GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

SPUD 1 - 16 MINERAL CLAIMS

091082

BEMA
Industries Ltd.

This report has been examined by the Geological Evaluation Unit under Section 53 of the Quartz Mining Act and is approved as representation work in the amount of $ 3200—.

P Webster

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

GEOLOGICAL AND GEOCHEMICAL REPORT

ON THE

SPUD 1 - 16 MINERAL CLAIMS

MAYO MINING DIVISION

N.T.S. 115 P/15

64°35'N Latitude; 136°59'W Longitude

Owned by:

CANADA TUNGSTEN MINING CORPORATION LIMITED
Executive Office
Box 12525, Oceanic Plaza
Ste. 1600 - 1066 West Hastings St.
Vancouver B. C. V6E 3X1

Work by:

BEMA INDUSTRIES LTD.
19945 - 56th Avenue
Langley, B.C. V3A 3Y2

R. H. Rainbird, B.Sc.

July 16 - 20, 1982

SUMMARY

1.0 INTRODUCTION

The SPUD 1 - 16 quartz claims were staked on August 6, 1981 for the Canada Tungsten Mining Corporation Limited by Bema Industries Ltd. Geological mapping, rock, soil and stream sediment sampling was completed by two Bema geologists during the week of July 16 - 20, 1982. A total of two years assessment credit was applied for on July 23, 1982.

1.1 LOCATION AND ACCESS

The SPUD claims are located at the headwater of Vancouver Creek in Central Yukon about 60 km west of Mayo and are centered at 63°45' N and 136°59' W (ref: NTS 115 P/15). Access is by helicopter. (FIGURE 1)

