

COMINCO LTD.

EXPLORATION

NTS:104. N/11W

WESTERN DISTRICT

GEOLOGICAL AND GEOCHEMICAL ASSESSMENT REPORT

ON THE PEREYE CLAIM GROUP

ATLIN MINING DIVISION

59⁰42'N 133⁰18'W

OWNED BY COMINCO LTD.

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

7278
NO.

Work Performed

August 28, September 1, 2 and 4, 1978

November, 1978

UDAYAN DAS GUPTA

TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION	1
SUMMARY	1
PROPERTY	1
LOCATION	1
HISTORY	2
GEOLOGY	2
Cache Creek Group	2
Ultrabasic Intrusions	3
Alaskite	3
Basalt and Scoria	3
Unconsolidated Deposits	3
STRUCTURAL GEOLOGY	4
GEOCHEMISTRY	4
MINERALIZATION	
a) Asbestos	4
b) Copper-Tungsten	4
c) Uranium	4
CONCLUSIONS	5

LIST OF ATTACHMENTS

Plate 1	Location Map	(1:900,800)
Plate 2	Location Map	(1:250,000)
Plate 3	Claim Map	(1:50,000)
Plate 4	Geology	(1:12,000)
Plate 5	Geochemistry of stream silts and water	(1:12,000)
Appendix "A"	Statement of Expenditures	
Appendix "B"	Statement	
Appendix "C"	Statement of Qualifications	
Appendix "D"	Geochemical Results	
Appendix "E"	References	

COMINCO LTD.

EXPLORATION
NTS:104 N/11W

WESTERN DISTRICT
March 28, 1979

GEOLOGICAL AND GEOCHEMICAL ASSESSMENT REPORT

PEREYE CLAIM GROUP

ATLIN MINING DIVISION

INTRODUCTION

Four days (August 28, September 1, 2 and 4, 1978) were spent in the field to geologically map the property and to carry out geochemical sampling. The aim during this initial phase was to evaluate the uranium potential of possible Pleistocene gravels and to provide a basis for further work in 1979. Geologist in the field was U. Das Gupta assisted by D.A. Perkins and by M.D.J. Waskett-Meyers. Mapping was carried out with the help of 1:15,000 airphotographs and a 1:12,000 scale topographical map.

SUMMARY

The Per and Eye claims (totalling 24 units) were staked to cover a small cinder cone and part of an alaskite body exposed immediately east on Ruby Creek approximately 25 road miles east of Atlin. The area is underlain by metasediments of the Cache Creek Group intruded by Permian ultramafics; these rocks were, in turn, intruded by a Cretaceous alaskite body. Unconsolidated gravel (both alluvial and glacial) caps the alaskite stock in the topographically lower areas and is capped in turn by Tertiary and Recent olivine basalt flows and younger scoria. Old showings in the area include placer gold in the unconsolidated gravel below the basalt cap and uranium mineralization in the alaskite. No new mineralization was found. Gravels underlying the basalts, although not exposed on the claims, present a potential for uranium mineralization.

PROPERTY

Date recorded:	June 8, 1978
Date due:	June 8, 1979
Per Claim:	20 units 100% Cominco through staking
Eye Claim:	4 units 100% Cominco through staking

LOCATION

N.T.S.:	104 N/11W
Latitude:	59°42'N
Longitude:	133°18'W
Mining Division:	Atlin Mining Division, B.C.

The claim group is located on the eastern side of Ruby Creek approximately 25 road miles east of Atlin in northern B.C. Access is by road from Atlin to a point on Ruby Creek approximately 1 mile west of the claim group. There is an old road that leads from this location on Ruby Creek, through the central portion of the property to Cracker Creek; this road is, at present, in very poor condition.

The property lies within moderately high relief terrain at elevations between 4000 feet and 6000 feet. There is very little outcrop over most of the area.

HISTORY

Parts of the property have apparently been held previously by a number of operators. Barymin Exploration of Toronto prospected the Boulder Creek and Ruby Creek regions in the 1950's on basis of pitchblende float reportedly found by placer operators on Boulder Creek. Subsequent work by other operators failed to verify the existence of such float.

Other mineralization in the area include placer gold in Pleistocene gravels below the basalt cover on Ruby Creek, and molybdenite (with minor chalcocopyrite) at the Adanac deposit west of the Per and Eye claim group.

GEOLOGY

The rock types exposed in the area covered by the claim groups range in age from Pennsylvanian to Recent. The oldest rocks belong to the Cache Creek group of metasediments while the youngest rocks are basalt and scoria related to a small cinder cone at the southern part of the Per group. Covering this basalt and scoria are recent glacial tills and fluvial gravels. The section exposed in the area is as follows:

Recent	Glacial till + fluvial gravel
Pleistocene + Recent	Basalt + Scoria
Late Tertiary and Pleistocene	Fluvial till + gravel (?)
Cretaceous	Alaskite
Permian and	Ultrabasic intrusions
Pennsylvanian	Cache Creek Group - chert, argillite, carbonates.

