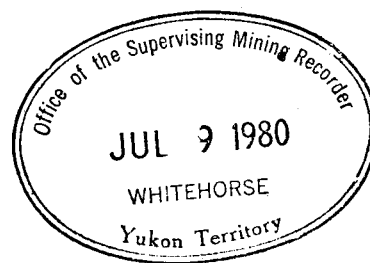


GEOLOGY AND GEOCHEMISTRY
OF THE
LICK CLAIM GROUP



Claim Sheet 105B/2

Lat: 60°03'N

Long: 130°45'W



Claims:

LICK : 1-8, 11-16, 23-28

Watson Lake Mining District
Yukon Territory

by:

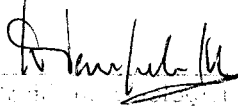
Eric James Sacks, M.Sc.

Work Completed July 7 and 12, 1979

090 629

This report has been examined by the
Department of Education Unit and is recom-
mended to the Commissioner to be consid-
ered as representation work in the amount of

6500



Registrar or
Mining Engineer

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

Commissioner of Yukon Territory

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SUMMARY

The LICK Claims are located at 130°45'W, 60°03'N within NTS map sheet 105B/2, Yukon Territory, and comprise 20 claims within the Watson Lake Mining District.

The claims were staked on June 26, 1979 to cover a G.S.C. - U.R.P U-Ag stream sediment anomaly (144 ppm U, 1.2 ppm Ag) released as O.F.R. 563. On July 12, 1979 Canadian Oxy conducted a reconnaissance geology-geochemistry survey of the property.

The LICK Claims are underlain by Jurassic-Cretaceous quartz monzonite and Devonian-Mississippian meta-pelites, meta-psammites and meta-arkoses (biotite-chlorite schists) which are in intrusive and fault contact. The quartz monzonite is cut by chloritized and brecciated shear zones and is highly jointed and generally brecciated and foliated. The biotite-chlorite schist occurs as a discrete unit and as screens and xenoliths within the younger quartz monzonite.

Strong Pb, Zn, Ag and lesser U, Cu and Mo stream sediment and soil anomalies occur over the western half of the claim group and are probably related to the meta-sediment - quartz monzonite contact which, in this area, is marked by chloritization and brecciation. Coincident U stream sediment and soil anomalies occur in the eastern part of the claim group probably related to an altered shear zone in quartz monzonite which contains anomalous U (5 ppm).

Potential uranium mineralization is likely to be related to shearing and alteration of differentiated, two-mica granite. Potential Pb-Zn-Ag-Mo-U mineralization in the western half of the claim group would be related to skarn development at the meta-sediment - intrusive contact, or to Pb-Zn-Ag mineralization within the meta-sediment itself.

Systematic mapping, prospecting, soil sampling, scintillometer surveys and further stream geochemistry are recommended.

I. INTRODUCTION

The LICK Claims were staked on June 26, 1978 to cover a G.S.C. - U.R.P. U-Ag stream sediment anomaly. On July 12, 1979 Canadian Oxy carried out a reconnaissance geology-geochemistry survey of the property. The results of that survey are the subject of this report.

II. LOCATION AND ACCESS

The LICK Claims are located at approximately $130^{\circ}45'W$, $60^{\circ}03'N$ within NTS map sheet 105B/2, Yukon Territory. (Figure 1) The claim group comprises 20 individual claims covering an area of approximately 1.6 mi^2 (4.1 km^2) and lies within the Watson Lake Mining District. (Figure 2)

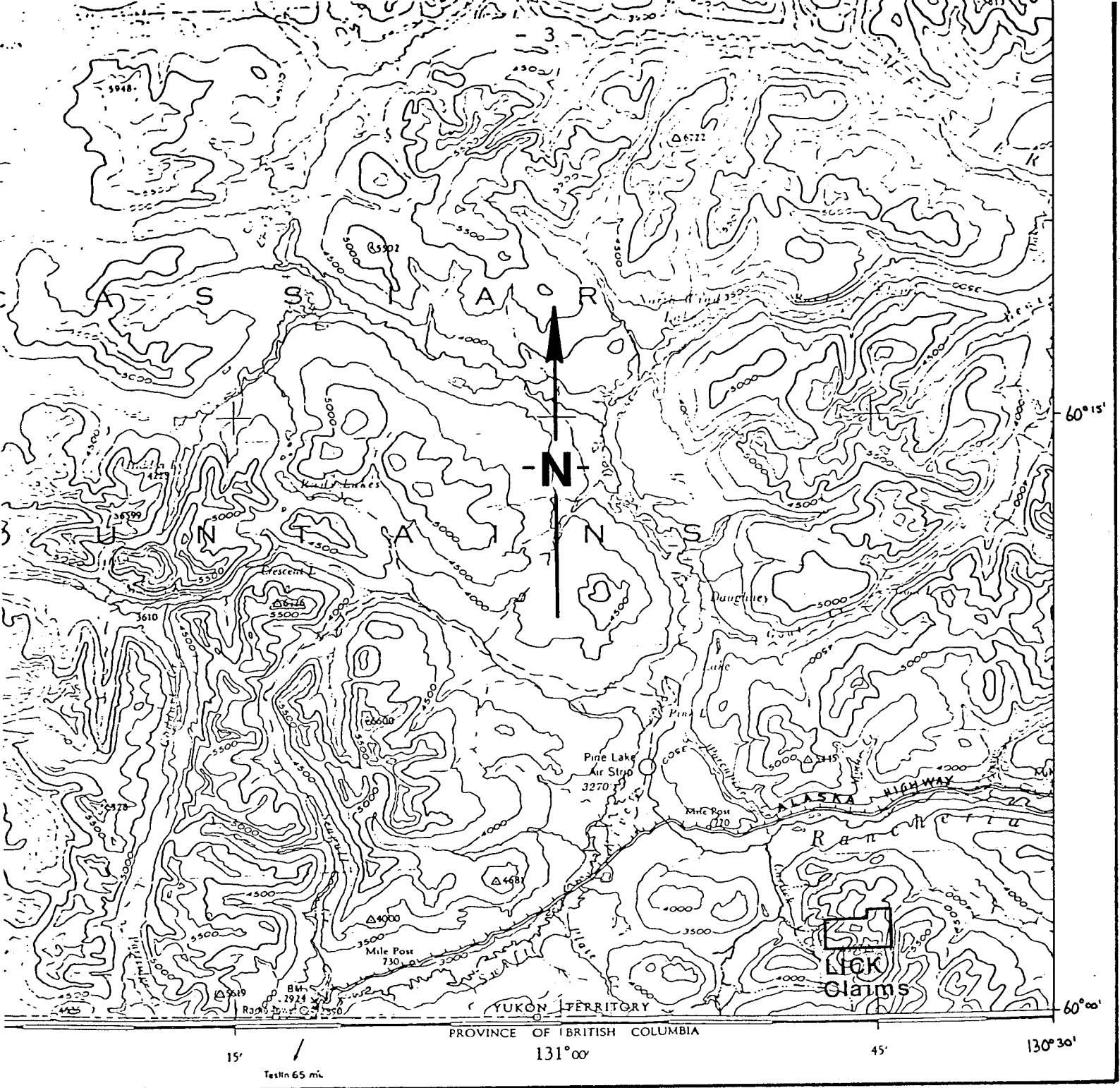


FIGURE 1

Location and Access of LICK Claims

NTS 105B/2

Scale 1:250,000

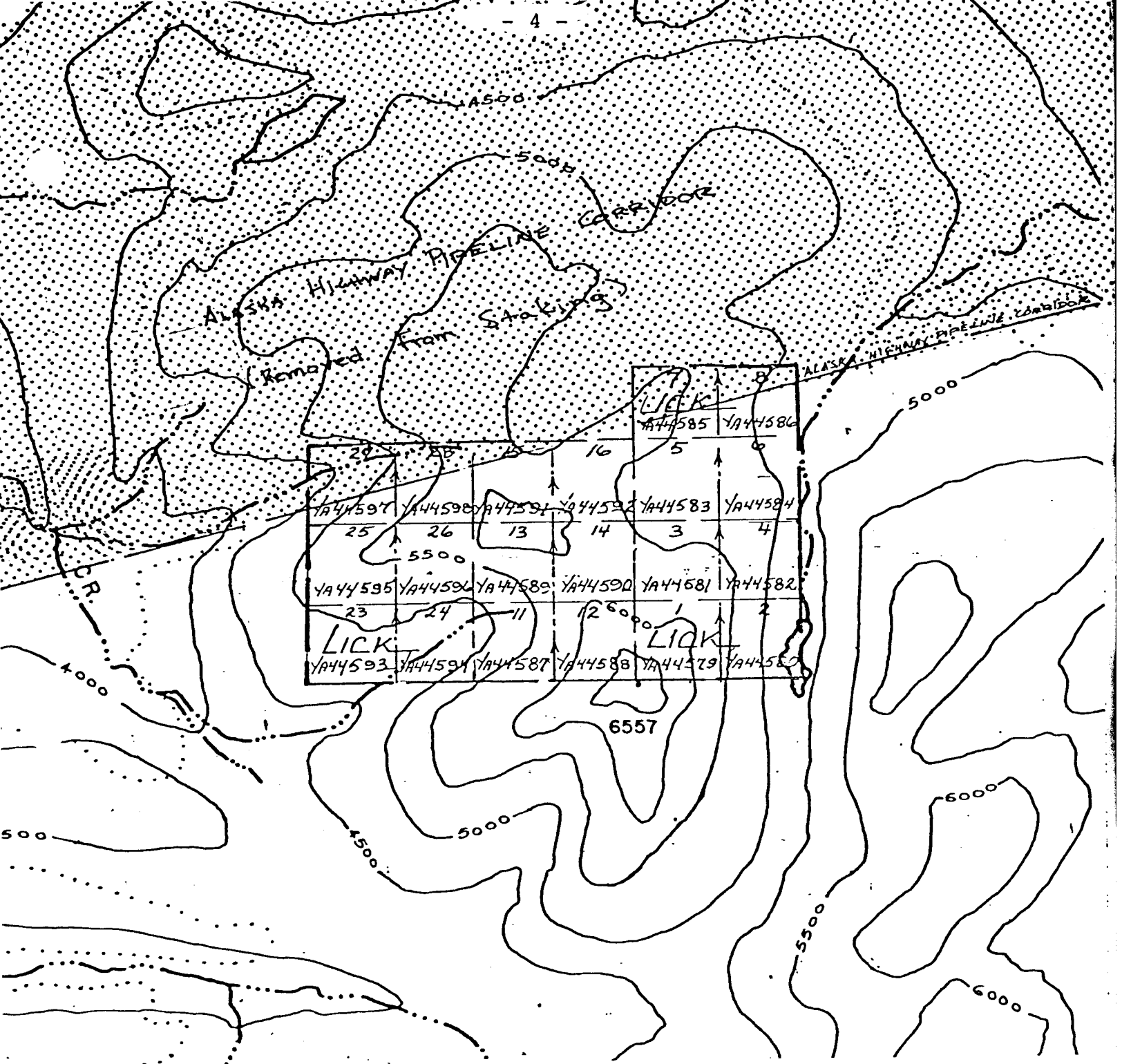


FIGURE 2
 Staking Sketch Showing the
 LICK Claim Group
 Scale: 1"=1/2 mi (2640')

The claims lie approximately 3 mi (4.8 km) south of mile 715 (km 1144) on the Alaska Highway. The settlement of Rancheria is located approximately 6 mi (9.6 km) northeast of the claims at mile 710 (km 1136) on the Alaska Highway. Rancheria contains a motel, restaurant and service station.

Access to the claims is by helicopter, either from Rancheria or from Pine Lake Airstrip, located 1 mi (1.6 km) north of mile 722.5 (km 1156) on the Alaska Highway. The Pine Lake Airstrip is an all weather, dirt and gravel emergency airstrip 6000 ft (1830 m) long. The airstrip is easily accessible from the Alaska Highway and offers several fine camping spots. No facilities for aircraft are available. The airstrip was built in 1942 by the U.S. Army Corps of Engineers to service construction of the Alaska Highway.

III. PHYSIOGRAPHY AND VEGETATION

Relief over the LICK Claims is 1750 ft (530 m) between elevations of 6558 ft (1999m) and 4800 ft (1465m) above sea level. The western parts of the claim group consist of 20° to 30° west dipping, grass and talus covered slopes while the eastern area consists of steep, east-facing cirques and scattered cliffs. The entire claim group lies above the treeline. Vegetation consists of tundra flora (grass humps, Labrador Tea, etc.).

IV. PREVIOUS WORK

No evidence of previous exploration work was noted. The entire area has been surveyed by the Geodetic Survey of Canada and a geodetic survey marker is located on the southern claim boundary at an elevation of 6558 ft (1999m) above sea level.

The Wolf Lake map sheet was geologically mapped by G.S.C. geologists during the period 1951 to 1959. In 1978 the G.S.C. conducted a stream sediment sampling survey as part of the G.S.C. - U.R.P coverage of the southern Yukon. Data was released as O.F.R. 563 on June 15, 1979 and the LICK Claims were staked on June 26, 1979 to cover a U-Ag stream sediment anomaly. (144 ppm U, 1.2 ppm Ag).

V. WORK COMPLETED - 1979

5.1 Staking

The LICK Claims were staked on June 26, 1979 by M.B.W. Surveys of Whitehorse, Y.T. for Canadian Oxy.

5.2 Geological Mapping

The LICK Claims were visited briefly by Wallis and Sacks on July 7, 1979 (see Appendix IV). On July 12, 1979 Sacks and Hooper conducted reconnaissance geological mapping and prospecting over the LICK Claims. A total of 2.2 man-days of work were completed.

5.5 Names and Addresses of Personnel

Dr. R. H. Wallis Canadian Occidental Petroleum Ltd. Minerals Division 311 - 215 Carlingview Drive Rexdale, Ontario M9W 5X8	Chief Geologist
E. J. Sacks, M.Sc. Same address as above	Project Geologist
J. Hooper Same address as above	Senior Assistant
E. Jermakowicz Same address as above	Junior Assistant
C. Pelletier Same address as above	Junior Assistant
B. Zayachivsky Same address as above	Junior Assistant
Dr. C. F. Gleeson C. F. Gleeson and Associates Ottawa, Ontario	Consulting Geochemist

.