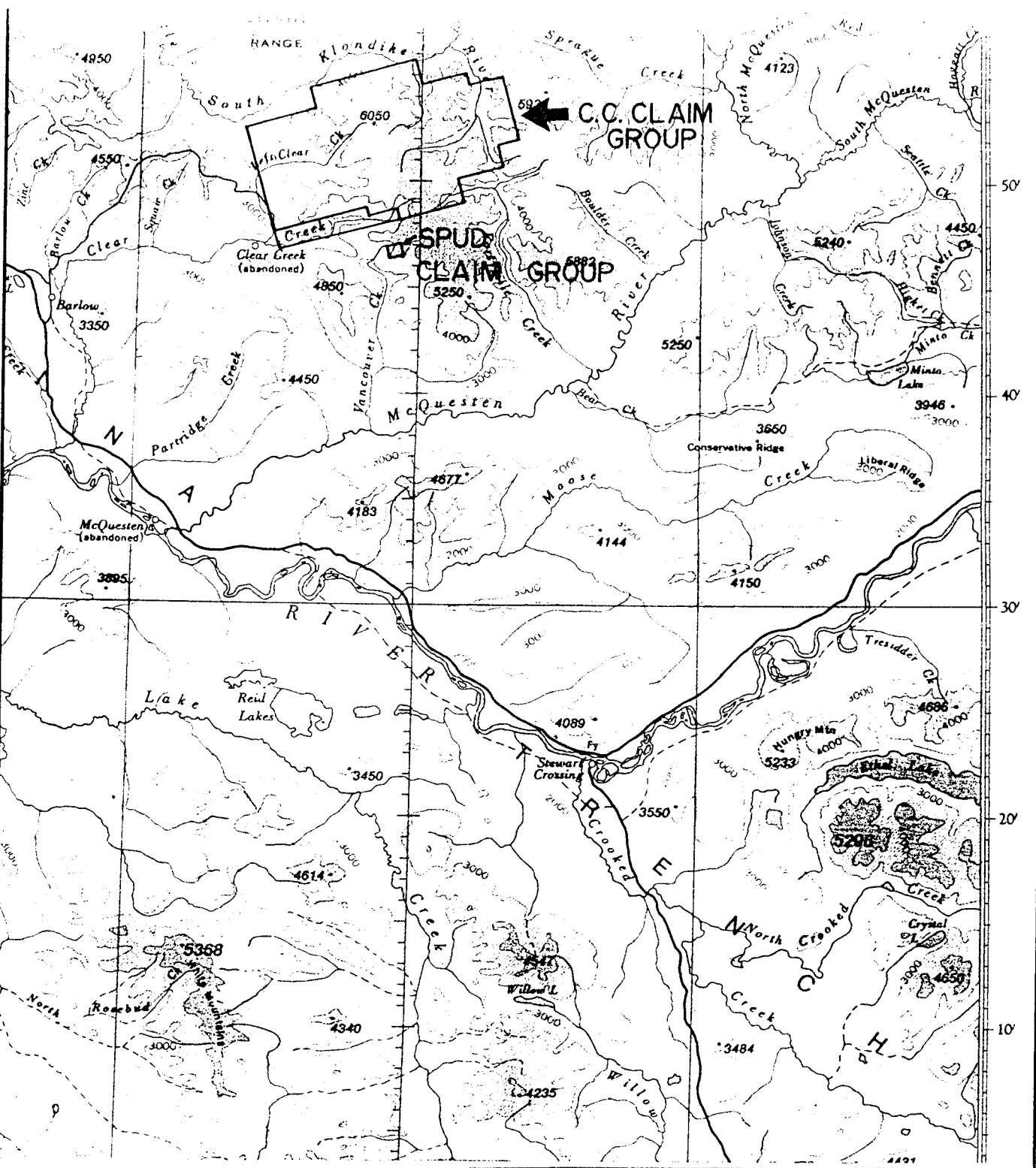
1.2 PHYSIOGRAPHY

The SPUD claims are situated at the southern end of a group of rolling mountains known as the West Ridge. The topography is dominated by frost-heaved boulder fields and talus slopes. Vegetation consists of open moss covered tundra above 1400 metres, giving way to stunted spruce forests at lower elevations.

1.3 PROPERTY

The SPUD claim group was staked August 5, 1981 and recorded in May the following day, August 6, 1981.

NAME	GRANT NUMBERS	OWNER	EXPIRY DATE
SPUD 1 - 16	YA63537 - YA63552	Canada Tungsten Mining Corporation Limited	August 6, 1984



CANADA TUNGSTEN MINING CORPORATION

VANCOUVER CREEK

1982 GEOLOGICAL EXPLORATION PROGRAMME

SPUD CLAIMS

LOCATION MAP

DATE AUGUST 1982	JOB NO 82-05
REVISED BY	FIG NO 1

BEMA INDUSTRIES LTD.

Scale 0 5 10 20 km

1:500,000 APPROXIMATE

1.4 HISTORY

In 1971 the North Stewart River Joint Venture was formed between the Canada Tungsten Mining Corporation Limited and Chevron Standard Ltd. resulting in the acquisition of the LUGDUSH 1 - 16 claims on the eastern contact of the Vancouver Creek stock. A program of silt and soil sampling outlined a zone of tungsten-bearing skarn but no further work was completed and the claims were allowed to lapse. The area was restaked as the HOP 1 - 30 claims in April 1979 by Amax Ltd. No work was filed on this group, leaving the ground open again in 1980.

1.5 PRESENT WORK

The 1982 exploration program on the SPUD claim group commenced with the setting up of a two-man helicopter fly camp at the headwaters of Vancouver Creek. The program focused on 1:5,000 scale geological mapping with particular attention to outlining the extent, structure and potential of tungsten-bearing calc-silicate skarn horizons. Selected soil, rock and heavy mineral samples were collected in specific areas to supplement the data obtained from work done by the North Stewart River Joint Venture (NSRJV - Cathro 1971). Ultra violet lamps were also used to identify scheelite-bearing rocks in the field.

1.6 BIBLIOGRAPHY

Cathro, R. J. (1971) North Stewart River Joint Venture: Private Report for Canada Tungsten Mining Corp. Ltd. and Chevron Standard Ltd.

Green, L. H. (1972) Geology of Nash Creek, Larsen Creek and Dawson Map Areas, Yukon Territory. GSC Memoir 364.

2.0 GENERAL GEOLOGY

The project area is located at the southern margin of the Selwyn Basin and is underlain by a thick sequence of deformed metasediments referred to as the "Grit Unit" (of Lower Cambrian, Upper Pre-Cambrian age) (Green 1972). The Grit Unit consists of an interbedded package of phyllite, argillite, gritty quartzite, micaceous quartzite and minor marble. Where these rocks have been intruded by acid intrusions they are altered to quartz and biotite-rich hornfels. Calcareous units are altered to calc-silicate hornfels which includes tungsten-bearing skarns.

Intrusive rocks include porphyritic quartz monzonite, quartz diorite, quartz-feldspar porphyry and andesite. The latter two types are least abundant and occur as dikes and small sills. Of the granitic rocks quartz monzonite is most common and forms the larger plutons (eg. Vancouver Creek Stock). The intrusive rocks in this area are believed to be part of the Middle Cretaceous 100 million year suite (Tempelman-Kluit, D.J., personal communication, 1981). Stratigraphic relationships are illustrated in Table 1.