Cache Creek Group

The Cache Creek Group of metasediments constitute the oldest rocks exposed in the area. They consist of dark grey weathering chert and argillite and lenticular beds of grey weathering impure carbonate with cherty laminae and nodules. The units are poorly exposed and it is not possible to determine the true sequence of the various components forming this group. On the whole, the sequence of chert and cherty argillite appears to have a lower chert content and a higher carbonate content than in the southeastern part of the Atlin map sheet. Most of the exposures consist of frost-heaved rubble comprising massive, dark grey chert, grey weathering cherty argillite with few alterations of light cream coloured quartzite and rusty siltstones. The carbonate unit generally consists of

tremolitic marble with cherty laminae varying in width from 0.5 to 2 cm. Near the contact with the alaskite this carbonate unit has been altered to a diopside - tremolite marble. Small lenses (1 cm to 30 cm wide) of grey carbonaceous limestone (metamorphosed to a coarsely crystalline marble) are common in the northern part of the Per claim. At the extreme north, this grey marble reaches a width of 20 metres.

Ultrabasic Intrusions

A buff to brown weathering sequence of dark green amphibolite and serpentinite occurs towards the northwestern boundary of the Per claim. The rocks in general are comprised of 1 cm to 4 cm sized crystals (altered to serpentine and hornblende) in a dark green to black chlorite and amphibole rich matrix. Pink weathering actinolite-rich veins and dark green serpentine rich veins are common. Rare vein of tremolite asbestos with fibres developed normal to the vein walls are also present.

Alaskite

The alaskite intrusion which occupied most of the area belongs to the Surprise Lake Batholith. It consists primarily of a light coloured porphyritic rock with phenocrysts of quartz and minor alkali feldspar (2 mm to 10 mm in size) in a medium to finely crystalline matrix. The texture varies from a coarsely crystalline K-feldspar rich phase to a porphyritic phase rich in phenocrysts of smoky quartz. The coarser phase is common in the southern part of the claim group. Mafic minerals present consist of biotite (generally less than 5%) and rare muscovite. Rare tourmaline, and possible allanite comprise the accessories. Quartz veins are common only in the eastern and northern parts of the area.

Basalt and Scoria

Sections exposed along Ruby Creek indicate that much of the low-lying areas in the southern part of the Per claim and on the Eye claim is covered by olivine basalt flows and scoria. Source of the volcanic scoria on the Per claim probably was the small cinder cone (Plate 4). The basaltic flows could have originated from either this cinder cone or from the volcano forming Ruby Mountain, a few kilometres to the west of the claim groups, or from both. Proudlock and Proudlock (1976) indicate that the whole rock K/Ar age of these multiple flows exposed along Ruby Creek is 100,000 years B.P. The thickness of the lava and associated scoria cap on the Per and Eye claims is not known. However, a shaft sunk by Columbia Development Ltd. on the eastern bank of Ruby Creek indicates that the flows are approximately 35 m thick and rest on 10 m of gravel overlying unglaciated alaskite (Galloway, 1933, p. 29).

Unconsolidated Deposits

Such deposits consist primarily of fluvial gravels with minor glacial outwash deposits. Black (1953) suggests that till deposited by a lobe of the Pine Creek glacier was eroded and water-worn material deposited along the NE-SW tributary of Cracker Creek. In addition it appears that the tributary of Cracker Creek originally flowed into Ruby Creek. Glacial till and volcanic scoria blocked the stream and at present it flows into Cracker Creek.

STRUCTURAL GEOLOGY

Absence of insitu outcrops makes it impossible to determine the structural geometry of the Paleozoic and Cretaceous rocks. On a regional scale, however, the structures appear to trend approximately northeast-southwest with steep dips to the northwest. Two probable faults (or shear zones) trending approximately north-south appear to cut the alaskite and the metasediments in the northern part of the claim group.

GEOCHEMISTRY

A total of 18 water samples, 9 stream sediment samples and 2 rock samples were collected from the property. The water samples were analysed for uranium and fluorine values, the stream sediments were analysed for cobalt, uranium, tungsten, and mercury contents, and the rock samples were analysed for lead, cobalt, and uranium. See Appendix "D" for analytical techniques. All the water samples have anomalous uranium and fluorine values. All silt samples have anomalous cobalt, uranium and mercury values, and mildly anomalous tungsten values indicating a high background for the area. One rock sample indicates anomalous cobalt.

None of the creeks drain the channel gravels underlying the basalt, and hence, stream geochemistry is not a favourable tool in evaluating the uranium potential of these channel gravels.

