

GEOLOGICAL AND GEOCHEMICAL REPORT  
K4 & T4 CLAIMS  
KWANIKA CREEK, B.C. NTS 93N/6W  
OMINECA MINING DIVISION  
LATITUDE 55° 28½'      LONGITUDE 125° 19'  
(T. MILLARD & T. GRAHAM OWNERS)

BY

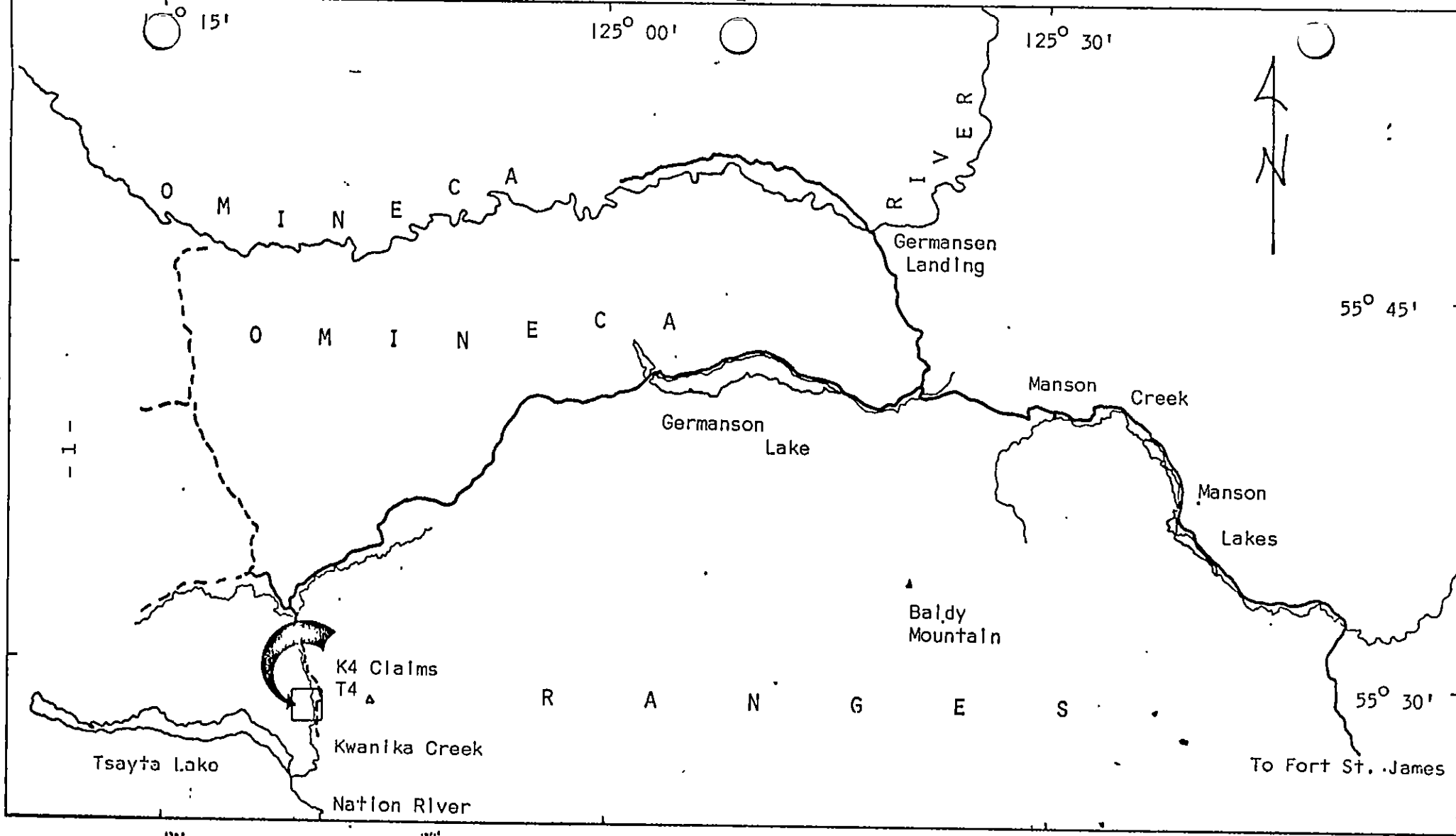
PLACER DEVELOPMENT LIMITED  
ENDAKO MINES DIVISION

FIELD WORK UNDERTAKEN DURING PERIOD  
JUNE 2-5 & 22-25, 1981

W. Bulmer

December 1981

FIGURE 1



# MANSON RIVER

BRITISH COLUMBIA  
CASSIAR LAND DISTRICT

93 N



Map and Photographs at points 20' N. East at a scale of about 1:400  
 Photographs approximately 1927 annual



TABLE OF CONTENTS

	PAGE
Index Map .....	1
Introduction .....	2
Summary .....	3
Economic Assessment .....	4
Location & Accessibility .....	4
Mineral Claims .....	4
Previous Work .....	5
Survey Control .....	5
Geological Survey	
General Geology .....	5
Property Geology .....	5 - 6
Mineralisation .....	6
Regional Geology Map .....	7
Geochemical Survey	
Introduction .....	8
Sampling .....	8
Assay Methods .....	8
Results .....	8
Molybdenum .....	8 - 9
Copper .....	9
Mercury .....	9
Statement of Expenditures .....	10
Conclusion .....	11

APPENDICES

Certification - W.R. Bulmer

Maps

Geology	Map 1
Soil Geochemistry	2
Mo, Cu, Ag, Hg	
Rock Geochemistry	3
Mo, Cu, Ag, Hg	

INTRODUCTION:

Soil and rock geochemical and geological surveys were conducted over the K4 and T4 group of mineral claims and their surrounding areas during the period of June 2 - 5 and 22 - 25, 1981.

The work was done as follow-up to a one day property examination which was initiated on the strength of a conversation with Mr. Millard in September of 1980. The property is located about 160 km NNW of the Endako Minesite, or about 6½ km north of Kwanika Creek, Nation River confluence.

