CANADIAN OCCIDENTAL PETBOLEUM LTD.

MINERALS DIVISION

GEOLOGY AND GEOCHEMISTRY

of the

BORDER CLAIMS
Yukon Territory

and the

ALLEN 1 & 2 CLAIMS
British Columbia

Claim Sheet Numbers 105-B-6W
104-O-E

Lat.: 60°18'N
Long.: 131°30'W

WATSON LAKE MINING DISTRICT, YUKON

and

LIARD MINING DIVISION, BRITISH COLUMBIA

090840

by:

Charles Hartley, B.Sc.

Work Completed June 29 to July 2, 1980

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $ 700.00

R. Debicki A Reg Geol
Resident Geologist or
Resident Mining Engineer July 8/81

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

Commissioner of Yukon Territory

INDIAN and NORTHERN AFFAIRS

TRANSMITTAL FORM

M.R. File No. _____
S.M.R. File No. _____
Date Fwd. 29 JUNE 1981

FROM: Mining Recorder at ... WATSON LAKE .....

Supervising Mining Recorder at Whitehorse, Y.T.

FOR ACTION ARE:

☐ NEW APPL'N for PLACER LEASE to PROSPECT: Name:

☐ RENEWAL APPL'N PLACER LEASE to PROSPECT: Name: Lease No. .....

☐ AFFIDAVIT of EXPENDITURE on PLACER LEASE. Name Lease No. .....

☐ ASSIGNMENT of PLACER LEASE No. .....
From: To:

☐ GROUPING APPL'N UNDER SEC. 52(2) PLACER MINING ACT.
Owner:

☐ DIAMOND DRILL LOGS:
Claims: Claim sheet no:

☒ QUARTZ ASSESSMENT REPORT
Claims: Border 1-6, 8 Claim sheet no. 105-B-2

Type of report: Geological & Geochemical

Submitted by: CANADIAN OCCIDENTAL PETROLEUM.

Cls. work performed on: Border 1-6, 8

$ Req. for ren. application $700.00

Signature

* Receipts held in Watson Office.

REPLY ACTION. Date Ret.

Signature

TABLE OF CONTENTS

SUMMARY

The BORDER-ALLEN claims are located at 60°00N, 130°40W straddling the Yukon-British Columbia border. The BORDER claims lie within NTS 105-B/2E, Yukon Territory, while the ALLEN claims lie within NTS 104-O/15E British Columbia. The claims were staked by Canadian Occidental on June 26, 1976 to cover multi-site stream sediments with high values of Cu, Pb, Zn, Ag and U. A reconnaissance geology, stream soil and rock geochemistry surveys conducted on the BORDER-Allen Claims by Canadian Occidental personnel in 1979 was successful in locating anomalous copper, lead, zinc, silver and uranium values.

In 1980, Canadian Occidental personnel returned to the BORDER-ALLEN Claims and located twelve areas of anomalous geochemical values in soils and/or rocks. The 1980 program also included a geological mapping program of the property.

The BORDER-ALLEN claims are underlain by a biotite ± muscovite quartz monzonite which is locally foliated, especially within the central ridge on the property, and also has local chloritic, saussuritic and kaolinitic alteration. The intrusive is cut by basalt and/or diabase dykes in the south half of the ALLEN claims.

Hornblende diorite which has undergone pervasive chlorite alteration of the hornblende phenocrysts outcrops in two areas in the south portion of the ALLEN claims. One outcrop was observed in the southeast corner of the claim group while the other was observed in the east end of the cirque in the southwest corner just south of the claim group.

The twelve geochemical Pb-Zn-Ag soil anomalies on the property appear to be related to shearing within quartz monzonite, cataclastic and/or chlorite alteration, the intrusion of the hornblende diorite in the south portion of the property, or possibly hydrothermal alteration which was observed north of the BORDER No. 1 claim.

Future work on the property should concentrate on the geochemical anomalies outlined on the property. This work should include detailed soil and rock geochemistry of the anomalies, as well as detailed geology and prospecting in the anomaly areas.

I. INTRODUCTION

The BORDER-ALLEN Claims were staked on June 26, 1979 to cover a multi-site G.S.C. stream sediments with high values of Pb, Zn, Ag, Cu and U contained in Open Files 561 and 563 released on June 8, and 15, 1979 respectively.

From June 29 to July 2, 1980, Canadian Occidental conducted a soil sampling and limited scintillometer survey on the property, in conjunction with geological mapping and a limited rock geochemistry survey of the BORDER-ALLEN Claims. This work was completed to further outline anomalies areas detected by Canadian Occidental personnel in 1979.

This report describes the work completed during the 1980 summer program.

II. LOCATION AND ACCESS

The BORDER-ALLEN Claims are located at 60°00N, 130°40'W straddling the Yukon-British Columbia border. The BORDER claims lie within NTS 105-B/2E, Yukon Territory, while the ALLEN Claims lie with NTS 104-O/15E, British Columbia.

The claims group lies approximately 9.6 km (6 miles) south of Rancheria at km 1136 (mile 710) on the Alaska Highway and immediately west of Alan Creek. Access to the claims is via helicopter. A washed out dirt road runs up Alan Creek from the Alaska Highway to within 1.6 km (1 mile) east of the claims.

III. PHYSIOGRAPHY AND VEGETATION

Relief over the Border-ALLEN claims is approximately 640 meters (2100 ft) between elevations 1340 m and 1980 m (4400 ft and 6500 ft) above sea level. Topography is disorganized and consists of steep, loose, scree slopes, dropping from rocky crags in western parts of the claims to Alan Creek

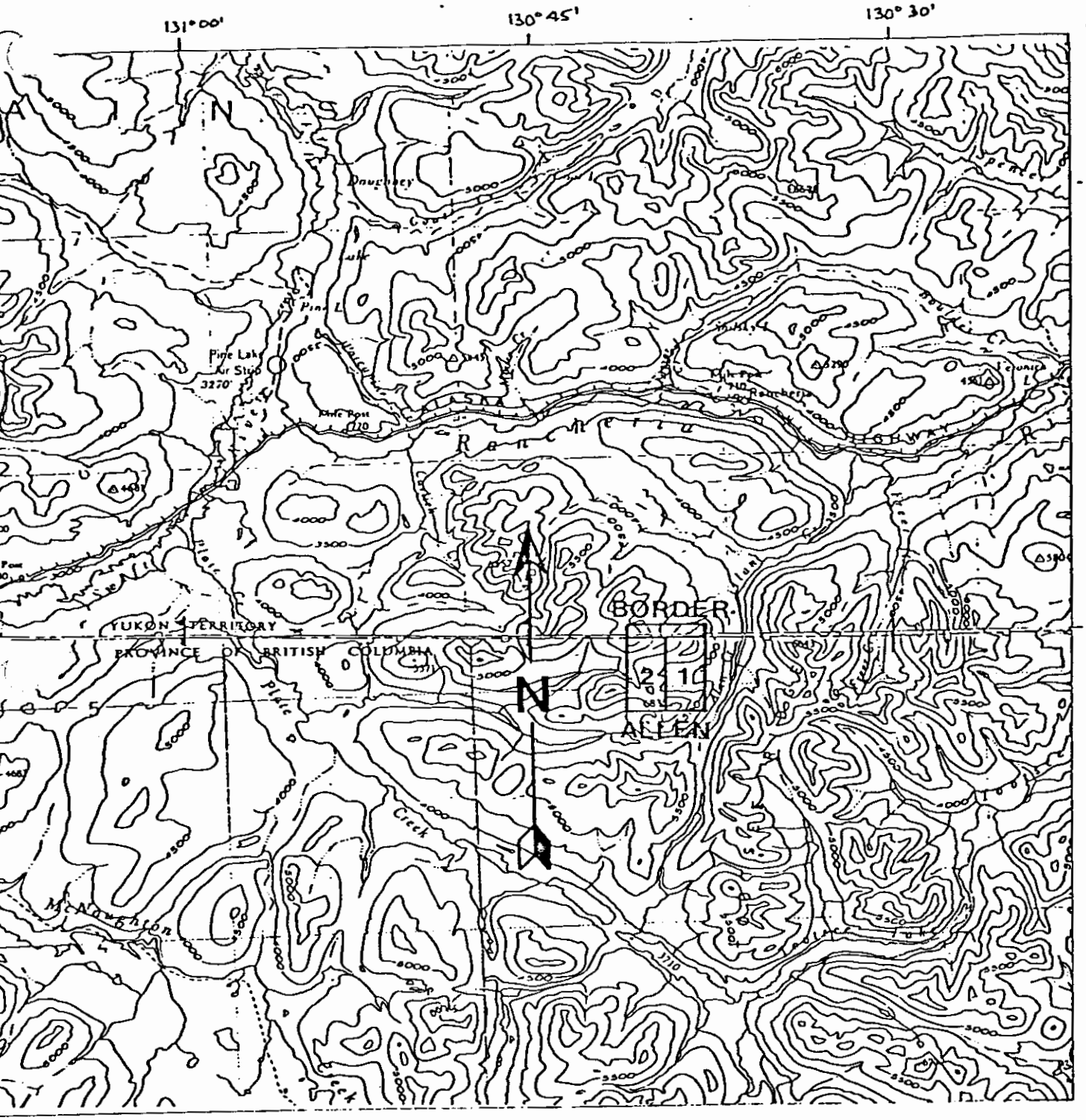
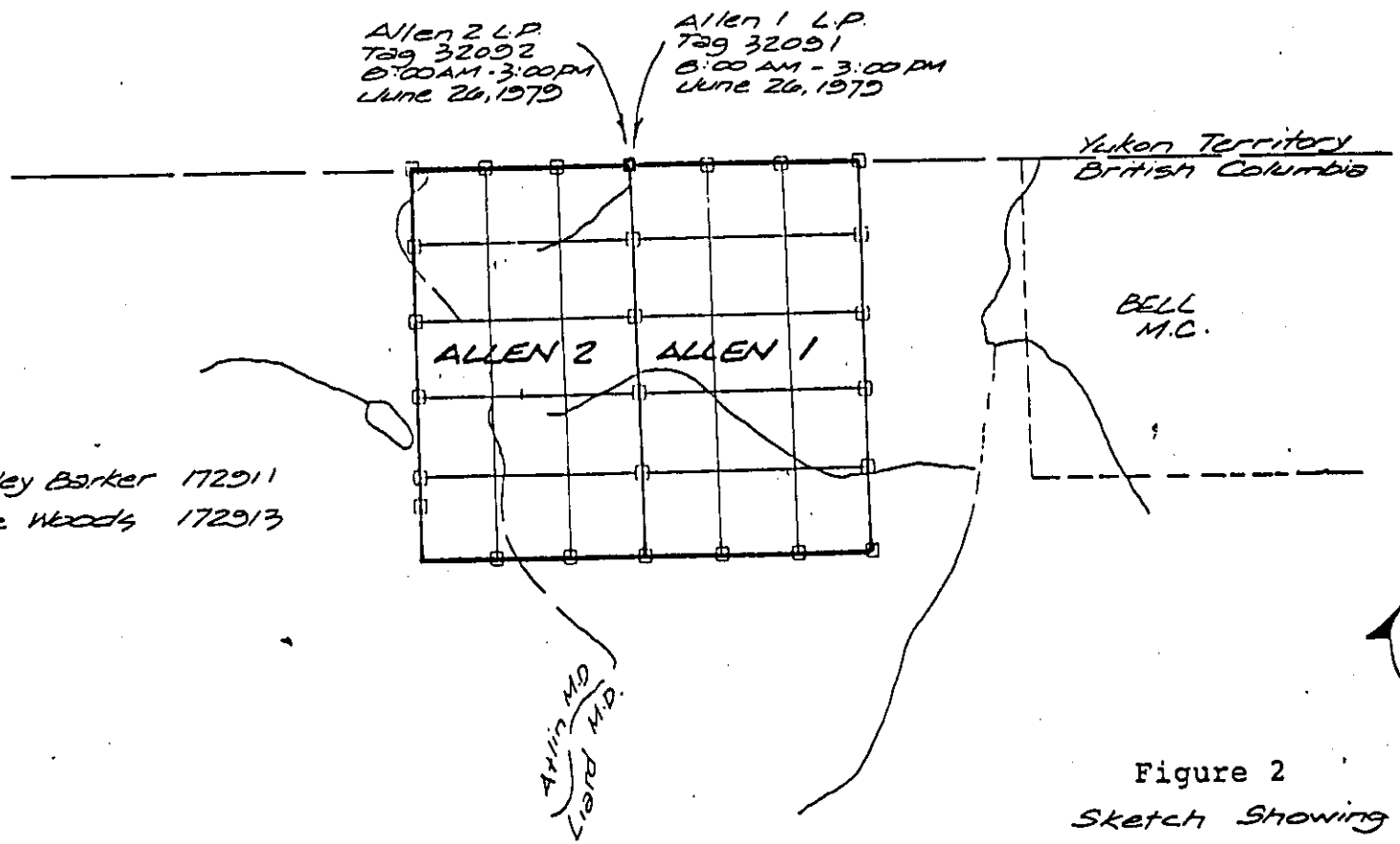


Figure 1
Location and Access of BORDER/ALLEN Claims
N.T.S. 104-O/15E-105B/2
SCALE: 1:250,000



ALLEN 1 : Morley Barker 172911
ALLEN 2 : Mike Woods 172913

Figure 2
Sketch Showing
ALLEN 1 AND 2
MINERAL CLAIMS
Map Sheet 104 O/15 E
Liard Mining Division

Scale 1:50,000

■ Legal Post
□ Identification / Corner Post

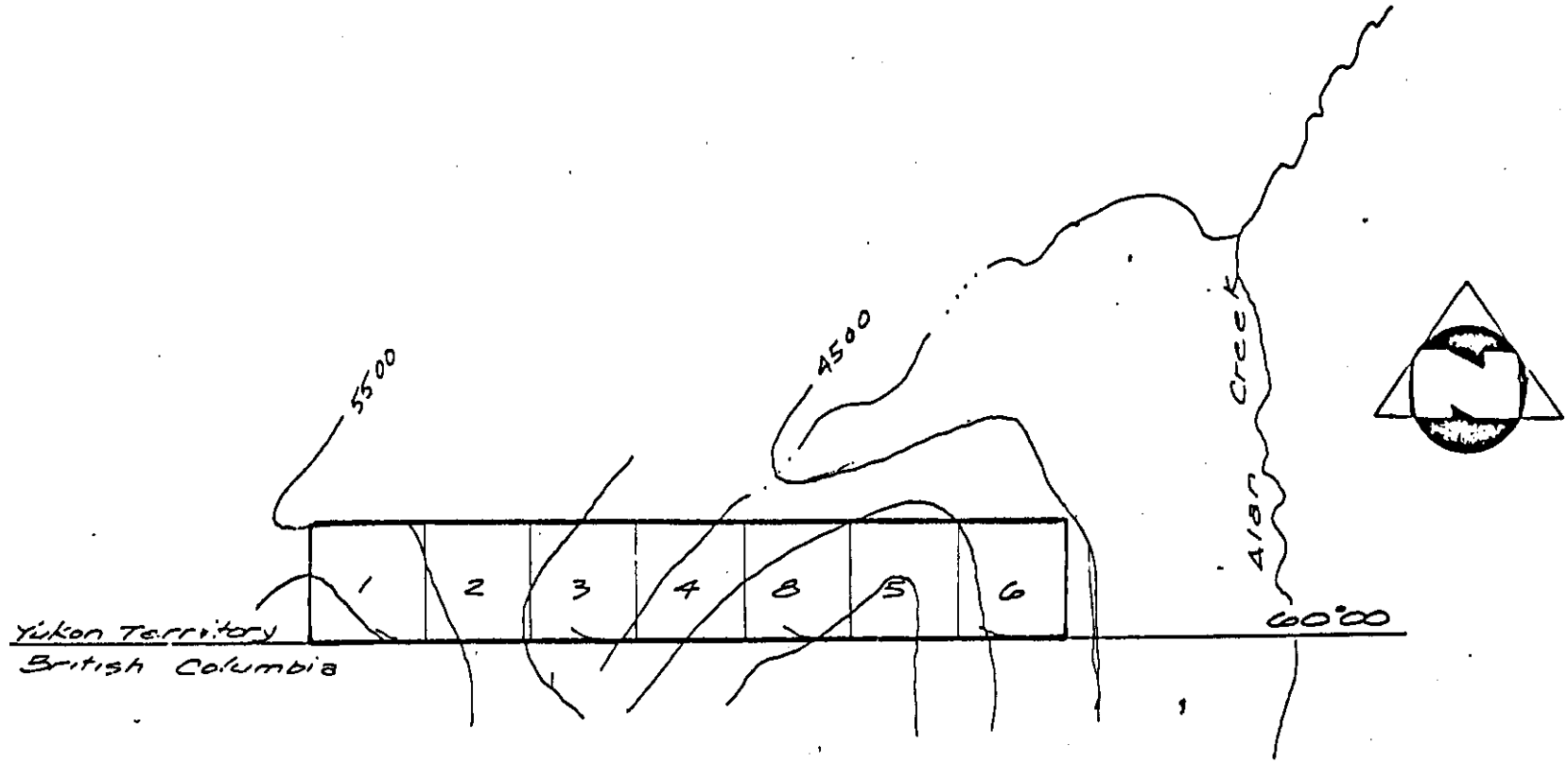


Figure 3

Staking Sketch Showing

BORDER 1-8

MINERAL CLAIMS

Watson Lake Mining District

Map Sheet 105 B/2

Scale 1" 2640'

Border 1-8 Marley Barker June 26/79

valley in the eastern part of the claims. The entire claim group lies above treeline.