MINERALIZATION

Mineralization in the area consists of the following:

a) Asbestos

Veins of tremolite asbestos are occasionally seen to cut the ultramafic body in the northwestern part of the claim group. The veins are, in general, 0.5 mm to 4.0 mm wide and have a density of 6 veins per metre. Fibres are developed normal to the vein walls. The veins are, in general, zoned with light coloured tremolite asbestos rimmed by dark green to grey chlorite-rich zone. The density of these dark green chlorite-rich veins is high (approximately 30 veins/metre). However, only 5% of the veins contain asbestos and the potential for a deposit appears to be very low.

b) Copper-Tungsten

Near the northeastern part of the property, the Cache Creek Group of metasediments consists of a sequence of cream coloured quartzites and brown siltstones with green calc-silicate bands and lenses 1 to 10 cm thick on the average. These calc-silicate bands are composed mainly of actinolite and occasional hornblende. Occasional specs of chalcopyrite and wolframite are associated with quartz veins cutting the sequence.

c) Uranium

In general, the alaskite intrusive has a higher radiation count (average 350 cps) than the other rock types in the area. Towards the eastern part of the Per and Eye claims is an area of higher-than-background radiation

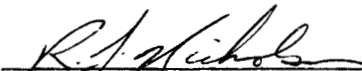
in the alaskite. This zone (marked in Plate 4) has an average radiation count of approximately 600 cps. Much of the observed high radiation counts as well as much of the known mineralization in the area appear to be associated with coarsely porphyritic alaskite (with pinkish alteration of feldspar).

CONCLUSIONS


No uranium mineralization of note was found on the Per and Eye claims. However, the Per and Eye claims appear to be favourable for uranium mineralization. The arguments in favour are noted below:

- a) Presence of unconsolidated fluvial gravels on a weathered alaskite basement. These gravels are approximately 9 metres thick in the region of Columbia Development Limited's shaft on Ruby Creek adjacent to the Per and Eye claims. Unconfirmed reports indicate the presence of minor glacial till capping these channel gravels.
- b) Presence of basalt cover over much of the area. In the area east of the cinder cone the basalt cover may be absent; here glacial till could serve as the appropriate impermeable cover,
- c) Stream water and sediment geochemistry shows that ground water, in the claim group is anomalously high in uranium content.

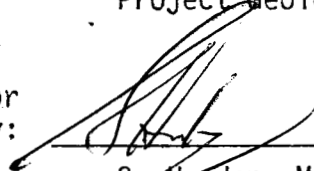
Report by:


for Udayan Das Gupta

Supervised by:


R.J. Nicholson, P. Eng.
Project Geologist

Endorsed for
Release by:


G. Harden, Manager
Western District

UDG/pc1

Distribution

Mining Recorder (2)
Western District
RJN

APPENDIX "A"

STATEMENT OF EXPENDITURES

PEREYE CLAIM GROUP

SALARIES

U. Das Gupta	:	August 28, September 1, 2 and 4, 1978; 4 days @ \$88.70/day	\$354.80	
D.A. Perkins	:	August 28, 1978; 1 day @ \$71.13/day	71.13	
M.D.J. Waskett-Myers:		September 1, 2, and 4, 1978; 3 days @ \$99.44/day	298.32	
R.J. Nicholson	:	August 18, 1978; 1 day organization @ \$99.36/day August 29, 1978; 1 day field supervision @ \$136.40/day	<u>235.76</u>	\$ 960.01

FOOD AND ACCOMMODATION

9 man-days, apportioned costs during period August 14 to September 12, 1978				261.19
---	--	--	--	--------

TRANSPORTATION

Truck Rental: apportioned cost during period August 14 to September 12, 1978			262.80	
U-Drive: apportioned cost during period August 14 to September 12, 1978			17.39	
Helicopter: apportioned cost of Hughes 500 helicopter during period August 14 to September 12, 1978, @ \$255/hour plus fuel			57.00	
Mobilization: apportioned cost during period August 14 to September 12, 1978			<u>182.42</u>	519.61

GEOCHEMICAL SUPPLIES & ANALYSES

18 water samples analysed for U and F; 10 stream sediment samples analysed for Co, U, Hg, and W; and 2 rock samples analysed for Pb, Co, and U. Total cost -				246.13
--	--	--	--	--------

MISCELLANEOUS

Field Supplies: apportioned costs of air-photos, flagging, hip chain thread, sample bags, etc.			26.33	
--	--	--	-------	--

MISCELLANEOUS CONTINUED

26.33

Communications: apportioned long distance
telephone charges

6.19

32.52

REPORT PREPARATION

U. Das Gupta : 6 days writing and draughting
@ \$76.12/day

456.72

R.J. Nicholson: 1 day @ \$99.36/day

99.36

556.08

\$2,575.54

APPENDIX "B"

IN THE MATTER OF THE B.C. MINERAL ACT AND IN THE MATTER OF A GEOLOGICAL AND GEOCHEMICAL PROGRAM CARRIED OUT ON THE DAM, BOU AND LEO MINERAL CLAIMS OF THE DAMBOULEO PROPERTY (NTS 104N/11W), ON THE PER AND EYE MINERAL CLAIMS OF THE PEREYE PROPERTY (NTS 104N/11W), ON THE VOL MINERAL CLAIM (NTS 104N/14W), ON THE HIR MINERAL CLAIM (NTS 104N/10W), ON THE CAP MINERAL CLAIM (NTS 104N/7W), ON THE TAY MINERAL CLAIM (NTS 104N/7W), ON THE ROB MINERAL CLAIM (NTS 104N/10E) AND ON THE FAR MINERAL CLAIM (NTS 104N/10W) ALL LOCATED IN THE ATLIN MINING DIVISION OF THE PROVINCE OF BRITISH COLUMBIA.