VI. GEOLOGY

6.1 General Geology

Mapping by Poole et al. (1960) of the G.S.C. show the LICK Claims to be underlain by Jurassic-Cretaceous, biotite quartz monzonite and granodiorite of the Cassiar Batholith (Unit 15a of Poole). Local shearing and brecciation was noted. To the west of the claims, the northwesterly trending Garlick Fault contacts the Cassiar Batholith with a westerly dipping, Devonian-Mississippian greenstone, chlorite schist, quartzite and slate assemblage. (Unit 7 of Poole).

Mapping by Canadian Oxy personnel shows the LICK Claims to be underlain by biotite-quartz-feldspar schist and gneiss (meta-pelites, meta-psammities) and by biotite-muscovite quartz monzonite which has been foliated, sheared and brecciated, hence the fault contact postulated by Poole is either very broad and complex or lies to the east of his postulated position.

6.2 Table of Formations (PLAN 1)

<u>Unit</u>	<u>Description</u>
2	Foliated, biotite-muscovite-quartz-monzonite; in part sheared and brecciated
1	Biotite - quartz-feldspar schist and gneiss (meta-pelite, meta-psammite)

6.3 Description of Rock Units (PLAN 1)

Descriptions of rock samples collected during the mapping survey are listed in Appendix II and may be located by referring to PLAN 2.

6.3.1 Unit 1 - Biotite-chlorite-quartz-feldspar schist and gneiss (meta-pelites, meta-psammities)

This unit is confined to the northwestern and southern portions of the claim group and also occurs as screens and xenoliths within the biotite-muscovite-quartz monzonite unit.

The rock consists of a dark grey, fine-grained, well foliated to schistose biotite-chlorite-quartz-feldspar assemblage. Plagioclase dominates K-feldspar and quartz and feldspar grains are aligned parallel to the foliation. Chlorite occurs

as alteration of biotite. In one sample (ES-LICK-5) a 1" (1.3 cm) wide K-feldspar-quartz vein cuts the schist parallel to the foliation. The unit is characterized by a scintillometer response of 150 to 175 c.p.s. (Urtec TC-1)

6.3.2 Unit 2 - Foliated, biotite-muscovite-quartz-monzonite; in part sheared and brecciated.

This unit comprises a medium to coarse-grained, massive (locally megacrystic) intrusive rock. It consists of plagioclase (20 to 30%), K-feldspar (20 to 50%), quartz (10 - 30%), biotite (1 - 30%), muscovite (5 - 10%) and contains traces of garnet and limonite. Screens and xenoliths of Unit 1 (biotite-schist) are common and increase in density in proximity to the contact with the biotite schist unit.

The unit is generally foliated and often brecciated. Foliation is most intense in the vicinity of screens and xenoliths of biotite-schist and is accompanied by alignment of quartz and feldspar grains. The boundaries of xenoliths are gradational and wispy.

Numerous shear zones cut the intrusive and contain abundant limonite and chlorite. Within the shears the rock is extremely brecciated resulting in a rock in which feldspar clasts are contained in a fine-grained, biotite-chlorite groundmass. (LICK-3, JH-LICK-3). Veins of chalcedony often occur within and paralleling the shears (ES-LICK-1B). The degree of brecciation of the quartz-monzonite decreases rapidly away from the shears.

The unit is characterized by a scintillometer response of 280 to 320 c.p.s. (Urtec TC 1) and there is no apparent increase or decrease in radioactivity within the shear zones.

6.4 Structure

Shear zones up to 10 ft wide cut the quartz-monzonite at 090 T and 150 T. Extreme brecciation accompanies shearing. While some brecciation is evident throughout the quartz-monzonite unit, it is most intense immediately within the shears.

Strong jointing is pervasive throughout the claim group. Joints resolve into sets at 040T/35°W-90° and 150T/90°, the latter set being dominant and paralleling the shearing.

Foliation in the northern part of the claims occurs at 150T/30°W. In the central and southern parts of the claims the quartz-monzonite is foliated at 050T/35°W to 90°. In the northwest part of the claims, Wallis noted two foliations within biotite-schist scree. In the southeast part of the claims the biotite schist is foliated at 150T/90° and one small S-fold plunged at 150T/65NW. In the northwest part of the claims foliated meta-psammite and meta-pelite contacts cataclastically fractured granodiorite, hence, the two maybe in fault contact in this area.

6.5 Metamorphism

The biotite-schist is likely a regionally metamorphosed pelitic, psommitic and arkosic sedimentary assemblage.

Metamorphism within the quartz-monzonite appears to be largely cataclastic within the shear zones; insufficient information is available to determine whether foliation within the quartz-monzonite is a flow texture or metamorphic effect. The latter seems most likely due to the presence of local porphyroblast (megacryst) development.

It is postulated that the quartz-monzonite intruded older, regionally metamorphosed meta-sediments, possibly along a fault contact. Subsequent movement would result in the cataclastic metamorphism noted in the shear zones.

6.6 Alteration

Alteration is confined to shear zones where biotite and muscovite are largely replaced by chlorite. Limonite staining is pervasive within the shears. Minor chloritization of biotite occurs outside the shears and accompanies brecciation. The meta-sediments are chloritized in the vicinity of the quartz monzonite contact.

6.7 Economic Geology

No visible mineralization was noted. Potential economic uranium mineralization could be of vein type within shears in the differentiated two mica granite. Skarn mineralization could occur near the intrusive contact.

VII. GEOCHEMISTRY

Mean, possibly anomalous and probably anomalous levels for each element in stream sediment, stream water and heavy mineral samples were determined from cumulative frequency distributions constructed from the combined Project WATSU regional follow-up survey data. In the case of soil samples, the combined data from all claim groups examined during Project WATSU was used. Mean (50th percentile), possibly anomalous (84th percentile) and probably anomalous (97th percentile) levels for each sample medium are presented in Table I.

Analytical data are presented in Appendix I. Sampling and laboratory procedures are presented in Appendix III.

7.1 Rock Geochemistry (PLAN 2)

Twenty samples from the LICK Claims were collected and analysed for Pb, Zn, Ag, U and F (Appendix I); rock descriptions are listed in Appendix II.

1. Biotite - muscovite-quartz-monzonite contains 1 to 3.5 ppm U and 145 to 770 ppm F. One sample of brecciated quartz monzonite from a shear zone contains 5 ppm U and 102 ppm Zn (ES-LICK-3A).

2. The chalcedony vein (ES-LICK-1B) contains 10 ppm U (highest on LICK Claims) and 0.6 ppm Ag.

3. Biotite-chlorite schist contains 1 to 5 ppm U.

4. One sample of brecciated biotite-granodiorite contains 4.5 ppm U and 1270 ppm F (LICK-4). This sample is near the bio-

TABLE 1

Mean, Possibly Anomalous and Probably Anomalous Levels -
Soils, Sediments, Waters, Heavies.

Note: levels chosen from cumulative frequency curves at 50th, 84th and 97th percentiles, respectively.

A. Heavy Minerals

	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppm Mo	ppb Au	ppm Sn	ppm W	ppm U	ppm Th
Mean	24	17	75	.05	1.5	<10	2.3	15	3.8	44
Poss. Anom.	63	89	200	.38	3.5	19	38	60	26	330
Prob. Anom.	165	280	440	.95	8.5	3150	300	160	120	1200

B. Stream Sediments

	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppm Mo	ppm Sn	ppm W	ppm U	ppm Th
Mean	11	5	58	<.1	<1	<1	<1	2.5	13
Poss. Anom.	28	21	115	<.1	3	2	5	17	29
Prob. Anom.	54	59	320	1	11	5	16	38	50

C. Soils

	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppm Mo	ppm Sn	ppm W	ppm U	ppm Th
Mean	8	8	48	<.1	<1	<1	<1	2	14
Poss. Anom.	22	32	115	.1	2.5	1	7.5	7	36
Prob. Anom.	120	150	270	.8	5	2	40	30	75

tite-schist-quartz-monzonite contact in the northwestern part of the claim group.

7.2 Heavy Mineral Geochemistry (PLAN 3,4,5)

Two heavy mineral samples were collected from two streams draining the western half of the claim group, and analysed for Cu, Mo, Pb, Zn, Ag, U, Th, Sn, W and Au. Results are listed in Appendix I.

1. 2.4 ppm Ag, 78 ppm Cu, 6 ppm Mo, 200 ppm Pb, 300 ppm Zn, 71 ppm U, 140 ppm Th and 75 ppm W occur in sample from the southwest corner of the claim group. The Ag value is highly anomalous.

2. 270 ppm Zn occurs in a sample from the northwest corner of the claim group

7.3 Stream Sediment Geochemistry (PLAN 3,6,7,8)

Stream sediment samples were collected at 500 ft. (150 m) intervals from two streams draining the southwest and northwest corners of the claim group. One sample was collected from a stream draining the northeast part of the claim group. All samples were analysed for Cu, Mo, Pb, Zn, Ag, U, Th, Sn and W. Results are listed in Appendix I.

1. 38 to 260 ppm Pb, 116 to 400 ppm Zn, 0.1 to 1.2 ppm Ag, 1 to 4 ppm Mo and 18 to 48 ppm Cu occur in stream sediments from the southwest corner of the claim group. Pb, Zn and Ag are anomalous over 5000 ft downstream from the headwater. One sample from the lower reaches of the stream contains 18.5 ppm U. The stream drains biotite-muscovite-quartz-monzonite, samples of which do not contain anomalous amounts of the above elements.

2. 32 to 142 ppm Pb, 320 to 680 ppm Zn and 26 to 32 ppm Cu occur in sediments from the northwest corner of the claim group. Samples also contain 0.2 to 0.6 ppm Ag and one sample contains 18.5 ppm U. Pb and Zn are anomalous over 3000 ft. The stream drains the meta-sediment-intrusive contact area.

3. The G.S.C. - U.R.P. sample on which basis the LICK claims were staked drains the extreme northern parts of the claims (PLAN 13). 1.2 ppm Ag, 40 ppm Pb, 144 ppm U and 4 ppm Mo occur in this sample.

4. 37 ppm U and 0.6 ppm Ag are contained in the sample from the eastern part of the claim group. This is the highest U value of all stream sediments sampled. 5 ppm U in rocks occurs in a shear zone in the headwater area.

In summary, stream sediments from the western half of the claim group contain highly anomalous contents of Pb, Zn and Ag and possibly anomalous contents of Cu, Mo and U. Pb, Zn and Ag values are persistent over 3000 to 5000 ft. Single station, possibly anomalous U values occur in both streams. The streams drain the general area of the metasediment-intrusive contact. A G.S.C. - U.R.P. sample downstream contains lesser, though possibly anomalous amounts of these elements.

7.4 Stream Water Geochemistry (PLAN 3,9)

Water samples were collected at each stream sediment site. All samples were analysed in the field for pH and specific conductivity and in the laboratory for U, F and As. Analytical results are listed in Appendix I.

1. 0.4 to 1.6 ppb U occurs in waters from the northwest corner of the claims. Stream sediments contain 12 to 18.5 ppm U. The anomaly is persistent over 2300 ft and coincides with a strong Pb-Zn-Ag stream sediment anomaly.

2. 0.6 and 0.8 ppb U occur as single station anomalies over the entire length of the stream draining the southwest corner of the claims.

3. pH in all waters is high (7.5 to 8.9) suggesting the draining of metasediments and alteration of the intrusive.

7.5 Soil Geochemistry (PLAN 3,10,11,12)

Talus fines were collected over the LICK Claims. The western traverse parallels the anomalous streams. All samples were analysed for Cu, Mo, Pb, Zn, Ag, U, Th, Sn and W. Analytical results are listed in Appendix I.

1. 132 to 290 ppm Pb, 230 to 660 ppm Zn, 0.6 to 1.6 ppm Ag and 6.5 to 17 ppm U occur in soils within an east-west trending area 1500 ft long along the southern claim boundary. Anomalous Pb, Zn and Ag contents occur in stream sediments draining this soil anomaly. These soils overlie the meta-sediment-intrusive contact.

2. 42 and 114 ppm Pb, 150 and 220 ppm Zn, 0.8 ppm Ag, and 7.5 ppm U occur in two samples from the northwest corner of the claim group. These samples straddle the headwaters of a stream containing anomalous Pb and Zn in sediments. These soils overlie the meta-sediment-intrusive contact.

3. 9 ppm U and 0.4 ppm Ag occur in one sample in the eastern part of the claims adjacent to a 31 ppm U stream sediment anomaly.

VIII. CONCLUSIONS

1. The LICK Claims are underlain by a two-mica, two-feldspar granite which intrudes biotite-chlorite schist of probable meta-sedimentary origin. The contact may be of fault nature.

2. The intrusive quartz monzonite is cut by shear zones containing chloritized and brecciated material. The shears parallel prominent joint sets.

3. Highest U values occur in shear zone material or chalcedony veins within the shears.

4. Strong, coincident stream sediment and soil Pb, Zn, Ag and lesser U and Mo anomalies occur in the western half of the claim group related to the meta-sediment-quartz monzonite contact.

5. A spot, coincident stream sediment and soil U anomaly occurs in the eastern half of the claim group and is probably related to an altered shear zone.

6. Potential uranium mineralization is likely to be related to the altered shear zones within a differentiated, two-mica granite. Potential Pb-Zn-Ag-Mo-U mineralization could occur in the western part of the claims as skarn deposits related to the meta-sediment-quartz monzonite contact or as Pb-Zn-Ag mineralization within the meta-sediments themselves.

IX. RECOMMENDATIONS

1. The LICK Claims should be geologically mapped and prospected with a scintillometer at a scale of 1"=400'.

2. Systematic soil and radiometric surveys should accompany the mapping.

3. 1"=400' air photo blowups should be used as bases for all future work.

4. The area immediately to the north of the claims should be prospected and streams draining this area sampled as the anomalous G.S.C. - U.R.P. stream sediment sample appears to drain this area. This area was originally intended for staking by Canadian Oxy but is restricted as part of the Alaska Highway Gas Pipeline Corridor. If follow-up work is promising, representation should be made for the release of this ground for staking.

5. All minor streams not sampled during the 1979 survey should be sampled in the same manner.

Respectfully submitted,



ERIC JAMES SACKS, M.Sc.

Toronto, Ontario
November, 1979.

APPENDIX I

ANALYTICAL RESULTS



CHEMEX LABS LTD.

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 NORTH VANCOUVER, B.C.
 CANADA V7J 2C1
 TELEPHONE: 984-0221
 AREA CODE: 604
 TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

TO: Canadian Occidental Petroleum Ltd.,
 Minerals Division,
 Ste. 311 - 215 Carlingview Dr., CC. E. Sacks
 Rexdale, Ont.