IV. PREVIOUS WORK

Numerous nearby Pb-An-Ag-Cu showings of possible skarn type have been located in the general area. The Jennings River (104-0) map sheet was mapped by the Geological Survey of Canada from 1944 to 1967. (Gabrielse 1968). The Wolf Lake (105-B) map sheet was mapped by the GSC from 1951 - 1959 (Poole et al. 1960). In 1978, the GSC conducted reconnaissance stream sediment and water sampling over both map sheets. Results for Jennings River (104-0) were released on June 8, 1979 as Open File 561. Results for Wolf Lake (105-B) were released on June 15, 1979 as Open File 563. The BORDER and ALLEN 1 and 2 Claims were staked on June 26, 1979, to cover a multi-site stream sediments with high values of Cu (26 ppm), Pb(72 ppm), Zn (200 ppm), Ag(1.0 ppm) and U (68.7 ppm).

Previous work on the BORDER-ALLEN Claims consisted of minor geological mapping, stream silt sampling and soil sampling by Canadian Occidental in July 1979. (See Sacks, 1979). No other previous work was observed or has been recorded on the BORDER-ALLEN Claims.

V. CLAIM STATUS

5.1 The BORDER Claims

The BORDER Claims were staked on June 26, 1979 by MBW Surveys of Whitehorse, Y.T. for Canadian Occidental. The BORDER Claims comprise 8 claims covering an area of 413 acres of 1.6 sq. km. (0.6 sq. mil.). The BORDER Claims were recorded on July 6, 1979.

Assessment work filed to date on the BORDER Claims

will hold the claims in good standing until April 5, 1982.

Claims	Tag Nos.	Date Staked	Dated Recorded	Valid Until
BORDER 1 to 8	YA44635 to YA44641	June 16, 1979	July 6, 1979	April 5, 1982

5.2 The ALLEN Claims

The ALLEN Claim group was staked on June 26, 1979 by MBW Surveys of Whitehorse, Y.T. for Canadian Occidental. The ALLEN 1 and 2 Claims comprise a total of 30 units covering an area of 1854 acres or 7.5 sq. km. (219 sq. mi.). The ALLEN Claims were recorded on July 16, 1979.

Assessment work filed to date on the ALLEN Claims will hold the claims in good standing until July 16, 1982.

Claim	No. Units	Staking Date	Recording Date	Expiry Date
ALLEN 1	15	June 26, 1979	July 16, 1979	July 16, 1982
ALLEN 2	15	June 26, 1979	July 16, 1979	July 16, 1982

VI. WORK COMPLETED - 1980

6.1 Geological Mapping

R. Wallis, C. Gleeson, R. Kuehnbaum and G. Tetu visited the property briefly on June 4, 1980. C. Hartley, T. Burns and G. Tetu visited the BORDER-ALLEN Claims on June 29, 1980 and conducted reconnaissance geological mapping. Hartley and Crandall returned to the BORDER-ALLEN Claims on June 30, July 1 and 2, 1980 to complete the geological mapping of the

BORDER-ALLEN Claims. A total of 8.5 man days of work were performed to geologically map the property.

6.2 Claim Post Tagging

G. Tetu and M. Oberc each spent 0.5 days locating and tagging claim posts on the BORDER Claims.

6.3 Geochemistry

A total of 153 soil samples, 1 heavy mineral sample and 1 silt sample were collected by M. J. Crandall, M. Oberc and C. Scott. Also 34 rock samples were collected during geological mapping of the BORDER-ALLEN Claims. All samples were sent to Chemex Labs Ltd., North Vancouver, B. C. for geochemical analysis. A total of 5.5 man days were needed for the collection of these samples.

6.4 Scintillometer Survey

A scintillometer survey was carried out simultaneously with the soil sampling on the BORDER-ALLEN Claims. Radiometric readings were taken at each soil sample location and approximately one half the distance between each soil sample location. Problems carrying this out occurred when one scintillometer was not in operating condition which resulted in no radiometric data for the north side of the south ridge, in the south portion of the ALLEN Claims.

6.5 Summary of Work Completed

Type of Work	Total Man Days	BORDER-ALLEN	
Geological Mapping	8.5	2.5	6.0
Geochemistry	5.5	2.5	3.0

		No. of Analyses						
	No. of Samples	Cu	Mo	Pb	Zn	Ag	U	Total
ALLEN								
Soils	99			99	99	99	-	297
Rocks	19	11	10	19	19	19	-	78
TOTAL ALLEN	118	11	10	10	118	118	1	375
BORDER								
Soils	54			54	54	54	-	162
Rocks	15	6	6	15	15	15	-	57
Silt	1			1	1	1	-	3
Heavy Mineral	1	1	1	1	1	1	1	6
TOTAL BORDER	71	7	7	71	71	71	1	228
TOTAL BORDER-ALLEN	189	18	17	189	189	189	1	603

		BORDER-ALLEN	
Helicopter Hours	4.1	1.1	3.0

6.6 Names and Addresses of Personnel

Dr. R.H. Wallis Canadian Occidental Petroleum Ltd. Minerals Division Ste. 311 - 215 Carlingview Drive Rexdale, Ontario M9W 5X8	Chief Geologist
R. Kuehnbaum Address as above	Project Supervisor
G. Tetu Address as above	Project Geologist
C. Hartley Address as above	Project Geologsit
T. Burns Address as above	Geologist
M.J. Crandall Address as above	Senior Assistant
C. Scott Address as above	Junior Assistant
M. Oberc Address as above	Junior Assistant
C. F. Gleeson C. F. Gleeson & Associates Ltd. R. R. #1, Lakeshore Drive Iroquois, Ontario K0E 1K0	Consulting Geochemist

VII. GEOLOGY

7.1 General Geology (Plans 1A and 1B)

Mapping by Gabrielse (1968) and Poole et al. (1960) show the BORDER-ALLEN Claims to be underlain by Mid-Cretaceous, biotite quartz-monzonite to granodiorite of the Cassiar Batholith.

Mapping by Canadian Occidental personnel indicates the BORDER-ALLEN Claims to be underlain by biotite ± muscovite quartz-monzonite to granodiorite which is foliated within the central ridge on the property, with local chloritized, saussuritized, kaolinized and limonitized fracture zones with rare quartz veining. The intrusive is cut by narrow 0.5 to 1 meter, aphanitic basaltic to diabasic dykes with phenocrysts of plagioclase up to 3 mm in size which were observed south of the central ridge on the BORDER-ALLEN Claims. Hornblende diorite with pervasive chloritic alteration of hornblende phenocrysts was observed in two outcrops in the south portion of the ALLEN Claims. One outcrop was observed in the southeast corner of the claim group while the other was observed in the east end of the cirque in the southwest corner just south of the claim group.

The andesite? outcrop observed by Sacks (1979) was not observed during the 1980 summer mapping program; however, numerous basaltic to diabasic boulders were noted mixed among the monzonite boulders within the scree in the southeast half of the property.

7.2 Table of Formations

TERTIARY

Unit 3 Diabase to basalt - aphanitic, dark coloured, highly magnetic, with phenocrysts of plagioclase

MID-CRETACEOUS

Cassiar Batholith

Unit 2 Hornblende diorite, medium to coarse grained, with altered phenocrysts of hornblende

Unit 1 Biotite, ± muscovite quartz-monzonite, light to medium grey coloured, medium to coarse-grained

7.3 Description of Rock Units

MID-CRETACEOUS - Cassiar Batholith

Unit 1 Biotite ± muscovite quartz monzonite to granodiorite, medium to coarse-grained, light to medium grey coloured.

This unit underlies, for all practical purposes, the entire claim group. The unit locally shows a cataclastic texture with chloritic alteration of mafic minerals especially within the central ridge, and rarely limonitic, kaolinitic and sericitic alteration within fracture zones. The unaltered rock is coarse grained and composed of plagioclase (20-40%), K-feldspar (30-60%), quartz (10-30%), biotite 1-10%) and muscovite (nil to 5%). Alteration is largely confined to areas where local cataclastic textures have developed. Within these zones, especially on the south side of the cirque on the west side of the BORDER claims, extensively altered biotite-muscovite quartz-monzonite occurs over a 15 to 30 meter section. The alteration here consists of extensive potassic, kaolinite, limonitic and sericitic alteration and extensive development of muscovite. Numerous quartz-carbonate veins were noted in talus along the zone of alteration; only trace to minor pyrite, however, was observed within this zone.

Unit 2 Hornblende Diorite

This unit occurs only within two outcrops in the south of the ALLEN

Claims. One outcrop occurs in the southeast and one outcrop on the east end of the cirque just south of the southwest corner of the ALLEN Claims. The rock unit is composed of plagioclase (75-80%), hornblende (10-15%) and biotite (1-5%), K-feldspar (1-5%). The rock, wherever observed, has undergone extensive chloritic alteration of the hornblende and biotite grains, which for the most part have retained their original shape. The hornblende (chlorite) occurs as phenocrysts up to 5 mm in size, as well formed euhedral crystals. No quartz was observed within this unit.

TERTIARY

Unit 3 Diabase, Basalt

This unit was observed south of the central ridge on the ALLEN Claims but was not observed within the BORDER Claims or north of this ridge. The unit occurs as narrow 0.5 to 1.0 meter dykes, and consists of a dark coloured, highly magnetic, aphanitic groundmass with plagioclase phenocrysts up to 3 mm in size. The rock is composed of mafic minerals, hornblende?, pyroxene, and magnetite and plagioclase with abundant disseminated pyrrhotite. The relative portions of these minerals is not certain because of the very fine-grained, aphanitic nature of the groundmass.

The unit shows well chilled margins 2 to 5 cm thick in contact with the biotite (± muscovite) quartz-monzonite. Also, the quartz monzonite shows a heated margin 2 to 5 cm thick which is light to dark brown coloured. The dykes strike 045° and dip moderately (35 to 50°) to the northwest. The orientation of these dykes may be joint controlled.

7.4 Structure

Shearing in the claim group strikes 040° to 065° and dips steeply

north (70^{o}) to vertical. The shear zones are easily recognized by pervasive limonitic staining, closely space fracturing and extensive kaolinite, sericitic alteration and muscovite development.

Orientation of the micas occasionally defines, with the quartz-monzonite a foliation, which is subparallel to the shearing. A cataclastic texture of the quartz-monzonite is locally developed and augen-like texture, with flattening and rotation of the quartz and feldspar grains, was noted on the central ridge on the BORDER-ALLEN Claims.

Joints on the property are resolved into sets: $140\text{-}160^{o}/60^{o}W$ to vertical, $060\text{-}080^{o}/70^{o}S$ to vertical and $175\text{-}020^{o}/70^{o}E$ to vertical. The joint fractures are normally fresh with only minor muscovite development; when associated with shear zones, however, extensive alteration has occasionally taken place.

Dykes observed in outcrop appear to be joint controlled and strike predominantly southeast to northwest.

7.5 Metamorphism

Metamorphism appears to be confined to the development of a cataclastic texture within narrow zones and marginal chill zones along the contact of the intrusions of the basaltic to diabasic dykes.

No other metamorphic textures are noted with the exception of the alignment of the micas within the biotite ± muscovite quartz monzonite.

7.6 Alteration

Alteration within the property is confined to the shear zones and to the hornblende diorite and has already been discussed above.

7.7 Economic Geology

Mineralization on the BORDER-ALLEN Claims consists of trace pyrite in small quartz-carbonate veins on the south side of the cirque on the west side of the BORDER claims. Trace cubic and disseminated pyrite in shear zones were observed on the property.

The most promising likelihood of economic mineralization exists within a possible stockwork development in the west end of the BORDER claims where there is extensive quartz veining, shearing and alteration. The possibility of economic Mo and Cu mineralization may be present here. This could be further investigated by detailed mapping, rock and soil sampling.

In addition, the possiblity of structurally controlled Ag, Pb, Zn sulphides and U (only on the BORDER Claims) within shear or fracture zones may be present. This should be further investigated by a more extensive search for veining and shearing with the biotite ± muscovite quartz-monzonite, along with detailed soil sampling in all areas of shearing and alteration.

Trace chalcopyrite was observed in talus from rocks in a shear zone in the southeast corner of the ALLEN claims within slightly altered biotite ± muscovite quartz-monzonite. The chalcopyrite occurs as disseminations between feldspar grains. The possibility of economic copper mineralization within this unit farther to the south should be investigated with more detailed mapping and sampling.

VIII. GEOCHEMISTRY

A total of 99 soil samples were collected on the ALLEN 1 and 2 claims and 54 soil samples were collected on or near the BORDER claims to follow up stream sediment anomalies outlined by Sacks (1979).

The soil geochemistry was supplemented by collecting 34 rock samples on the BORDER-ALLEN Claim groups for geochemical analysis of which 16 were collected on or near the BORDER claims and 18 were collected on or near the ALLEN 1 and 2 claims.

The soil geochemistry outlined five areas on the ALLEN claims and three areas on the BORDER claims which are probably anomalous to anomalous. For the purposes of discussion, the anomalies are discussed in numerical order, however, it should be kept in mind the anomaly priority is not necessarily related to the anomaly number.

8.1 Sampling Procedure

Due to the very rugged terrain on the BORDER-ALLEN claims with relief on 640 m (2100 ft.) between elevations 1340 m (4400 ft.) and 1900 m (6500 ft.) and a disorganized topography consisting of steep, loose, scree slopes, dropping from rocky crags in the western parts of the claims to Alan Creek valley in the eastern part of the claims, the logical approach to soil sampling on the property was by running contour lines around these steep ridges. The soil samples were collected every 125 meters along the base of the ridges and the "B" soil horizon was sampled. Sampling and laboratory procedures are outlined in Appendix III.

8.2 Standard Samples

To check the reproducibility and quality of analytical work, seven soil samples were randomly selected and split. The analytical values are compared in Table 1 as a check on the reproducibility of analytical results.

Table 1 Standard Samples, Soils

Sample No.	Pb (all values in ppm)	Zn	Ag	Duplicate of	Pb (all values in ppm)	Zn	Ag	%Difference from Av. Pb	Zn	Ag
10,000	38	90	0.1	10,023	42	104	0.1	5	7	0
10,001	16	52	0.1	10,060	14	46	0.1	7	6	0
10,002	22	72	0.1	10,076	22	70	0.1	0	1	0
10,003	22	72	0.1	10,091	18	78	0.1	10	4	0
10,004	20	92	0.1	10,122	16	84	0.1	11	5	0
20,000	18	51	0.1	22,021	18	52	0.1	0	1	0
22,001	6	54	0.1	22,036	6	48	0.1	0	6	0

As demonstrated in the above table, all analytical results are within acceptable reproducibility limits of 30% from 1 to 10 ppm, 20% from 10 to 50 ppm and 10% for greater than 50 ppm.

8.3 Statistical Treatment of Analytical Results

To determine mean, probably anomalous, and anomalous values for both rock and soil samples, the element values obtained from the laboratory (see Appendix II) were grouped into fixed ranges or class intervals and histograms (frequency distribution diagrams) and cumulative frequency per cent diagrams were constructed. A "best" fit curve was constructed on each histogram. All values greater than the intersection of the "best" fit curve with the abscissa are anomalous. The mean value is taken at the 50th percentile from the cumulative frequency per cent curve of the normal (non-anomalous) population and samples above the 97th percentile are considered probably anomalous.

Table 2

Summary of Anomalous, Probably Anomalous and Mean Levels, Soils and Rocks

Soils	Mean	Probably Anomalous	Anomalous	Range
Lead	15 ppm	45 ppm	>50 ppm	6 - 152 ppm
Zinc	55 ppm	105 ppm	>120 ppm	20 - 240 ppm
Silver	0.1 ppm	0.2 ppm	>0.4 ppm	0.1 - 3.8 ppm

Rock Samples	Mean	Probably Anomalous	Anomalous	Range
Lead	6 ppm	20 ppm	>25 ppm	2 - 280 ppm
Zinc	39 ppm	55 ppm	> 60 ppm	4 - 1950 ppm
Silver	0.1 ppm	0.3 ppm	>0.4 ppm	0.1 - 5.0 ppm
Copper	4 ppm	13 ppm	>15 ppm	1 - 168 ppm
Molybdenum	1 ppm	2 ppm	none	1 - 2 ppm

Frequency distribution tables and diagrams and cumulative frequency curves are presented in Tables 3 to 10 and Figures 5 - 19.

