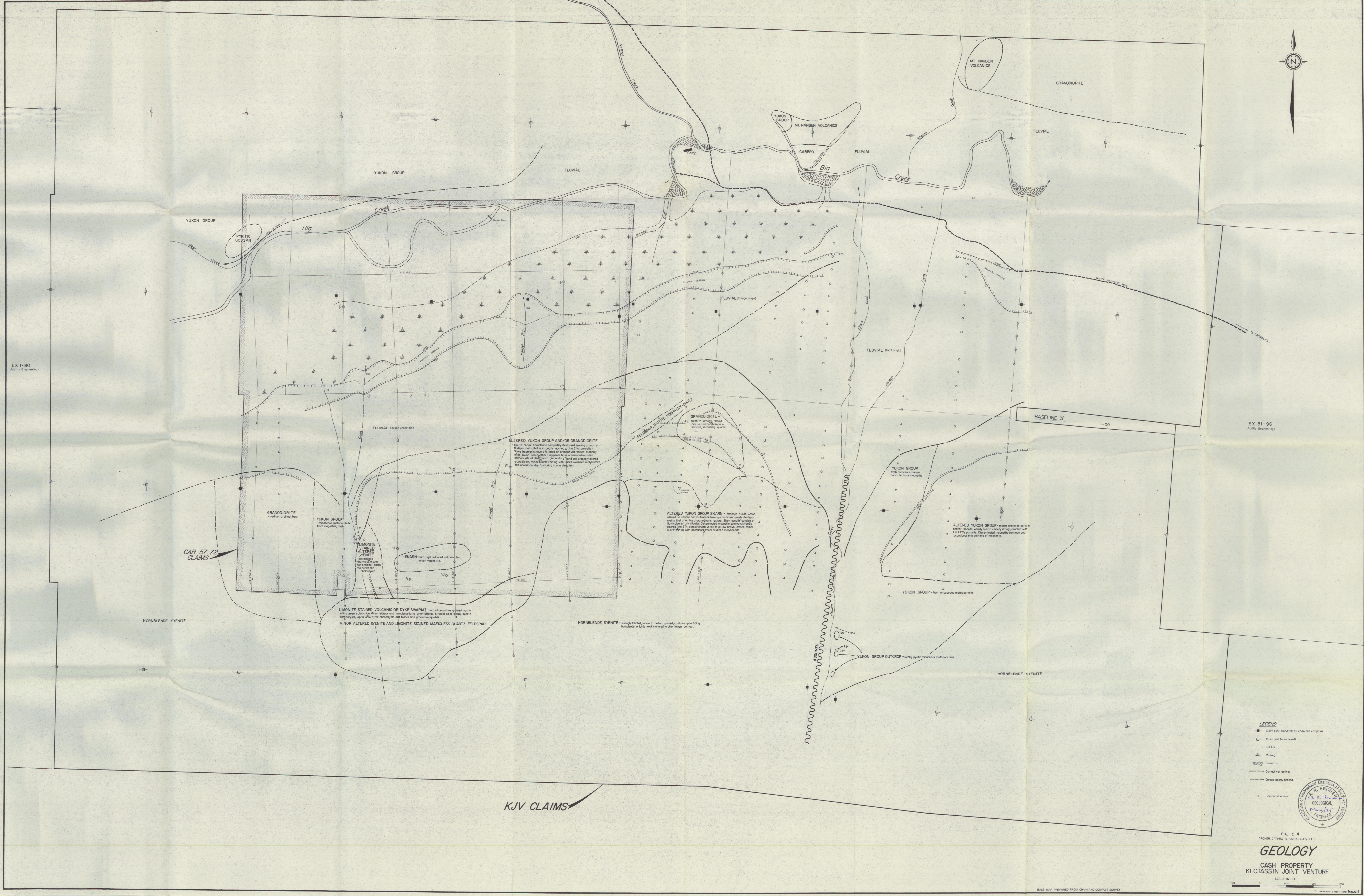
- Q1 Tertiary and probably Quaternary glaciofluvial deposits, alluvium, and colluvium
- eTcv CARMACKS VOLCANIC (Black weathering basalt and andesite flows)
- TMN MOUNT NANSSEN GROUP (Black weathering dark green grey massive till and till breccia)
- Tfp FELDSPAR PORPHYRY (Mt. Nansen Group) ophiolitic greenstone with quartz phenocrysts
- Mgd GRANODIORITE (Baffle principle matrix, generally mafic dykes)
- My GNEISS (Foliated hornblende gneiss often with large phenocrysts of potash-feldspar)
- Pub DIORITE (Coarse grained hornblende diorite, gabbro and pyroxenite)
- PPsn YUKON GROUP (Quartzite, muscovite schist with minor hornblende, feldspar, gneiss bands)
- Outcrop or near outcrop (Air photo and topographic locations)
- Approximate contact (Based on reports and air photo locations)
- Contact - defined, approximately assumed
- Fault - strike and dip
- Fault - approximate
- Hydrothermal alteration
- Area with dykes
- Pyritic gossan
- Mineralization
- Thin Section Box / Stained Rock Slab

FIG. C-1  
ARCHER, CATHRO & ASSOCIATES LTD.  
**GEOLOGY**  
CASH OCCURRENCE  
KLOTASSIN JOINT VENTURE  
SCALE IN FEET  
0 1000 2000 3000



EX 1-80  
(Agilis Engineering)

EX 81-96  
(Agilis Engineering)



CAR 57-72 CLAIMS

KJV CLAIMS

- LEGEND**
- Claim post (surveyed by chain and compass)
  - Claim post (unsurveyed)
  - Cut line
  - Marking
  - Gravel bar
  - Contact well defined
  - Contact poorly defined
  - Sample pit location

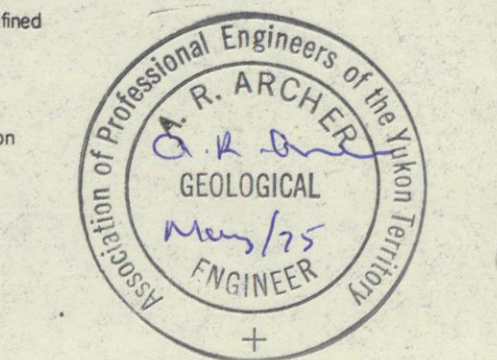
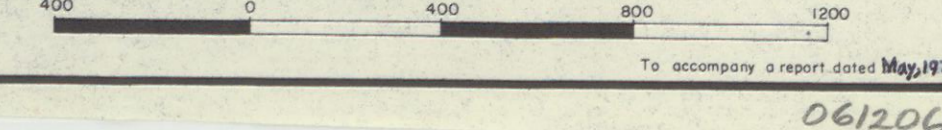


FIG. C-4  
ARCHER, CATHOR & ASSOCIATES LTD.