CERTIFICATE NO. 48584
 INVOICE NO. 31310 32113-TH
 RECEIVED July 16/79
 ANALYSED July 23/79

ATTN: WATSU - LICK - STREAM SED.

SAMPLE NO. :	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
	Cu	Mo	Pb	Zn	Ag	Sn	W	U	Th (N.A.)
79 WT 0453	34	3	74	220	0.2	1	2	7.5	16
0454	48	3	260	400	0.8	1	3	11.5	18
0455	40	3	140	345	1.2	1	2	8.0	19
0456	38	4	112	330	1.0	1	2	6.5	17
0458	24	3	38	126	0.2	1	1	5.0	15
0459	30	3	104	315	1.0	1	1	8.5	20
0460	18	1	40	116	0.1	1	1	1.5	21
0461	22	3	74	230	0.4	1	1	18.5	25
0462	20	2	64	200	0.2	1	1	12.5	24
0463	22	1	116	430	0.2	1	1	15.0	22
0464	28	1	142	590	0.6	1	1	16.5	25
0465	18	2	6	40	0.1	1	1	2.0	25
0466	32	1	134	680	0.4	1	1	18.5	24
0467	32	1	32	320	0.2	1	1	12.0	14
0468	30	2	96	600	0.2	1	1	15.0	20
0469	26	1	60	445	0.1	1	1	9.0	21
(79) WT 0746	20	2	50	190	0.6	1	1	37	21



MEMBER
 CANADIAN TESTING
 ASSOCIATION

CERTIFIED BY: *Hart Biddle*



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TELEX: 043-52597

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CERTIFICATE OF ANALYSIS

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
RExdale, Ont.

CERTIFICATE NO. 49050
INVOICE NO. 31613
RECEIVED July 25/79
ANALYSED Aug. 6/79

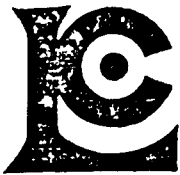
ATTN: WATSU-LICK-WATER CC. E. Sacks

SAMPLE NO. :	PPB	PPB	PPB
	U	F	As
79 WT 0453	0.6	10	<2
0454	< 0.2	10	<2
0455	< 0.2	10	<2
0456	0.8	10	<2
0458	0.2	10	<2
0459	0.2	10	<2
0460	< 0.2	10	<2
0461	0.8	10	<2
0462	0.2	10	<2
0463	0.8	10	<2
0464	1.6	10	<2
0466	0.8	10	<2
0467	0.8	10	<2
0468	0.4	10	<2
0469	0.4	10	2
79 WT 0746	0.4	10	<2



MEMBER
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ASSOCIATION

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CERTIFICATE NO. 48579
INVOICE NO. 31310 32113
RECEIVED July 15/79
ANALYSED July 23/79

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr., CC. E. Sacks
Rexdale, Ont.

ATTN: WATSU-LICK-SOIL

SAMPLE NO. :	PPM Cu	PPM Mo	PPM Pb	PPM Zn	PPM Ag	PPM Sn	PPM W	PPM U	PPM Th (N.)
79 WT 0100	6	1	32	90	0.1	1	1	2.5	23
0101	2	1	14	46	0.1	1	1	1.5	24
0102	8	1	24	64	0.2	1	1	2.0	19
0103	20	2	26	82	0.1	1	1	7.5	28
0457	12	2	290	600	1.6	1	1	17.0	38
0741	4	1	38	76	0.1	1	1	3.5	26
0742	6	1	18	48	0.1	1	1	3.0	22
0743	4	2	12	58	0.1	1	1	4.0	4
0744	4	1	20	68	0.2	1	1	5.0	22
0745	8	2	38	124	0.4	1	1	9.0	22
0747	4	1	12	44	0.1	1	1	2.0	26
0748	4	2	16	52	0.1	1	1	3.0	23
0749	10	1	28	98	0.1	1	1	6.5	26
0750	4	1	14	48	0.1	1	1	2.5	15
0935	4	1	42	150	0.1	1	1	2.0	27
0936	38	2	114	220	0.8	1	3	7.5	22
0937	18	1	26	82	0.1	1	3	3.0	13
0938	18	1	88	138	0.4	2	1	2.5	15
0939	12	1	26	64	0.1	1	2	2.0	17
0940	22	1	24	94	0.1	1	1	1.5	13
0941	14	1	48	128	0.1	1	2	2.0	19
0942	14	1	16	60	0.1	1	2	3.0	14
0943	14	1	34	88	0.1	1	4	4.0	21
0944	34	1	210	330	1.0	1	1	10.0	32
79 WT 0945	10	1	132	230	0.6	1	1	6.5	38



MEMBER
CANADIAN TESTING
ASSOCIATION

CERTIFIED BY:

Hart Biddle



CHEMEX LABS LTD.

217 BROOKSBANK AVE.
 NORTH VANCOUVER, B.C.
 CANADA V7J 2C1
 TELEPHONE: 984-0221
 AREA CODE: 604
 TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 49030

TO: Canadian Occidental Petroleum Ltd.,
 Minerals Division,
 Ste. 311 - 215 Carlingview Dr.,
 Rexdale, Ont.
 ATTN: WATSU-ROCKS

INVOICE NO. 31610

RECEIVED July 24/79

ANALYSED Aug. 3/79

CC. E. Sacks

SAMPLE NO. :	PPM	PPM	PPM	PPM	PPM
	Pb	Zn	Ag	U	F
ES-LICK-1A	4	48	0.1	2.5	440
1B	4	26	0.6	10.0	225
1C	8	72	0.1	4.0	450
2	4	36	0.1	1.5	380
3A	8	102	0.1	5.0	530
3B	6	74	0.1	2.0	430
4	6	20	0.1	3.0	510
ES-LICK-5	4	58	0.1	1.5	610
JH-LICK-1	4	72	0.1	1.5	520
2	24	52	0.2	1.5	350
3	14	70	0.2	3.5	770
4	4	40	0.2	1.5	490
5	30	110	0.2	1.5	305
6	6	12	0.1	1.0	145
7	8	32	0.1	2.5	220
JH-LICK-8	10	60	0.1	2.5	560
JH-BA -1	1	42	0.1	2.5	
2	10	54	0.1	0.5	
3	2	46	0.1	4.0	
4	1	76	0.1	1.5	
5	12	92	0.1	0.5	
6	1	74	0.1	1.5	
7	6	78	0.1	2.0	
8	2	26	0.1	4.0	
8A	1	20	0.1	3.5	
8B	54	148	0.1	0.5	
JH-BA -9	2	56	0.2	1.5	
ES-BA -1	10	36	0.1	1.5	
2	10	28	0.1	5.5	
3	8	34	0.1	1.5	
4	6	22	0.1	1.0	
5A	10	114	0.4	5.0	
5B	4	68	0.1	6.5	
5C	4	76	2.2	1.0	
5D	26	94	1.2	11.5	
ES-BA -5E	6	198	2.2	1.0	
JH-PLATE-1	2	6	0.4		
2	12	12	0.6		
3	2	18	0.2		
J LATE-4	4	4	0.1		

ES BA -6 further.



MEMBER
 CANADIAN TESTING
 ASSOCIATION

CERTIFIED BY:

Hart Biddle

APPENDIX II

ROCK DESCRIPTIONS AND GEOCHEMICAL ANALYSES

APPENDIX II - ROCK DESCRIPTIONS AND GEOCHEMICAL ANALYSES

Sample No. (Scint-Urtec TC 1)	NAME	% COMPOSITION						DESCRIPTION	ppm	ppm	ppm	ppm	ppm
		Plag	Ksp	Qtz	Bi	Ms	Other		U	Pb	Zn	Ag	F
LICK-1	Biotite- muscovite quartz monzonite	30	40	30	1-2	<1	tr.lt	med. to c. grained, massive; biotite clusters into pods; plag smaller than Ksp + both euhedral; lt as fine fract- ure filling	45	8	24	.1	165
LICK-2	Foliated biotite-ms quartz monzonite	30	50	20	2-3	<1		fine grained, foliated	5	4	28	.1	690
LICK-3	Feldspar breccia	5	10	-	50	tr	20% chl.	breccia - frags. K-fsp in bi-chl gdmass	3	30	22	.4	510
LICK-4	Biotite granodiorite with bi-schist xenolith	60	10	20	1-2	tr		med.gr. massive igneous rock containing xenolith of bi-fsp schist	4.5	12	28	.4	1270
ES-LICK-1A (320 c.p.s.)	Biotite-ms qtz monz to granite	20	50	30	1-2	<1	-	fine to med. grained; massive; hypidiomorphic	2.5	4	48	.1	440
1B (300 c.p.s.)	chalcedony fracture filling	-	-	90	tr	tr	tr.lt	orange, aphanitic chalcedony fracture filling; pods earthy limonite; mottled white and orange - orange due to lt. stain; dense	10	4	26	.6	225
1C (300 c.p.s.)	Foliated bi-ms quartz monzonite	30	20	30	5	<1		foliated, fine grained; Ksp grains are euhedral megacrysts up to ¼" in plag-qtz-bi gdmass 1/8"	4	8	72	.1	450

APPENDIX II - ROCK DESCRIPTIONS AND GEOCHEMICAL ANALYSES

Sample No. (Scint-Urtec TC 1)	NAME	% COMPOSITION						DESCRIPTION	ppm U	ppm Pb	ppm Zn	ppm Ag	ppm F
		Plag	Ksp	Qtz	Bi	Ms	Other						
ES-LICK - 2 (280 c.p.s.)	Muscovite biotite quartz monzonite	20	30	30	2	10		slightly foliated with Ksp. megacrysts up to ¼" in bi- ms-plag-qtz matrix (1/8")	1.5	4	36	.1	380
ES-LICK-3A	Altered monzonite	20	10	10	30	-	-	Altered biotite rich rock; plag largely altered to sericite; rock soft; fine grained, massive	5	8	102	.1	530
3B (220 c.p.s.)	Altered bi- quartz mon- zonite	30	40	20	10	-	tr. garnet tr. chlorite	megacrystic; euhedral Ksp megacrysts up to ½" in 1/8" plag-qtz-bi-chl gdmass; megacrysts cut by fine parallel fractures; euhedral disseminated red garnet	2	6	74	.1	430
(210 - 230 c.p.s.)	4 Foliated bi- ms monzonite and bi-ms schist	15	15	5	30	10	tr. chlorite	fine grained, foliated with pods v.f. gr. bi-ms	3	6	20	.1	510
(150 - 175 c.p.s.)	5 Bi-qtz-fsp schist cut by pegmatite vein	10	5	30	30	tr.	-	med. gr. schist cut by c.gr. Ksp-qtz vein paralalled to foliation	1.5	4	58	.1	610
JH-LICK-1	Qtz-fsp schist	10	30	15	-	tr.		Fine gr., foliated with lineation of Ksp; leucocratic	1.5	4	72	.1	520
-2	Biotite- quartz mon- zonite gneiss	20	30	20	10	2	tr. chl.	med. gr. foliated; bands igneous Qtz. monzonite alt. with wispy bi-schist	1.5	24	52	.2	350

APPENDIX II - ROCK DESCRIPTIONS AND GEOCHEMICAL ANALYSES

Sample No. (Scint-Urtec TC 1)	NAME	% COMPOSITION						DESCRIPTION	ppm	ppm	ppm	ppm	ppm
		Plag	Ksp	Qtz	Bi	Ms	Other		U	Pb	Zn	Ag	F
JH-LICK-3	Brecciated monzonite	10	30	5	20	1	tr. chl.	breccia; euhedral Ksp grains to ½" and plag to ¼" in bi-chl matrix	3.5	14	70	.2	770
-4	Quartz monzonite augen gneiss	10	50	10	-	5	-	foliated augen gneiss; Ksp. augen in ms-qtz matrix	1.5	4	40	.2	490
-5	Brecciated monzonite	10	30	5	30	-	tr. chl.	as above JH-LICK-3; v.f. grained	1.5	30	110	.2	305
-6	Biotite- ms-qtz monzonite	40	30	20	5	5	tr. chl.	massive, med. grained	1	6	12	.1	145
-7	Foliated bi-ms-qtz monzonite	30	40	20	10	5		foliated, med. grained; Ksp, plag + qtz. aligned; crude gneissic texture	2.5	8	32	.1	220
-8	Brecciated monzonite	10	30	?	40	-	tr. chl.	highly broken Ksp. grains set in f.gr. bi-chl. matrix	2.5	10	60	.1	560

Appendix III - Sampling and Laboratory Procedures

I. SAMPLING PROCEDURES

A) Heavy Minerals

1. A sample site is selected which exhibits maximum sorting of stream bed material. Active (below water) or previously active (dry now but previously below water) sites may be chosen. Leading edges or sides of gravel bars with large boulders are most attractive. In practice, the ideal case is rare and one chooses the best possible site.

2. Gravel and cobble material is shoveled into a large (18" to 24") gold pan into which 1/4" holes have been drilled. The material is vigorously shaken in still water so that - 1/4 in. material passes the screen into a second, matching pan. Enough -1/4 in. material is collected to fill an 18" x 24" poly bag (usually one large pan or two smaller ones). The -1/4" material is returned to camp.

3. The - 1/4 in. material is panned to achieve a concentrate of heavy minerals and aggregates containing heavy minerals. Approximately 80% of the original material (20 - 25 lbs) is discarded while a 1 - 2 lb. concentrate is obtained. The concentrate is sealed in a plastic or cloth bag (cloth is preferred as it allows

the sample to dry, thus reducing shipping weight) and then sent to the laboratory for geochemical analysis.

B) Stream Sediment

1. A presently or previously active stream site is selected which exhibits minimum sorting ie. quiet water, and accumulation of fine sandy and silty material. If the stream is too active, material can be obtained from bank-moss which acts as a trap, or by digging out the lee of large boulders.
2. Three to four handfuls of material is collected and after squeezing to remove excess water is placed in high wet-strength, heavy duty, prenumbered kraft envelopes. The samples are dried in the field and then sent to the laboratory for geochemical analysis.

C) Stream Water

1. A 4 oz. poly bottle is rinsed with the sample site water at least three times then filled fully and tightly capped. The sample is tested in the field for pH and specific conductivity, then sent to the laboratory for geochemical analysis.
2. Care should be taken to avoid contamination by always collecting waters up-stream from a heavy mineral or sediment sample site.