Table 3

Frequency Distribution: Lead in BORDER-ALLEN soils

Class Interval	Frequency	Cumulative Frequency	Cumulative per cent
1 - 10	36	36	28.1
11 - 20	55	91	71.1
21 - 30	21	112	87.5
31 - 40	9	121	94.5
41 - 50	7	128	100
51 - 60	9	137	
61 - 70	4	141	
71 - 80	3	144	
81 - 90	5	149	
91 - 100	1	150	
101 - 110	0	150	
111 - 120	0	150	
121 - 130	0	150	
131 - 140	1	151	
141 - 150	1	152	
151 - 160	1	153	

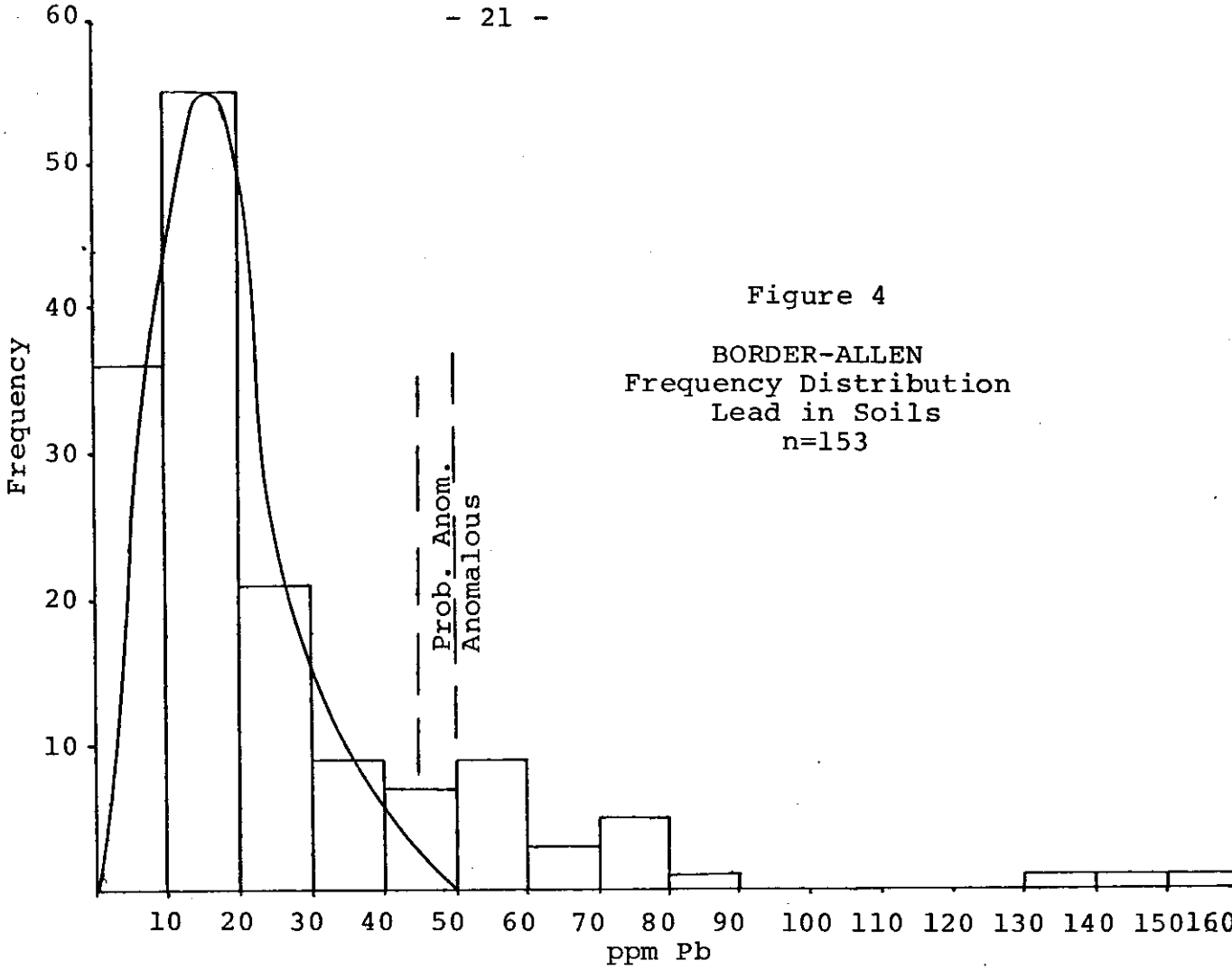


Figure 4

BORDER-ALLEN
Frequency Distribution
Lead in Soils
n=153

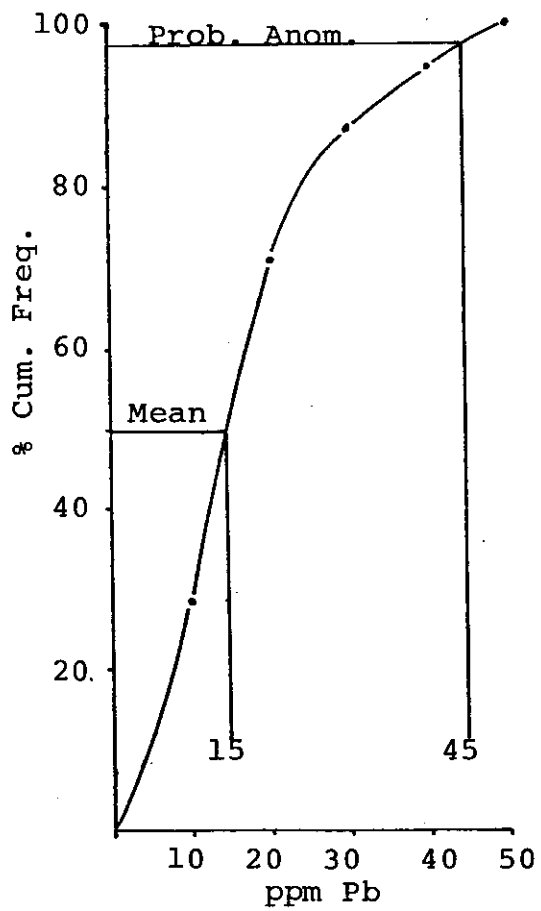


Figure 5

BORDER-ALLEN
Percent Cumulative Frequency
Lead in Soils

Table 4

Frequency Distribution: Zinc in BORDER-ALLEN Soils

Class Interval	Frequency	Cumulative Frequency	Cumulative per cent
0 - 20	2	2	1.6
21 - 40	19	21	17.4
41 - 60	53	74	61.2
61 - 80	27	101	83.5
81 - 100	15	116	95.9
101 - 120	11	127	100
121 - 140	9	136	
141 - 160	2	138	
161 - 180	3	141	
181 - 200	4	145	
201 - 250	2	147	
251 - 300	1	148	
301 - 350	2	150	
351 - 400	0	150	
> 400	3	153	

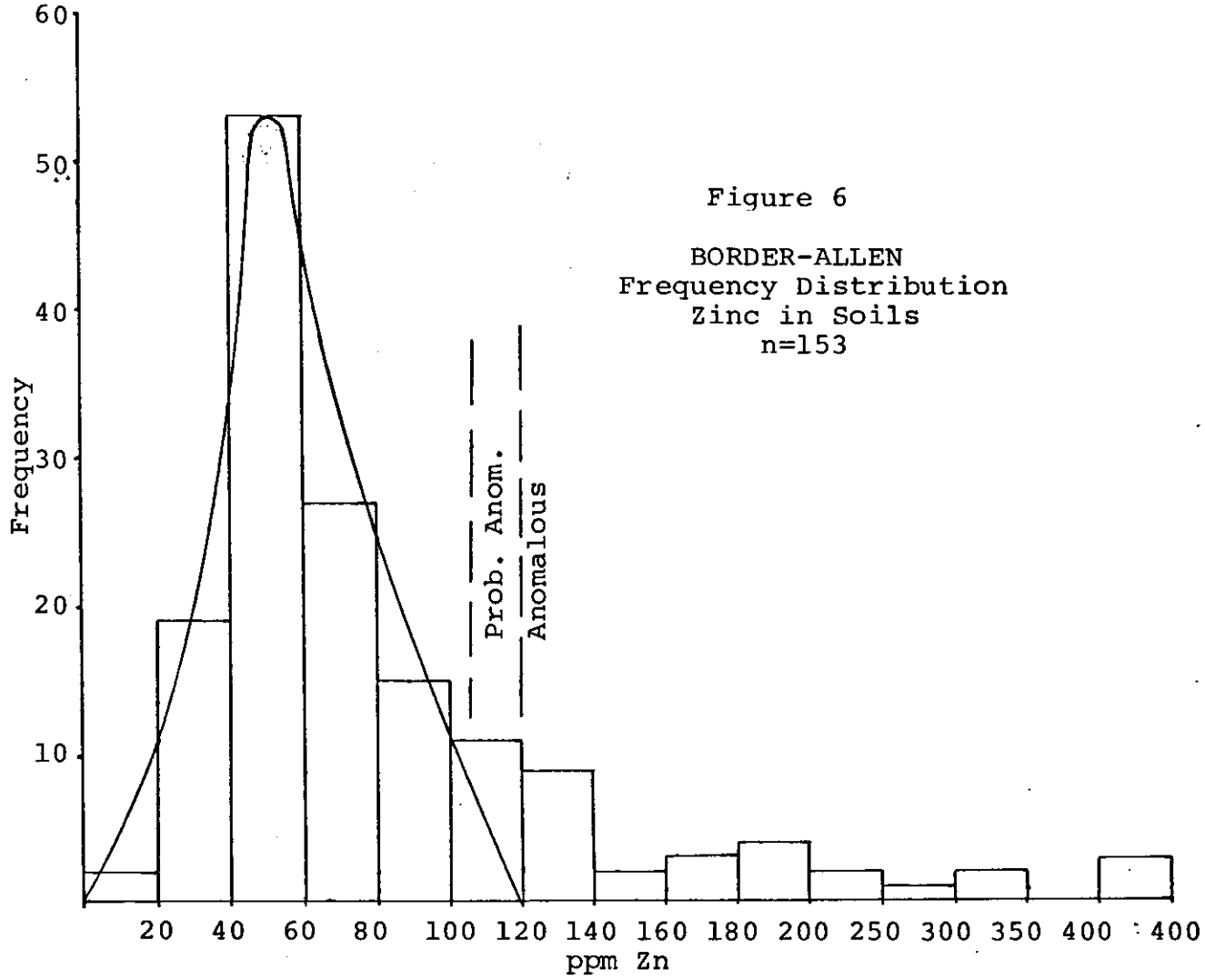


Figure 6

BORDER-ALLEN
Frequency Distribution
Zinc in Soils
n=153

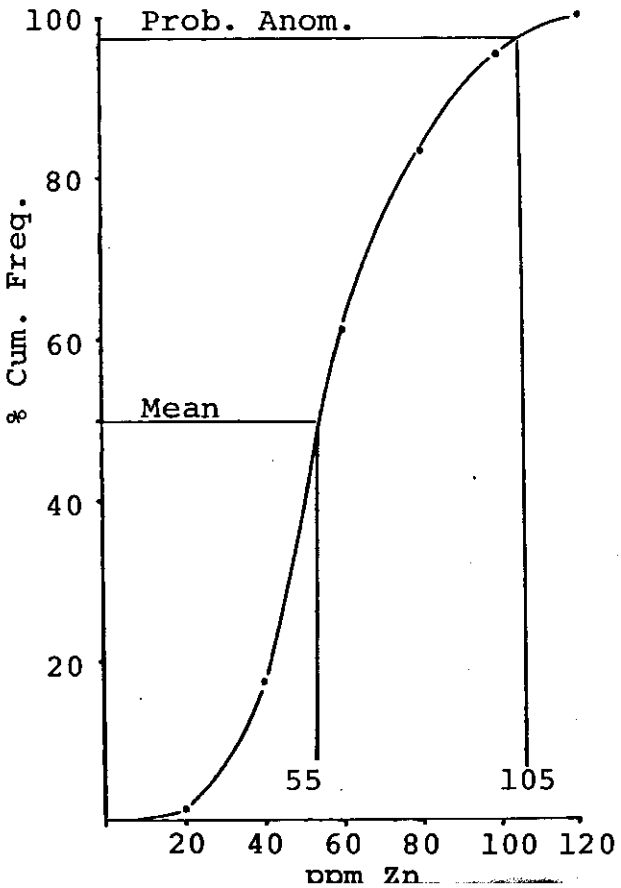


Figure 7

BORDER-ALLEN
Cumulative Percent Frequency
Zinc in Soils

Table 5

Frequency Distribution: Silver in BORDER-ALLEN Soils

Class Interval	Frequency	Cumulative Frequency	Cumulative per cent
0.0 - 0.1	148	148	98.7
0.2	1	149	99.3
0.3 - 0.4	1	150	100
0.5 - 0.6	0	150	
0.7 - 0.8	0	150	
0.9 - 1.0	1	151	
1.1 - 1.2	1	152	
1.3 - 1.4	0	152	
1.5 - 1.6	0	152	
1.7 - 1.8	0	152	
1.9 - 2.0	0	152	
> 2.0	1	153	