S T A T E M E N T

I, ROBERT JOHN NICHOLSON, OF THE DISTRICT OF NORTH VANCOUVER IN THE PROVINCE OF BRITISH COLUMBIA, HEREBY DECLARE:

1. THAT I am employed as a Project Geologist by Cominco Ltd. and, as such, have a personal knowledge of the facts to which I hereinafter depose;
2. THAT annexed hereto and marked as Appendix "A" to this statement is a true copy of expenditures incurred on a geological and geochemical program carried out on the Per and Eye mineral claims;
3. THAT the said expenditures were incurred for the purpose of mineral exploration of the above noted mineral claims between the 14th of August and 12th of September, 1978.

Signed: _____


R.J. NICHOLSON, P.Eng.

APPENDIX "C"

STATEMENT OF QUALIFICATIONS

I, UDAYAN DAS GUPTA, OF THE CITY OF VANCOUVER, BRITISH COLUMBIA
HEREBY CERTIFY:

1. THAT I AM A GEOLOGIST PRESENTLY RESIDING AT 1361 ROBSON STREET, VANCOUVER, BRITISH COLUMBIA, WITH A BUSINESS ADDRESS AT 700-409 GRANVILLE STREET, VANCOUVER, BRITISH COLUMBIA.
2. THAT I GRADUATED WITH BSc (HONOURS) AND MSc DEGREE IN GEOLOGY FROM THE UNIVERSITY OF CALCUTTA, INDIA, IN 1967 AND 1970 RESPECTIVELY.
3. THAT I GRADUATED WITH A PhD DEGREE IN GEOLOGY FROM THE UNIVERSITY OF TORONTO, ONTARIO, IN 1978.

DATED THIS 15TH DAY OF NOVEMBER 1978 AT
VANCOUVER, BRITISH COLUMBIA.



UDAYAN DAS GUPTA, PhD.

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

APPENDIX "D"

1. All analyses done by Cominco Lab in Vancouver.
2. All water samples were filtered and acidified in the field using 5 ml. HNO₃ (25%) and sent for analysis.
3. All silt samples were screened and the -80 mesh fraction sent for analysis.
4. Water samples were analysed for U by fluorimetric method and F by fusion and specific ion method.
5. Silt samples were analysed for Co, U, Hg and W
 - (a) Uranium analysis by fluorimetric method
 - (b) Co analysis by hot acid digestion and atomic absorption
 - (c) W analysis by fusion and colorimetry
 - (d) Hg analysis by acid digestion, vapour evolution and atomic absorption.
6. Rock samples were analysed for Pb, Co and U.
 - (a) Uranium analysis by fluorimetric method
 - (b) Pb and Co by hot acid digestion and atomic absorption.

GEOCHEMICAL RESULTS

(A) WATER SAMPLES

<u>SAMPLE NUMBER</u>	<u>U (ppb)</u>	<u>F (ppb)</u>
Au-D-79	0.74	900
Au-D-80	0.11	1060
Au-D-81	0.36	1120
Au-D-82	0.86	1800
Au-D-83	0.6	1060
Au-D-84	1.0	60
Au-D-85	2.5	1060
Au-D-86	1.4	1000
Au-D-87	2.0	1380
Au-D-88	0.86	1560
Au-D-89	1.6	1120
Au-D-90	0.8	680
Au-D-92	2.8	>2000
Au-D-93	1.7	1060
Au-D-94	1.9	1250
Au-D-95	2.2	1270
Au-D-96	1.0	1100
Au-D-98	<0.5	15

APPENDIX "D" Con't.

(B) SILT SAMPLES

<u>SAMPLE NUMBER</u>	<u>Co (ppm)</u>	<u>U (ppm)</u>	<u>Hg (ppb)</u>	<u>W (ppm)</u>
Au-D-80	8	16.0	51	4
Au-D-82	7	60.0	128	6
Au-D-84	6	17.0	22	8
Au-D-85	10	50.0	68	8
Au-D-88	12	48.0	122	8
Au-D-89	9	17.0	51	12
Au-D-90	3	37.0	32	--
Au-D-92	4	62.0	62	15
Au-D-94	9	60	--	--

	<u>F (water)</u> <u>(ppb)</u>	<u>U (water)</u> <u>(ppb)</u>	<u>U (silt)</u> <u>(ppm)</u>	<u>Co (ppm)</u>	<u>Hg (ppb)</u>	<u>W (ppm)</u>
BACKGROUND	275	0.4	18	10	65	5

(C) ROCK SAMPLES

<u>SAMPLE NUMBER</u>	<u>Pb (ppm)</u>	<u>Co (ppm)</u>	<u>U (ppm)</u>
Au-Ur-17	7	<2	14.0
Au-Ur-23	7	51	<0.1

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

APPENDIX "E"