TABLE 1

TABLE OF FORMATIONS

AGE OF MINERALIZATION
Sinclair, et.al., 1980

ERA	PERIOD	MILLONS OF YEARS	BOYLE, R.W. (1965)	GREEN, L.H. (1971) TEMPELMAN-KLUIT (1970)	BLUSSON, S.L. (1978)	BEMA INDUSTRIES LTD. (1980)
CENOZOIC	TERTIARY	65		Quartz-feldspar porphyry		
	CRETACEOUS	136	Quartz-feldspar porphyry biotite lamprophyre	Greenstone Keno Hill quartzite fm		Quartz-feldspar porphyry biotite lamprophyre
			Greenstone			Greenstone Keno Hill Quartzite
	JURASSIC	190		Lower Schist fm		Lower Schist fm
MESOZOIC	TRIASSIC	225				
	PERMIAN	280				
	CARBONIFEROUS	345			Central Quartzite	
	DEVONIAN	395			Lower Schist	
	SILURIAN	430				
	ORDOVICIAN	500				
PALEOZOIC	CAMBRIAN	570				
PRECAMBRIAN		4600	Upper Schist fm Central Quartzite fm Lower Schist fm	Upper Schist fm		Upper Schist fm ? Grit Unit

3.0 PROPERTY GEOLOGY

The Vancouver Creek quartz monzonite stock, of Mid-Cretaceous age, outcrops along the western edge of the property (FIGURE 3). (1) Its contact strikes roughly north-south but is quite irregular, particularly where it intersects the main skarn horizon. The property is located at the southern end of this large elongate pluton, which is approximately 11 km. long and up to 5 km. wide. The composition of the intrusion is varied; at the contact it is medium-grained and creamy coloured with small rounded smoky quartz and equant feldspar phenocrysts. It is quite similar to the West Ridge porphyritic quartz monzonites to the north. Further to the west the intrusion is coarser grained, light grey and includes large elongate feldspar phenocrysts up to 10 cm. long. Biotite and hornblende are the predominant mafic constituents of both types.

The Vancouver Creek stock has intruded "Grit Unit" metasediments which have been thermally metamorphosed up to 2 km. away from the intrusive contact. Textures and assemblages indicate that these rocks had undergone low grade greenschist regional metamorphism prior to the intrusion. Rock types include quartz-biotite hornfels, biotite-muscovite-andalusite hornfels, calc-silicate hornfels and calc-silicate skarn. The few outcrops that do exist indicate the attitude as striking north and dipping from 10° - 30° east. This is almost perpendicular to the regional trend suggesting possible doming by the intruding pluton.

Textures and structures such as minor folding indicate at least two phases of regional deformation and one phase of local deformation due to intrusive emplacement.

1. Outcrop on the property is extremely scarce, however in situ felsenmeer is believed to be representative of the underlying bedrock.

3.1 MINERALIZATION

Mineralization on the SPUD claims is confined primarily to tungsten-bearing skarn which occurs within calc-silicate hornfels horizons. The largest and most prominent skarn bed occurs near the centre of the property and is about 800 metres long with an apparent thickness of between 150 and 200 metres. (1) Tungsten grade within this bed is variable but generally low ($< 0.1\%$ WO_3) although it appears to increase slightly away from the intrusive contact. Maximum grade deduced by UV visual examination is 0.4% WO_3 in a sample of pyroxene-quartz-calcite skarn. Other calc-silicate skarn assemblages noted in the area include: garnet-epidote, pyroxene-garnet and wollastonite-quartz-calcite (light skarn). Garnet-bearing assemblages contain little or no tungsten.

A second area of skarn mineralization occurs in three small pods on the boulder-strewn north-facing slope of the claim block (FIGURE 3). These occurrences are mineralogically similar to the main skarn bed and contain only minor amounts of scheelite.

Skarn mineralization was also observed adjacent to a small diorite-granodiorite plug which outcrops in the southeast corner of the claim block. The extent of this occurrence could not be determined due to overburden coverage. Grab samples from this zone are visually estimated to contain 0.1% - 0.2% WO_3.

The most significant tungsten mineralization is located in an outcrop about 400 m. southeast of the main skarn bed. Tungsten grade of 2.18% WO_3 was obtained from a 0.2 metre bed of scheelite-bearing biotite-quartz hornfels. The rock is easily distinguished from bounding strata by its coarse-grained banded texture. It is possible that this rock represents a hydrous retrograde skarn assemblage common in many tungsten deposits and characterized by an abundance of biotite and remobilized scheelite.

(1) Assuming an average dip of 15° and taking topography into account the true thickness of the skarn bed is approximately 40 metres.

Galena-bearing quartz vein material was the only other mineralization noted within the SPUD claims. Both occurrences were on scree slopes within 500 metres of the intrusive contact, although no bedrock source was located.