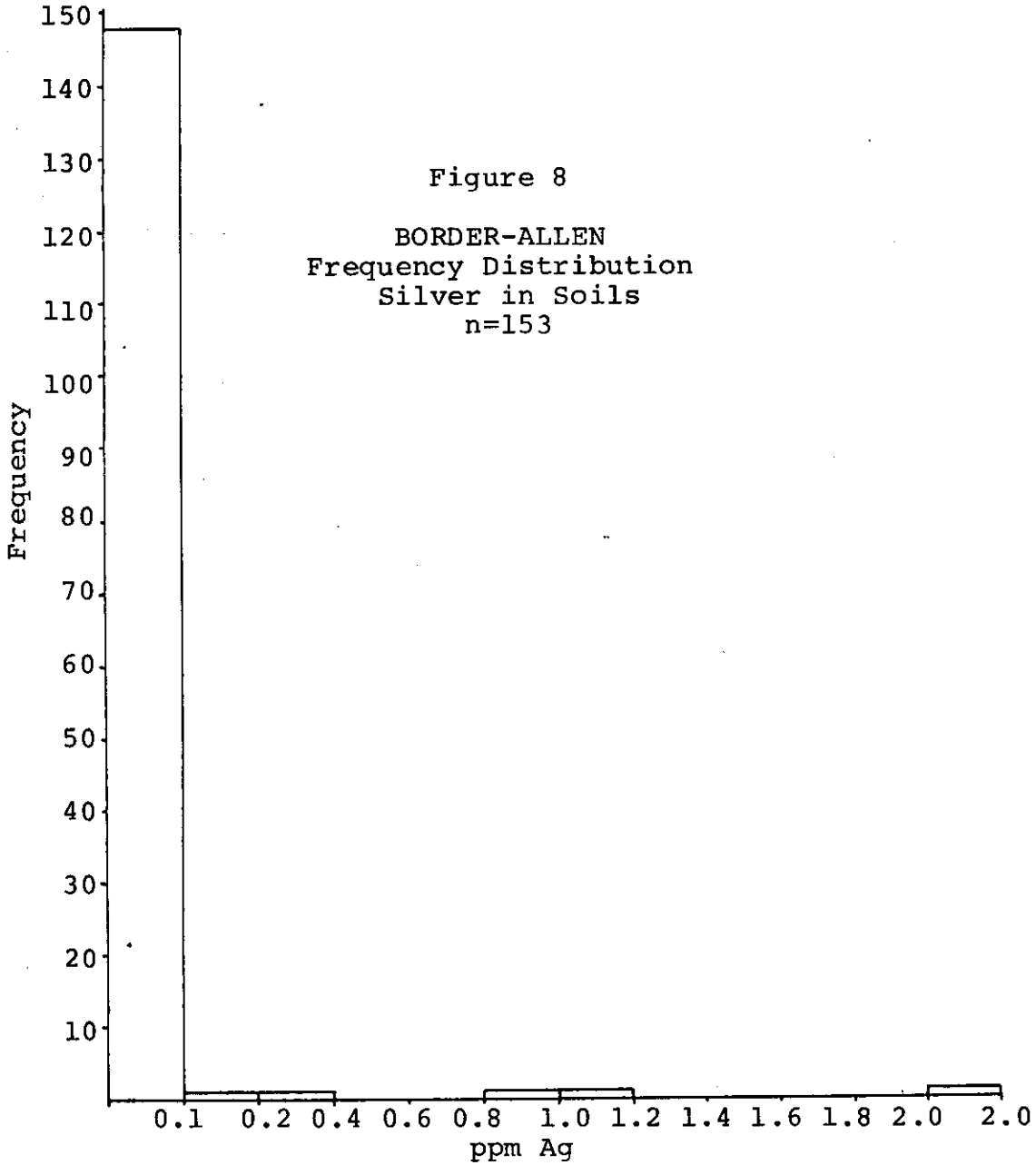


Figure 8

BORDER-ALLEN
Frequency Distribution
Silver in Soils
n=153

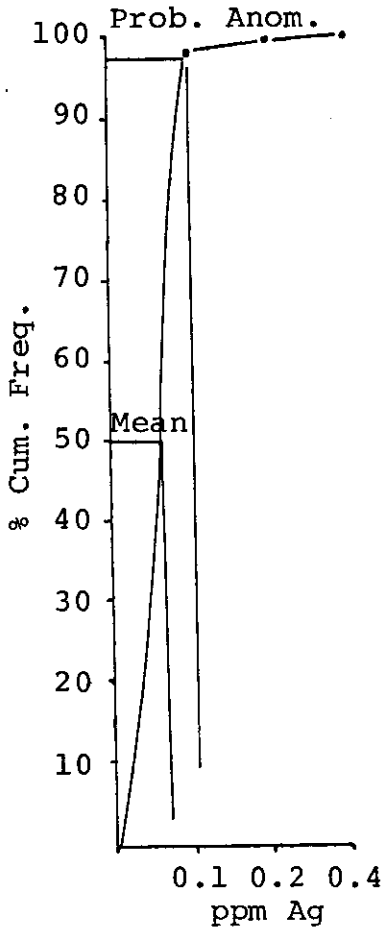


Figure 9

BORDER-ALLEN
Percent Cumulative Frequency
Silver in Soils

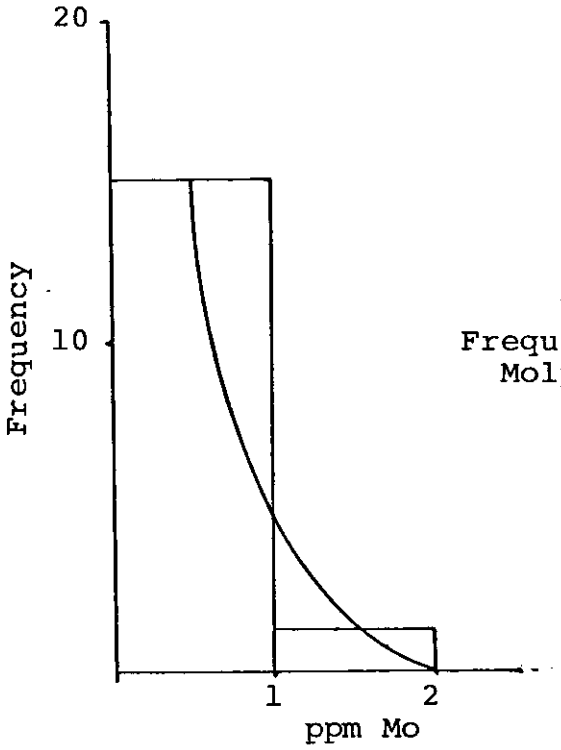


Figure 10

BORDER-ALLEN
Frequency Distribution
Molybdenum in Rocks

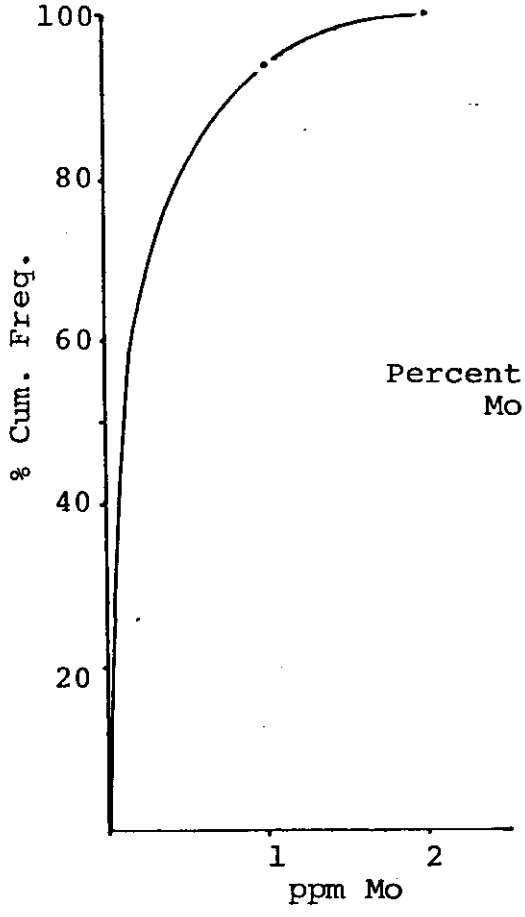


Figure 11

BORDER-ALLEN
Percent Cumulative Frequency
Molybdenum in Rocks

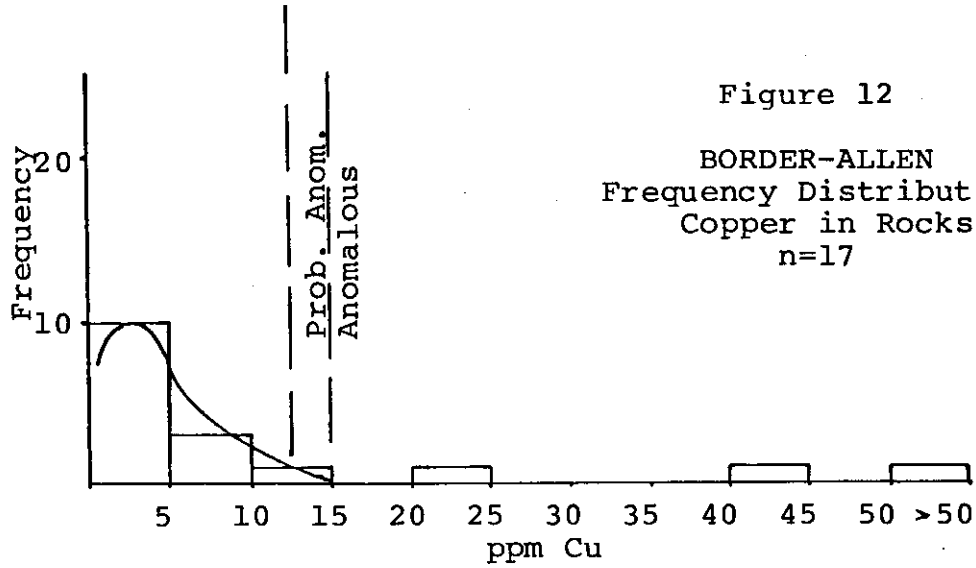


Figure 12

BORDER-ALLEN
Frequency Distribution
Copper in Rocks
n=17

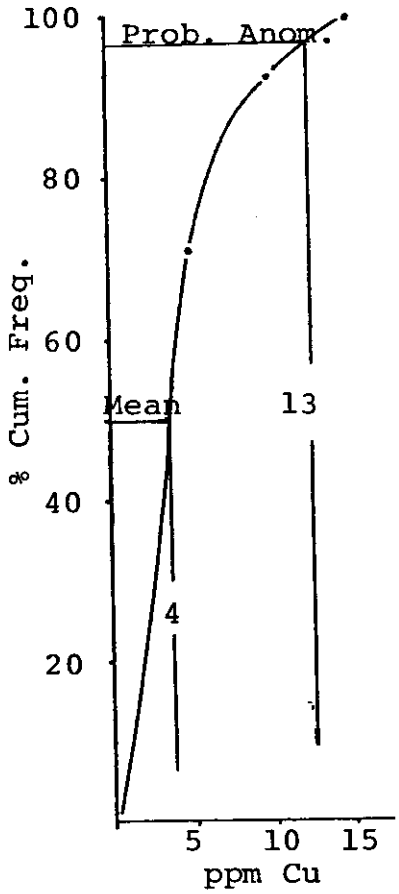


Figure 13

BORDER-ALLEN
Percent Cumulative Frequency
Copper in Rocks

Table 6

Frequency Distribution: Copper in BORDER-ALLEN Rocks

Class Interval	Frequency	Cumulative Frequency	Cumulative per cent
1 - 5	10	10	71.4
6 - 10	3	13	92.8
11 - 15	1	14	100
16 - 20	0	14	
21 - 25	1	15	
26 - 30	0	15	
31 - 35	0	15	
35 - 40	1	16	
41 - 45	0	16	
45 - 50	0	16	
>50	1	17	

Table 7

Frequency Distribution: Molybdenum in BORDER-ALLEN Rocks

Class Interval	Frequency	Cumulative Frequency	Cumulative Per cent
1	15	15	94
2	1	16	100
3			
4			
5			
6			
7			
8			
9			
10			

Table 8

Frequency Distribution: Lead in BORDER-ALLEN Rocks

Class Interval	Frequency	Cumulative Frequency	Cumulative per cent
0 - 5	10	10	34.5
6 - 10	12	22	75.9
11 - 15	2	24	82.8
16 - 20	4	28	96.6
21 - 25	1	29	100
26 - 30	1	30	
31 - 35	1	31	
36 - 40	1	32	
41 - 45	0	32	
46 - 50	0	32	
51 - 55	1	33	
56 - 60	1	34	
>60	1	35	

Table 9

Frequency Distribution: Zinc in BORDER-ALLEN Rocks

Class Interval	Frequency	Cumulative Frequency	Cumulative per cent
1 - 10	2	2	6.7
11 - 20	3	5	16.7
21 - 30	5	10	33.3
31 - 40	6	16	53.3
41 - 50	11	27	92.3
51 - 60	3	30	100
61 - 70	0	30	
71 - 80	0	30	
81 - 90	1	31	
91 - 100	0	31	
>100	4	35	

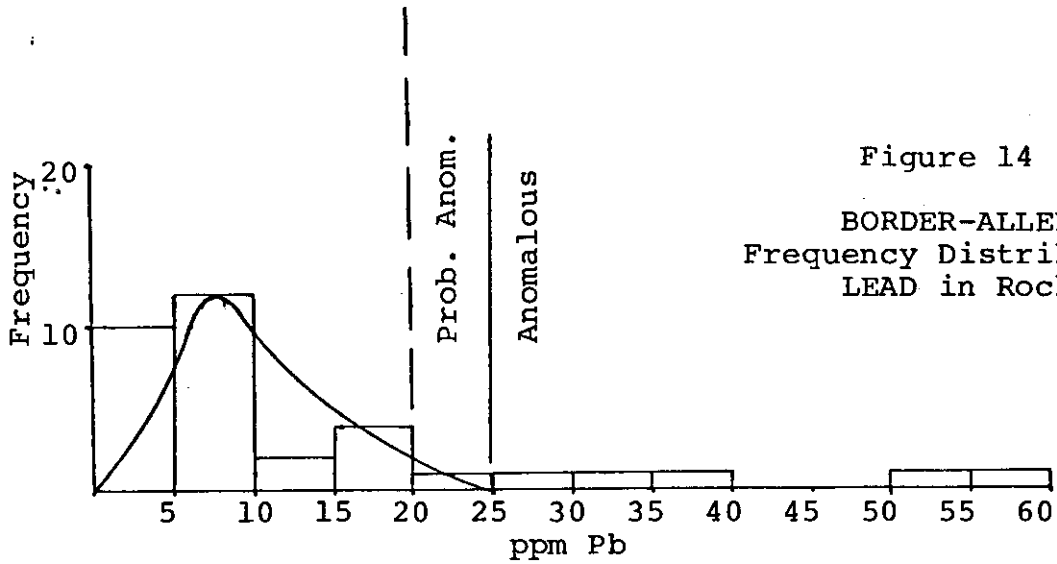


Figure 14

BORDER-ALLEN
Frequency Distribution
LEAD in Rocks

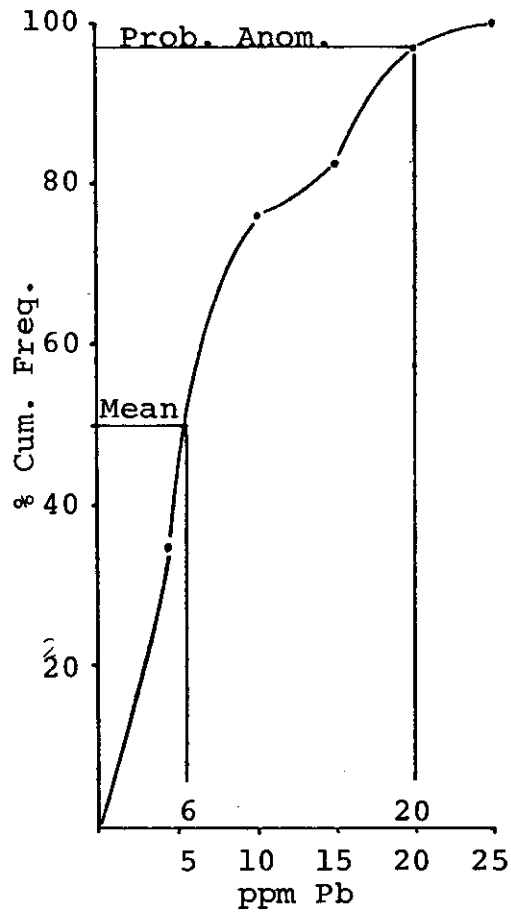


Figure 15

BORDER-ALLEN
Percent Cumulative Frequency
Lead in Rocks

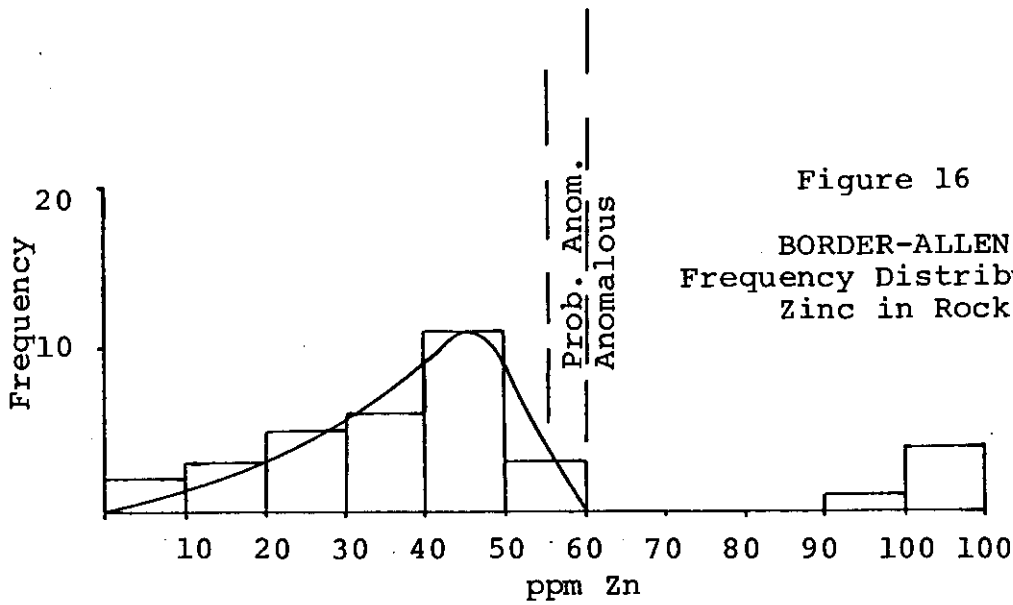


Figure 16

BORDER-ALLEN
Frequency Distribution
Zinc in Rocks

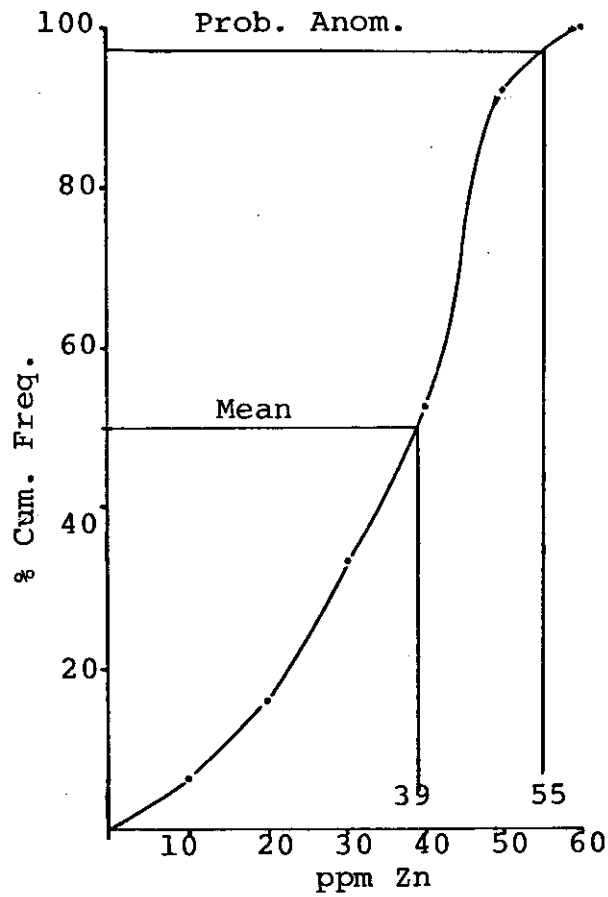


Figure 17

BORDER-ALLEN
Percent Cumulative Frequency
Zinc in Rocks

Table 10

Frequency Distribution: Silver in BORDER-ALLEN Rocks

Class Interval	Frequency	Cumulative Frequency	Cumulative per cent
0 - 0.1	23	23	79.3
0.1 - 0.2	3	26	89.7
0.3 - 0.4	3	29	100
0.5 - 0.6	0	29	
0.7 - 0.8	0	29	
0.9 - 1.0	0	29	
1.1 - 1.2	0	29	
1.3 - 1.4	0	29	
1.5 - 1.6	0	29	
1.7 - 1.8	0	29	
1.9 - 2.0	2	31	
> 2.0	3	34	

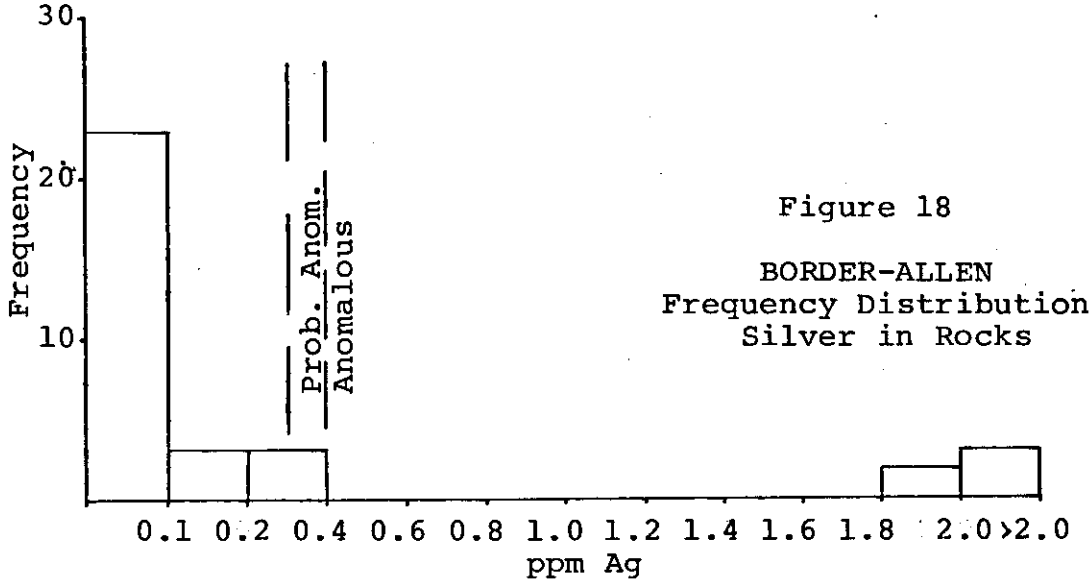


Figure 18

BORDER-ALLEN
Frequency Distribution
Silver in Rocks

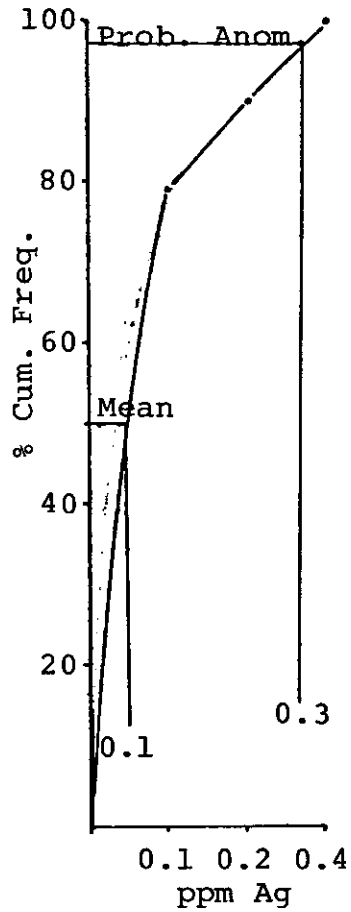


Figure 19

BORDER-ALLEN
Percent Cumulative Frequency
Silver in Rocks

8.4 Heavy Mineral Geochemistry (Plan 1B)

One heavy mineral sample was taken from a small stream just north of BORDER 1 Claim.