SUMMARY:

Intensely altered and cataclastised granitic rocks of the Hogem Batholith outcrop along Kwanika Creek within the K4 and T4 group claims. The creek, not only an expression of the Pinchi fault, follows closely the contact between the granite and Takla Group sediments. Copper and molybdenum mineralisation occurs sporadically along the creek. Spurious values of .5% Mo and .6% Cu have been found but are not continuous.

Thick alluvial overburden covers the claim group, leaving mineralised exposures only along the creek. The areal extent of mineralisation is therefore unknown.

ECONOMIC ASSESSMENT:

Work performed in the area by several companies in the past, has indicated mineralisation is widespread.

Mineralisation found within the cataclastised granite, though possibly fault related, may pre-date the fault. Unfortunately, thick alluvium covers the entire area, masking any mineralisation which may be of large areal extent.

The nature of the mineralisation and proximity to the fault infers that a large tonnage low grade Mo - Cu deposit may exist.

LOCATION AND ACCESSIBILITY:

The property is located about 6½ km north of the Kwanika Creek-Nation River confluence on Kwanika Creek, and is accessible by road about 80 km west of the Village of Manson Creek via the Silver Creek road. Manson Creek is 200 km north of Fort St. James and accessible by an all weather dirt road.

The property can be reached directly by helicopter or by fixed wing aircraft which is able to land on Tsayta Lake. The latter method involves a 6-8 km walk by trail to the claims.

MINERAL CLAIMS:

The property consists of six 2 post claims, four of which are entitled K4 #1-4 and belong to T. Millard; the remaining two entitled T4 #1 and 2 belong to T. Graham. All units lie within the Omineca Mining Division at Latitude 55° 28' 30" and Longitude 125° 19'.

<u>OWNER</u>	<u>MINERAL CLAIM</u>	<u>RECORD NO.</u>	<u>RECORDING DATE</u>
Millard	K4 1-4	2931 - 34	June 17, 1980
Graham	T4 1-2	2940 - 41	June 17, 1980

Ten additional claims were staked in November of 1981; 4 2 post claims north of and contiguous with the T4 claims entitled Glen #1-4, and 6 2 post claims south of and contiguous with the K4 claims entitled K45 #1-6.

<u>OWNER</u>	<u>MINERAL CLAIM</u>	<u>RECORD NO.</u>	<u>RECORDING DATE</u>
G. Gainor Box 475 Fort St. James	Glen 1-4	4392 - 4395	November 2, 1981
T. Graham Box 35 Fort St. James	K45 #1-6	4396 - 4401	November 2, 1981

PREVIOUS WORK:

The claims cover a portion of that area originally held in the mid 1960's and 1970's by Hogem Mines Ltd. The ground was worked by Canex Aerial Exploration, Great Plains Development, Bow River Resources and Pechiney Development. These companies optioned the ground from Hogan for varying periods of time and performed various types of work including I.P. surveys and several thousand feet of diamond drilling, see B.C. Department of Mines and Petroleum Resources G.E.M. 1972 pp 440 - 447.

SURVEY CONTROL:

A 1:5,000 base sheet was prepared from the government geological map in the B.C. Department of Mines and Petroleum Resources, report of the Geology, Exploration and Mining in British Columbia Report for 1972 pg. 440. Aerial photograph B.C. 7165 - 169 was used in conjunction with pace and compass lines. Soil and rock sample sites were flagged and given an identity.

GEOLOGICAL SURVEY:

General Geology

The area is principally underlain by granitic rocks of the Omineca Intrusive of Upper Jurassic of Lower Cretaceous age and Palaeozoic sediments predominately limestone, of the Cache Creek group. The dividing line between these two major series is formed by the Pinchi Fault; a regional and complex fault system, which has been traced for a total length well in excess of 100 miles. Strike of the fault is NNW with minor flexures. Occasional inliers of older sediments and volcanics of the Takla Group (Triassic - Jurassic) are found within the intrusive rocks at or near the Pinchi Fault, (See Figure 2).

Property Geology

Outcrop is essentially restricted along the Kwanika Creek, hence evaluation of property geology is limited. Glacial drift covers much of the claim area except where steep granite bluffs outcrop along the creek.

Pink, medium grained equigranular biotite (hornblende) granite appears to be in faulted contact east of the argillaceous sediments. Along the creek, the granite has undergone intense weathering and kaolinisation. Brecciation, cataclasis, silicification and occurrences of mylonite within the immediate vicinity of the creek could only have arisen through a major fault where repeated movement has occurred. The granite, because of the varying degrees of deformation and accompanying weathering exhibits a variety of textures which give the impression that more than one type of granite is present.

The creek appears to be within the Pinchi Fault Zone, and is situated essentially along the granite-sediment contact; the contact being the trace of the Pinchi Fault.