4.0 GEOCHEMISTRY

A total of 17 soil, 5 rock and 4 panned heavy mineral concentrate samples were collected from the SPUD property.

Soil samples were collected along the southern claim line at 100 metre intervals between the two intrusive contacts. Analysis was by a colourimetric method for W only. Results indicate a strong anomaly with values between 95 and 250 ppm in a zone about 200 metres wide and within 500 metres of the Vancouver Creek Stock (See FIGURE 2). When combined with results from the NSRJV (Cathro 1971) soil survey the anomaly forms the southern extension of a larger NE trending tungsten soil anomaly. The northern end of the anomalous area coincides with the main pyroxene skarn zone assuming some downslope soil migration. Field mapping did not indicate calc-silicate skarn mineralization toward the southern end of the anomaly. High tungsten values in this region may be due to biotite-rich retrograde skarn or perhaps a scheelite-bearing quartz vein stockwork which extends from the intrusive into the hornfels zone.

Rock chip samples of selected skarn zones yielded low results ($< 0.05\%$ WO_3) except for one sample of coarse biotite skarn (2.18% WO_3). Tungsten analysis was by Neutron Activation at Chemex Labs, North Vancouver. One of the two showings of galena-bearing quartz assayed at 8% Pb and 18.8 oz/ton Ag.

Heavy mineral samples were collected at four locations along the south fork of Vancouver Creek, one of the sites being on a northern branch of this small tributary. An approximately 5 kg. sample of -10 mesh material is collected and then panned down to roughly 25 grams. The concentrate is then pulverized to 100 mesh, split and analyzed by atomic absorption for gold and tin and by colourimetry for tungsten. The three samples from the main fork were all anomalous in tungsten (800 - 870 ppm) and in tin (230 - 250 ppm). The tin values are particularly significant indicating the possibility of tin-silicate mineralization within the calc-silicate skarn. Tungsten values are also high but do not point to any specific source. Gold values are low (20 ppb) and considered to be background.

5.0 CONCLUSIONS

(1) Calc silicate skarn units observed to date within the SPUD claim group are of too low grade to be economically important; however the abundance of good host rocks in the area does not preclude the existence of higher grade material at depth.

(2) The abundance of moss-covered felsenmeer, general lack of fresh outcrop, and long daylight hours makes an accurate assessment of this area extremely difficult.

(3) The greatest potential for high grade tungsten is in the biotite-rich retrograde skarn if sufficient tonnage can be outlined.

(4) Significant soil and heavy mineral geochemistry indicates a possible bedrock source for tungsten and possibly tin in a 200 - 300 m. wide band of calc-silicate skarn trending northeast from the intrusive contact.

6.0 RECOMMENDATIONS

(1) Surface exposures of calc-silicate skarn should be systematically hand blasted and trenched in order that fresh bedrock may be properly examined.

Trenching targets include:

(a) The main skarn zone approximately 400 metres east of the intrusive contact;

(b) The area in the vicinity of the high grade biotite-quartz skarn;

(c) The skarn zone located in the southeast corner of the SPUD claim block.

(2) It is recommended that a systematic soil grid be set up on the claims and that samples be analyzed for tungsten in the southern part of the grid and tin over the entire grid.

(3) Reconnaissance mapping and prospecting around the periphery of the Vancouver Creek stock should be carried out, time and funds permitting.

STATEMENT OF COSTS

LABOUR

R. Rainbird, geologist	6 days @ $225/day	$1,350.00
M. Zurowski geological assistant	6 days @ $125/day	750.00
	TOTAL LABOUR	$2,100.00

DISBURSEMENTS

Helicopter	2.0 hours @ $500/hr.	$1,000.00
Helicopter Fuel	47 gal. @ $2.15/gal.	100.00
Groceries		100.00
Drafting and field map reproduction		100.00
Rock Assay		70.00
Soil and Heavy Mineral Geochem Analysis		90.00
	TOTAL DISBURSEMENTS	$1,460.00

TOTAL	$3,560.00

STATEMENT OF QUALIFICATIONS

I, ROBERT H. RAINBIRD OF BEMA INDUSTRIES LTD. DO HEREBY CERTIFY THAT:

1. I am a graduate of Carleton University, Ottawa, Ontario and hold the following degree:

   B.Sc. Honours Geology, 1980

2. I have practiced my profession as a geologist since 1980.

3. I have no interest, direct or indirect, in the property or shares of Canada Tungsten Mining Corporation Limited nor do I expect to receive any such interest.