To determine anomalous values, the analytical results were compared to Sacks' (1979) results for heavy minerals compiled from the WATSU 1979 program (below). The 1980 sample contains anomalous Cu, Pb and Mo.

	Cu	Pb	Zn	Ag	Mo	Sn	W	U	Th	(ppm)
Probably Anomalous Sacks (1979)	165	280	440	0.95	8.5	300	160	120	1200	
22029HM (1980)	184	296	114	0.1	12	NSS*	NSS*	20.5	NSS*	

*NSS = not sufficient sample

8.5 Rock Geochemistry (Plans 1A and 1B)

A total of 34 rock samples were collected on the BORDER and ALLEN Claims. The statistical results were discussed earlier and the results are mentioned with relation to the soil geochemical anomalies later in this report, with the exception of the one sample from the south side of the central ridge mentioned below.

A sample of quartz monzonite (#10298) from the central part of the ALLEN Claims is highly anomalous in Zn (540 ppm), Pb (280 ppm), Ag (5 ppm) and Cu (168 ppm). This sample is located on the south slope of the central ridge in the central east portion of ALLEN 2 in the area where Sacks (1979) located anomalous Pb, Zn, Ag and U in five rock samples. Sacks reports values of 6 to 26 ppm Pb, 68 to 198 ppm Zn, 0.1 to 2.2 ppm Ag and 1 to 11.5 ppm U in rock samples.

Soil samples collected by Sacks (1979) in the anomaly area contain 58 to 92 ppm Pb, 146 to 250 ppb Zn, 12 to 26 ppm Cu, 1 ppm Mo, 0.1 to 0.6 ppm Ag, and 3 to 34 ppm U.

The anomaly as mentioned earlier is underlain by quartz monzonite. The quartz monzonite in this area has been altered and contains sericite, muscovite and chlorite with a catclastic texture and minor pyrite and iron (brown staining on weathered surfaces.

8.6 Disscussion of Soil Anomalies (Plans 3A and 3B, 4A and 4B)

8.6.1 ALLEN 1 and 2 Anomalies

Anomaly No. 1 is located just south of the southwest corner of ALLEN 2, in a small northwest facing cirque which is drained by a small stream. The anomaly consists of two areas of 250 m x 250 m and approximately 750 meters long z 200 meters wide. It consists of seven soil samples, five of which are located on the east side of the cirque and contain 104 to 260 ppm Zn, 34 to 152 ppm Pb and 0.1 to 1.2 ppm Ag. On the west side of the cirque, there are two samples containing 440 and 460 ppm Zn, 52 and 80 ppm Pb and 0.1 and 0.4 ppm Ag.

The anomaly is underlain by quartz monzonite and a dyke or small stock of hornblende diorite. The soil anomalies are located on the periphyry of the diorite. Shearing in a 40° direction has been noted in the anomaly area. No rocks with anomalous values were found in the area.

Anomaly No. 2 is twopart and occurs on the north sope of the southern ridge in the southern portion of the ALLEN claims. It consists of five soil samples, four of which contain anomalous Pb (52 to 90 ppm) and Zn (132 to 325 ppm) and one sample contains 1 ppm Ag.

The soil anomaly is underlain by quartz monzonite. One sample (#10288) of this unit with quartz veining from the anomalous area contained 20 ppm Zn, 22 ppm Pb and 0.4 ppm Ag.

The anomaly is approximately 650 meters long.

Anomaly No. 3 occurs on the north slope of the central ridge running through the property. It consists of five samples. Five contain anomalous Zn (128-136 ppm) and four contain anomalous Pb (64-92 ppm). There are no anomalous Ag values.

The anomaly is underlain by quartz monzonite, two samples of which (#10294-95) contain 26 and 52 ppm Zn, 8 and 6 ppm Pb and 3.0 and 0.1 ppm Ag; only the 3.0 ppm Ag is anomalous and consequently the soil anomaly is unexplained.

Anomaly No. 4 is located in the southeast central portion of ALLEN 1 on the north slope of the south ridge. Three soil samples, over a length of 200 meters, contain one anomalous Pb value (6ppm) and three anomalous Zn values (110 - 148 ppm). A small intrusion (possibly a dyke or small stock) of hornblende diorite cuts the quartz monzonite and a kaolinized shear zone is present in quartz monzonite just west of the soil anomaly. No anomalous metal values occur in three rock samples taken from the area.

Anomaly No. 5 consists of one sample containing 178 ppm Zn and 138 ppm Pb located on the west side of the northeast trending ridge in the northern portion of ALLEN 1. The anomaly is underlain by quartz monzonite; no rock samples were takn in this area.

Anomaly No. 6 is located in the southwest corner of ALLEN 2 and consists of two widely separated samples containing 42 and 82 ppm lead, 172 and 178 ppm zinc and 0.1 ppm silver; only the 82 ppm Pb value and the Zn values are anomalous.

The anomaly is underlain by biotite quartz monzonite. Two rock samples taken from the area contained only background metal values.

Anomaly No. 7 is a single sample soil anomaly located on the west slope of the central ridge on the western boundary of ALLEN 2. The sample contains 54 ppm Lead and 132 ppm Zinc (both anomalous) and 0.1 ppm silver (not anomalous).

The anomaly is underlain by biotite quartz monzonite and one pyrite-bearing sample from the anomaly area contains 16 ppm lead, 44 ppm zinc and 0.4 ppm silver.

8.6.2 BORDER Anomalies

Anomaly No. 8 occurs just north of BORDER Claim No. 1 and incorporates two widely separated samples: one on the south falling slope contains 192 ppm Zn, 72 ppm Pb and 3.8 ppm Ag. The other on the north falling slope contains 500 ppm Zn and 54 ppm Pb.

Joints and shear zones in the underlying quartz monzonite trend northwest and northeast. The anomaly may reflect structurally controlled mineralization related to the joint and/or shear pattern within the rocks.

Several areas of quartz ± carbonate, ± pyrite veining in quartz monzonite were located in the general area. Adjacent to the anomaly, one sample returned values of 26 ppm Pb and 1.2 ppm Ag.

Anomaly No. 9 just southeast of Anomaly No. 8, is a single-station anomaly containing 200 ppm Zn and 0.2 ppm Ag. Anomalies No. 8 and 9 may have a common source on the ridge between them.

Geochemical analysis of two samples of the underlying quartz monzonite in the area of the soil anomaly indicates background values for Pb, Zn and Ag. One of the samples contains quartz veins with pyrite.

Anomaly No. 10 is a single-station sample with anomalous Pb (52 ppm). A rock sample of pyritic quartz monzonite, taken 150 meters to the south, contains anomalous Zn and Ag (1950 ppm and 0.4 ppm, respectively). The Pb soil anomaly is, however, unexplained.

Anomaly No. 11 is a single-station anomaly with 54 ppm Pb and 116 ppm Zn. Underlain by quartz monzonite, it it presently unexplained; no rock samples were taken in the vicinity.

Anomaly No. 12 occurs just north of BORDER Claims 4 and 8 with the exception of sample No. 10077 which is located in the mid north area of BORDER Claim No. 4. The anomaly consists of five samples, four of which contain high values of Zn (136 - 350 ppm) and Pb (46 - 142 ppb). There are no anomalous

Ag values.

Geochemical analysis of three samples of the underlying quartz monzonte (two of which contain trace pyrite) indicate background values for Pb and Ag. Zn values are anomalous in two (58 and 108 ppm).

IX. RADIOMETRIC SURVEY (Plans 2A, 2B, 4A and 4B)

The radiometric survey carried out simultaneously with the soil sampling added little information to the property. This is due largely to the widely spaced lines which were run only on the bases of the ridges. This was also complicated by the fact that on at least one traverse, on the north side of the south ridge, the scintillometer used was not in operating condition, which resulted in no radiometric data for this area.

Statistical analysis of the radiometric data using histograms and cumulative frequency curves indicates a probably anomalous value of 262 cps at the 97th percentile of the normal population with a distinct second population above this value from 262 to 317 cps.

The general results of the radiometric survey indicate the biotite quartz-monzonite in the BORDER-ALLEN area has a typical radiometric response (Urtec Model 130) of 180 to 300 cps. The slightly higher values ranging from 226 cps to 317 cps values are scattered throughout the property and do not appear to show any correlation with alteration within the quartz monzonite or with the geochemical anomalies with possible exception of anomaly No. 3 which shows a radiometric response of 280 cps to 317 cps (the highest radiometric values recorded) in the anomaly area. High radiometric response (272 - 310 cps) also characterizes the area of soil anomaly No. 1.

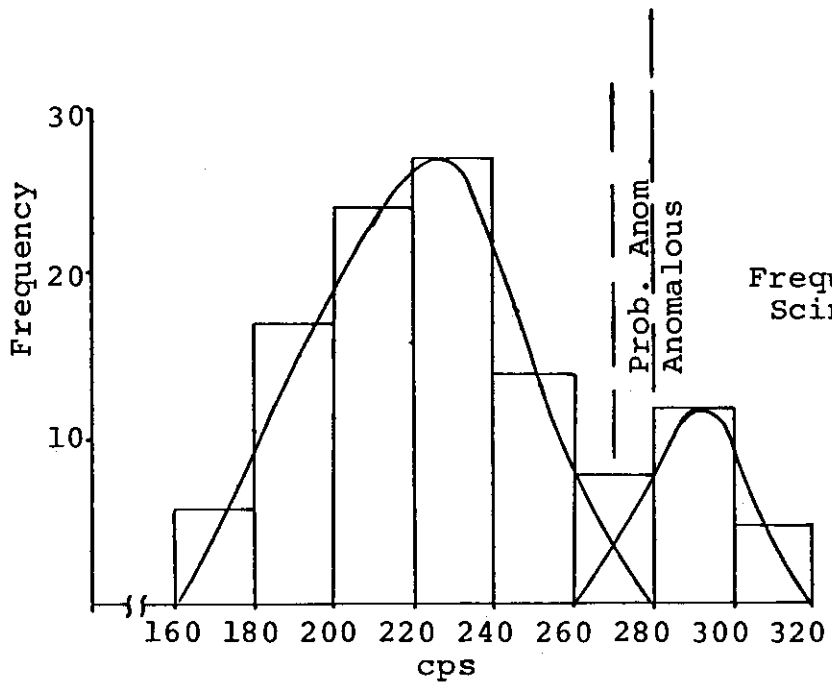


Figure 20

BORDER-ALLEN
Frequency Distribution
Scintillometer Survey

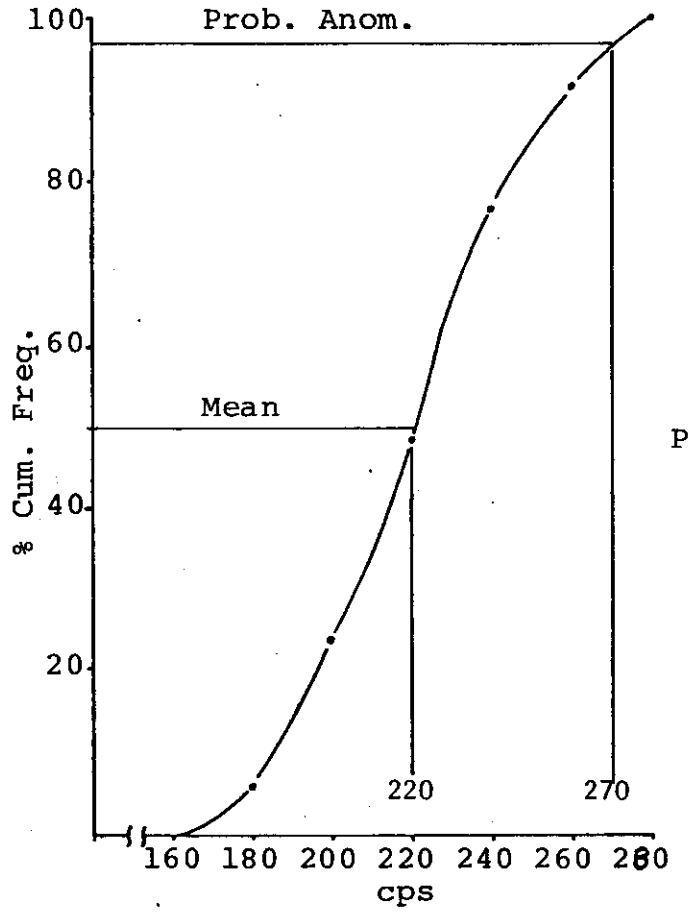


Figure 21

BORDER-ALLEN
Percent Cumulative Frequency
Scintillometer Survey

Table 10

Frequency Distribution: Radiometric Survey Counts per second

Class Interval	Frequency	Cumulative Frequency	Cumulative Per cent
160 - 180	6	6	6.2
181 - 200	17	23	23.9
201 - 220	24	47	48.9
221 - 240	27	74	77.1
241 - 260	14	88	91.7
261 - 280	8	96	100
281 - 300	12	108	
301 - 300	5	113	

Anomalous > 280 c.p.s.

Probably Anomalous 270 c.p.s.

Mean 220 c.p.s.

X. CONCLUSIONS

The BORDER-ALLEN Claims are underlain by a biotite ± muscovite quartz monzonite with local cataclastic texture, noted especially within the central ridge on the property. Alteration on the property is limited to chlorite alteration of the micas where cataclastic textures are noted and hydrothermal alteration with quartz-carbonate veins was noted just north of BORDER Claim No. 1. Pyrite is widely distributed within the quartz monzonite and quartz-carbonate veins. Also the quartz monzonite is intruded by basalt to diabase dykes 0.5 to 1 meter thick which have been observed south of the central ridge which runs through the property.

In the southwest and southeast the biotite ± muscovite quartz monzonite is intruded by a hornblende diorite which has undergone extensive chlorite alteration of the hornblende and biotite grains.

Soil and rock geochemistry over the property has indicated twelve areas which are anomalous in Pb, Zn, Ag and at least one of these areas (anomaly No. 9) also contains anomalous Cu and U. The anomalies appear to be related to shearing and at least two anomalies appear to be related to the intrusion of the hornblende diorite stocks or dykes on the property.

Soil and rock geochemistry has been successful in outlining anomalous areas. The radiometric survey carried out to date is sketchy and has added little additional information for assessment of the property.

XI. RECOMMENDATIONS

Geochemical anomalies on the BORDER-ALLEN claims should be followed up by detailed soil grids with a sampling density of 60 x 60 meters where possible. Also detailed geological mapping and prospecting in the anomaly areas should be carried out to define possible structural control of any mineralization present and locate areas of hydrothermal alteration where the possibility of economic Pb, Zn, Ag, or Mo mineralization may be present.

Detailed rock geochemistry, prospecting, and geology should be carried out in the central ALLEN Claims in the central ridge area, in order to define areas of possible economic mineralization related to the chloritic alteration and/or cataclastic fabric developed in this area.

A VLF survey may be useful in locating shear zones and/or veins of possible economic interest which may contain economic values of Pb, Zn or Ag.

Upon completion of these surveys, a careful examination of the data should be carried out to define areas where trending should be done

to outline any mineralization which may exist.

Respectfully submitted,

Charles Hartley

Charles Hartley, B.Sc.

APPENDIX I

ROCK DESCRIPTION

BORDER CLAIM GROUP

SAMPLE NUMBER	DESCRIPTION

Rocks collected by J. Crandall.