### GEOLOGY

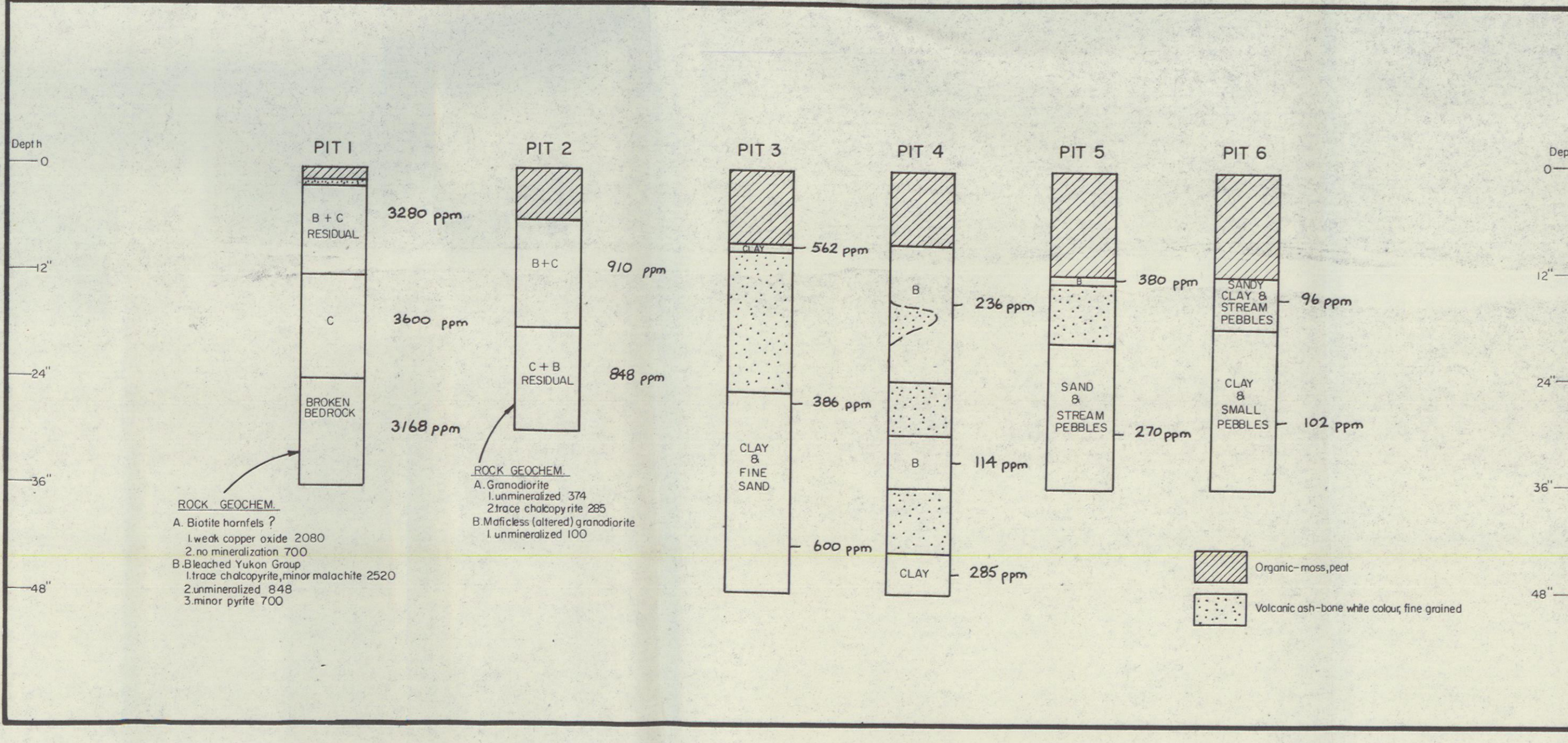
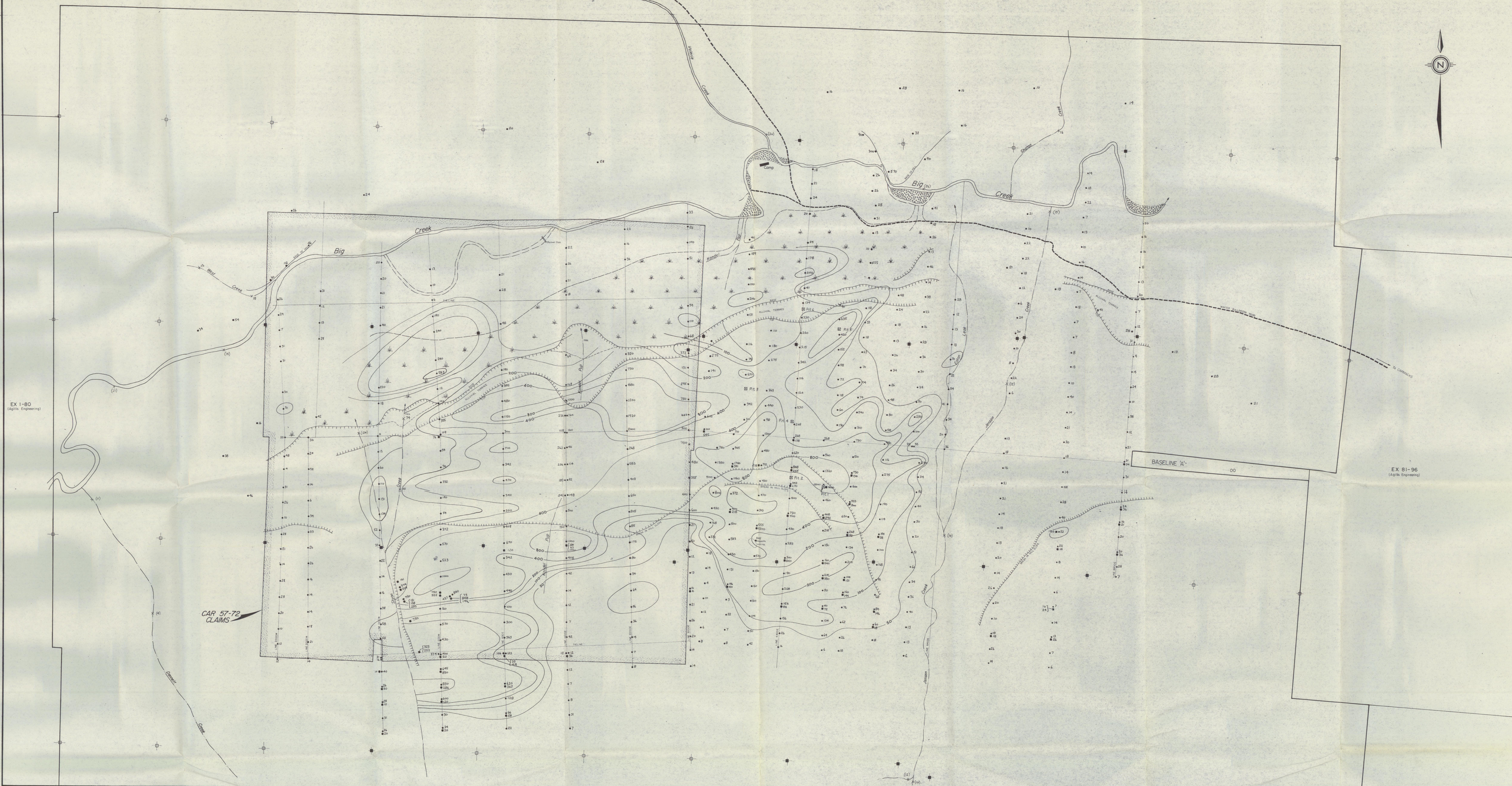
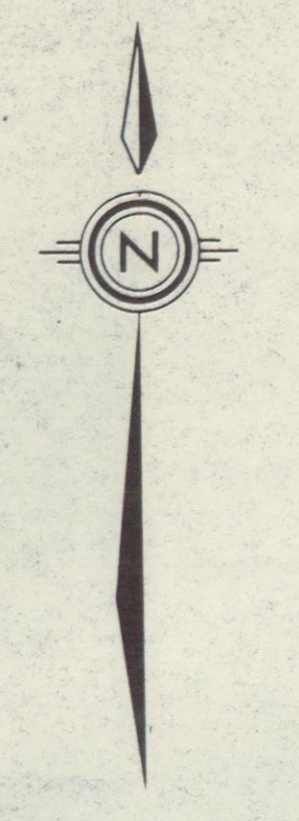
CASH PROPERTY  
KLOTASSIN JOINT VENTURE