D) Soil

1. 'B' horizon or talus fine material is sampled.
2. Three to four handfuls of material are collected into heavy duty, high wet-strength kraft envelopes which are dried in the field and then sent to the laboratory for analysis.

E) Sample Site Information Card

1. At each soil or stream sample site, an 80 column field data card is completed. The sampler records such information as sample number, location and type, depth of stream, sample composition, vegetation, drainage, etc. Separate cards are used for stream and soil samples in order to record pertinent information.

II. Laboratory Procedures

A. Sample Preparation

i) Heavy Minerals

1. Samples dried and weighed.
2. Screen - 10 mesh material from sample and weigh; weigh and retain +10 mesh material left on screen.
3. Use -10 mesh fraction for heavy liquid separation.
4. Transfer -10 mesh (fine) fraction into a 1000 ml. separatory funnel containing 200 mls. of tetrabromoethane (S.G. 2.96).
5. Shake sample gently in heavy liquid. Particles of fines adhering to sides of the separatory funnel can be washed into the heavy liquid by slowly rotating the funnel at an oblique angle. The "heavies" (S.G. >2.96) will slowly settle to the bottom of the heavy liquid.
6. Drain the "heavies" into a small filter funnel. Drain excess heavy liquid and light materials into a separate filter funnel. Collect all heavy liquid into a waste receiving bottle.
7. Save light minerals (S.G. <2.96). Wash "heavies" fraction with methanol to remove residual tetrabromoethane. Use the same procedure on light minerals fraction. Dry both fractions and weigh. Retain the "lights" in a suitable sealed container. Save 0.5 gm of "heavies" in a plastic vial for visual examination.
8. Pulverize the remaining "heavies" in an agate mortar and pestle and homogenize before weighing for analyses.

9. Analyse the "heavies" powder for appropriate elements. The number of elements analysed for is determined by the amount of "heavy" material obtained in separation.

ii) Stream Sediments

1. Samples are sorted and dried at 50^oc for 12 to 16 hours.
2. Dried material is then screened to obtain the -80 mesh (177 micron) fraction. The rest of the material is discarded.
3. -80 mesh fraction material is weighed and analysed for appropriate elements.

iii) Soils

Same procedure as for stream sediments.

iv) Rocks

1. Entire sample is crushed.
2. If necessary (>250 gms.). The sample is split on a Jones splitter, the reject is retained for a short period.
3. The split fraction is pulverized in a ring grinder such that 90% passes a 200 mesh (74 micron) sieve.
4. The -200 mesh material is weighed and analysed for the appropriate elements.

v) Waters

See individual element descriptions for U and F.

B. Elemental Analyses

i) ppm Copper, Lead, Zinc, Silver, Molybdenum (Atomic Absorption)

1. A 1.0 gm portion of -80 mesh soil or stream sediment or -200 mesh rock flour or pulverized "heavies" is digested in concentrated, hot, perchloric - nitric acid ($HClO_4-HNO_3$), for 2 hours.

2. Digested sample is cooled and made up to 25 mls. with distilled water.

3. Solution is mixed and solids allowed to settle.

4. Cu, Pb, Zn Ag and Mo are determined by atomic absorption, using background correction for Pb and Ag analyses.

<u>Element</u>	<u>Bkgd. Corr.</u>	<u>Flame Type</u>	<u>Wave Length hm</u>	<u>Detection Limit</u>	<u>Chemex Standard</u>	<u>+ 1 Std. Deviation</u>
Cu	No	A	324.7	1 ppm	71 ppm	+ 3
Pb	Yes	A	217.0	1 ppm	59 ppm	+ 1
Zn	No	A	213.8	1 ppm	52 ppm	+ 3
Ag	Yes	A	328.1	0.2 ppm	8.5 ppm	+ 0.5
Mo	No	N	313.3	1 ppm	25 ppm	+ 1

A = Air acetylene flame.

N = Nitrous oxide - acetylene flame.

ii) ppm Tin (Sn) (Atomic Absorption)

1. A 1.0 gm sample of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is scintered with ammonium iodide.

2. The resulting tin-iodide is leached with a dilute HCl - ascorbic acid solution.

3. The TOPO complex is then extracted into MIBIC (Methyl isobutyl ketone) and analysed via atomic absorption.

4. Detection limit: 1 ppm Sn

iii) ppm Tungsten (W) (Colourimetric)

1. 0.5 gm of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is fused with potassium bisulfate and leached with HCl.

2. The reduced form of W is complexed with toluene 3, 4 dithiol and extracted into an organic phase.

3. The resulting colour is visually compared to similarly prepared standards. (Colourimetric method)

4. Detection limit: 2 ppm W

iv) ppb Gold (Au) (Atomic Absorption)

1. A 5 gm sample of -200 mesh rock flour or pulverized "heavies" is ashed at 800°C for 1 hour.

2. Ashed material is digested with aqua regia twice to dryness.

3. Digested material is taken up in 25% HCl.

4. Au is extracted as the bromide into MIBK and analysed via atomic absorption.

5. Detection limit: 10 ppb Au

v) ppm Thorium (Th) (Neutron Activation)

1. 1 gm of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is weighed into a polyethelene vial and heat sealed.

2. Samples, along with standards, are then irradiated

for sufficient periods to receive a neutron dose of $1-3 \times 10^{10}$ to $10^{15}/\text{cm}^2$.

3. Following irradiation, samples are cooled for at least one week and thorium determined by the measurement of its characteristic gamma ray, using a semiconductor (Ge (Li)) detector.

4. Detection limit: 1 ppm Th

vi) Uranium (U) (Fluorimetry)

A) Uranium in soils, stream sediments, "heavies", rocks.

1. 1 gm of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is digested with hot, $\text{HClO}_4\text{-HNO}_3$ to strong fumes of HClO_4 for approximately 2 hours.

2. The digest is diluted to volume and mixed.

3. An aliquot is extracted into MIBK with the acid of an aluminum nitrate-tetrapropyl ammonium hydroxide salting solution. (TPAN)

4. Uranium in the MIBK is determined by evaporating a portion of the MIBK in a platinum dish and fusing with a mixture of $\text{Na}_2\text{CO}_3\text{-K}_2\text{CO}_3\text{-NaF}$.

5. The fluorescence of the fused flux is measured to determine the uranium content.

6. Detection limit: 0.5 ppm U

B) Uranium in Water

1. A portion of the sample is filtered to remove sediment (if necessary), is acidified and then evaporated to dryness.

2. Residue is leached with a small volume of HCO_3 .

3. Uranium in the leachate is extracted into MIBK, with the aid of TPAN salting solution.

4. Uranium is determined as for solid materials, above by fluorimetry.

5. Detection limit: 0.2 ppb U

vii) Fluorine (F) (Specific Ion Electrode)

A) F in soils, stream sediments, rocks, "heavies".

1. 0.25 gm of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is fused with a 2:1 NaCO₃-KNO₃ mixture.

2. The melt is leached with water and citric acid, adjusted to pH 5.5 and the activity measured with a fluoride specific ion electrode.

3. Detection limit: 10 ppm F

B) F in Waters (Potentiometric)

1. An aliquot of the sample is filtered and treated with an equal volume of Total Ionic Strength Adjustment Buffer (TISAB) consisting of glacial acetic acid, sodium chloride and cyclohexanediamine tetraacetic acid.

2. The resulting solution is stirred for 3 minutes to allow the fluoride electrode to stabilize.

3. The F concentration is read from a specific ion meter which is calibrated frequently with freshly prepared standard fluoride solutions.

4. Detection limit: 0.02 ppb F

viii) ppb Arsenic (As) (Atomic Absorption)

a) As in waters

1. An aliquot of water is acidified with HCl and then reduced with potassium iodine to reduce As (V) to As (III).

2. A portion of this solution is further reduced with sodium borohydride to arsine, AsH₃.

3. The volatile arsine is swept into a heated cell in an atomic absorption spectrophotometer and decomposed to free arsenic to determine the arsenic concentration.

4. Detection limit: 2 ppb As

ix) pH

1. pH in waters was determined in the field, using a portable pH meter.

2. The meter was standardized by means of buffer solutions, every 10th sample to minimize meter drift.

x) Specific Conductivity (S.C.)

1. S.C. in waters was determined in the field, using a portable S.C. meter.

2. The electrode was washed in a standard water, after each determination, to minimize and standardize contamination.

APPENDIX IV

COMMENTS OF R. H. WALLIS - EXAMINATION OF LICK CLAIMS

APPENDIX IV - Comments of R. H. Wallis - Examination of LICK Claims

LICK CLAIMS 105 B 2 E & W $\frac{1}{2}$

July 7, 1979

Commodity (U + Pb + Ag) RHW and E.S.

West slopes relatively smooth talus 20-30°, east slopes steep cirques and shattered cliffs. All above treeline. No need for cut and picketed lines, need blown up 1:50,000 plus airphotos.

N/W corner of claims.

Geology - in theory all 15a-biotite quartz monzonite, not apparently so in fact - unless the Garlick fault - Cassiar west boundary fault complex is deceiving.

Apparently a contact between schistose (two foliations) biotite-chlorite semipelite, foliated psammites, foliated arkoses and massive "granitic" (?diorite to granodiorite) rock which is cataclastically fractured. (are the metaseds really cataclastic granodiorites? as per RAN claims).

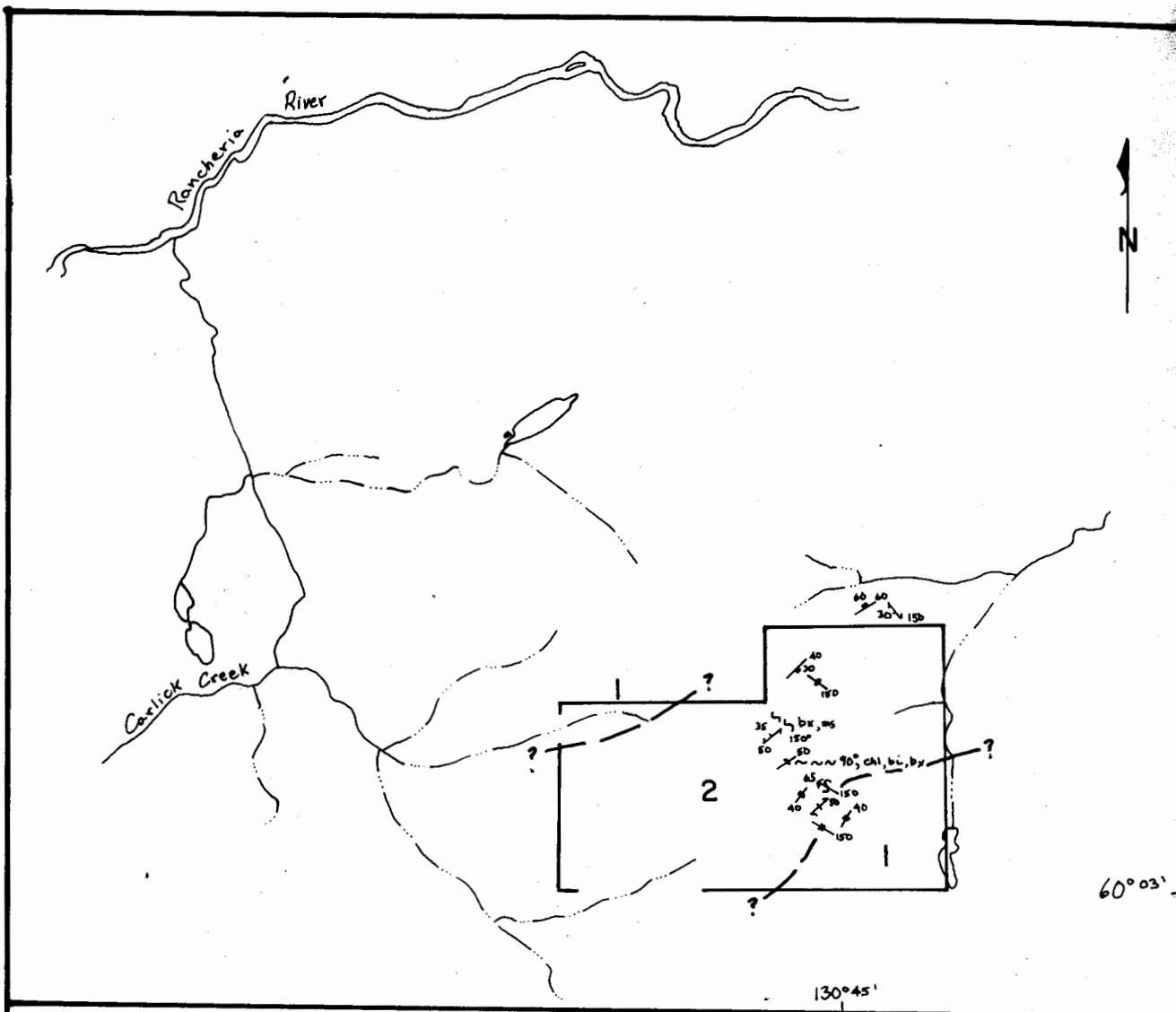
The original G.S.C. sample sites came from east cirques which were not visited,

Appendix V - References

1. Poole, W., Roddick, J. and Green, L. (1960): Geology of Wolf Lake, Yukon Territory; G.S.C. Map 10-1960, Preliminary Series

2. G.S.C. (1979): Regional Stream Sediment Reconnaissance Data - Wolf Lake, Y.T.; G.S.C. O.F.R. 563

.