80-WA-22190R — Biotite Quartz-monzonite
- medium grained with 7 to 8% biotite± muscovite
- cut by small quartz veinlet containing trace pyrite

Pb	Zn	Ag	
4	1950	0.4	(ppm)

80-WA-22191R — Biotite±muscovite-quartz
- fine-grained, containing K-feldspar phenocrysts, sericite and chlorite alteration of feldspars and micas common.
- trace amounts of pyrite

Pb	Zn	Ag	
4	108	0.2	(ppm)

80-WA-22192R — Biotite quartz monzonite
- quartz vein in monzonite with chlorite and sericite alteration with minor pyrite

Pb	Zn	Ag	
12	26	0.1	(ppm)

80-WA-22193R — Biotite quartz-monzonite
- K-feldspar porphyry containing 15-20% biotite± muscovite with cataclastic texture

Pb	Zn	Ag	
38	42	1.9	(ppm)

Rocks collected by G. Tetu

80-WA-22194

Quartz-monzonite with quartz veins
- altered quartz monzonite, fine to medium grained with 30% quartz, 45% K-feldspar and 25% plagioclase and 1-2% sericite after muscovite
- quartz monzonite makes up only 30% of sample. 70% of sample is quartz veins

Pb	Zn	Ag	(ppm)
8	26	3.0	

Quartz veins
- either massive white or euhedral interlocking crystals 1-4 mm long with vuggy texture
- trace brown carbonate
- black manganese stain along vein edges, no sulphides observed

Pb	Zn	Ag	(ppm)
6	42	0.1	

80-WA-22195

Quartz-monzonite with quartz veins
- altered quartz-monzonite, fine crystalline (1 mm) containing 40% quartz grains and 60% feldspar with white clay alteration and minor yellow-green sericite
- quartz veins - massive or as euhedral crystals with trace weathered sulphides

Pb	Zn	Ag	(ppm)
6	52	0.1	

80-WA-22196

Quartz-monzonite with quartz-carbonate veins
- altered quartz monzinite medium to coarse crystalline (1-4 mm) containing 50% quartz and 50% white feldspar

Quartz carbonate vein
- 70% white calcite, 29% quartz-sericite and 1% epidote and trace pyrite cubes
- calcite vein separate from quartz vein

Pb	Zn	Ag	(ppm)
58	24	0.1	

80-WA-22197

Massive quartz-vein
- 15% massive pyrite, 5% dark green chlorite, 3% white clay (altered feldspar?)
- trace carbonate

Pb	Zn	Ag	(ppm)
6	110	0.1	

80-WA-22198

Porphyritic biotite-quartz-monzonite
- 10% of rock K-feldspar phenocrysts (to 1 cm); medium to coarse-grained, fresh: no alteration
- 25% quartz, 30% K-feldspar, 35% plagioclase, 10% biotite, ±muscovite

Pb	Zn	Ag	(ppm)
4	50	0.1	

Rocks collected by C. Hartley.

80-WA-22183R

Quartz Vein
- massive white quartz vein with trace pyrite and carbonate

Mo	Cu	Pb	Zn	Ag	(ppm)
1	14	2	4	0.1	

80-WA-22184R

Quartz-monzonite with quartz vein
- 40% quartz monzonite, 60% quartz vein, fine-grained quartz monzonite with 40% quartz and 60% orange-coloured feldspar, no mafic minerals observed
- quartz vein massive white

Mo	Cu	Pb	Zn	Ag	(ppm)
1	8	14	6	0.1	

80-WA-22185R

Biotite-quartz-monzonite
- fresh medium-grained biotite-quartz-monzonite with 30% quartz, 40% K-feldspar and 25% plagioclase and approximately 5% biotite

Mo	Cu	Pb	Zn	Ag	(ppm)
10	42	10	44	0.1	

80-WA-22186R

Quartz-monzonite
- quartz-monzonite containing 30% quartz and 70% feldspar, kaolin and sericitic alteration pervasive throughout

Mo	Cu	Pb	Zn	Ag	(ppm)
1	4	8	36	0.1	

80-WA-22187R

Quartz-monzonite with carbonate vein
- altered quartz-monzonite containing 40% quartz and 60% kaolin altered feldspar makes up 30% of sample. 70% of sample made of carbonate vein containing light brown euhedral calcite crystals. With trace pyrite.

Mo	Cu	Pb	Zn	Ag	(ppm)
1	4	16	20	0.1	

80-WA-22199R

Biotite-Quartz Monzonite
- Fresh-coarse grained biotite-quartz monzonite containing 30% quartz, 40% K-feldspar, 25% plagioclase and 5% biotite. Slight porphyry texture.

Mo	Cu	Pb	Zn	Ag	(ppm)
1	2	2	32	0.1	

80-WA-22200R

Biotite-Quartz Monzonite
- same as 80-WA-22199R

Pb	Zn	Ag	(ppm)
6	40	0.1	

ROCK DESCRIPTION

ALLEN CLAIM GROUP

Rock samples collected by C. Hartley.

80-CA-10280R

Biotite-Hornblende Diorite
- Medium grained containing euhedral altered hornblend crystals up to 0.5 cm. Hornblende and biotite pervasively altered to chlorite. 10% hornblende, 5% biotite, and 85% plagioclase.

Mo	Cu	Pb	Zn	Ag	(ppm)
1	10	4	48	0.1	

80-CA-10281R

Biotite-Quartz Monzonite
- Medium to coarse grained with porphyritic texture. Fresh and unaltered containing 30% quartz, 40% K-feldspar, 25% plagioclase and 5% biotite.

Mo	Cu	Pb	Zn	Ag	(ppm)
1	10	2	32	0.1	

80-CA-10282R

Biotite-Quartz Monzonite
- same as 80-CA-10281R

Mo	Cu	Pb	Zn	Ag	(ppm)
1	4	6	44	0.1	

80-CA-10283R

Biotite-Quartz Monzonite
same as 80-CA-10281R

Mo	Cu	Pb	Zn	Ag	(ppm)
1	2	8	34	0.1	

80-CA-10284R

Hornblende-Biotite Diorite
- medium grained containing euhedral crystals of dark green coloured hornblende up to 0.5 cm. Hornblende and biotite pervasively altered to chlorite. Sample contains 10% hornblende, 5% bioite and 85% plagioclase.

Mo	Cu	Pb	Zn	Ag	(ppm)
1	4	4	30	0.1	

80-CA-10285R

Biotite-Quartz Monzonite
- medium to coarse grained porphyry containing K-feldspar phenocrysts (up to 4mm) with abundant kaolin altered feldspars. Rock composition quartz 30%, biotite 5%, K-feldspar 40% and plagioclase 24% and 1% pyrite with trace chalcopyrite.

Mo	Cu	Pb	Zn	Ag	(ppm)
1	4	4	30	0.1	

80-CA-10286R

Biotite-Quartz Monzonite
- medium to caorse grained porphyry, fresh with no apparent alteration containing quartz 30%, K-feldspar 45%, plagioclase 25% and biotite 5%.

Mo	Cu	Pb	Zn	Ag	(ppm)
1	2	16	42	0.1	

80-CA-10287R

Biotite-Quartz Monzonite
- same as 80-CA-10286R

Mo	Cu	Pb	Zn	Ag	(ppm)
1	2	2	26	0.1	

80-CA-10288R

Quartz-Monzonite with quartz vein
- fine to medium grained porphyry, with massive white quartz vein contains trace pyrite. Rock composition 30% quartz, 40% K-feldspar, 29% plagioclase, 1% biotite.

Mo	Cu	Pb	Zn	Ag	(ppm)
1	1	22	20	0.4	

80-CA-10289R

Basalt to Diabase
- fine grained (<1 mm) dark coloured rock containing abundant magnetite and pyrrhotite with pyroxene?, hornblende and plagioclase.

Mo	Cu	Pb	Zn	Ag	(ppm)
1	2	10	44	0.2	

Rock samples collected by J. Crandall.

80-CA-10290R

Biotite Muscovite Quartz Monzonite
- fine to medium grained intrusive with augen like texture containing 5% biotite, 5% muscovite, 30% quartz, 40% K-feldspar, 18% plagioclase and 2% pyrite with slickenside surface.

Pb	Zn	Ag	(ppm)
16	42	0.4	

80-CA-10291R

Biotite Quartz-Monzonite with quartz veins
- medium grained with minor sericite alteration and weathered quartz veinlets with minor pyrite containing 30% quartz, 40% K-feldspar, 28% plagioclase, and 2% biotite.

Pb	Zn	Ag	(ppm)
4	34	0.1	

80-CA-10292R

Biotite Quartz-Monzonite
- fine grained with cataclastic texture containing veinlets of quartz with trace pyrite.

Pb	Zn	Ag	(ppm)
52	86	0.2	

80-CA-10293R

Biotite-Quartz Monzonite with quartz carbonate veins
- fine to medium grained quartz monzonite with numerous veinlets of quartz-carbonate containing minor pyrite.

Pb	Zn	Ag	(ppm)
38	42	1.9	

80-CA-10294R

Biotite-muscovite quartz monzonite
- coarse grained with flakes of biotite up 2 mm, and massive quartz veins with trace pyrite. Rock contains 10% biotite, 10% muscovite, 5% hornblende, 20% K-feldspar, 15% plagioclase, and 40% quartz.

Pb	Zn	Ag	(ppm)
8	16	3.0	

80-CA-10295R

Biotite-Quartz Monzonite
- coarse grained K-feldspar porphyry phenocrysts up to 8 mm, minor chlorite alteration of biotite and trace pyrite. 50% quartz, 15% plagioclase, 25% K-feldspar and 10% biotite.

Pb	Zn	Ag	(ppm)
6	52	0.1	

80-CA-10296R

Biotite-Muscovite Quartz Monzonite
- quartz veins in chloritic coarse grained monzonite with trace pyrite.

Pb	Zn	Ag	(ppm)
58	24	0.1	

80-CA-10297R

Hornblende-Biotite Quartz Monzonite
- medium grained with foliated texture and carbonate -calcite veinlets and pervasive chloritic alteration. Rock composition 10% biotite, 10% hornblende, 30% quartz and 50% feldspars.

Pb	Zn	Ag	(ppm)
58	24	0.1	

80-CA-10298R

Biotite Muscovite Quartz Monzonite
- cataclastic with pervasive iron staining and minor (1-2%) pyrite and pyrrhotite. Sericitic alteration of feldspars common and chloritic alteration of biotite common. Sample taken from shear zone.

Mo	Cu	Pb	Zn	Ag	(ppm)
2	168	280	540	5.0	

APPENDIX II

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

CHEMEX LABS LTD.

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54186
INVOICE NO. 36929
RECEIVED July 5/80
ANALYSED July 15/80

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont. M9W 5X8 CC. Watson Lake, Y.T.

ATTN: Border Allen Soils Cassi Project

SAMPLE NO. :	PPM Pb	PPM Zn	PPM Ag
10003 80-CA	22	84	0.1
10004	20	92	0.1
10086	24	68	0.1
10087	14	40	0.1
10088	24	48	0.1
10089	28	86	0.1
10090	16	68	0.1
10091	18	78	0.1
10092	14	30	0.1
10093	52	102	0.1
10094	18	70	0.1
10095	8	48	0.1
10096	8	26	0.1
10097	14	52	0.1
10098	22	104	0.1
10099	16	42	0.1
10100	24	70	0.1
10101	10	52	0.1
10102	8	48	0.1
10103	24	72	0.1
10104	24	92	0.1
10105	48	118	0.1
10106	12	68	0.1
10107	42	178	0.1
10108	8	58	0.1
10109	16	84	0.1
10110	16	78	0.1
10111	8	34	0.1
10112	30	62	0.1
10113	82	172	0.1
10114	12	50	0.1
10115	18	48	0.1
10116	20	84	0.1
10117	34	104	0.1
10118	56	210	0.1
10119	64	225	0.1
10120	34	144	0.1
10121	152	260	1.2
10122	16	84	0.1
10123 80-CA	30	102	0.1

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Biddle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54187

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont. M9W 5X8 CC. Watson Lake, Y.T.

INVOICE NO. 36929

RECEIVED July 5/80

ANALYSED July 15/80

ATTN: Border Allen Soils Cassi Project

SAMPLE NO. :	PPM Pb	PPM Zn	PPM Ag
10124 80-CA	80	440	0.4
10125	52	460	0.1
10126 80-CA	26	90	0.1

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Biddle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54163

TO: Canadian Occidental Petroleum Ltd.
Minerals Division
Ste. 311 - 215 Carlingview Dr.
Rexdale, Ont. M9W 5X8

INVOICE NO. 36838

RECEIVED July 4/80

ATTN: Cassi-Allen Soils

ANALYSED July 11/80

SAMPLE NO. :	PPM Pb	PPM Zn	PPM Ag
Prefix 80-CA			
10000	38	90	0.1
10001	16	52	0.1
10002	22	72	0.1
10010	16	72	0.1
10011	22	64	0.1
10012	10	50	0.1
10013	10	62	0.1
10014	12	48	0.1
10015	28	76	0.1
10016	86	194	1.0
10017	88	132	0.1
10018	12	46	0.1
10019	52	194	0.1
10020	90	325	0.1
10021	34	72	0.1
10022	62	166	0.1
10023	42	104	0.1
10024	14	64	0.1
10025	14	78	0.1
10026	38	114	0.1
10027	60	148	0.1
10028	30	110	0.1
10029	16	74	0.1
10030	28	24	0.1
10031	8	36	0.1
10032	8	48	0.1
10033	12	34	0.1
10034	10	52	0.1
10035	12	52	0.1
10036	12	38	0.1
10037	20	44	0.1
10038	54	132	0.1
10039	8	34	0.1
10040	16	56	0.1
10041	8	42	0.1
10042	16	30	0.1
10043	14	68	0.1
10044	84	134	0.1
10045	38	114	0.1
10046	64	130	0.1

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Biddle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54164

INVOICE NO. 36838

RECEIVED July 4/80

ANALYSED July 11/80

TO: Canadian Occidental Petroleum Ltd.
Minerals Division
Ste. 311 - 215 Carlingview Dr.
Rexdale, Ont. M9W 5X8

ATTN: Cassi-Allen Soils

SAMPLE NO. :	PPM Pb	PPM Zn	PPM Ag
Prefix 80-CA			
10047	92	128	0.1
10048	44	70	0.1
10049	18	54	0.1
10050	26	96	0.1
10051	16	54	0.1
10052	12	64	0.1
10053	14	52	0.1
10054	20	52	0.1
10055	12	48	0.1
10056	14	54	0.1
10057	10	46	0.1
10058	10	64	0.1
10059	14	42	0.1
10060	14	46	0.1
10061	10	42	0.1
10062	12	44	0.1
10063	14	52	0.1
10064	12	48	0.1
10065	14	46	0.1
10066	72	136	0.1
10067	22	58	0.1
10068	38	94	0.1
10069	38	88	0.1
10070	34	106	0.1
10071	12	56	0.1
10072	14	38	0.1
10073	14	50	0.1
10074	138	178	0.1
10075	10	42	0.1
10076	22	70	0.1
10077	142	350	0.1
10078	28	86	0.1
10079	46	138	0.1
10080	66	140	0.1
10081	46	136	0.1
10082	8	20	0.1
10083	14	28	0.1
10084	12	34	0.1
10085	20	56	0.1

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Biddle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54167

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont. M9W 5X8 CC. Watson Lake, Y.T.

INVOICE NO. 36923

RECEIVED July 4/80

ANALYSED July 15/80

ATTN: Cassi - ~~Allen - ROCKS~~

SAMPLE NO. :	PPM Pb	PPM Zn	PPM Ag
10290R 80-CA	16	42	0.4
10291	4	34	0.1
10292	52	86	0.2
10293	38	42	1.9
10294	8	26	3.0
10295	6	52	0.1
10296	58	24	0.1
10297 80-CA	6	110	0.1

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hank Biesle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54198

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
STe. 311 - 215 Carlingview Dr.,
Rexdale, Ont. M9W 5X8

INVOICE NO. 36990

RECEIVED July 5/80

ANALYSED July 17/80

ATTN: CASSI PROJECT - Allen Claims ROCKS CC. Watson Lake

SAMPLE NO. :	PPM Cu	PPM Mo	PPM Pb	PPM Zn	PPM Ag
ca-80 10280R	10	1	4	48	0.1
10281	10	1	2	32	0.1
10282	4	1	6	44	0.1
10283	2	1	8	34	0.1
10284	24	1	2	56	0.2
10285	4	1	4	30	0.1
10286	2	1	16	42	0.1
10287	2	1	2	26	0.1
10288	1	1	22	20	0.4
10289	2	1	10	44	0.2
CA-80 10298R	168	2	280	540	5.0

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Biddle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54162

TO: Canadian Occidental Petroleum Ltd.
Minerals Division
Ste. 311 - 215 Carlingview Dr.
Rexdale, Ont. M9W 5X8

INVOICE NO. 36838

RECEIVED July 4/80

ATTN: Watsu-Border Soils & Silts

ANALYSED July 11/80

SAMPLE NO. :	PPM Pb	PPM Zn	PPM Ag
Prefix 80-WA			
22000	18	51	0.1
22010	12	46	0.1
22011	10	58	0.1
22012	28	54	0.1
22013	28	76	0.1
22014	20	88	0.1
22015	38	82	0.1
22016	12	60	0.1
22017	14	64	0.1
22018	16	88	0.1
22019	10	51	0.1
22020	54	500	0.1
22021	18	52	0.1
22022	20	54	0.1
22023	16	44	0.1
22024	6	32	0.1
22025	8	52	0.1
22026	8	46	0.1
22027	72	192	3.8
22028	10	46	0.1
22029 SS	50	164	0.8

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Biddle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54173

INVOICE NO. 37709

RECEIVED July 4/80

ANALYSED Aug. 12/80

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont. M9W 5X8

ATTN: Watsu-Border Heavy Minerals CC. Watson Lake, Y.T.

SAMPLE NO. :	PPM Cu	PPM Mo	PPM Pb	PPM Zn	PPM U	PPM Ag	PPM Sn	PPM W	PPM Th
22029HM	184	12	296	114	20.5	0.1	NSS	NSS	NSS

Note: Th results = NSS

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hart Biddle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54188

INVOICE NO. 36930

RECEIVED July 5/80

ANALYSED July 15/80

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont. M9W 5X8 CC. Watson Lake, Y.T.