#### Mineralisation

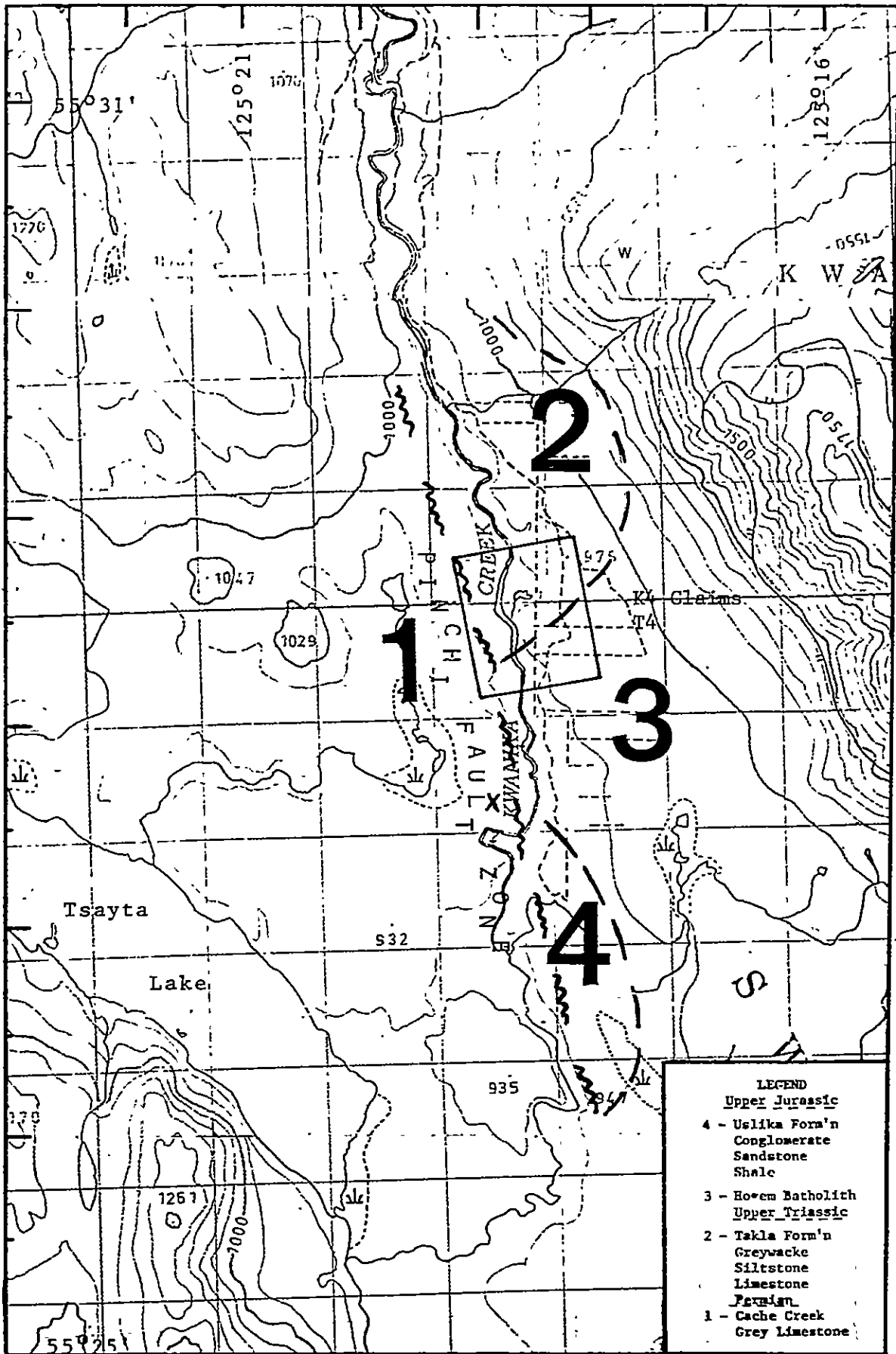
Mineralisation is restricted to the granite, in particular, that portion which has undergone cataclasis. Pyrite is ubiquitous, particularly where the granite is severely crushed. Hematite occurs as fracture coatings and occurs primarily south of the claim block. Minor amounts of disseminated chalcopyrite with associated malachite was found in most outcrops and appears to be as common as pyrite, however, grade from grab samples did not exceed .6% Cu.

There appears to be some association between copper and molybdenum, however there are occurrences where although copper is present molybdenum is not, or only in minor amounts.

Molybdenite, although visible in only two localities along the creek, situated at the northern and southern extremities of the claim group, occurs as fine disseminations and coats hairline fractures as a thick dusting. It is possible that graphite is intimately associated with the molybdenite and may be responsible for the black, less bluish tinge to the mineralised portions. The best samples come within the creek and are readily obtained when water level is low. The molybdenite also occurs within quartz veins as thin ribbons. These specimens come from the creek bottom and are difficult to obtain.



FIGURE 2



**LEGEND**

Upper Jurassic

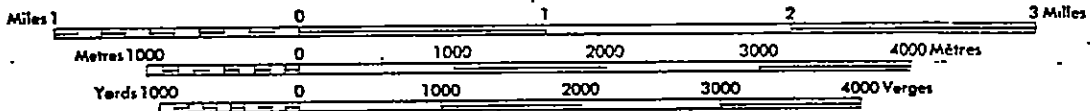
4 - Uslika Form'n  
Conglomerate  
Sandstone  
Shale

3 - Howem Batholith  
Upper Triassic

2 - Takla Form'n  
Greywacke  
Siltstone  
Limestone  
Permian

1 - Cache Creek  
Grey Limestone

Scale 1:50,000 Échelle



93 N/6W

GEOCHEMICAL SURVEY:

Introduction

Fifty-one soil and rock samples were collected. The soils were restricted to a grid, the sampling stations of which were at 100 metre intervals on a 200 metre line spacing. The rocks were collected from scattered outcrops examined along the creek and located amongst the geochemical lines.

In general, B horizon samples were collected, or when not possible lithosol from the C horizon. Organic samples from bogs or A horizons were not taken. The soil is essentially alluvial debris and ranges up to 100 feet in thickness.

Sampling

Soil samples were collected from holes dug with a pick-mattax to depths of about 30 cm. About 300 gms of B horizon soil was sampled from each location.

Assay Methods

All soil and rock samples were analysed for Mo, Cu, Hg and Ag at the Placer Geochemical Laboratory in Vancouver, B.C.

Standard analytical methods used by Placer Development Limited Geochemical Laboratory are as follows:

<u>UNITS</u>	<u>WT.G</u>	<u>ATTACK USED</u>	<u>TIME</u>	<u>RANGE</u>	<u>METHOD</u>
Mo ppm	0.5	C HClO <sub>4</sub> /HNO <sub>3</sub>	4 hrs	1-1000	Atomic Absorption
Cu ppm	0.5	C HClO <sub>4</sub> /HNO <sub>3</sub>	4 hrs	2-4000	Atomic Absorption
Ag1 ppm	0.5	C HClO <sub>4</sub> /HNO <sub>3</sub>	4 hrs	0.2-20	A.A. Background Cor
Ag2 ppm	0.5	C HNO <sub>3</sub>	2 hrs	0.02-4.00	A.A. Solvent Extract
HG ppb	0.5	DIL HNO <sub>3</sub>	2 hrs	5-2000PPB	A.A. Cold Vapor Gen.

Results

Results from geochemical analysis for soils and rocks are plotted on Maps 2 and 3 respectively.

A summary of each element analysed follows:

Molybdenum

Most of the soils collected averaged less than 2 ppm Mo whereas the remainder ranged between 4 and 24 ppm. Spatial distribution of the samples appear to be erratic, and not associated with molybdenite bearing outcrops.