LEGEND

- 2 Foliated biotite-muscovite quartz monzonite
 1 Biotite-quartz feldspar schist and gneiss

SYMBOLS

- — — Joint (Vertical, inclined)
 — — — Foliation (Vertical, inclined)
 — — — Drag Fold (Plunging)
 ~ ~ ~ Fault (assumed)
 — — — Geological Contact (assumed)

br - breccia chl - chlorite
 ms - muscovite
 bi - biotite

CANADIAN OCCIDENTAL PETROLEUM LTD.
 MINERALS DIVISION

PROJECT WATSU
 LICK CLAIMS

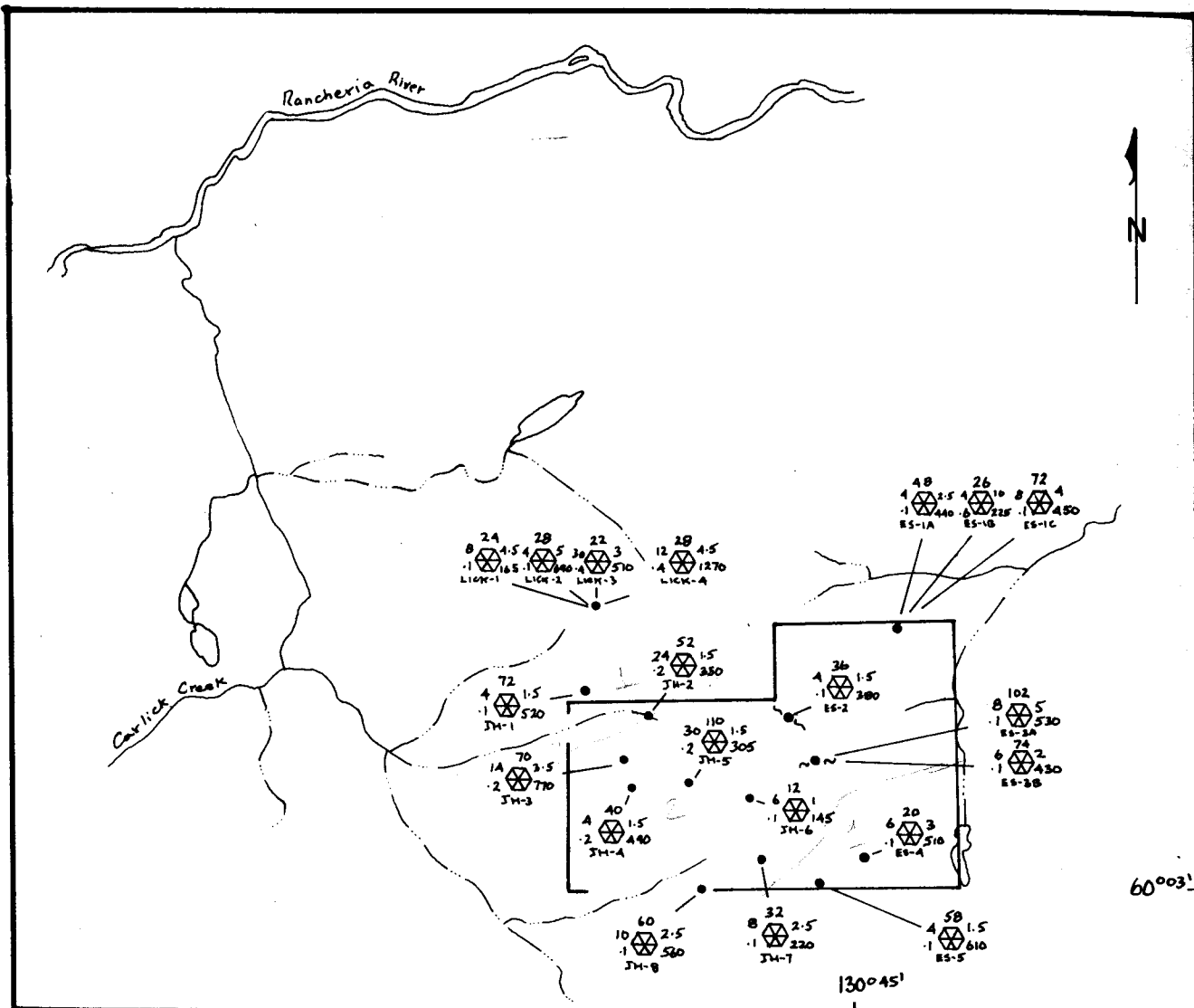
YUKON TERRITORY

GEOLOGY

Scale 1:50,000

PLAN I

September, 1979



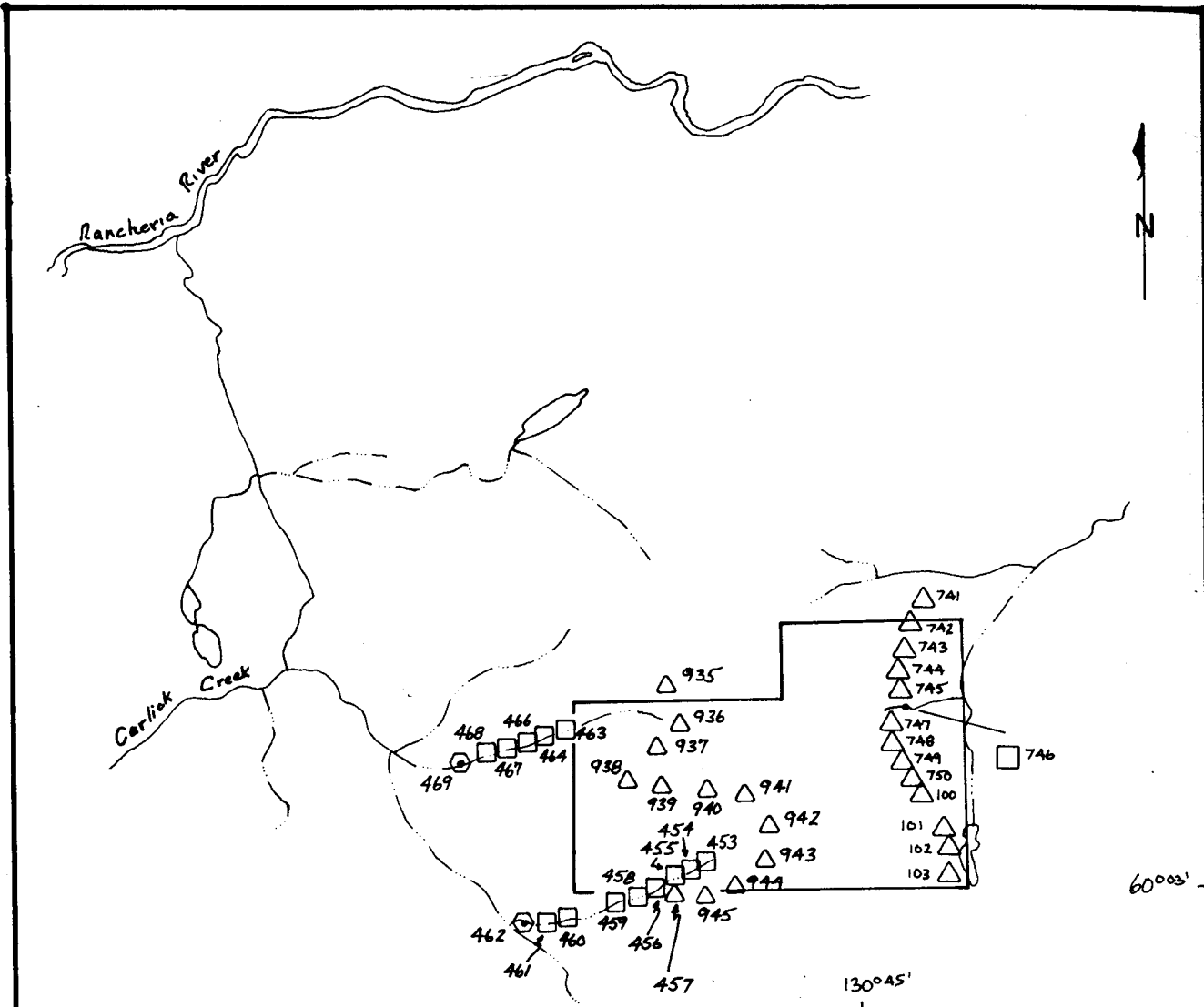
LEGEND

ppm Zn
 ppm Pb ppm U
 ppm Ag ppm F
 Sample No.

CANADIAN OCCIDENTAL PETROLEUM LTD.
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PROJECT WATSU
 LICK CLAIMS
 YUKON TERRITORY

ROCK GEOCHEMISTRY



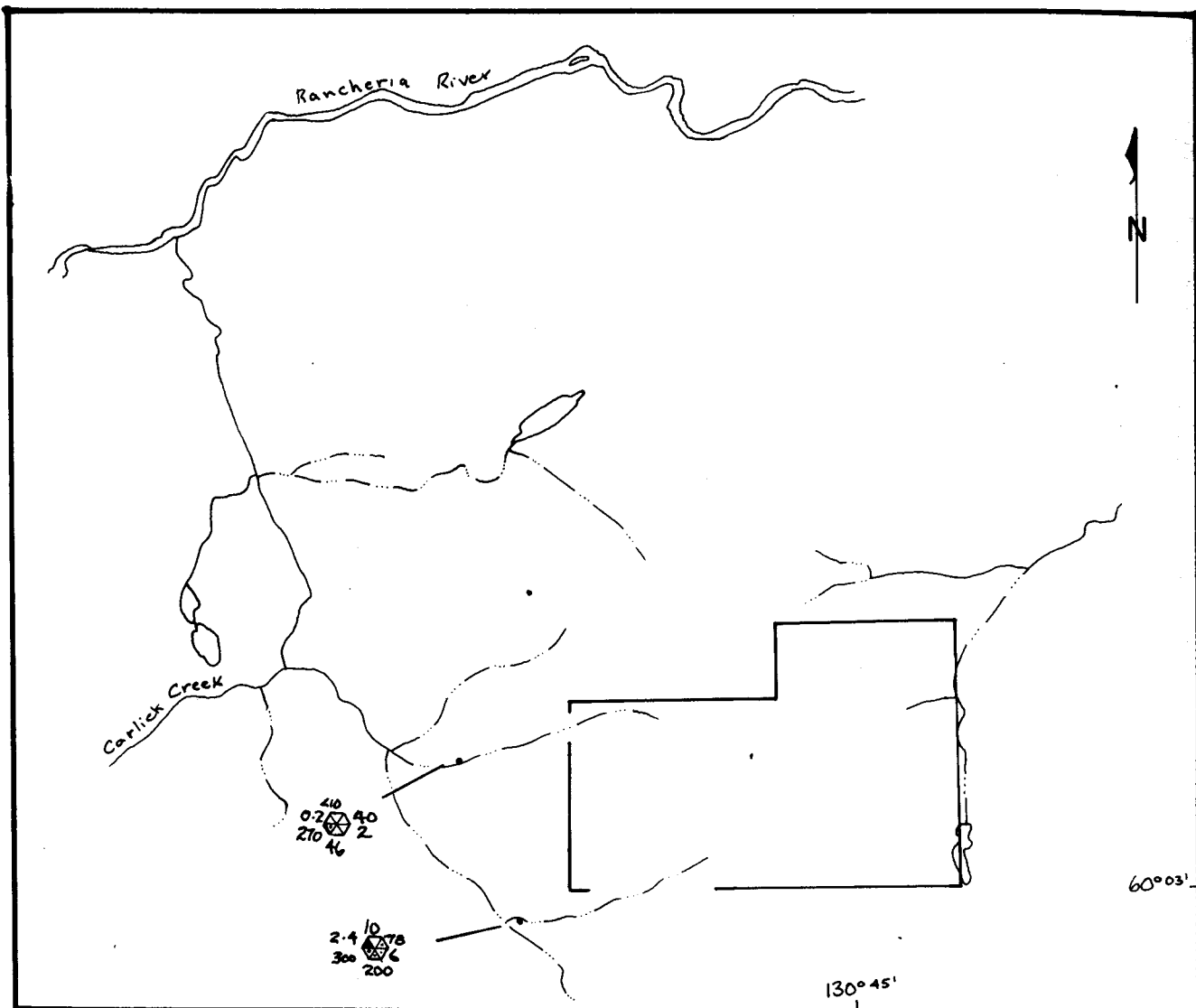
LEGEND

- △ Soil
- Sediment & Water
- ⬡ Heavy Mineral & Sediment & Water

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
LICK CLAIMS
YUKON TERRITORY