SCALE IN FEET



BASE MAP PREPARED FROM CHAIN AND COMPRESS SURVEY

061206



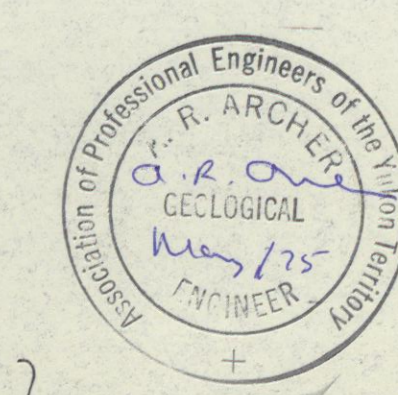
**LEGEND**

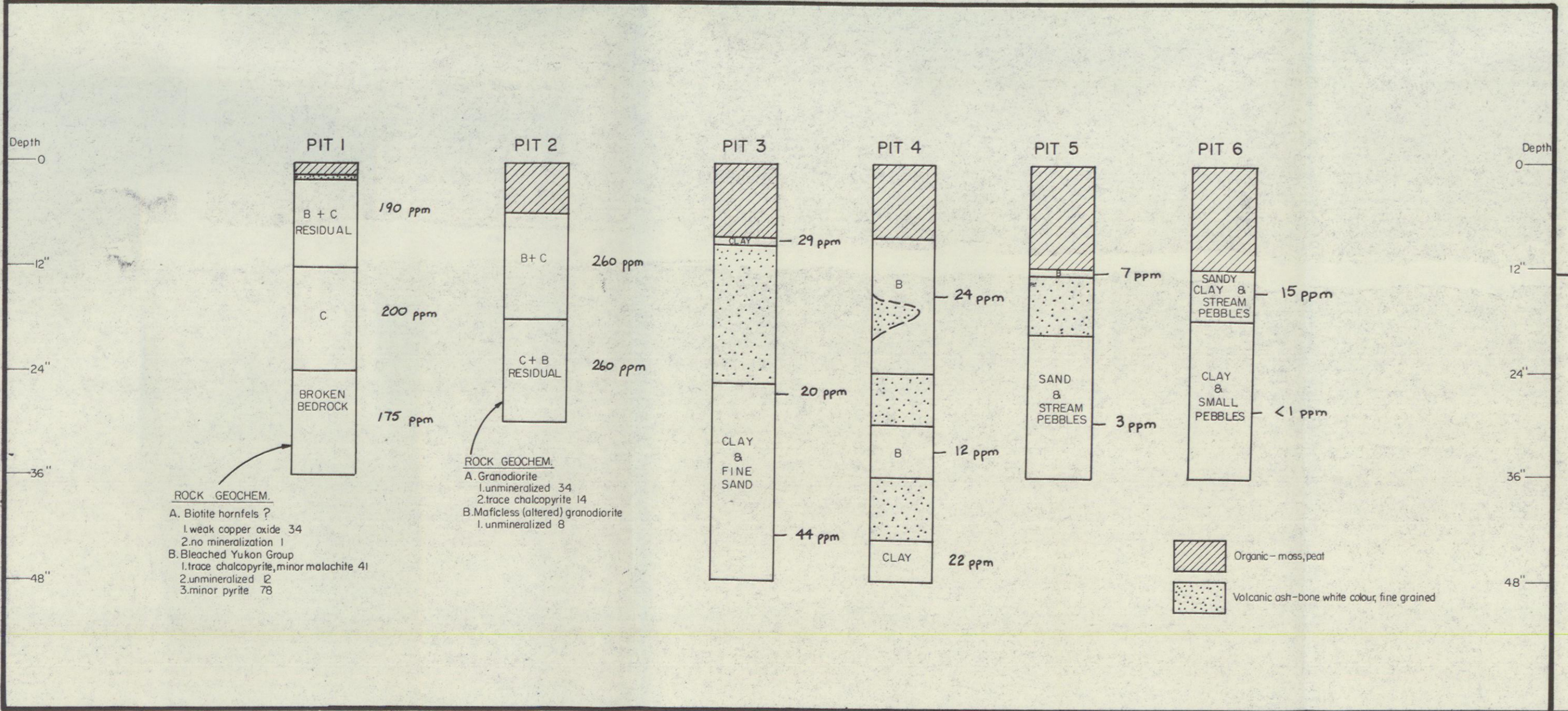
- Claim pole (surveyed)
- Claim post (unsurveyed)
- Cut line
- Mapping
- Gravel bar
- Soil sample
- Stream sediment (soil sample)
- Rock sample
- Atlas East List sample 1970
- Pit location

**FIG. C5**  
 ARCHEL, CATHRO & ASSOCIATES LTD.

**COPPER GEOCHEMISTRY**  
 CASH PROPERTY  
 KLOTASSIN JOINT VENTURE  
 SCALE IN FEET

BASE MAP PREPARED FROM CHAIN AND COMPASS SURVEY





KJV CLAIMS

LEGEND

- Contour point (unverified)
- Contour point (verified)
- Cut line
- ▨ Muck
- ▧ Gravel bar
- Soil sample
- × Stream sediment bulk sample
- Rock sample
- ⊗ Area Expl. Ltd sample 1970
- ⊙ Pit location
- NSS Not sufficient sample for analysis