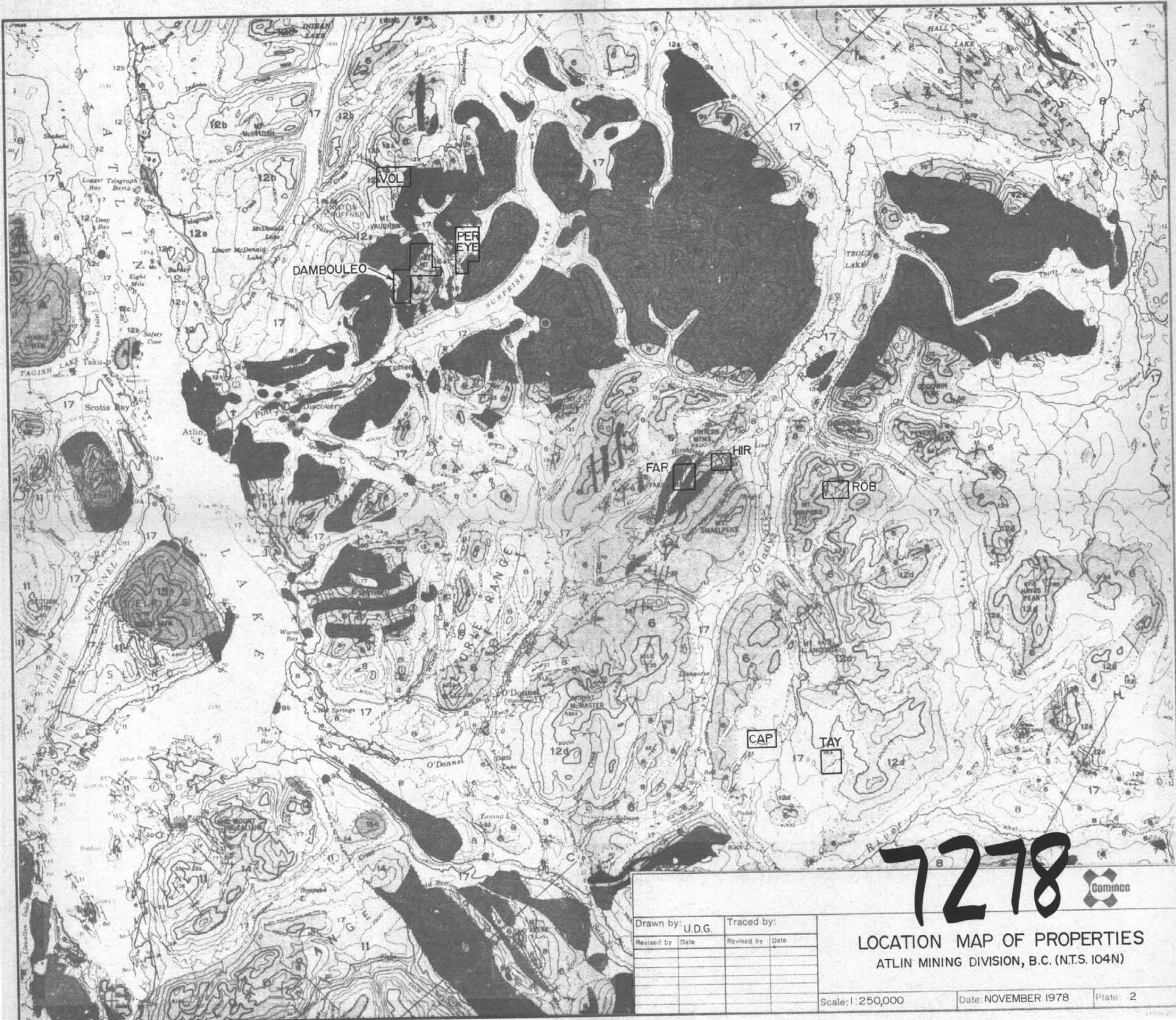
REFERENCES

AITKEN, J.D., 1959, Atlin Map area, British Columbia: G.S.C. Memoir 307, 89 p.

BLACK, J.M., 1953, Geology of the Atlin Placer Camp: B.C. Ministry of mines and Petroleum Resources.

GALLOWAY, J.D., 1933, Placer Mining in B.C.: B.C. Ministry of Mines and Petroleum Resources, Bull. 1.

PROUDLOCK, P.S., and PROUDLOCK, W.M., 1976, Stratigraphy of the Placers in the Atlin Placer Mining Camp: B.C. Ministry of Mines and Petroleum Resources, 69 p.



7278



Drawn by: U.D.G.	Traced by:
Revised by: _____	Revised by: _____
_____	_____
_____	_____
_____	_____

LOCATION MAP OF PROPERTIES
 ATLIN MINING DIVISION, B.C. (N.T.S. 104N)