SAMPLE LOCATIONS



LEGEND

ppb Au
 ppm Ag ppm Cu
 ppm Zn ppm Mo
 ppm Pb

Cu Mo Pb Zn Ag Au

Poss. Anomalous

	63	2.5	89	200	.4	19
Prob. Anomalous	165	8.5	280	440	1	3150

PLAN 4

CANADIAN OCCIDENTAL PETROLEUM LTD.
 MINERALS DIVISION

PROJECT WATSU
 LICK CLAIMS

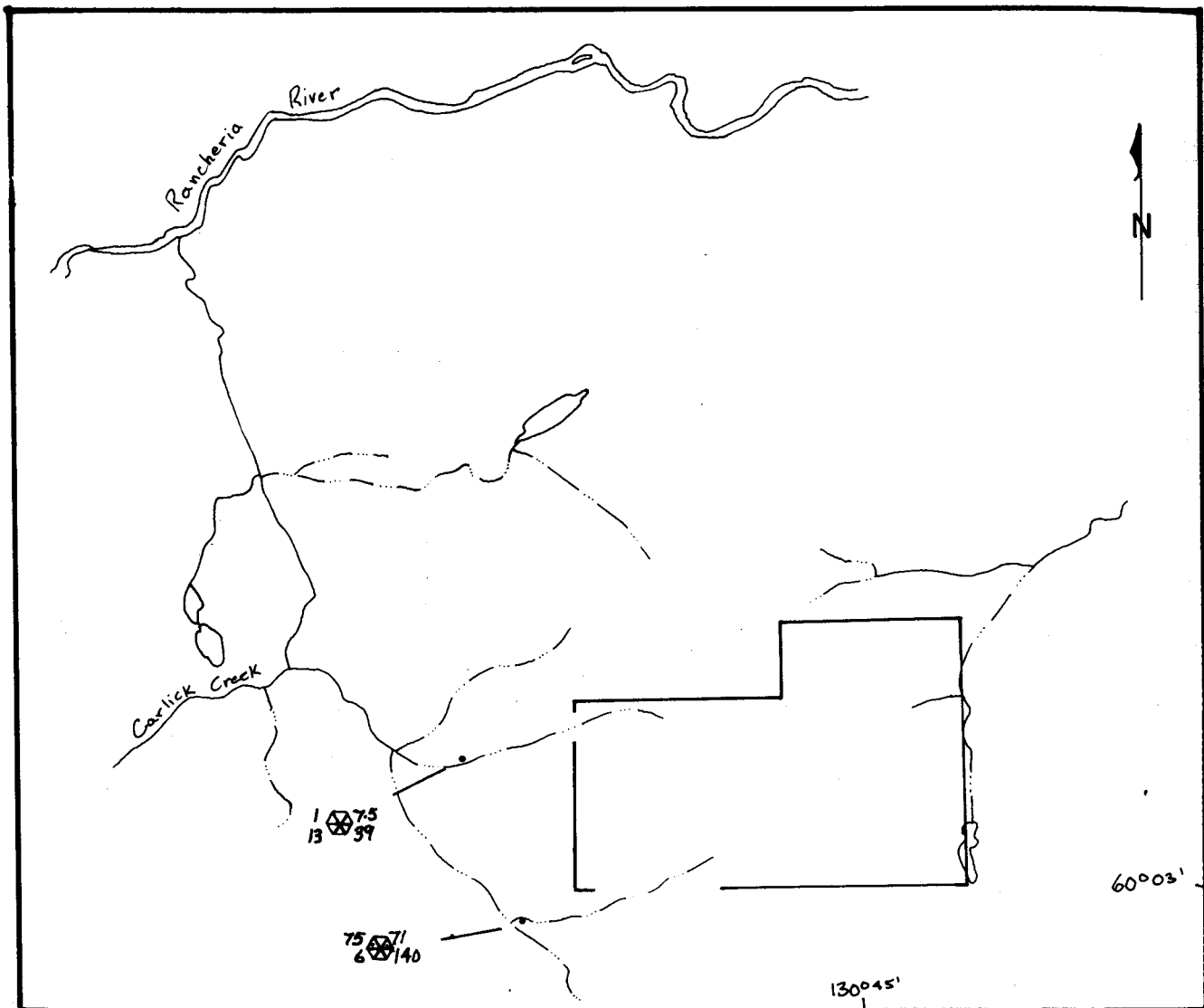
YUKON TERRITORY

HEAVY MINERAL GEOCHEMISTRY

Cu - Mo - Pb - Zn - Ag - Au



Scale: 1:50,000

September, 1979



LEGEND

ppm W  ppm U
ppm Sn ppm Th

	U	Th	Sn	W		
Poss. Anomalous		26	330	38	60	
Prob. Anomalous		120	1200	300	160	

PLAN 5

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
LICK CLAIMS

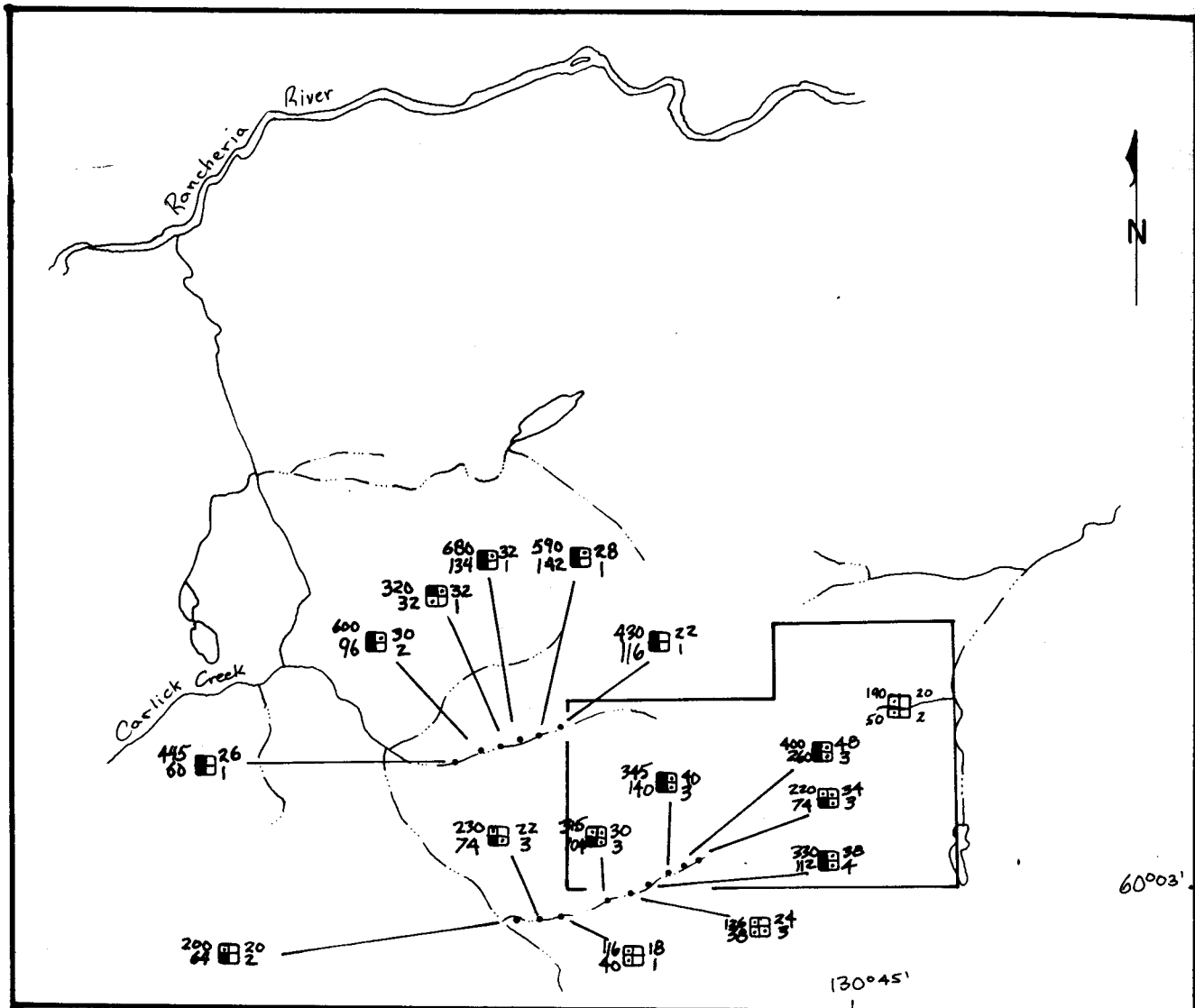
YUKON TERRITORY

HEAVY MINERAL GEOCHEMISTRY

U - Th - Sn - W

Scale: 1: 50,000

September, 1979



CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
LICK CLAIMS
YUKON TERRITORY

STREAM SEDIMENT GEOCHEMISTRY
Cu - Mo - Pb - Zn

LEGEND

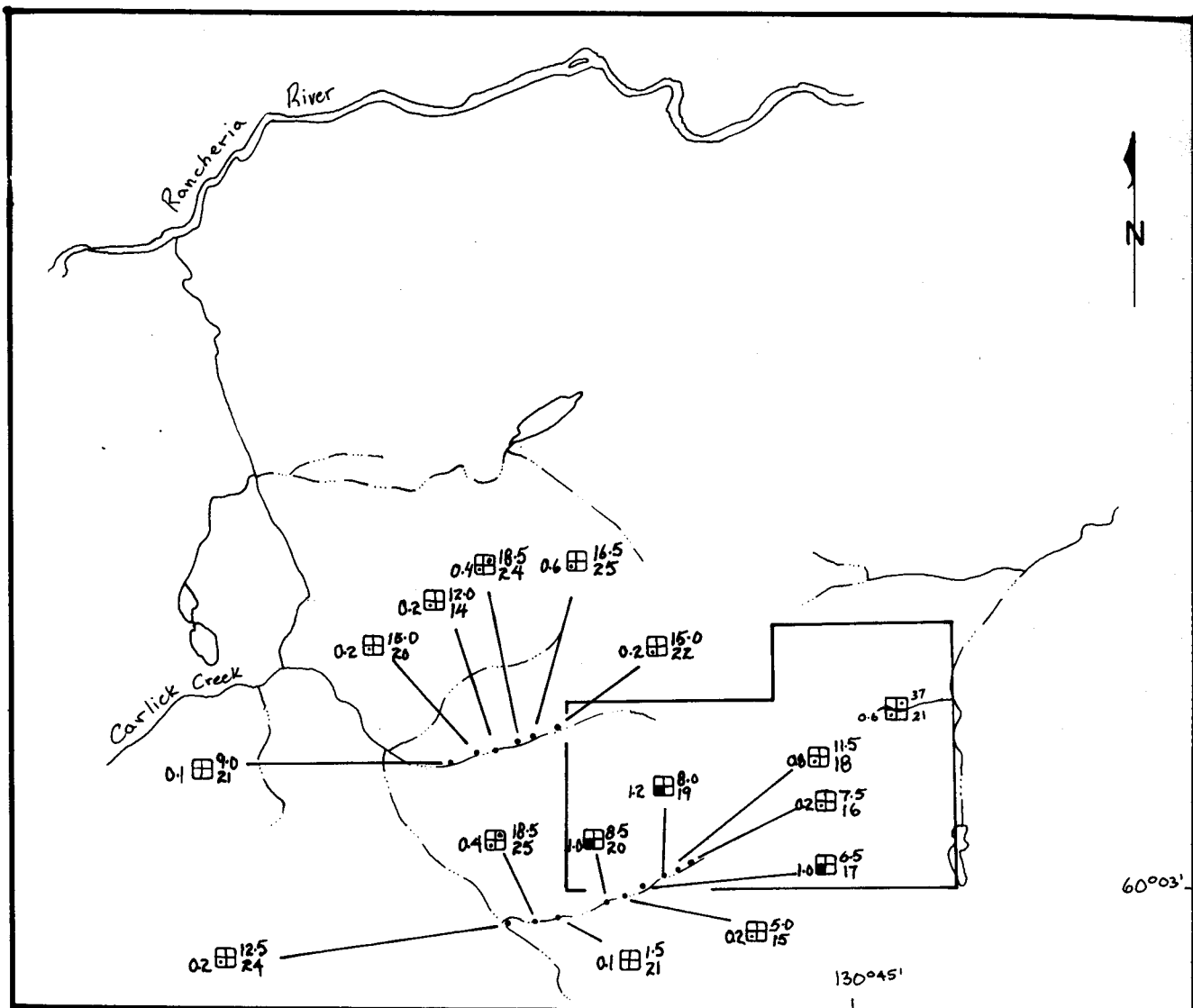
ppm Zn □ ppm Cu
ppm Pb □ ppm Mo

	Cu	Mo	Pb	Zn	---
Poss. Anomalous	28	3	21	115	
Prob Anomalous	54	11	59	320	

PLAN 6

Scale: 1:50,000

September, 1979



LEGEND

ppm Ag \oplus ppm U
ppm Th

U Th Ag - - -

Poss. Anomalous	\triangle	17	29	<1		
Prob. Anomalous	\blacktriangle	38	50	1		

PLAN 7

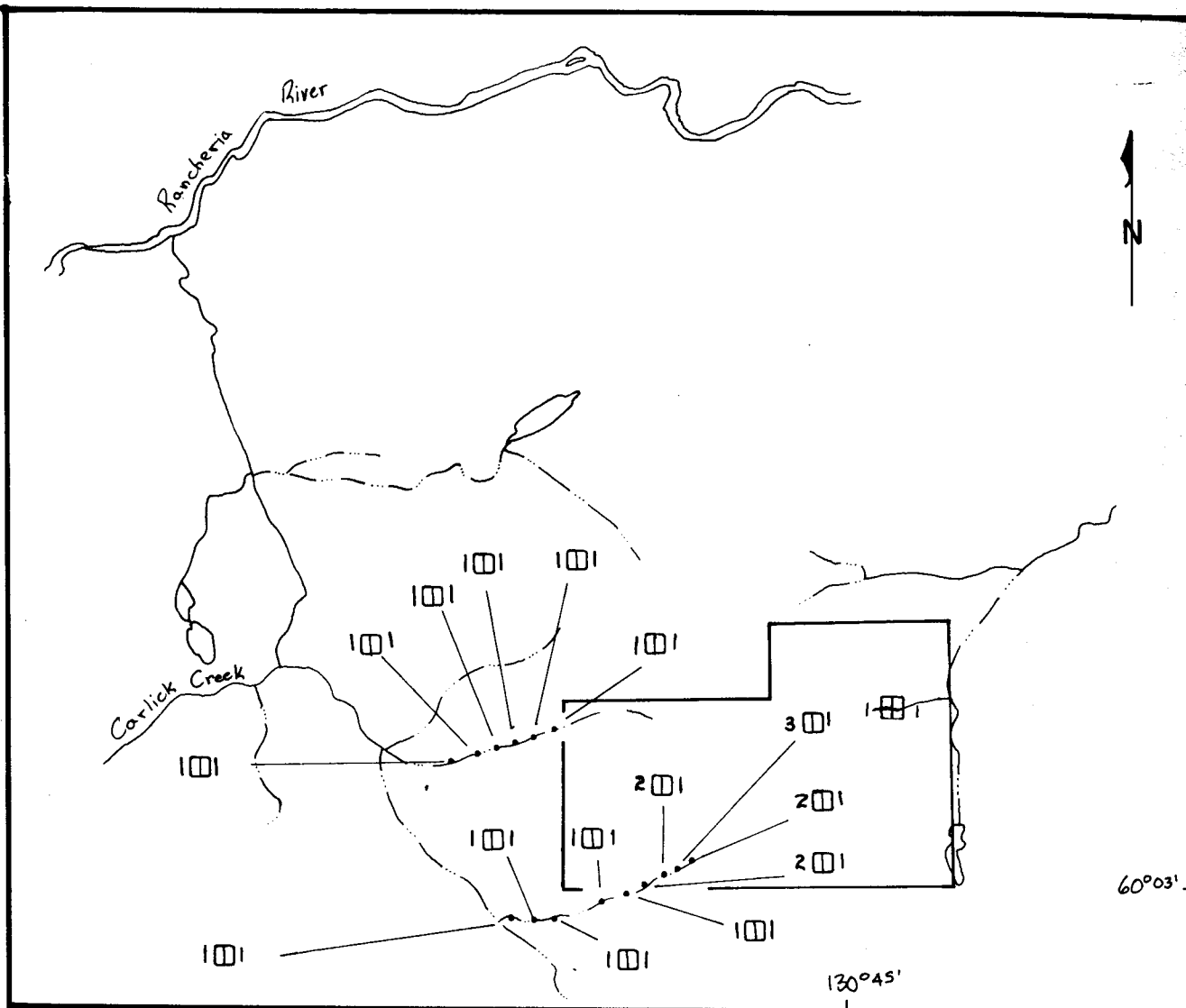
CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
LICK CLAIMS
YUKON TERRITORY