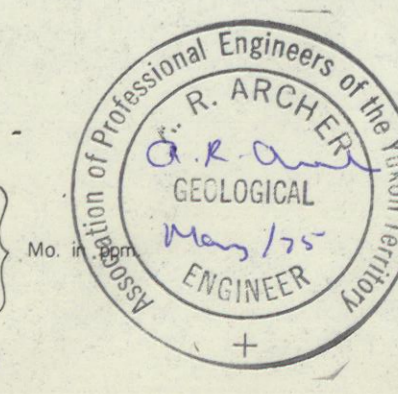
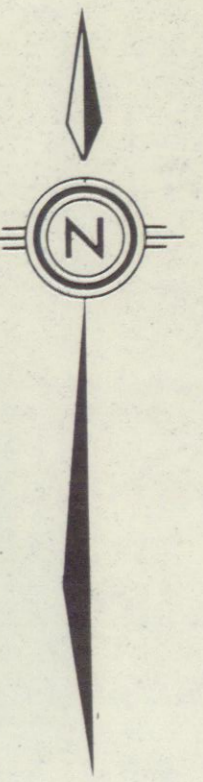
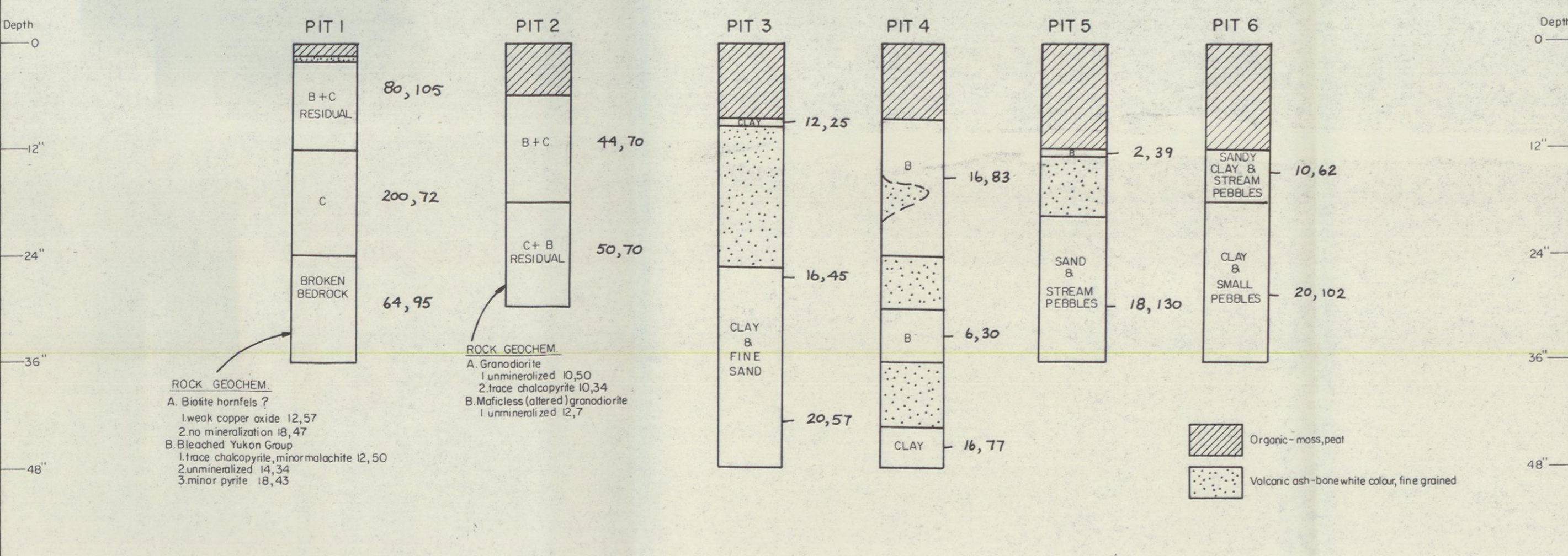
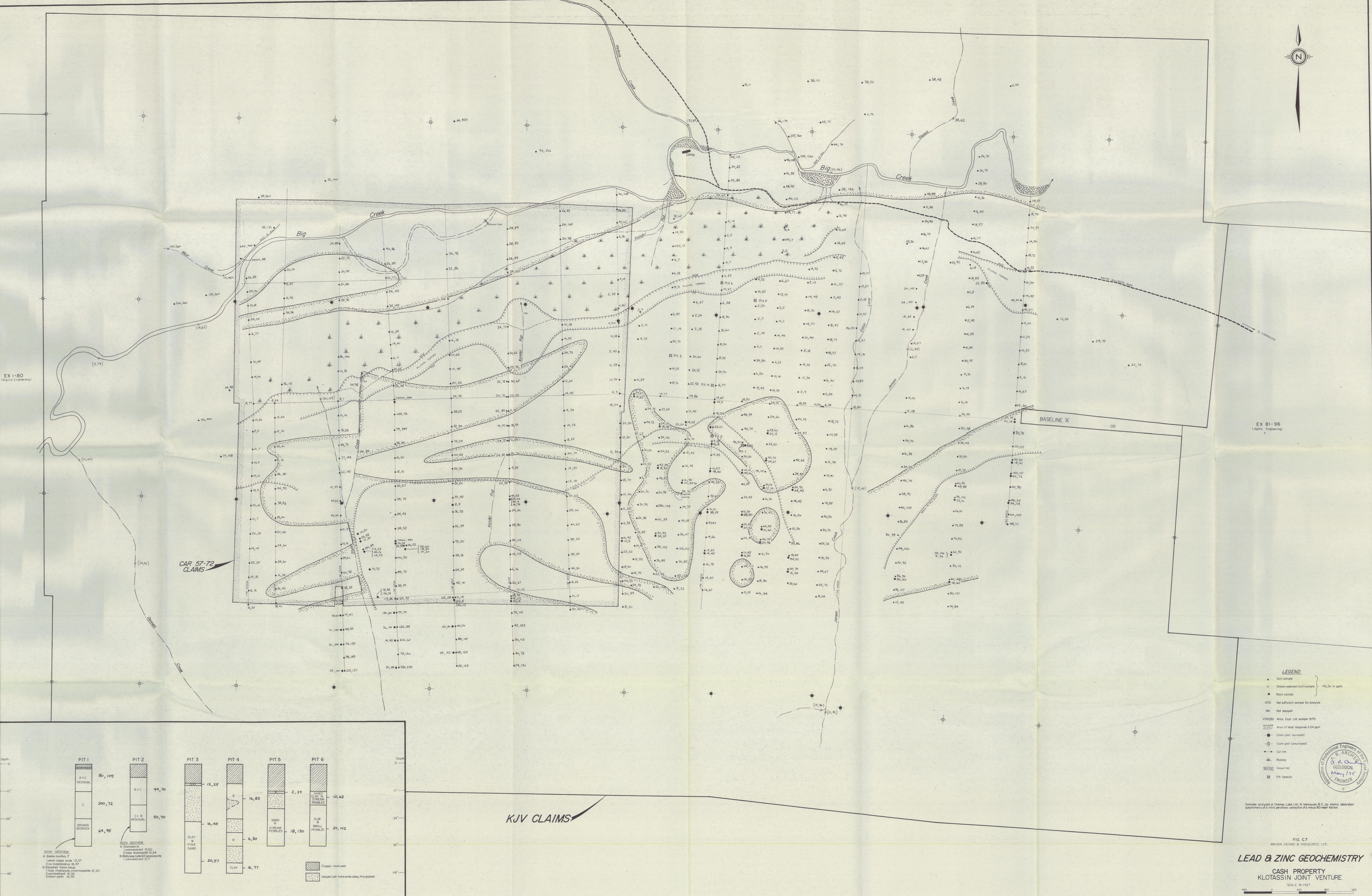


FIG. 06  
ARCHER CATHRO & ASSOCIATES LTD.  
**MOLYBDENUM GEOCHEMISTRY**  
CASH PROPERTY  
KLOTASSIN JOINT VENTURE  
SCALE IN FEET  
0 100 200 300 400 500



EX 1-80  
(Agnis Engineers)

EX 81-96  
(Agnis Engineers)



**LEGEND**

- Soil sample
- X Shear sediment (all) sample Pb, Zn in ppm
- Rock sample
- NSS Not sufficient sample for analysis
- NA Not assayed
- VSDS Atlas Exel Ltd sample 1970
- [Area of lead response > 24 ppm]
- [Claim post (unverified)]
- [Claim post (unverified)]
- [Cut line]
- [Mudline]
- [Gravel bar]
- [Pit location]