The rock samples however, because they are confined to the creek, reveal different anomalous sites. Less than 10% of the values were anomalous, the majority of which lie near the southern end of the claim group. Values up to .54% Mo were detected, but these are spurious and are restricted to the molybdenite ribbon type of mineralisation found within quartz veins in the creek bottom, located at the southern end of the claim group.

#### Copper

About 80% of the data averaged 20 ppm Cu, and envelopes the moderately to higher values which occur along the creek. Spurious rock values of .6% Cu are rare and are confined to the north.

#### Mercury

A definite relationship exists with Cu mineralisation. Although most of the soil samples average 9 ppb, a definite area of increased Hg content was exposed along the west side of the creek.

In general soil and rock geochemistry outlines obvious Cu mineralisation along the creek and the not so obvious associated Hg. Molybdenum however, appears more erratic.

#### Silver

No significant results were noted.

CONCLUSION:

Soil and rock geochemical surveys conducted over the T4 and K4 claims revealed anomalous Cu, Mo and Hg values that are restricted to cataclastised granite. The granite is exposed along Kwanika Creek and appears to be near a sediment contact; the contact being the site of a major crustal lineament known as the Pinchi Fault. The fault may, in addition to being mineralised, be the main mineralising event, however it is not known if mineralisation within the granite predates the structural break or if there is within the granite at depth a stock - works of Mo rich quartz veins, a portion of which is exposed within the creek.

Submitted by,

*W. Bulmer*

W. Bulmer  
Exploration Geologist

WB:hh

STATEMENT OF QUALIFICATION

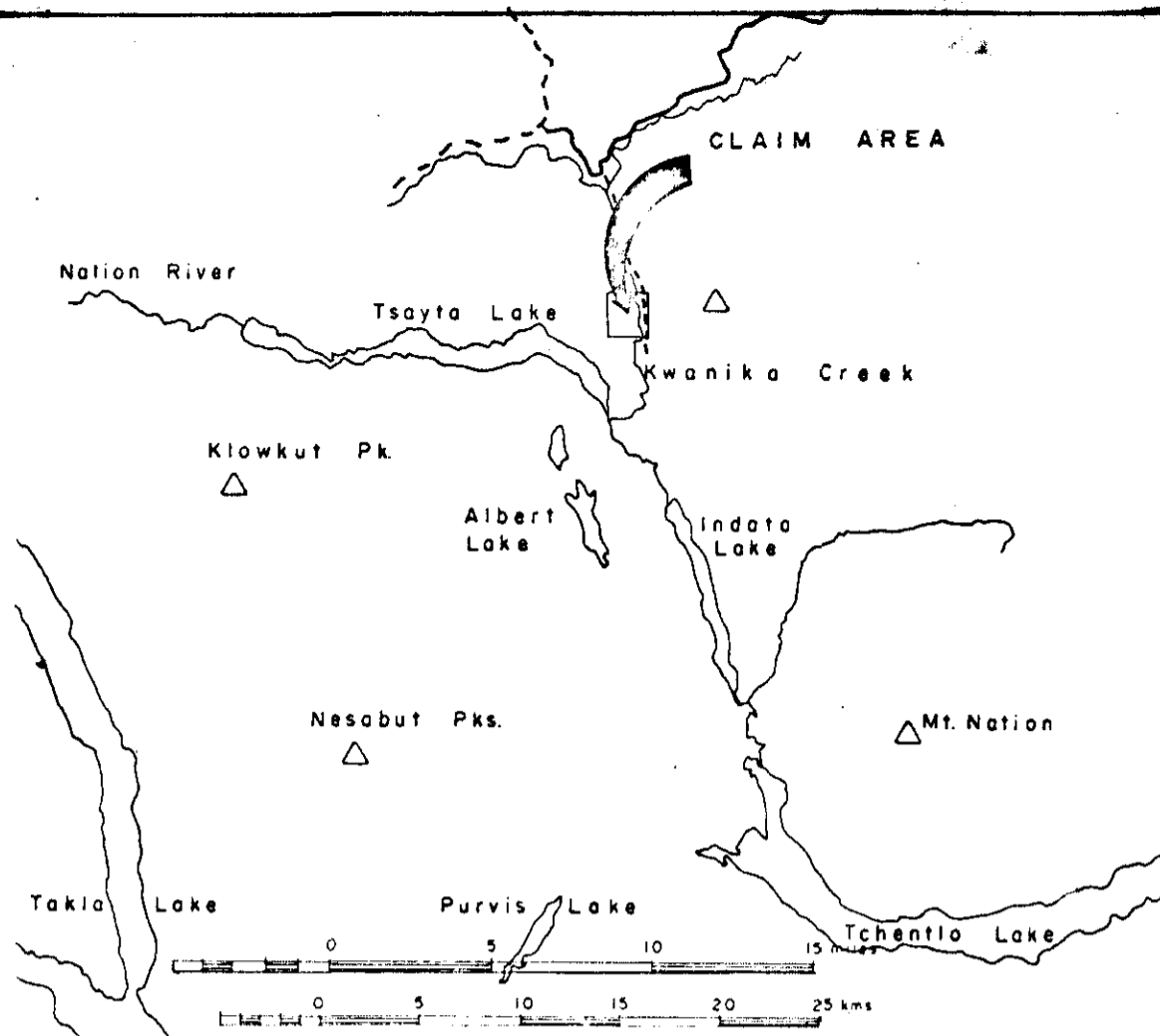
I, W.R. Bulmer, of Placer Development Limited, Endako Mines Divison, Endako, B.C., do hereby certify that:

1. I am a Geological Technologist/Geologist.
2. I am a graduate of Cambrian College of Applied Arts and Technology with a Certificate in Geological Technology in 1973.
3. I am a graduate of University of Western Ontario with an Honours BSc. in Geology in 1976.
4. From 1971 until the present I have been engaged in mineral exploration in Ontario, Labrador Newfoundland, Yukon Territory and British Columbia.
5. I personnaly supervised and participated in the field work and have reviewed and assessed the data resulting from this work.