STREAM SEDIMENT GEOCHEMISTRY
U - Th - Ag

Scale 1:50,000

September, 1979



LEGEND

ppm W □ ppm Sn

W Sn - - - -

Poss. Anomalous	5	2				
Prob. Anomalous	16	5				

PLAN 8

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

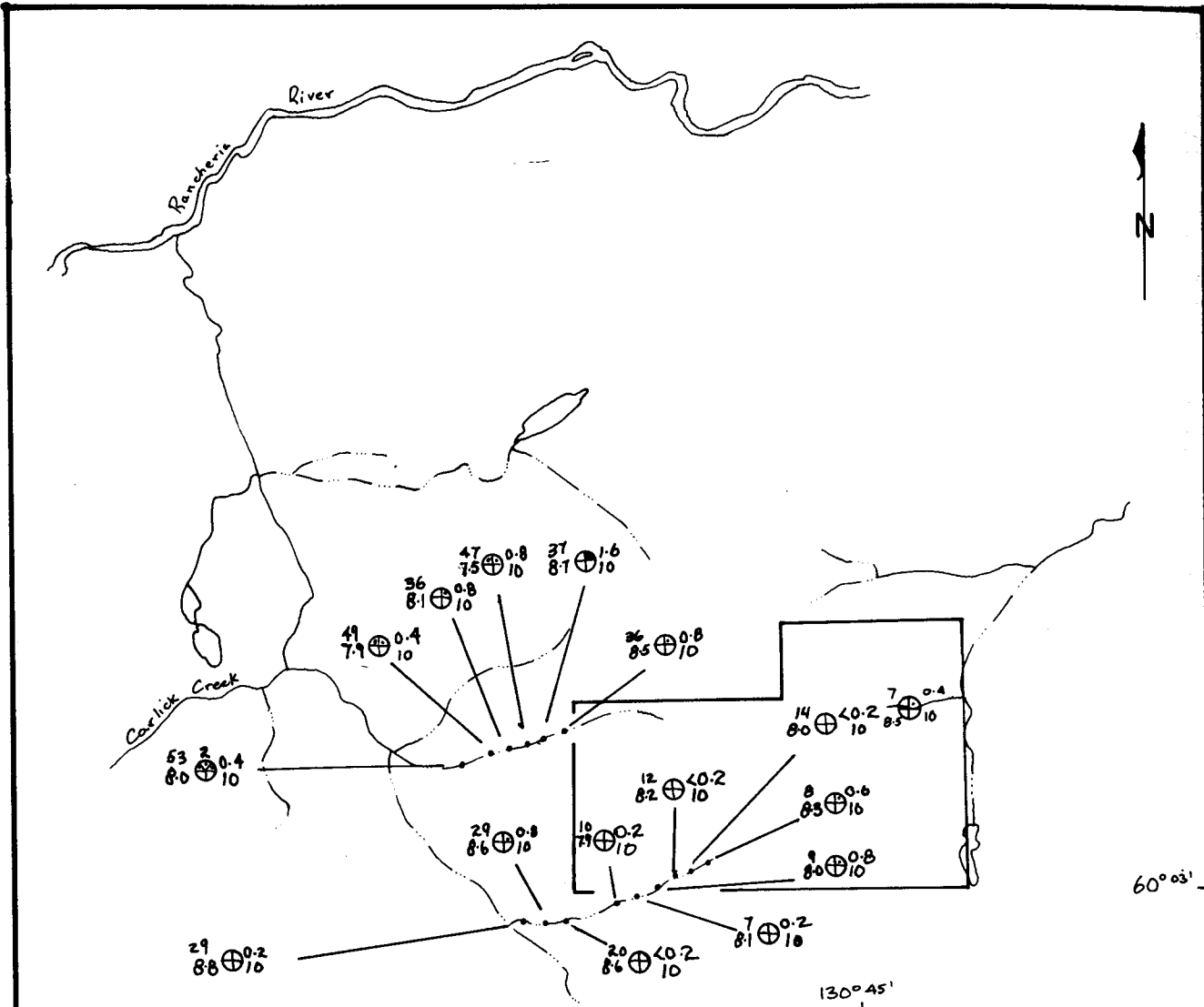
PROJECT WATSU
LICK CLAIMS
YUKON TERRITORY

STREAM SEDIMENT GEOCHEMISTRY

Sn - W

Scale: 1:50,000

September, 1979



CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
LICK CLAIMS
YUKON TERRITORY

STREAM WATER GEOCHEMISTRY

U - F - pH - SC - As

LEGEND.

SC ⊕ ppbU , As < 2ppb
pH ⊕ ppbF

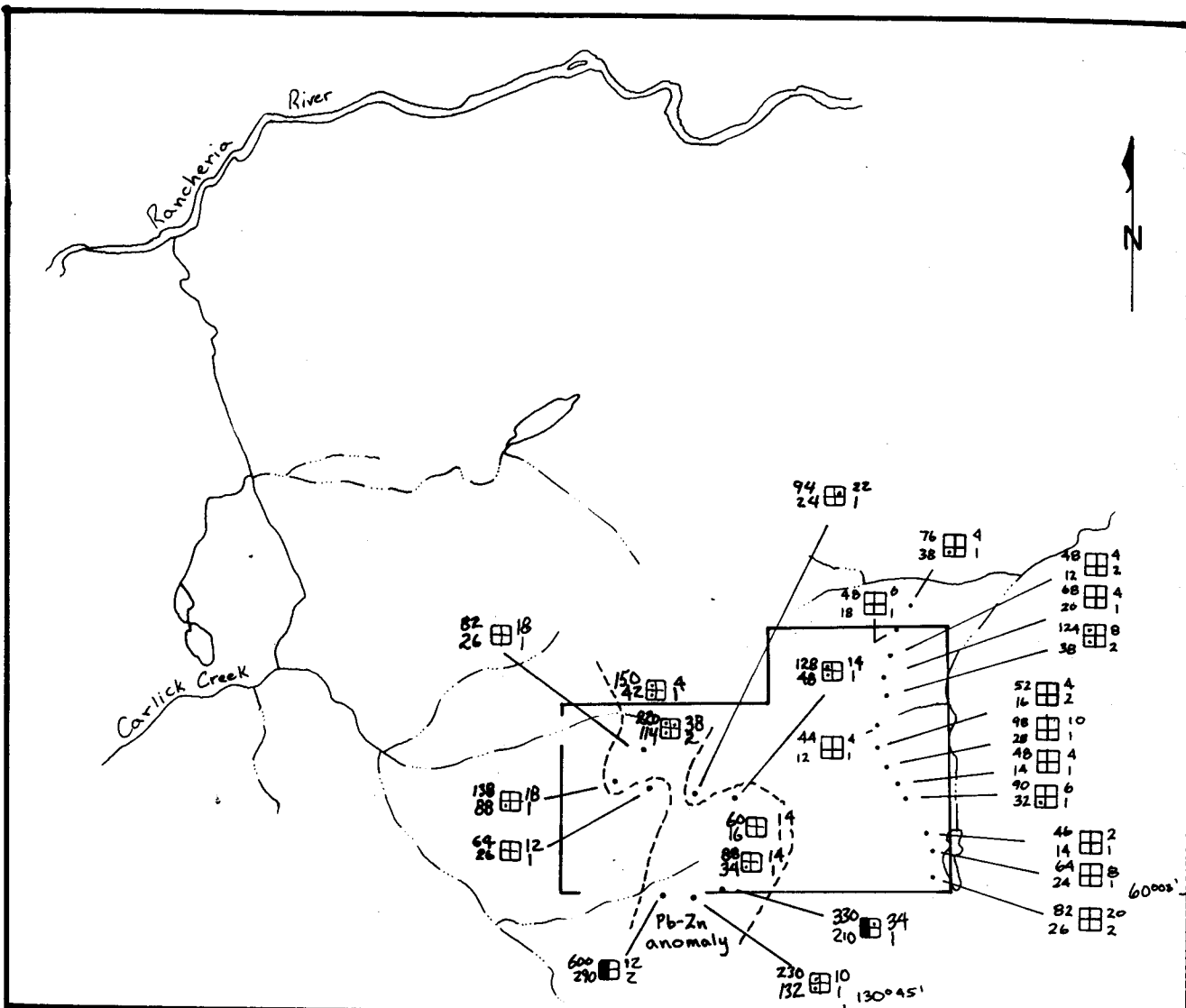
ppbAs
S-C ⊕ ppbU
pH ⊕ ppbF

	U	F	As	S.C.		
Poss. Anomalous	25	100	2	46		
Prob. Anomalous	85	210	72	100		

PLAN 9

Scale: 1:50,000

September, 1979



CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
LICK CLAIMS
YUKON TERRITORY