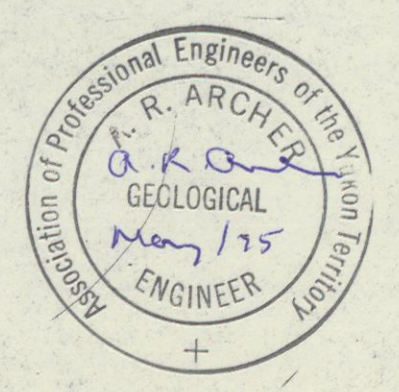
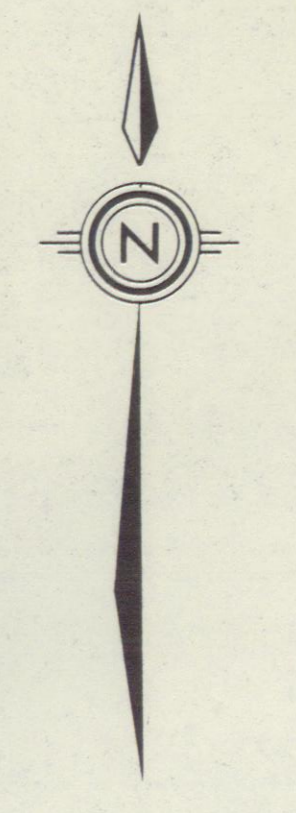


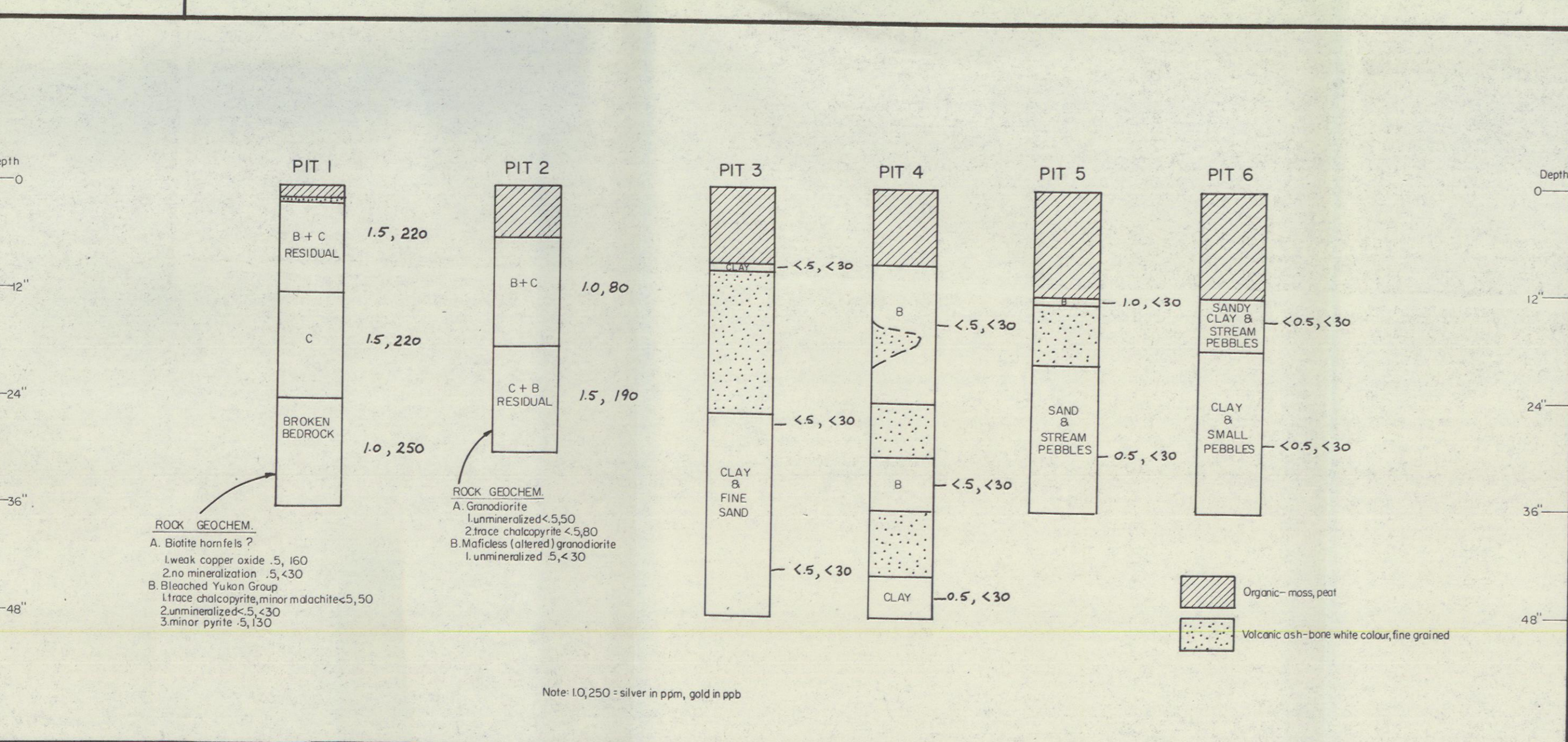
FIG. C7  
 ARCHER, CATHRO & ASSOCIATES LTD  
**LEAD & ZINC GEOCHEMISTRY**  
 CASH PROPERTY  
 KLOTASSIN JOINT VENTURE  
 SCALE IN FEET  
 0 100 200 300 400 500 600 700 800 900 1000

BASE MAP PREPARED FROM CHAIN AND COMMISS SURVEY



EX 1-80  
(Agilis Engineering)