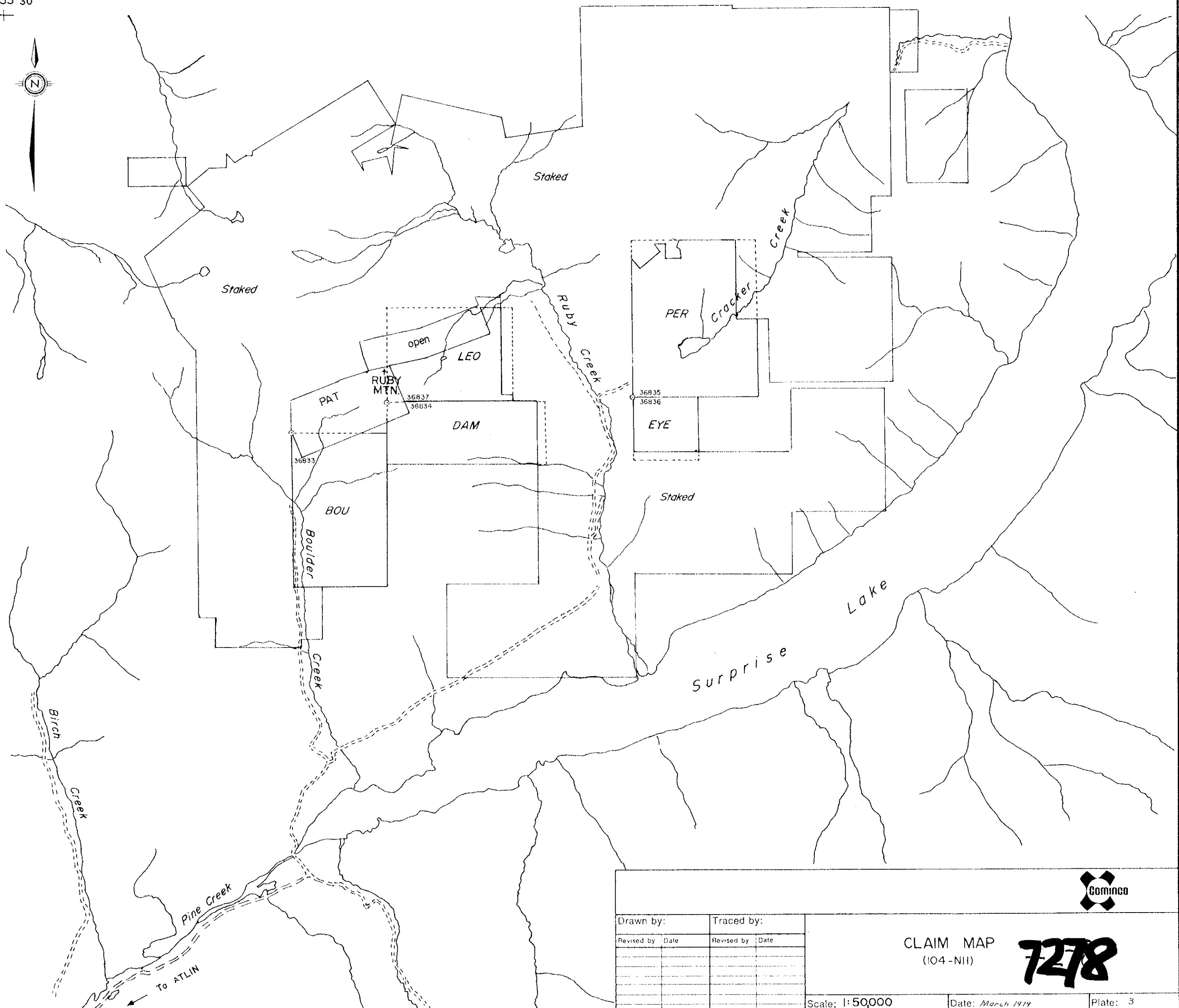
Scale: 1:250,000

Date: NOVEMBER 1978

Plate: 2

133° 30'