ATTN: [redacted] Soils, Watsu Project

SAMPLE NO. :	PPM Pb	PPM Zn	PPM Ag
22001 80-WA	6	54	0.1
22030	24	70	0.1
22031	42	200	0.2
22032	6	62	0.1
22033	8	70	0.1
22034	52	98	0.1
22035	8	34	0.1
22036	6	48	0.1
22037	54	116	0.1
22038	20	88	0.1
22039	8	46	0.1
22040	6	36	0.1
22041	8	40	0.1
22042	10	54	0.1
22043	6	52	0.1
22044	10	40	0.1
22045	10	44	0.1
22046	6	38	0.1

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Ian Ridle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54168

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont. M9W 5X8 CC. Watson Lake, Y.T.

INVOICE NO. 36924

RECEIVED July 4/80

ANALYSED July 15/80

ATTN: [redacted]

SAMPLE NO. :	PPM Pb	PPM Zn	PPM Ag
22190R 80-WA	4	1950	0.4
22191	8	108	0.2
22192	12	26	0.1
22193	6	58	0.1
22194	6	42	0.1
22195	32	20	0.1
22196	26	44	1.2
22197	18	48	0.2
22198	4	50	0.1
22200R 80-WA	6	40	0.1

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hawk Bickle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54199

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont. M9W 5X8

INVOICE NO. 36991

RECEIVED July 5/80

ANALYSED July 17/80

ATTN: WATSU PROJECT - Border Claims ROCKS CC. Watson Lake

SAMPLE NO. :	PPM Cu	PPM Mo	PPM Pb	PPM Zn	PPM Ag
80-WA 22183R	14	1	2	4	0.1
22184	8	1	14	6	0.1
22185	42	1	10	44	0.1
22186	4	1	8	36	0.1
22187	4	1	16	20	0.1
80-WA 22199R	2	1	2	32	0.1

CTA MEMBER CANADIAN TESTING

CERTIFIED BY: Hart Biddle

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: 984-0221
AREA CODE: 604
TELEX: 04-352597

CHEMEX LABS LTD.

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CERTIFICATE OF ANALYSIS

CERTIFICATE NO. 54199

TO: Canadian Occidental Petroleum Ltd.,
Minerals Division,
Ste. 311 - 215 Carlingview Dr.,
Rexdale, Ont. M9W 5X8

INVOICE NO. 36991

RECEIVED July 5/80

ATTN: WATSU PROJECT - Border Claims ROCKS CC. Watson Lake

ANALYSED July 17/80

SAMPLE NO. :	PPM Cu	PPM Mo	PPM Pb	PPM Zn	PPM Ag
80-WA 22183R	14	1	2	4	0.1
22184	8	1	14	6	0.1
22185	42	1	10	44	0.1
22186	4	1	8	36	0.1
22187	4	1	16	20	0.1
80-WA 22199R	2	1	2	32	0.1

CTA MEMBER CANADIAN TESTING ASSOCIATION

CERTIFIED BY: Hans Biella

APPENDIX III

Appendix III - Sampling and Laboratory Procedures

I. SAMPLING PROCEDURES

A) Heavy Minerals

1. A sample site is selcted 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 vigourously 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. $\geq$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°c 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 Absorptio

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.

Element	Bkgd. Corr.	Flame Type	Wave Length hm	Detection Limit	Chemex Standard	± 1 Std. Deviation
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 anaylsed 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

PROJECT WATSU

1980

Statement of Expenditures

Claims BORDER

Record Numbers YA44635-YA44641

1)	Salaries & Benefits	$ 1,310.00[1]
2)	Helicopter flying - 1.1 hours @ $315/hour	347.00[2]
3)	Scintillometer rentals (Urtec)	174.00[3]
4)	Geochemical Analyses - 71	393.32[4]
	Sub Total	2,224.32
5)	Administration @ 10%	222.43
	Total	$ 2,446.75

Notes:

[1] Pro-rated on basis of 5 man-days worked on claims conducting geological/geochemical/geophysical surveys out of a total of 511 man-days spent on Project Watsu surveys (see attached breakdown on following sheet), unit cost @ $262/man-day.

[2] Helicopter flying completed by Northern Mountain Helicopters Inc., Prince George, B.C., unit cost @ $315/hr.

[3] Pro-rated on basis of 5 man-days worked on claims conducting geophysical surveys out of a total of 461 man-days spent on Project Watsu surveys (see attached breakdown on following sheet), unit cost @ $34.70/man-day.

[4] Geochemical analyses completed by Chemex Labs of Vancouver, B.C. (see attached cost breakdown), unit cost @ $5.54 /sample.

PROJECT WATSU

Salaries & Benefits Costs - 1980

Claim Group	No. of Man-Days	@ $262/m.d.
B.C.		
ALLEN	9	$ 2,358
KAZ	10	2,620
NEED	37	9,694
PLATE 1-2	26.4	6,917
PLATE 3-4	16.2	4,245
RAN	48	12,576
SHAR 1-2	14	3,668
SHAR 10	4	1,048
SHAR 3, 4, 9, 11	9.7	2,541
SHAR 5-6	16	4,192
SHAR 7-8	37.7	9,877
##########		
YUKON		
GOAT 1-36	18.5	4,847
BORDER	5	1,310
BIG OX 1-72	54	14,148
CO	9	2,358
GOAT 37-84	25	6,550
ICE	13.1	3,432
LICK	27.7	7,257
MOX	33	8,646
OXY	10.8	2,830
PISA	13	3,406
SAL	19	4,978
TIER	16.8	4,401
WOX	26.8	7,022
NISU	12	3,144
BIG OX 73-76	2	524
TOTALS	511	$134,099

PROJECT WATSU

Scintillometer Rentals - 1980

Claim Group	No. of Man Days	@ $34.7/m.d.
B.C.		
ALLEN	9	$ 312
PLATE 1-2	26.4	916
PLATE 3-4	16.2	562
RAN	48	1,666
SHAR 1-2	14	486
SHAR 10	10	347
SHAR 5-6	16	555
SHAR 7-8	37.7	1,308
##########		
YUKON		
GOAT 1-36	18.5	642
BORDER	5	174
BIG OX 1-72	54	1,874
CO	9	312
GOAT 37-84	25	868
ICE	13.1	455
LICK	27.7	961
MOX	33	1,145
OXY	10.8	375
PISA	13	451
SAL	19	659
TIER	16.8	584
WOX	26.8	930
NISU	12	416
TOTALS	461	$16,004

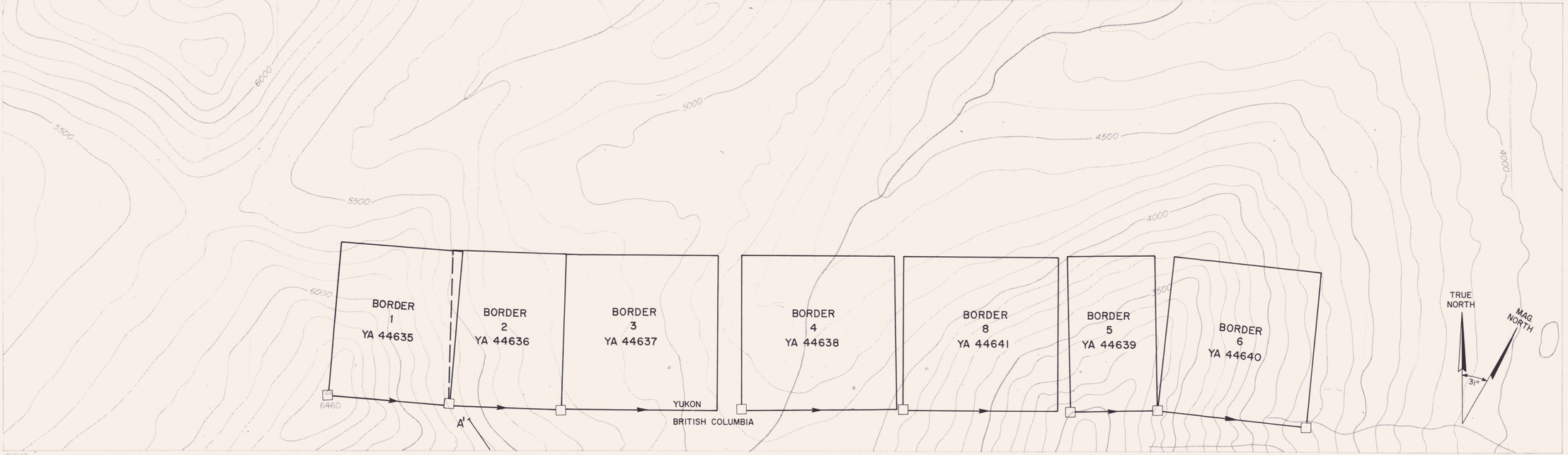
PROJECT WATSU

1980

BORDER _____ CLAIM GROUP

Geochemical Cost Breakdown

Invoice #	Certificate #	Amount
36929	54186	$122.12
	54187	
36838	54162	59.64
	54163	
	54164	
36923	54167	32.32
36990	54198	56.76
36930	54188	51.12
36924	54168	40.40
36991	54199	30.96
	TOTAL	$393.32



Claim post

Claim boundary

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
BORDER CLAIMS

WATSON LAKE MINING DISTRICT,
YUKON
N.T.S. 105-B

BASE MAP

100 50 0 100 200 300 400
SCALE IN METRES

PLAN 0

C.G.H./PF/Feb. 1981

ALLEN 2 ALLEN 1

LEGEND

CRETACEOUS

2 Hornblende Diorite

1 Biotite (±Muscovite) Quartz-Monzonite

SYMBOLS

- Joints (inclined, vertical)
- Shearing (vertical, inclined)
- Geological Contact (approximate)
- Outcrop
- cpy Chalcopyrite
- py Pyrite
- po Pyrrhotite
- mag Magnetite
- Qv Quartz veins
- Cv carbonate veins
- QCV Quartz carbonate veins
- Rock Sample Location All values in ppm
- Anomalous
- Probably Anomalous
- Claim Post
- Claim Line
- A' A'' Cross Section

TRUE N

MAG 31°

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT CASSI
ALLEN 1-2 CLAIMS

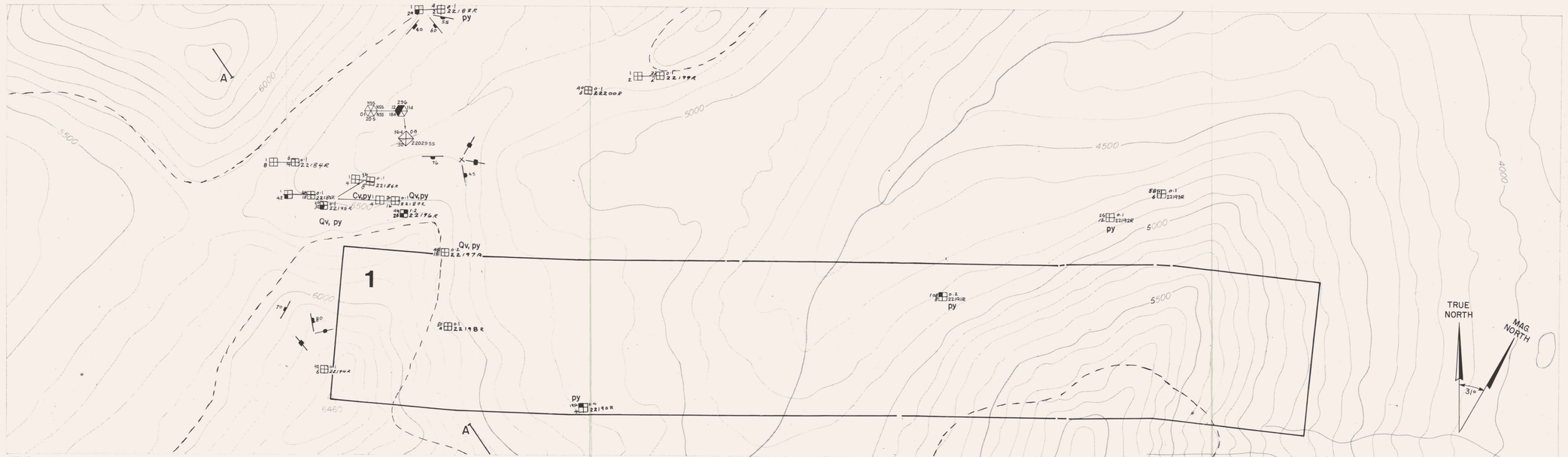
ATLIN MINING DIVISION,
BRITISH COLUMBIA
N.T.S. 104-O

GEOLOGY & ROCK GEOCHEMISTRY

SCALE IN METRES
100 50 0 100 200 300 400

PLAN IA C.G.H./PF/Feb. 1981

ALLEN 1-2



LEGEND

CRETACEOUS

1 — Biotite (±Muscovite) Quartz-Monzonite

SYMBOLS

- Joints (inclined, vertical)
- Shearing (vertical, inclined)
- Geological Contact (approximate)
- Outcrop
- Py — Pyrite
- Qv — Quartz veins
- Cv — carbonate veins
- QCV — Quartz carbonate veins
- Heavy Mineral Sample Location All values in ppm
- Probably Anomalous (Sacks 1979)
- cv — Carbonate vein
- Rock Sample Location All values in ppm
- Anomalous
- Probably Anomalous
- Claim Post
- Claim Line
- A A' — Cross Section
- Stream Sediment Sample Location All values in ppm
- Probably Anomalous (Sacks 1979)

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
BORDER CLAIMS

WATSON LAKE MINING DISTRICT,
YUKON
N.T.S. 105-B

GEOLOGY & ROCK GEOCHEMISTRY

100 50 0 100 200 300 400
SCALE IN METRES

PLAN 1B

C.G.H./P.F./Feb.1981

ALLEN2 ALLEN1

A'

A"

6460

6000 5000 5500 6000 5500 5000 5500 6000 5500 5000 6000 6000 5500 6000 6500 6000 6500 6000 4500 4000 4500 5000 5000

205 202 203 209 218 255 248 233 169 232 215 222 221 193 248 229 245 236 281 235 236 283 317 249 238 250 298 238 242 247 235 284 284 303 307 283 287 239 226 217 241 222 231 282 223 231 259 249 241 244 310 285 243 272 285 309 246

TRUE N

MAG.

3½°

LEGEND

Readings and contours in c.p.s.
Urtec model UG 130 TC, at 1 sec.

- ○ sample location
- ● anomalous > 280cps
- ⊙ probably anomalous > 270 cps
- A' A" Cross section
- □ Claim post
- Claim boundary

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT CASSI

ALLEN 1-2 CLAIMS

ATLIN MINING DIVISION,
BRITISH COLUMBIA
N.T.S. 104-O

SCINTILLOMETER SURVEY

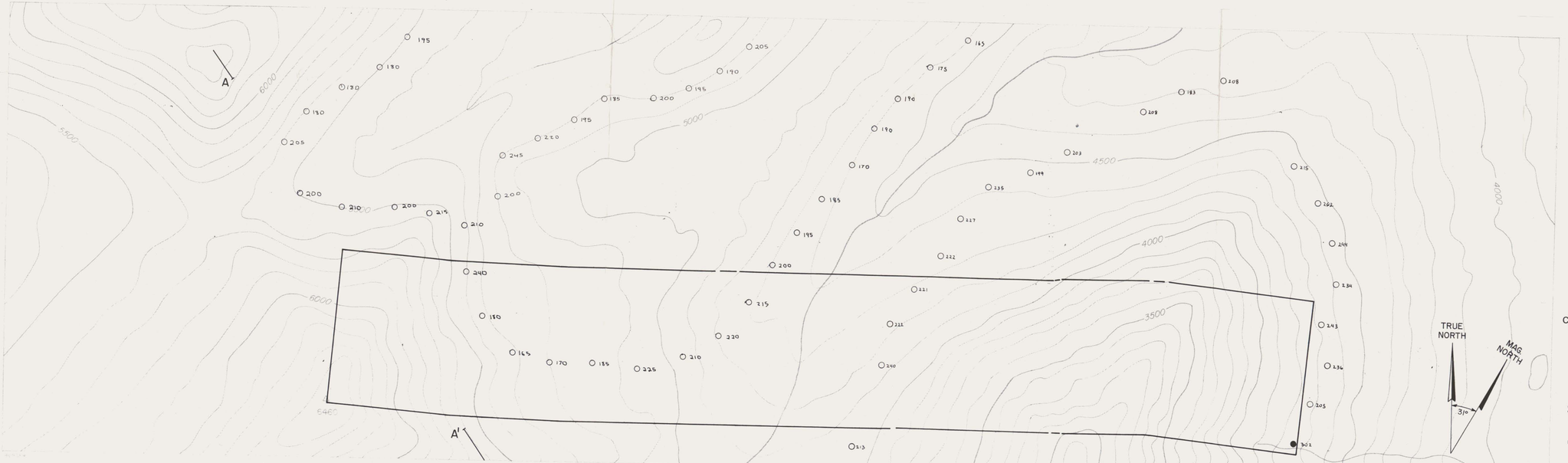
CONTOURED VALUES

SCALE IN METRES
100 50 0 100 200 300 400

PLAN 2A

C.H. /a.h. /Mar.81

ALLEN 1-2



LEGEND

Readings and contours in c.p.s.
Urtec model UG 130 TC₁ at 1 sec.