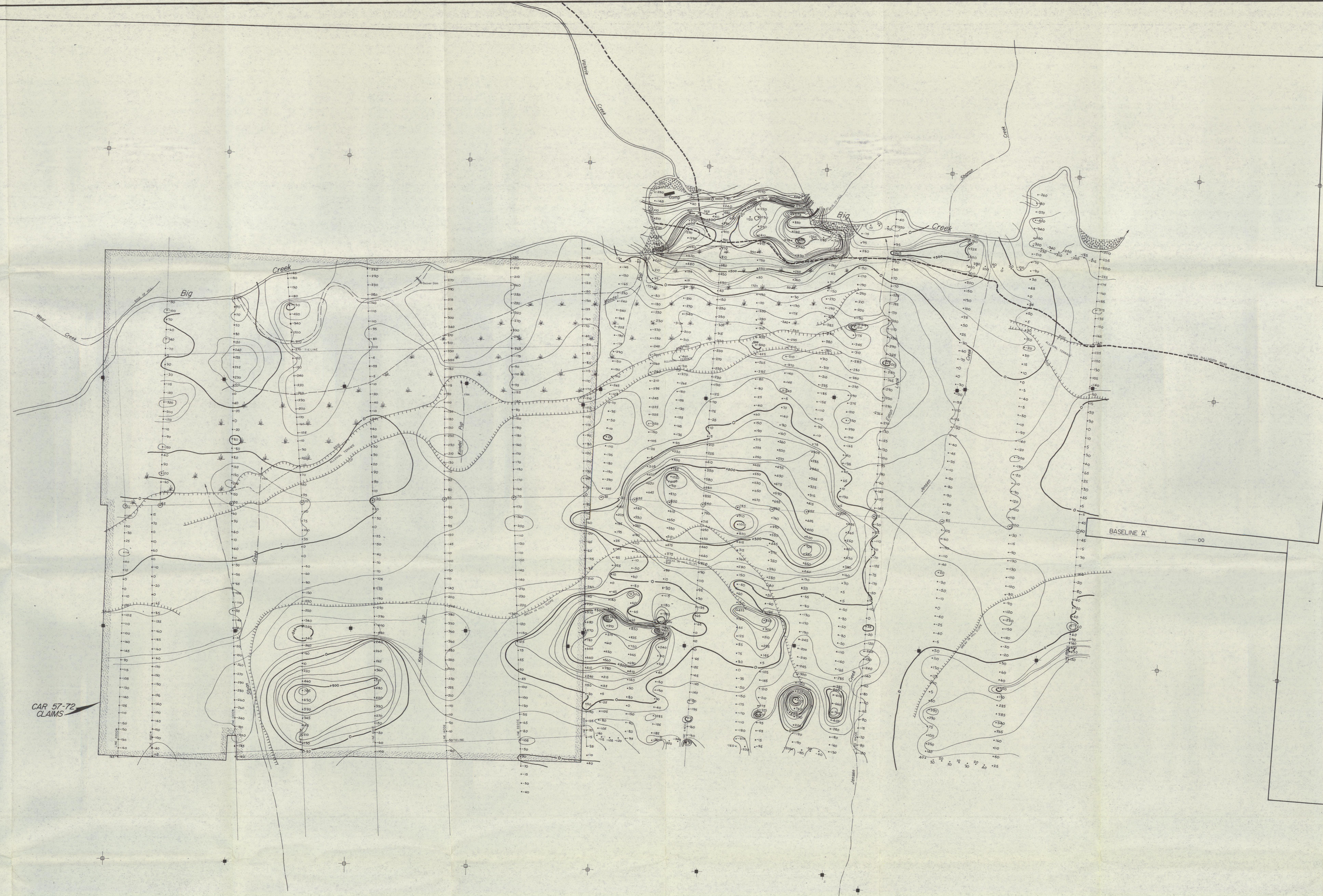
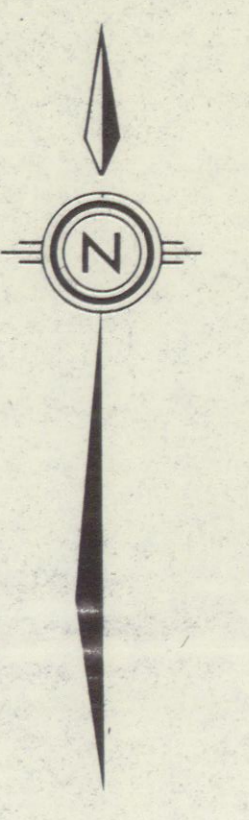
EX 81-96  
(Agilis Engineering)



**LEGEND**

- Soil sample
- X Stream sediment (all sample)
- Rock sample
- N/S Not sufficient sample for analysis
- NA Not analyzed
- 2.0/80 Silver assay in ppm, gold assay in ppb
- Silver < 0.5 ppm, gold < 30 ppb
- XMA(NA) Atlas(Exp) LMS sample 1970
- Claim post (surveyed)
- Claim post (unsurveyed)
- Cul line
- Mucking
- Green bar
- Pit location

**FIG. C8**  
ARCHER, CATHRO & ASSOCIATES LTD.  
**SILVER & GOLD GEOCHEMISTRY**  
CASH PROPERTY  
KLOTASSIN JOINT VENTURE  
SCALE IN FEET  
100 200 300 400 500 600 700 800 900 1000  
BASE MAP PREPARED FROM CHAIN AND COMPASS SURVEY



EX 1-80  
(Agilis Engineering)

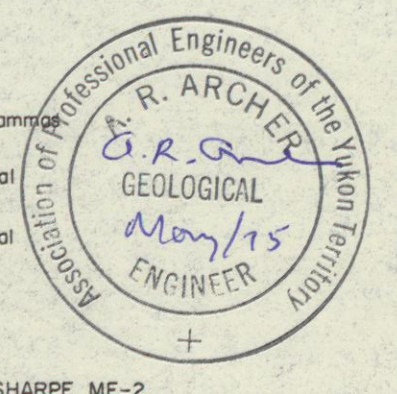
EX 81-96  
(Agilis Engineering)

CAR 57-72  
CLAIMS

KJV CLAIMS

**LEGEND**

- Claim post (surveyed)
- ⊕ Claim post (unsurveyed)
- Cut line
- ⊙ Mound
- ▨ Gravel bar
- ⊕ Magnetometer reading in game
- 100 gamma contour interval
- 500 gamma contour interval
- Base station

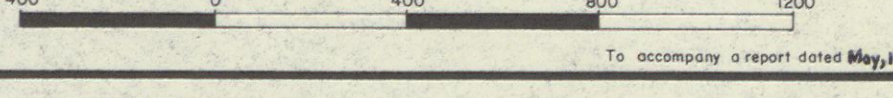


SURVEY CONDUCTED BY D. EATON USING A SHARPE MF-2  
PLUGGATE MAGNETOMETER S/N 000207 BETWEEN AUG 27-31  
AND SEPT 7 - OCT 10 1974