SOIL GEOCHEMISTRY

Cu - Mo - Pb - Zn

LEGEND

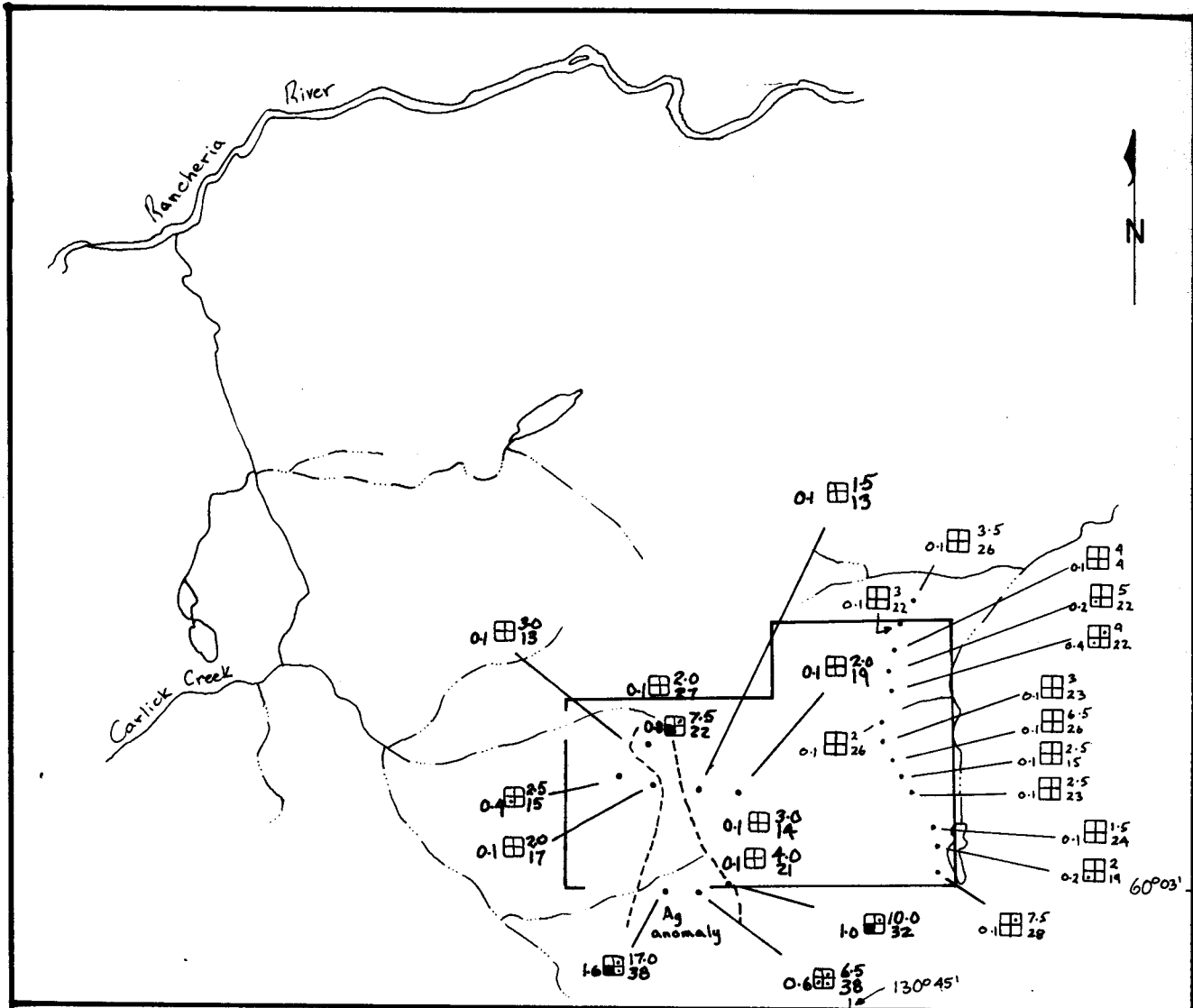
ppm Zn □ ppm Cu
ppm Pb □ ppm Mo

	Cu	Mo	Pb	Zn		
Poss. Anomalous	22	2.5	32	115		
Prob Anomalous	120	5	150	270		

PLAN 10

Scale: 1: 50,000

September, 1979



CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
LICK CLAIMS

YUKON TERRITORY

SOIL GEOCHEMISTRY

U - Th - Ag

LEGEND

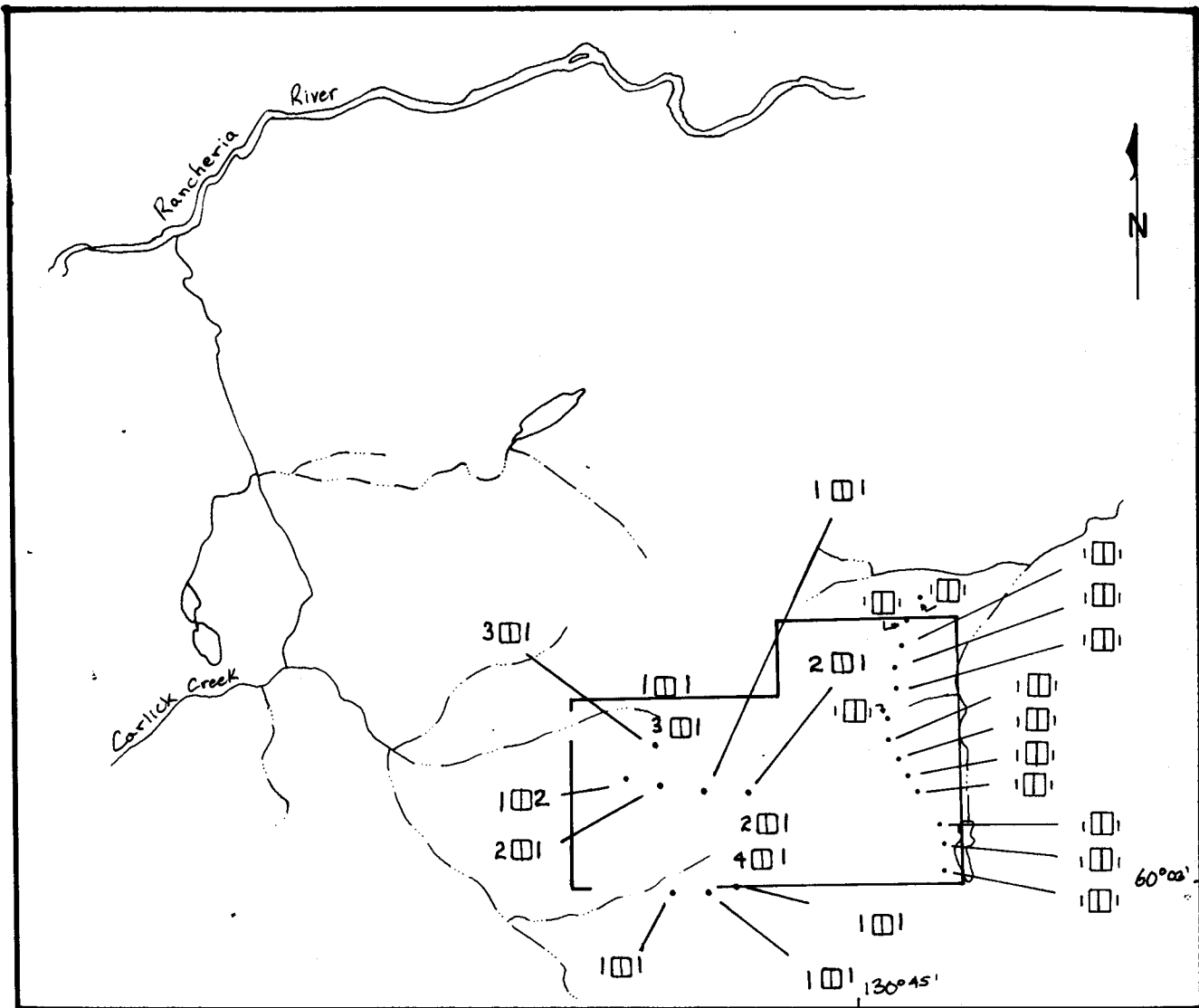
ppm Ag ppm U
ppm Th

	U	Th	Ag		
Poss. Anomalous	7	36	0.1		
Prob. Anomalous	30	75	0.8		

PLAN II

Scale: 1:50,000

September, 1979



CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
LICK CLAIMS

YUKON TERRITORY

SOIL GEOCHEMISTRY

Sn - W

LEGEND

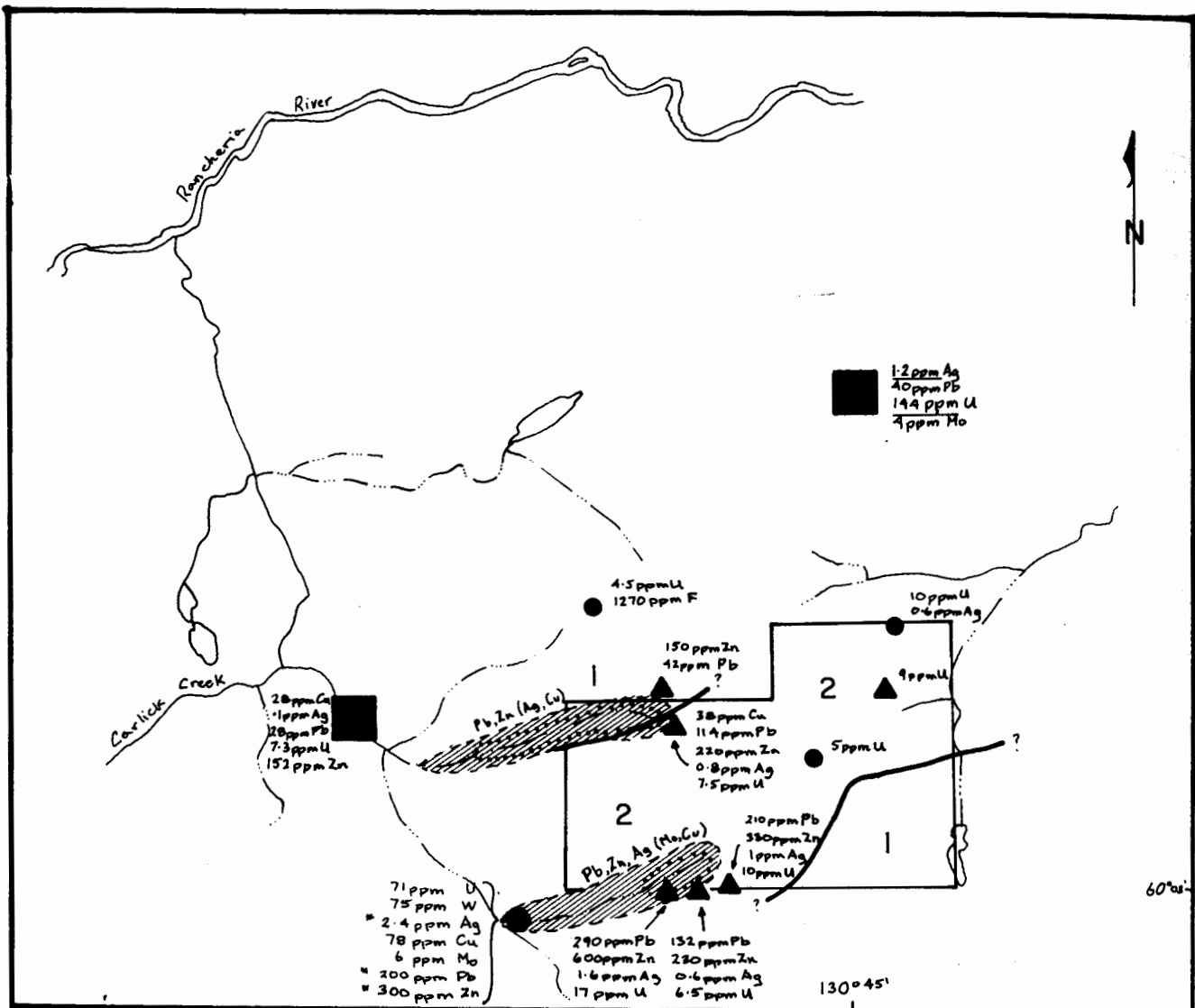
ppm W □ ppm Sn

	W	Sn				
Poss. Anomalous	7.5	1				
Prob. Anomalous	40	2				

PLAN 12

Scale: 1:50,000

September, 1979



LEGEND

Geology

- 2 : Foliated biotite-muscovite quartz monzonite
- 1 : Biotite-quartz-feldspar schist (meta-sediments)

Soil Anomaly ▲

Rock Geochemistry ●

Heavy Mineral Geochemistry ●

Stream Sediment Anomaly (hatched) Pb > 21ppm; Zn > 115ppm; Ag > 1ppm; Cu > 28ppm; Mo > 3ppm

Stream Water Anomaly (dotted) U > 0.85ppb

1978 G.S.C.-U.R.P.

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
LICK CLAIMS
YUKON TERRITORY

COMPILATION OF GEOLOGY & GEOCHEMISTRY

Scale 1:50,000

PLAN 13

September, 1979

Author's Qualifications

Eric J. Sacks

Education - Graduated Queen's University,
Kingston, Ontario
M.Sc. in Geology, 1978
- Graduated University of Toronto,
Toronto, Ontario
B.Sc. in Geology, 1977

Work Experience - Employed as field exploration geologist
with Canadian Occidental Petroleum Ltd., Minerals Division,
Toronto, Ontario since 1978. Carried out and supervised
mineral exploration programs in B.C. and Yukon.

Statement of Expenditures

Claims LICK 1-8, 11-16, 23-28

Record Numbers YA 44579 - YA 44598

		<u>Pro-rated¹ Costs</u>
Salaries and Benefits		\$1,532.34
Travel and Accommodation		934.02
Drafting and Reproduction		328.15
Consultant		460.44
Camp costs and Supplies		1,051.83
Rental of Equipment		175.30
Other Work		448.21
		<hr/>
	Sub-total	<u>\$4,930.29</u>
Helicopter 2.2 hr. at \$340/hr.	\$ 748.00	²
Geochemical 546 analyses	<u>920.36</u>	³
		<u>\$1,668.36</u>
	Total	<u>\$6,598.65</u>

Notes

¹ Pro-rated on basis of 5.2 man-days worked on claims conducting geological/geochemical/geophysical surveys out of a total of 115.6 man-days spent on these surveys during Project Watsu (see attached breakdown on following sheet).

² Helicopter flying completed by Associated Helicopters Ltd.

³ Geochemical analyses completed by Chemex Labs, Vancouver, B.C. (see attached Cost Breakdown).

PROJECT

BC CLAIM GROUPS	TOTAL NO. OF MAN DAYS	PRO-RATED COSTS							SUB-TOTAL "A"	REAL COSTS				SUB-TOTAL "B"	TOTAL "A" + "B"
		SALARIES & BENEFITS	TRAVEL & ACCOMMODATION	DRAFTING & REPRODUCTION	CONSULTANTS	CAMP COSTS & SUPPLIES	EQUIPMENT RENTAL	OTHER WORK		HELICOPTER		GEOCHEMISTRY			
										at \$310/hr	hrs.	cost	# ana		
ALLEN	4.3	1267.12	772.36	271.35	380.75	869.78	144.96	370.63	4076.95	620.00	2.0	617.80	385	1237.80	5314.75
ASP	5.0	1473.40	898.10	315.53	442.73	1011.38	168.56	430.97	4740.67	682.00	2.2	627.28	396	1309.28	6049.95
COT	3.0	884.04	538.86	189.32	265.64	606.83	101.13	258.58	2844.40	620.00	2.0	378.24	201	998.24	3842.64
KAZ	5.0	1473.40	898.10	315.53	442.73	1011.38	168.56	430.97	4740.67	527.00	1.7	854.64	454	1381.64	6122.31
MAR	1.0	294.68	179.62	63.11	88.55	202.28	33.71	86.20	948.15	310.00	1.0	62.40	18	372.40	1320.55
NEED	5.0	1473.40	898.10	315.53	442.73	1011.38	168.56	430.97	4740.67	837.00	2.7	966.36	560	1803.36	6544.03
PLATE	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	961.00	3.1	793.24	464	1754.24	6874.15
RAN	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	1209.00	3.9	775.28	524	1984.28	7104.19
SHAR 1&2	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	1023.00	3.3	639.36	402	1662.36	6782.27
SHAR 3&4, 9	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	1488.00	4.8	480.04	619	2268.04	7387.95
SHAR 5&6	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	899.00	2.9	750.36	469	1649.36	6769.27
SHAR 7&8	5.4	1591.27	969.94	340.77	478.15	1092.29	182.04	465.45	5119.91	837.00	2.7	749.28	460	1586.28	6706.19
SUB-TOTAL (1)	55.7	16413.66	10004.78	3514.99	4932.03	11266.77	1877.72	4801.02	52810.97	10013.00	32.3	7994.28	4952	18007.28	70818.25
YUKON CLAIM GROUPS										at \$340/hr					
BIG OX	5.6	1650.21	1005.87	353.39	495.86	1132.74	188.78	482.69	5309.54	1020.00	3.0	879.76	541	1899.76	7209.30
BORDER	1.1	324.15	197.58	69.42	97.40	222.50	37.08	94.81	1042.94	204.00	0.6	165.16	101	369.16	1412.10
CLO	3.9	1149.25	400.52	246.11	345.33	788.87	131.47	336.16	3697.71	1224.00	3.6	316.96	185	1540.96	5238.67
CO	2.2	648.30	395.16	138.83	194.80	445.01	74.16	189.63	2085.89	918.00	2.7	535.24	372	1453.24	3539.13
GOAT	5.5	1620.74	987.91	347.08	487.01	1112.51	185.41	474.07	5214.73	782.00	2.3	1266.48	807	2048.48	7263.21
ICE	4.2	1237.66	754.40	265.04	371.90	848.56	141.59	362.32	3982.47	782.00	2.3	798.64	351	1280.64	5263.11
LICK	5.2	1532.34	934.02	328.15	460.44	1051.83	175.30	448.21	4930.29	748.00	2.2	920.36	546	1668.36	6598.65
MOX	5.9	1738.61	1059.75	372.32	522.43	1193.42	198.90	508.54	5593.97	1292.00	3.8	1205.04	705	2497.04	8091.01
OXY	4.6	1355.53	826.25	290.29	407.31	930.47	155.07	396.49	4361.41	884.00	2.6	732.44	449	1616.44	5977.85
PISA	5.6	1650.21	1005.87	353.39	495.86	1132.74	188.78	482.68	5309.54	714.00	2.1	757.96	512	1471.96	6781.50
SAL	5.6	1650.21	1005.87	353.39	495.86	1132.74	188.78	482.78	5309.54	1190.00	3.5	497.12	411	1687.12	6996.66
TIER	4.9	1443.93	880.15	309.21	433.91	991.10	165.16	422.71	4645.46	1156.00	3.4	750.76	438	1906.76	6552.60
WOX	5.6	1650.21	1005.87	353.39	495.86	1132.74	188.78	482.69	5309.54	952.00	2.8	841.04	579	1793.08	7102.62
SUB-TOTAL (2)	59.9	17651.35	10759.22	3780.01	5303.97	12116.23	2019.28	5162.98	56793.41	11866.00	34.9	9367.00	5997	21233.00	78026.41
TOTALS (1+2)	115.6	34065.00	20764.00	7295.00	10236.00	23383.00	3897.00	9964.00	109604.00	21879.00	67.2	17361.28	10949	39240.28	148844.66

THE LICK CLAIM GROUP
GEOCHEMICAL COST BREAKDOWN

<u>INVOICE #</u> ¹	<u># OF SAMPLES</u>	<u>DESCRIPTION</u>	<u>COST</u> ²
31990	2	Cu, Mo, Pb, Zn, As, Au, W, Sn, U	\$ 58.20
32448	2	Th	10.00
31310	41	Cu, Mo, Pb, Zn, Ag, Sn, W, U	535.05
32113	41	Th	205.00
31613	16	U, F, As	148.00
31610	16	Pb, Zn, Ag, U, F	151.20
31253	4	Pb, Zn, Ag, F, U	43.00
SUB-TOTAL			\$1150.45 less 20%
TOTAL			<u><u>\$920.36</u></u>

1 - all invoices from Chemex Labs unless otherwise noted
2 - cost includes preparation of samples