4. That the information contained in this report is both true and correct to the best of my knowledge.

Signed: R. H. Rainbird

Robert H. Rainbird, B.Sc.
Geologist

Date: August 20, 1982

SYMBOLS

GEOLOGICAL BOUNDARY: defined; approximate; assumed
LIMIT of GEOLOGICAL MAPPING
OUTCROP
FELSENMEER
TALUS
FAULTS: defined; approximate; assumed
VEIN STRUCTURE: defined; approximate; assumed
BEDDING: horizontal; vertical; inclined; overturned
FOLIATION: horizontal; vertical; inclined; unknown
ANTICLINE: defined; approximate; overturned
SYNCLINE: defined; approximate; overturned
JOINTING: vertical — weak, moderate, strong; inclined — weak, moderate, strong
MINOR FOLDS: style & direction
GLACIAL STRIAE: movement known; movement known

SHAFT
RAISE
WINZE
ADIT or TUNNEL: caved
QUARRY or MINE: active; abandoned
TRENCH: closed end; open end
PIT
GRAVEL PIT: active; dormant
DUMP or TAILINGS
DDH & NUMBER: 80-00 location; surface projection
OVERBURDEN DRILL HOLE: OBH-80 location
CHIP SAMPLE
ROCK SAMPLE
FLOAT: with rock type
SURVEY STATION
TRIANGULATION POINT
CLAIM POST
CLAIM BOUNDARY
ROAD
CAT TRAIL
CABIN
SPRING

LITHOLOGY

JURASSIC AND OR CRETACEOUS
Intrusive and subvolcanic (hypabyssal) rocks

2
- 2a Aplite
- 2b Granodiorite
- 2c Porphyritic quartz monzonite
- 2d Quartz diorite and diorite

LATE PRECAMBRIAN OR EARLY PALEOZOIC
Upper schist / Grit unit

1
- 1a Massive, gritty and thin bedded quartzite
- 1b Micaceous quartzite
- 1c Phyllite: c_1: Muscovite-sericite phyllite; c_2: Chloritic phyllite; c_3: Graphitic phyllite
- 1d Hornfelsic rocks: d_1 interlayered quartzite and biotite schist; d_2 Massive and interlayered biotite and chloritic schist; d_3: Massive quartzitic hornfels; d_4: Greisen
- 1e Calc-silicate skarn: e_1: Pyroxene-(dark); e_2: Wollastonite-quartz-(light)
- 1f Breccia
- 1g Marble

Scale 0 20 40 60 80 100 200 300 400 500 Metres

CANADA TUNGSTEN MINING CORPORATION
VANCOUVER CREEK
1982 GEOLOGICAL EXPLORATION PROGRAMME
SPUD CLAIMS

GEOLOGY

09102

DATE: AUGUST 1982	JOB NO. 82-05	FIG. NO. 3
DRAWN BY: RHR	SCALE: 1:5000	
REVISED BY:		

BEMA INDUSTRIES LTD.

SPUD 16 - YA63552

SPUD 14 - YA63550

SPUD 12 - YA63548

SPUD 10 - YA63546

SPUD 15 - YA63551

SPUD 13 - YA63549

SPUD 11 - YA63547

SPUD 9 - YA63545

SPUD 8 - YA63544

SPUD 6 - YA 63542

SPUD 4 - YA63540

SPUD 2 - YA63538

SPUD 7 - YA63543

SPUD 5 - YA63541

SPUD 3 - YA63539

SPUD 1 - YA63537

Au - 10 ppb
W - 80 ppm
Sn - 2 ppm

Au - <10 ppb
W - 870 ppm
Sn - 250 ppm

Au - 20 ppb
W - 800 ppm
Sn - 250 ppm

Au - 20 ppb
W - 940 ppm
Sn - 240 ppm

▲ 0.01% WO_3

▲ 0.01% WO_3

▲ 8.0% Pb, 0 18.76 oz/t Ag

▲ 2.18% WO_3

▲ 0.05% WO_3

Vancouver

4000

4500

5000

WEST

RID

N

LEGEND

- ● PANNED HEAVY MINERAL CONCENTRATE
- ▲ ROCK SAMPLE (Assay)
- • SOIL SAMPLE
- × SOIL SAMPLE - from NSRJV (Cathro 1971)

Scale 0 20 40 60 80 100 200 300 400 500 Metres

CANADA TUNGSTEN MINING CORPORATION

VANCOUVER CREEK

1982 GEOLOGICAL EXPLORATION PROGRAMME

SPUD CLAIMS

GEOCHEMISTRY

DATE: AUGUST 1982	JOB NO. 82-05	FIG. NO. 2
DRAWN BY: RHR	SCALE: 1:5000	
REVISED BY:		

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