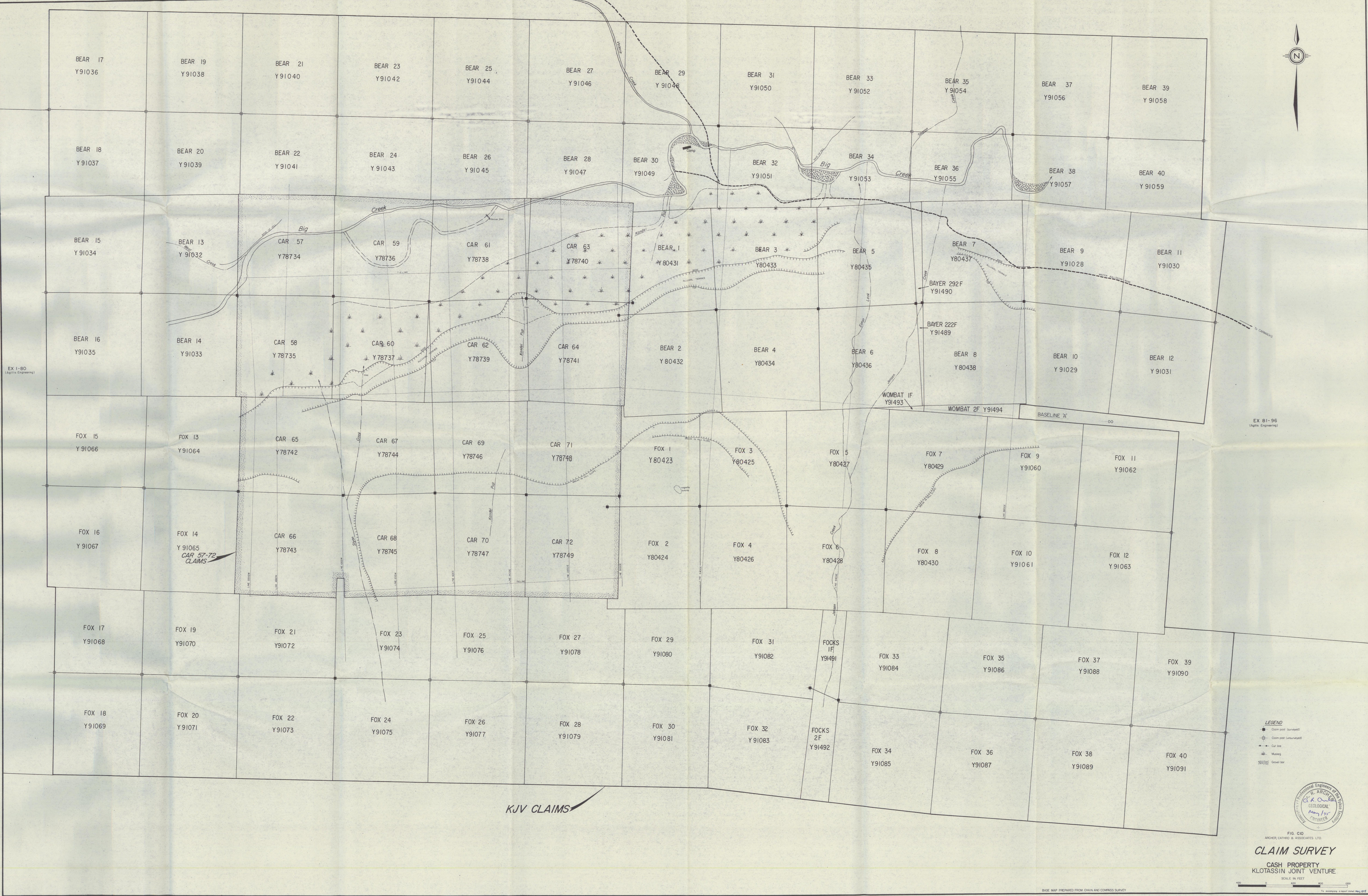
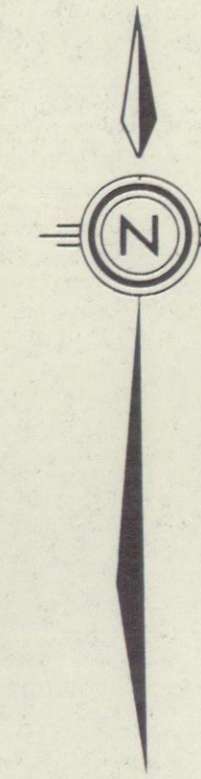
**FIG. C 9**  
ARCHER, CATHRO & ASSOCIATES LTD.  
**MAGNETIC SURVEY**

CASH PROPERTY  
KLOTASSIN JOINT VENTURE

SCALE IN FEET



BASE MAP PREPARED FROM CHAIN AND COMPASS SURVEY



EX 1-80  
(Agilis Engineering)

EX 81-96  
(Agilis Engineering)

Y 91065  
CAR 57-72  
CLAIMS

KJV CLAIMS

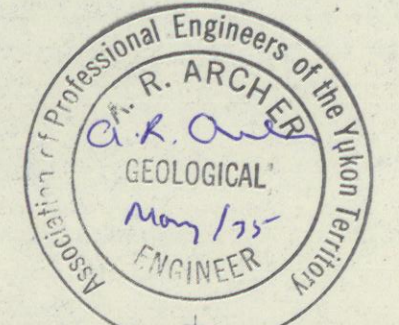


FIG. C10  
ARCHER, CATHRO & ASSOCIATES LTD.

### CLAIM SURVEY

CASH PROPERTY  
KLOTASSIN JOINT VENTURE

SCALE: IN FEET  
0 100 200 300 400

BASE MAP PREPARED FROM CHAIN AND COMPASS SURVEY

The accuracy is reported May 2015