*W.R. Bulmer*

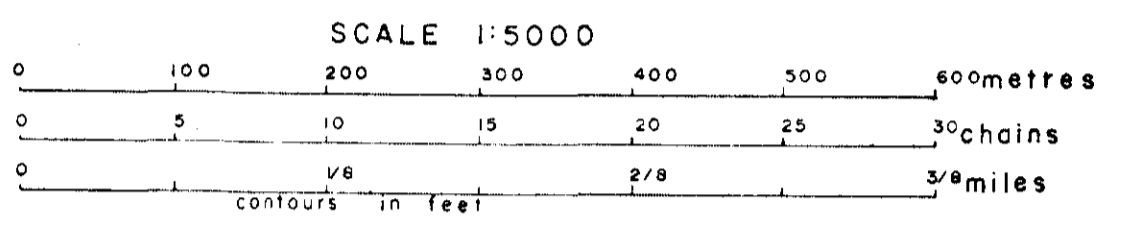
W.R. Bulmer

# K4 & T4 CLAIMS KWANIKA CREEK T. MILLARD T. GRAHAM

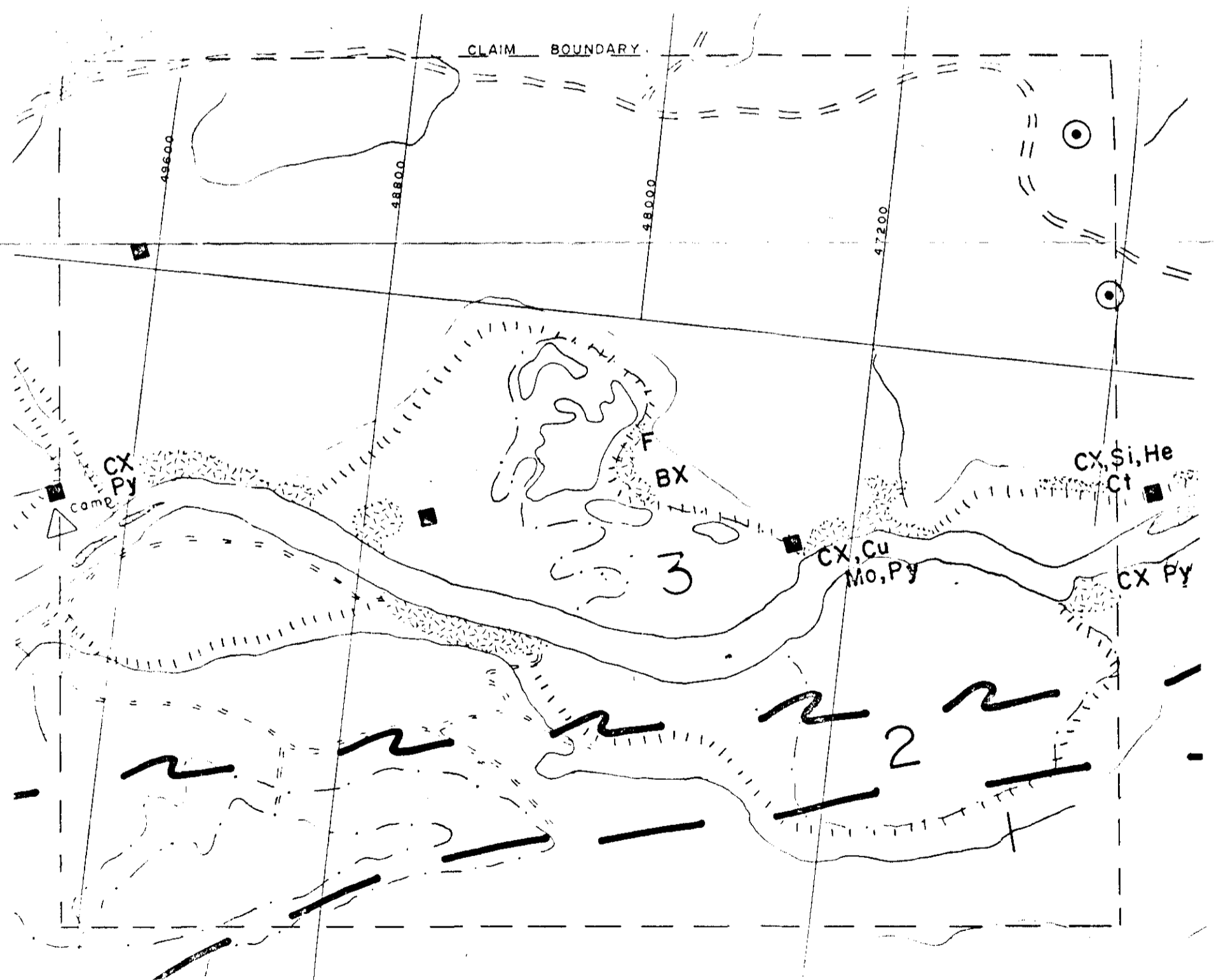


- 1966 Canex Aerial grid 52000
- " " " DDH
- Percussion Hole
- Claim Post
- Outcrop
- Lowland limit
- Contact
- Fault
- Strike/dip

- ### GEOLOGY
- CONGLOMERATE**  
Polymictic, poorly sorted pebbles/cobbles. Brown red reflective polish on pebbles "Desert Varnish"
  - ARGILLITE/GREYWACKE**  
Brown-black. Thin alternating beds, primary sedimentary features visible
  - HOGEM BATHOLITH**  
Pink, medium grained equigranular biotite hornblende granite. Textures: brecciated, cataclastic, mylonitic, silicified to fresh. May be rusty, carries Cu, Mo, (Au) Hg
  - LIMESTONE**  
Cream-grey brecciated
- Si = silicification ND = nondeformed Py = pyrite He = hematite Ct = carbonate  
 CX = cataclasis BX = brecciation Mo = molybdenite Cu = copper