59° 45' +



Drawn by:	Traced by:
Revised by: Date	Revised by: Date

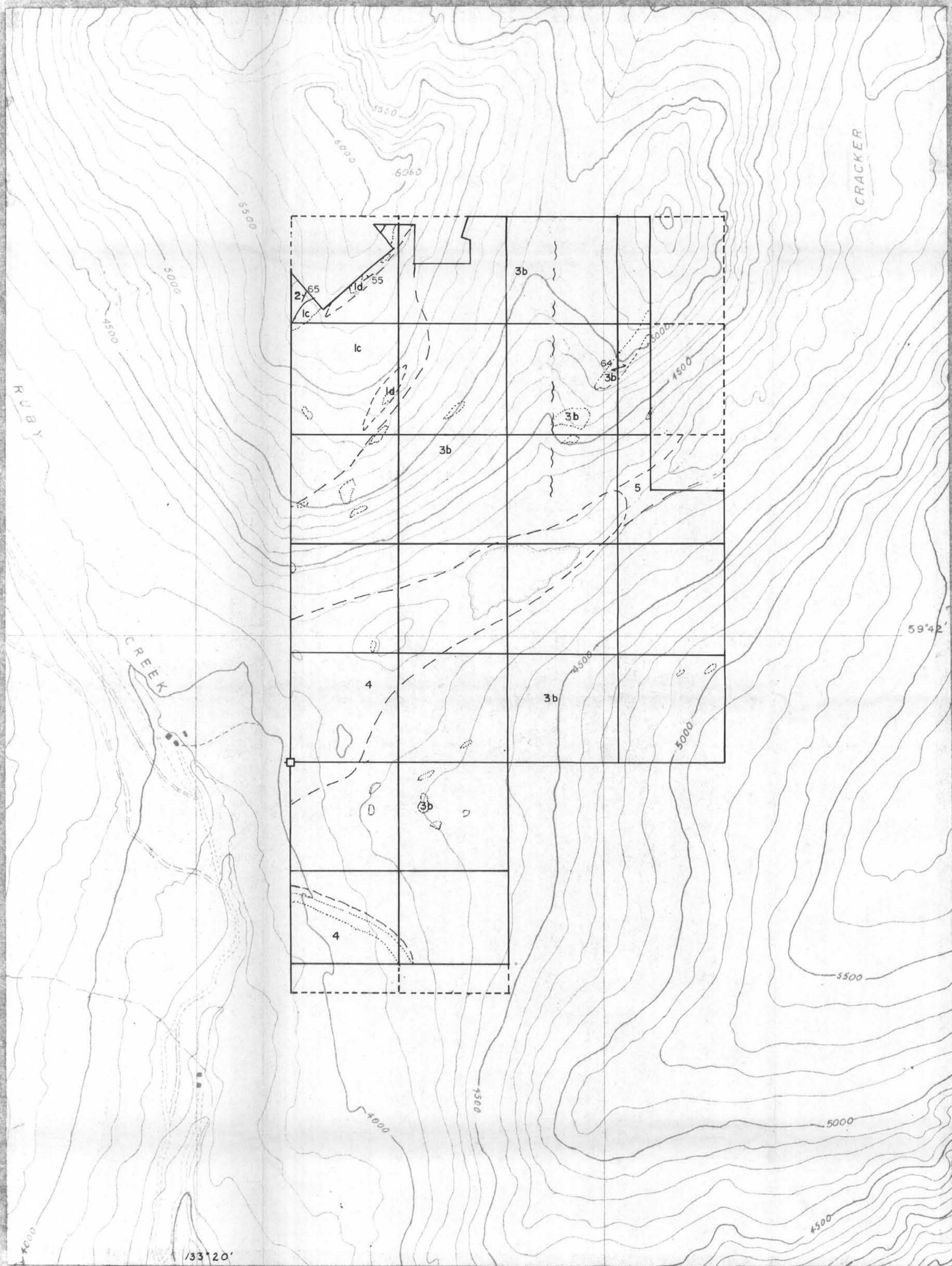
CLAIM MAP
(104-N11)

7278

Scale: 1:50,000

Date: March 1979

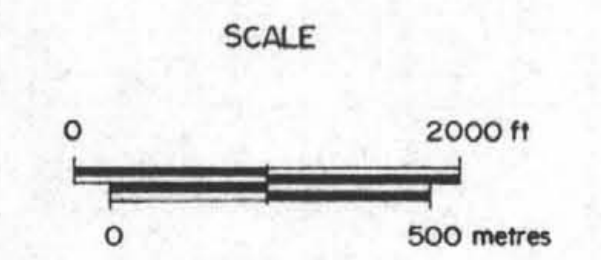
Plate: 3



LEGEND

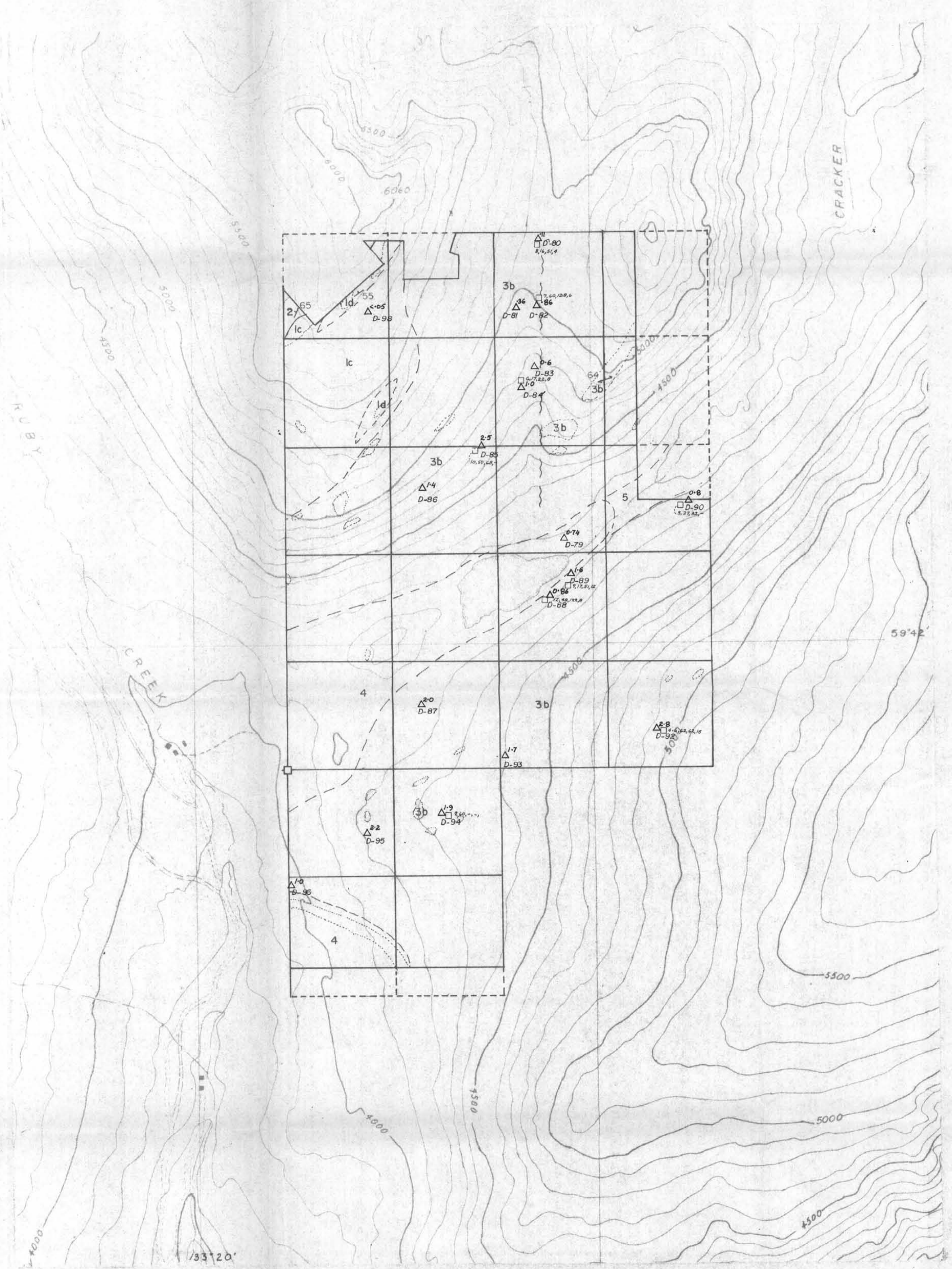
<ul style="list-style-type: none"> 5 Glacial drift and alluvium 4 Olivine basalt and scoria 3b Ataskite 3a Granitoid intrusives 2 Ultrabasics 1 Cache Creek Group: <ul style="list-style-type: none"> 1a undifferentiated metasediments 1b chert-pebble conglomerate, greywacke 1c grey chert and amillite 1d grey marble 1e dark grey "ribbon" chert 1f buff to light grey chert, quartzite 1g skarn, amphibolite 	<ul style="list-style-type: none"> Quaternary Tertiary and Quaternary Cretaceous Jurassic Pennsylvanian and Permian
--	--