○ Location and Value

●>280 Anomalous

Probably Anomalous 270
(none shown)

Claim boundary

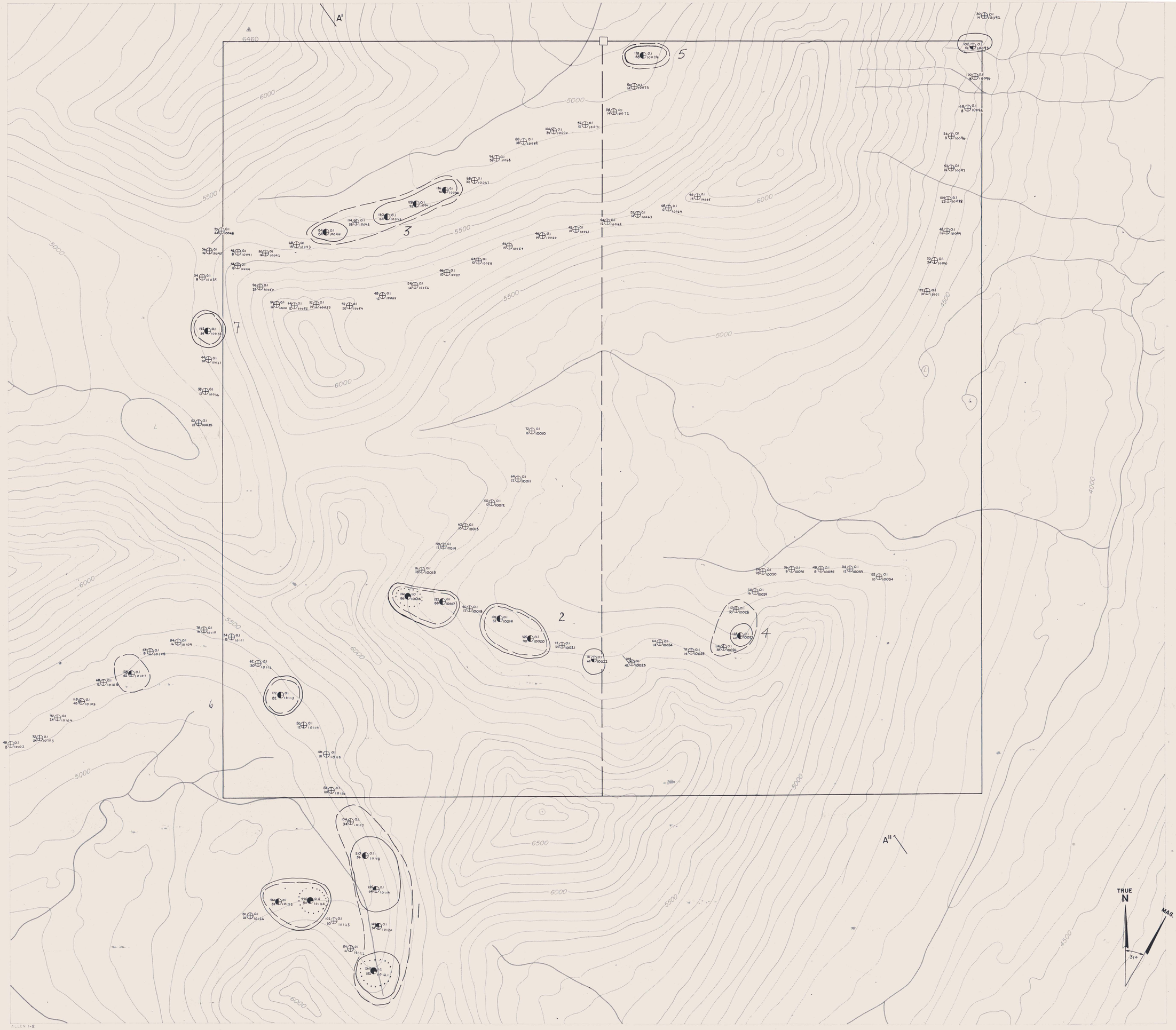
CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
BORDER CLAIMS

WATSON LAKE MINING DISTRICT,
YUKON
N.T.S. 105-B

SCINTILLOMETER SURVEY
CONTOURED VALUES

100 50 0 100 200 300 400
SCALE IN METRES



LEGEND

3 Soil anomaly discussed in text

≥ 45 ppm Pb
≥ 103 ppm Zn
≥ 0.2 ppm Ag

All values in ppm

Zn Ag
Pb
BD CA sample number

ANOMALOUS

PROBABLY ANOMALOUS

Claim post

Claim boundary

A A' Cross Section

TRUE N

MAG.

31°

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT CASSI

ALLEN 1-2 CLAIMS

ATLIN MINING DIVISION,
BRITISH COLUMBIA

N.T.S. 104-O

SOIL GEOCHEMISTRY

SAMPLE LOCATION AND VALUE

Pb, Zn, Ag.

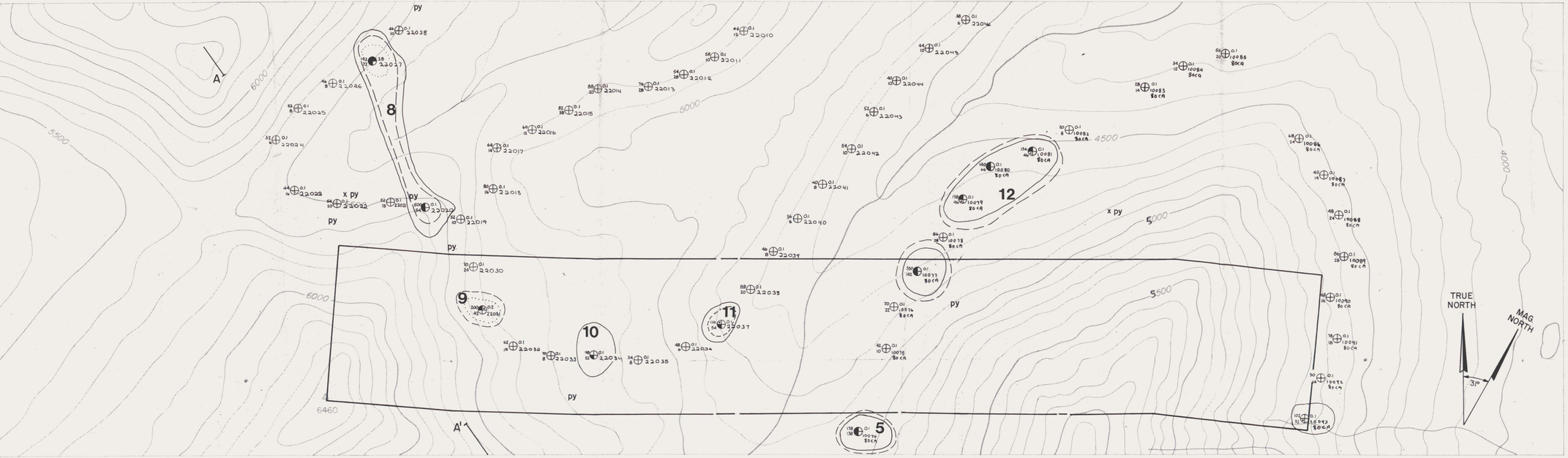
SCALE IN METRES

100 50 0 100 200 300 400

PLAN 3A

C.H./c.h./Mar. 1981

ALLEN 1-2



LEGEND

All values in ppm

Zn / Ag / Pb — 80 ppb soil sample number

ANOMALOUS

>120 / >30 / 0·4

PROBABLY ANOMALOUS

103 / 45 / 0·2

A — A' Cross section

Claim boundary

8 Soil anomaly discussed in text

⩾45 ppm Pb in soil

⩾103 ppm Zn in soil

⩾0·2 ppm Ag in soil

py Pyrite

CANADIAN OCCIDENTAL PETROLEUM LTD.

MINERALS DIVISION

PROJECT WATSU
BORDER CLAIMS

WATSON LAKE MINING DISTRICT, YUKON

N.T.S. 105-B

SOIL GEOCHEMISTRY

SAMPLE LOCATION AND VALUE

Pb, Zn, Ag.

100 50 0 100 200 300 400

SCALE IN METRES

PLAN 3B

C.G.H./P.F./Feb. 1981

ALLEN2 | ALLEN1

5
138 ppm Pb
118 ppm Zn

80 38 ppm Pb
1.9 ppm Ag
QCV
py

80 110 ppm Zn

80 58 ppm Pb
py

80 52 ppm Pb
86 ppm Zn
py

114 - 136 ppm Zn
38 - 98 ppm Pb

80 3.0 ppm Ag

3

79 74 ppm Zn

79 1.2 ppm Ag

1

80 280 ppm Pb
540 ppm Zn
5.0 ppm Ag
188 ppm Cu
py
po

80 0.4 ppm Ag

7

54 ppm Pb
132 ppm Zn

37.8 ppm U
0.5 ppm Ag
Actual position
400m north

70 ppm Pb
158 ppm Zn
31.8 ppm U
8 ppm W
1.1 ppm Ag

12 - 90 ppm Pb
46 - 325 ppm Zn
0.1 - 1.0 ppm Ag
po, Mag

2

80 22 ppm Pb
0.4 ppm Ag
QV, py

178 ppm Zn

6

82 ppm Pb
172 ppm Zn

30 - 60 ppm Pb
110 - 148 ppm Zn

4

79 54 ppm Pb
148 ppm Zn

80 56 ppm Zn
24 ppm Cu

155
trace of cpy in float

52 - 80 ppm Pb
440 - 460 ppm Zn
0.1 - 0.4 ppm Ag

34 - 152 ppm Pb
144 - 260 ppm Zn
0.1 - 1.2 ppm Ag

46.1 ppm U
0.9 ppm Ag

A

A'

A''

6460

6000

5500

5000

4500

4000

6500

LEGEND

CASSIAR BATHOLITH

2 Hornblende Diorite
1 Biotite (±Muscovite) Quartz-Monzonite

Symbols

- Joints (inclined; vertical)
- Shearing (inclined; vertical)
- cpy Chalcopyrite
- py Pyrite
- po Pyrrhotite
- mag Magnetite
- Qv Quartz
- Cv Carbonate Vein
- Area of Radiometric Response greater than 280 cps (Urtec Model UG 1-10 TC_1 @ 1 sec.
- 52 ppm Pb / 1 Soil Anomaly with Range of Values of Anomalous Metals
- 1978 GSC Stream Sediment Sample Location with high values
- 80 1980 Rock Sample Location with Anomalous and Probably Anomalous Values
- 79 1979 Rock Sample Location with Anomalous and Probably Anomalous Values; >20 ppm Pb; >55 ppm Zn; >0.3 ppm Ag; >13 ppm Cu
- 1979 Stream Sediment Sample Location All Values in ppm
- Probably Anomalous (Sacks 1979) All Values in ppm
- 1979 Heavy Mineral Sample Location All values in ppm
- Probably Anomalous (Sacks 1979)
- 1979 Soil Sample Location All Values in ppm
- A'' A' Cross Section
- Claim post
- Claim boundary

TRUE N
MAG.
31°

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT CASSI
ALLEN 1-2 CLAIMS

ATLIN MINING DIVISION,
BRITISH COLUMBIA
N.T.S. 104-O

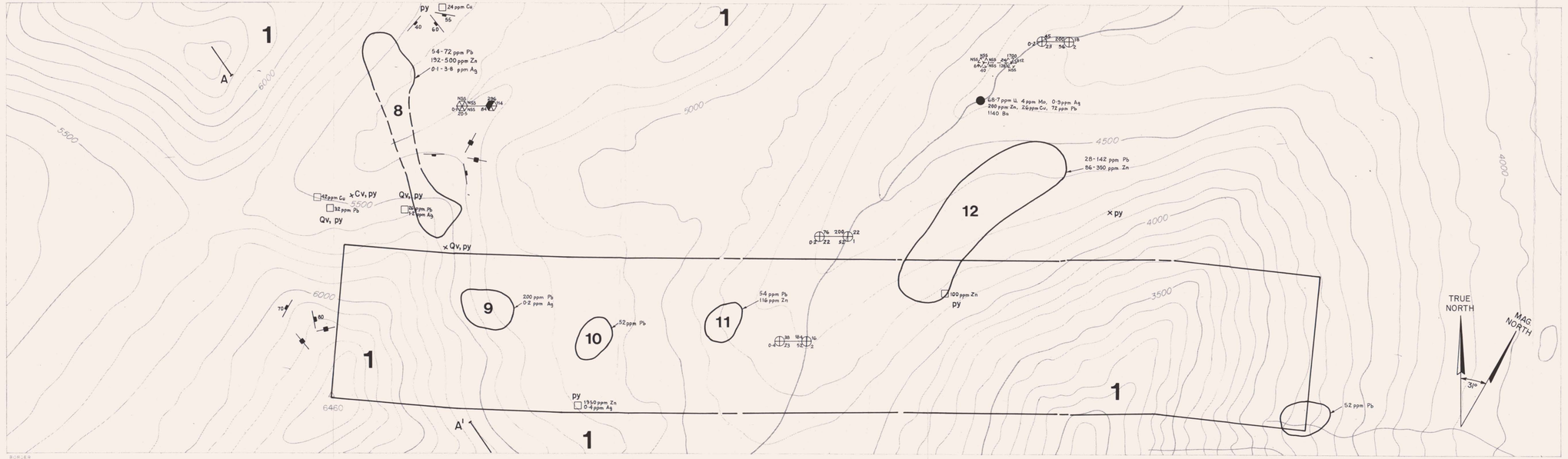
COMPILATION MAP

SCALE IN METRES
100 50 0 100 200 300 400

PLAN 4A

C.H./a.h./Mar.81

ALLEN 1-2



LEGEND

Symbols

- Joints (inclined, vertical)
- Qv — Quartz veins
- Cv — Carbonate Veins
- Py — Pyrite
- 120ppm Pb — 1980 Rock sample with Probably Anomalous and Anomalous Values >20 ppm Pb; 55 ppm Zn; >0.3 ppm Ag; >13 ppm Cu
- 52 ppm Pb / 1 — Soil Anomaly with Range of Values of Anomalous Metals
- 1978 GSC Stream Sediment Sample Locations with High Values
- 1979 Stream Sediment Sample Location All Values in ppm
- 1980 Heavy Mineral Sample Location All Values in ppm
- 1979 Heavy Mineral Sample Location All Values in ppm
- Probably Anomalous (Sacks, 1979)
- A A' — Cross-section
- Claim boundary

CRETACEOUS

CASSIAR BATHOLITH

1 — Biotite (±Muscovite) Quartz-Monzonite

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
BORDER CLAIMS

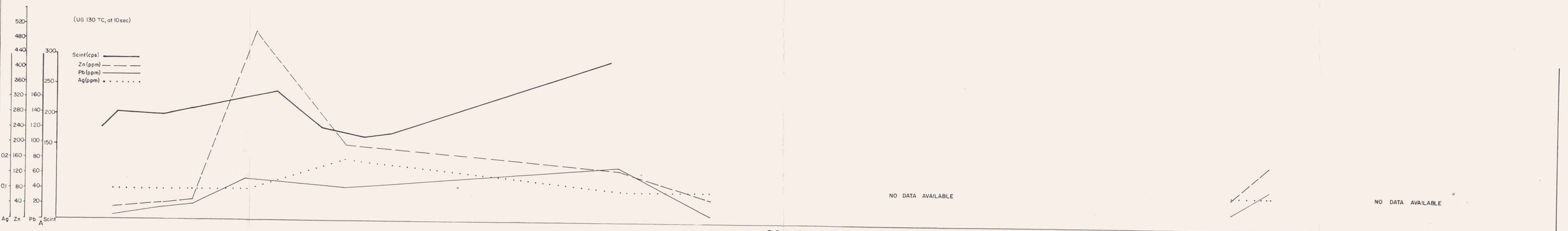
WATSON LAKE MINING DISTRICT,
YUKON
N.T.S. 105-B

COMPILATION MAP

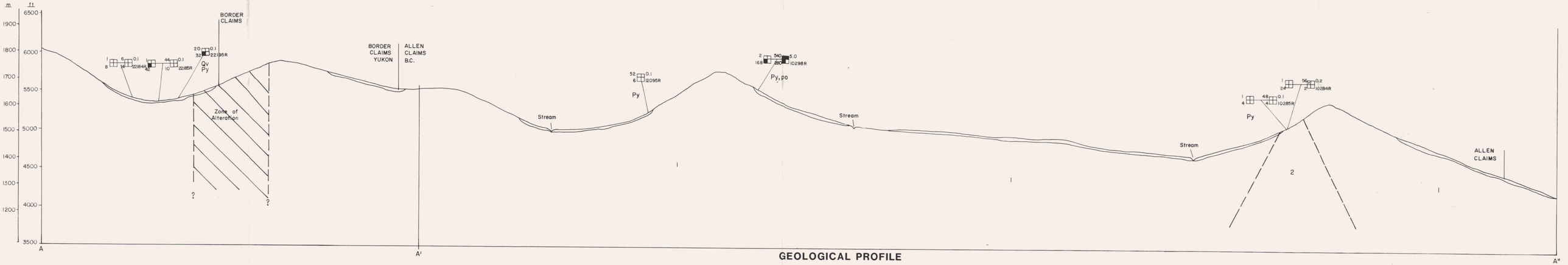
100 50 0 100 200 300 400
SCALE IN METRES

PLAN 4B

C.G.H./P.F./Feb. 1981



SOIL GEOCHEMICAL PROFILE
of SILVER , ZINC and LEAD
and SCINTILLOMETER SUVREY



GEOLOGICAL PROFILE
(Looking North - East)

LEGEND

CRETACEOUS

2 Hornblende Diorite

1 Biotite (±Muscovite) Quartz-Monzonite

SYMBOLS

Geological Contact (approximate)

py Pyrite

po Pyrrhotite

Qv Quartz veins

Rock Sample Location
All values in ppm

Anomalous

Probably Anomalous

CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION

PROJECT WATSU
BORDER - ALLEN CLAIMS

WATSON LAKE MINING DISTRICT, YUKON
N.T.S. 105-B

ATLIN MINING DIVISION, BRITISH COLUMBIA
N.T.S. 104-O

GEOLOGICAL , GEOCHEMICAL & SCINTILLOMETER PROFILES A - A' - A''

C.H./sh, Feb.1981

PLAN 5