93 N6



MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT  
**1982**

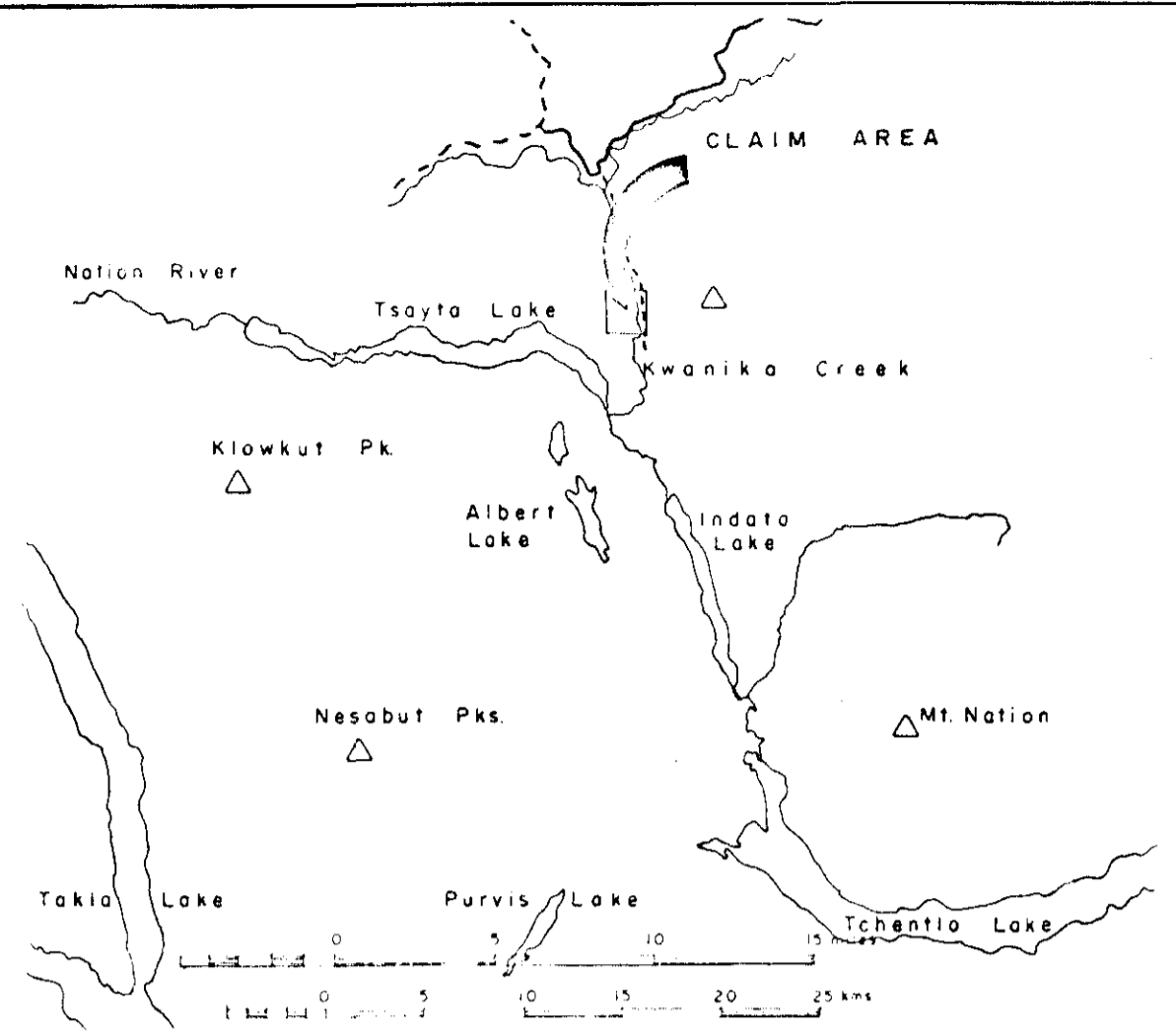
*W. Bulmer*

DRAWN W. Bulmer	SCALE 1:5000	PLACER DEVELOPMENT LIMITED ENDAKO MINES DIVISION	GEOLOGY	MAP/1
TRACED	DATE Dec. 1981		K4, T4 Claims T. Millard, T. Graham	FILE No.
CHECKED	APPROVED			