<ul style="list-style-type: none"> foliation: strike/dip bedding: strike/dip fault: observed, inferred fold axis: plunge axial trace: antiform, synform outcrop contact: observed, inferred claim boundary sample site: water, silt rock, soil mineralization: scheelite, wolframite, chalcopyrite, sphalerite, fluorite, zinnerite, molybdenite legal corner post 	<ul style="list-style-type: none"> △ □ ● ○ x
---	--



7278

PEREYE GROUP				
Drawn by: G.J.G.	Traced by:			GEOLOGY
Revised by: Date:	Revised by: Date:			
Scale: 1:12,000		Date: Nov. 1978	Plate: 4	



LEGEND

- 5 Glacial drift and alluvium
 - 4 Olivine basalt and scoria
 - 3b Alaskite
 - 3a Granitoid intrusives
 - 2 Ultramafics
 - 1 Cache Creek Group:
 - 1a undifferentiated metasediments
 - 1b chert-pebble conglomerate, graywacke
 - 1c grey chert and argillite
 - 1d grey marble
 - 1e dark grey "ribbon" chert
 - 1f buff to light grey chert, quartzite
 - 1g skarn, amphibolite
- foliation: strike/dip
 bedding: strike/dip
 fault: observed, inferred
 fold axis: plunge
 axial trace: antiform, synform
 outcrop
 contact: observed, inferred
 claim boundary
 claim boundary
 sample site: water, silt rock, soil
 x S, W, Ep, Sp, F, Cu, Mo Mineralization: scheelite, wolframite, chalcocite, sphalerite, fluorite, zinnerite, molybdenite
 legal corner post
 Uranium in water sample (ppb)
 sample site number

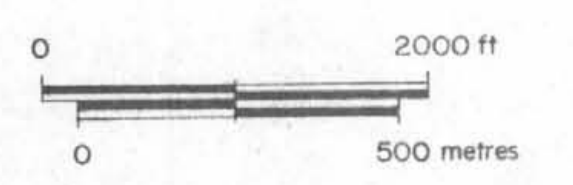
GEOCHEMISTRY
Uranium in water samples (ppb)

- Background < 0.4
- Threshold 0.4-1.2
- Anomalous 1.2-3.5
- Highly anomalous > 3.5

GEOCHEMISTRY (SILT SAMPLES)

	Cobalt (ppm)	Uranium (ppm)	Mercury (ppb)	Tungsten (ppm)
□ Background	< 10	< 18	< 65	< 2
□ Threshold	10-20	18-36	65-80	2-10
□ Anomalous	20-50	36-60	80-150	10-50
□ Highly anomalous	> 50	> 60	> 150	> 50

SCALE



7278

Drawn by: R.J.G.		Traced by:		PEREYE GROUP	
Revised by	Date	Revised by	Date	GEOCHEMISTRY OF STREAM SILTS AND WATERS	
Scale: 1:12,000				Date: Nov. 1978	Plate: 5