# K4 & T4 CLAIMS

## KWANIKA CREEK

T. MILLARD T. GRAHAM

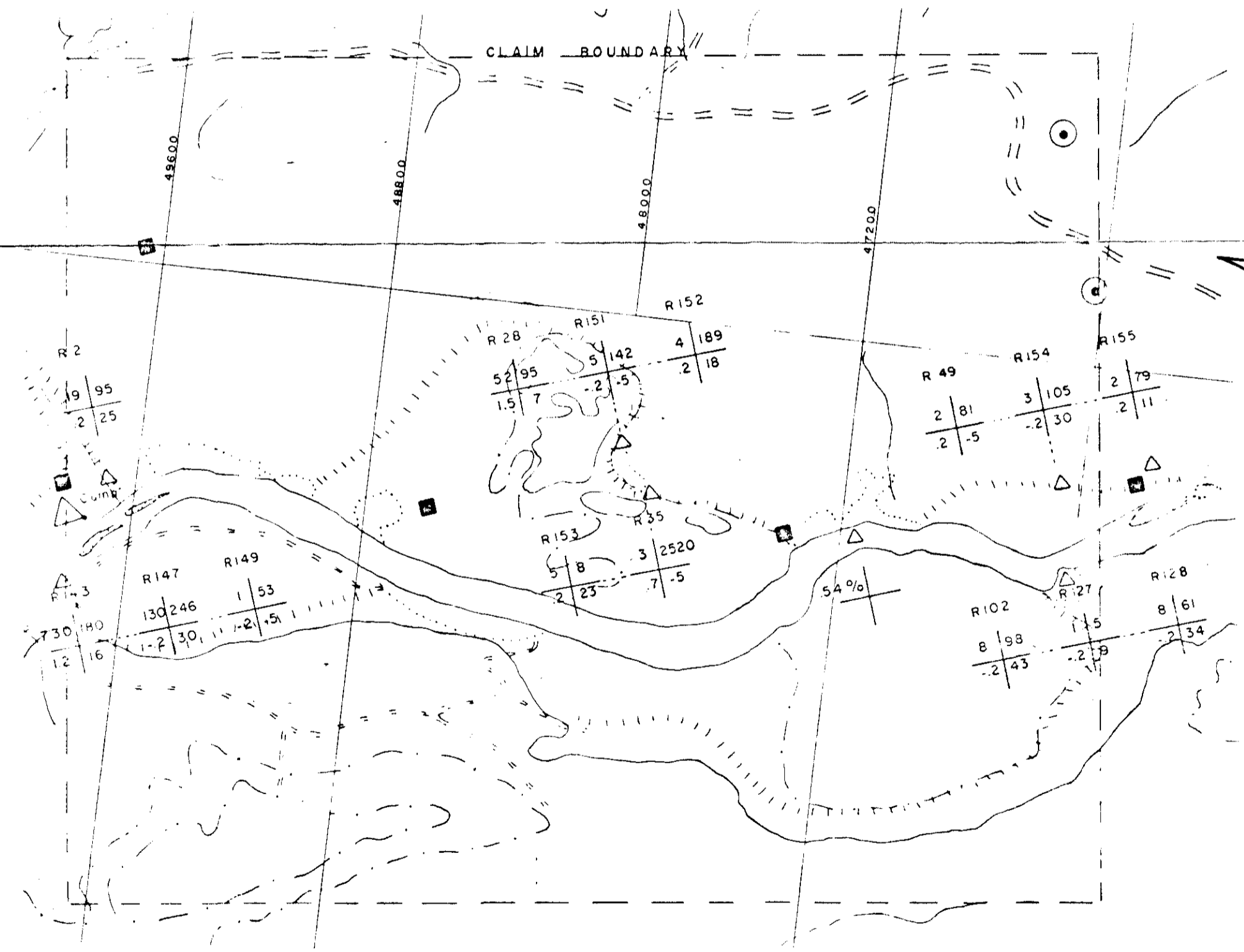
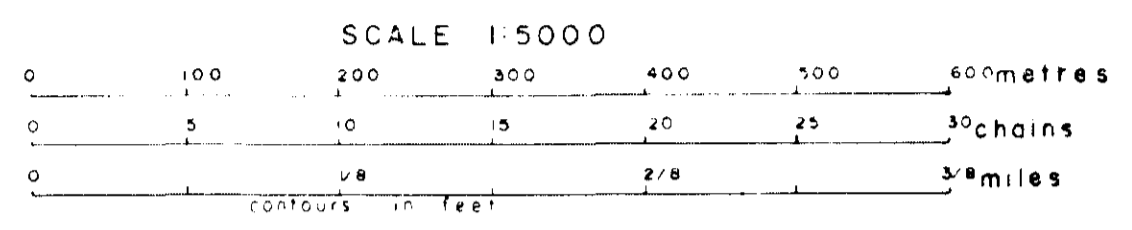


ROCK GEOCHEMISTRY

81KWR33

ppm Mo	ppm Cu
ppm Ag	ppb Hg

1966 Conex Aerial grid 52000  
 " " " DDH  
 Percussion Hole  
 Claim Post  
 Outcrop  
 Lowland limit

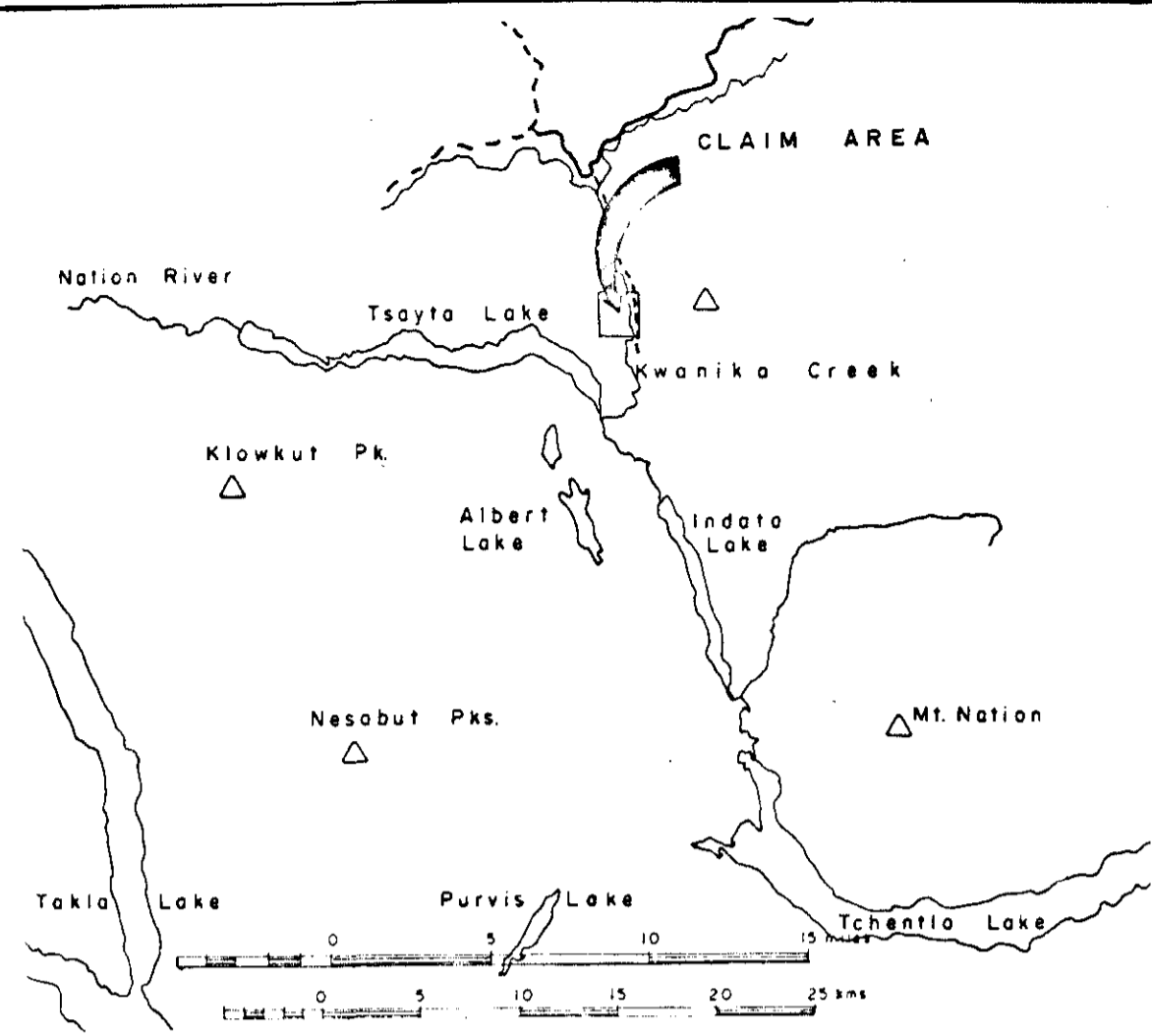


MINERAL RESOURCES BRANCH  
 ASSESSMENT REPORT

DRAWN W. Bulmer		SCALE 1:5000	PLACER DEVELOPMENT LIMITED ENDAKO MINES DIVISION	Rock Geochemistry	MAP 2
TRACED		DATE Dec. 1981		K4, T4 Claims T. Millard, T. Graham	FILE No
CHECKED		APPROVED			

# K4 & T4 CLAIMS

KWANIKA CREEK  
T. MILLARD T. GRAHAM

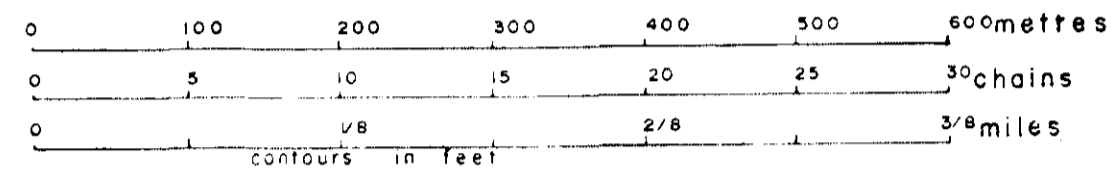


## SOIL GEOCHEMISTRY

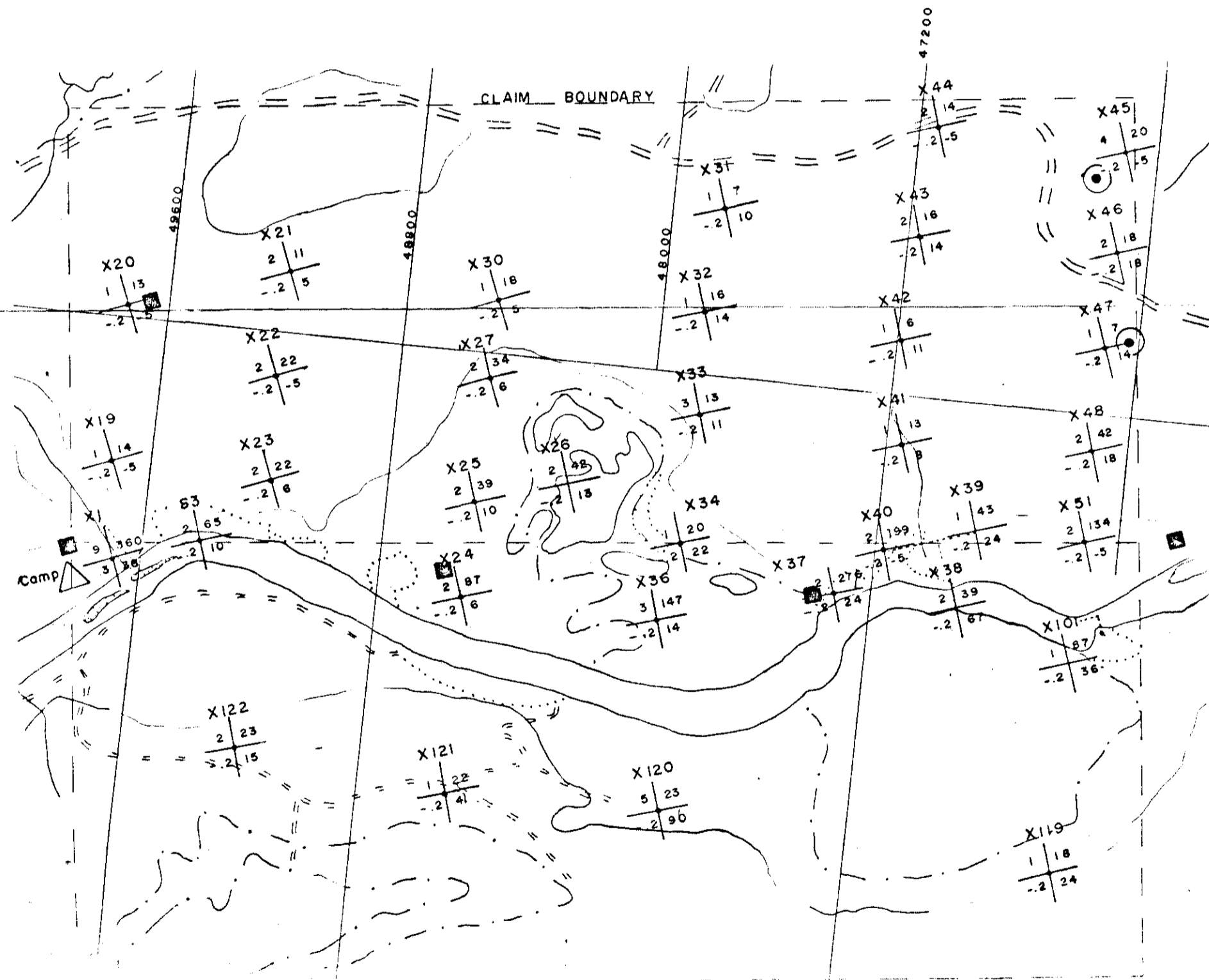
1966 Conax Aerial grid 52000  
" " " DDH  
Percussion Hole  
Claim Post  
Outcrop

BIKW33  
ppm Mo ppm Cu  
ppm Ag ppb Hg

SCALE 1:5000



93 N6



MINERAL RESOURCES BRANCH  
ASSESSMENT REPORT  
**W.A.P.**

DRAWN W. Bulmer	SCALE 1:5000	PLACER DEVELOPMENT LIMITED	Soil Geochemistry	MAP 3
TRACED	DATE Dec. 1981	ENDAKO MINES DIVISION		
CHECKED	APPROVED	K4, T4 Claims T. Millard, T. Graham	FILE No.	REV. No.