

2082



GEOLOGICAL AND GEOCHEMICAL REPORT
ON THE THEBAN NOS. 1-40 CLAIMS, SITUATED APPROXIMATELY
SIX MILES SOUTH OF TOODOGGONE LAKE IN THE
COMINECA MINING DIVISION
57° 19' N, 126° 57' W

94E-7W

REPORT BY

D.L. COOKE, Ph.D.,

UNDER THE SUPERVISION OF

J. RICHARDSON, P. ENG.

Mining Recorder's Office
RECORDED

AUG 11 1969

AT.....
SMITHERS, B.C.

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

GEOLOGICAL AND GEOCHEMICAL REPORT
ON THE THEBAN NOS. 1-40 CLAIMS, SITUATED APPROXIMATELY
SIX MILES SOUTH OF TOODOGGONE LAKE IN THE
OMINECA MINING DIVISION
57° 19' N, 126° 57' W

<u>Group</u>	<u>Number of Claims</u>	<u>Credit Requested</u>
Theban #1 Group	40	44 years

Located claims on which assessment work credit is requested are as follows:

<u>Claim</u>	<u>Record No.</u>	<u>Credit Requested</u>	<u>Total</u>
Theban Nos. 1-20 inclusive	61155 - 61174 inclusive	1 year each	20 years
Theban Nos. 21-24 inclusive	61175 - 61178 inclusive	2 years each	8 years
Theban Nos. 25-36 inclusive	61179 - 61190 inclusive	1 year each	12 years
Theban Nos. 37-40 inclusive	61592 - 61595 inclusive	1 year each	4 years
Total:			44 years

Work was done on these claims during the period July 18 to August 2, 1968.

REPORT BY

D.L. COOKE, Ph.D.,

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J. RICHARDSON, P. ENG.

DLC:ma
July 2, 1969
Vancouver, B.C.

COMINCO LTD.

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OMINECA MINING DIVISION
57° 19' N, 126° 57' W
94E-7W

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION.....	1
HISTORY.....	1
GEOLOGY.....	1,2
GEOCHEMISTRY.....	2
Soil Survey.....	2
Sample Preparation.....	2
Atomic Absorption Analysis for Copper.....	2
Analysis for Molybdenum.....	2
SUMMARY AND CONCLUSIONS.....	2,3
REFERENCES.....	3
ATTACHMENTS.....	3
(1) Statement of Expenditures	
(2) Statutory Declaration of Expenditures	
(3) Statement of Qualifications	
#1 (4) Plate PC-68-7, Geology, Theban Group, 1" = 400'.	
#2 (5) Plate PC-68-7A, Soil and Silt Survey, Theban Group, 1" = 400'.	
#3 (6) Plate PC-68-7A, Soil & Silt Survey, Theban Group, 1" = 400' " Location Insert	

DLC:ma
July 2, 1969
Vancouver, B.C.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
2082
2050A
NO. MAP

Chip samples from a mineralized area along the southwestern corner of the claim group returned 0.12% Cu/50 feet, and from an area near the center of the claims 0.05% Cu/30 feet. Other areas of mineralization were visually estimated to be of a grade similar to that of the areas trenched and sampled.

GEOCHEMISTRY

Soil samples were collected and analyzed for copper using the Unicam SP 90 Atomic Absorption Spectrophotometer. Molybdenum was determined chlorimetrically using thiocyanate. The results for copper and molybdenum are plotted on Plate PC-68-7A.

Soil Survey:

A total of 500 samples were taken where possible from the B horizon (red-brown), and if not available, the A₁ horizon. Sample depth ranges from 6" to 12". All samples were taken with a Manitoba pick and placed in Kraft sample bags.

Survey control was provided by chain and compass for the location of claim lines. The two claim location lines were used as base and tie lines. Soil sample lines and locations were controlled by pace and compass. Sample spacing is 400' along traverse lines approximately 400' apart.

Sample Preparation:

The respective soil horizon samples (A₁, B) are first dried overnight in an oven at 60°C-100°C, and then subjected to sieving with a minus 80 mesh nylon screen. A 0.5 gram portion of each screened sample is weighed into a 16 x 150 mm. pyrex test tube and 5 ml. of 10% HCL added. The sample is next digested for one hour at 95°C in a water bath, and on removal from the water bath a further 5 ml. of 10% HCL is added, using an automatic pipette to ensure complete mixing. The mixture is allowed to settle and equilibrate for a period of from one to two hours, and then analyzed by atomic absorption.

Atomic Absorption Analysis for Copper:

The SP. 90 Unicam atomic absorption Spectrophotometer accepts a small portion of the extract which is aspirated into an Oxygen-Acetylene flame. The flame temperature is sufficient to dissociate most of the sample into the atomic state. The amount of sample absorption of the line spectrum of the particular element being analyzed for is compared to the amounts obtained by previously carefully prepared standards. The values of the standards are plotted on log-log paper with percent absorption against concentration in ug/ml. The amounts of copper are read from the graph in ug/ml. and these values are multiplied by a dilution factor to give the copper readings in ppm. Sensitivity of this method is 5 ppm. copper.

Analysis for Molybdenum:

A torsion Balance is used to weigh out 0.2 gram of the screened sample into an 18 x 150 mm. pyrex test tube. Molybdenum is extracted by fusing the sample with a standard pyrosulphate, cooling the fused mass, adding 10 ml. of 10% HCL, and allowing the mixture to sit in a hot water bath. A 5 ml. aliquot is transferred to a 16 x 150 mm. test tube and 1 ml. of ammonium thiocyanate is added. After mixing thoroughly, 1 ml. of stannous chloride solution is added, and the mixture is shaken until the red coloration disappears. Water is added to bulk the specimen to the 10 ml. mark and ½ ml. isopropyl ether added.

The test tube is stoppered, and shaken for 30 seconds. The phases are allowed to settle and the colour produced is compared against carefully prepared standards containing known amounts of molybdenum. The concentration of molybdenum in each sample is thus determined to the nearest 1 ppm.

SUMMARY AND CONCLUSIONS

The Theban claim group covers a copper prospect located six miles south of Toodoggone Lake. The claims were staked in 1968 and a program of geological mapping, soil sampling and trenching was subsequently undertaken.

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

GEOLOGICAL AND GEOCHEMICAL REPORT
ON THE THEBAN NOS. 1-40 CLAIMS, SITUATED APPROXIMATELY
SIX MILES SOUTH OF TOODOGGONE LAKE IN THE
OMINECA MINING DIVISION
57° 19' N, 126° 57' W

INTRODUCTION

This survey consists of geological mapping and soil sampling, which were done to determine the extent of copper mineralization on the Theban claims. Two mineralized exposures were trenched and sampled at this time.

The survey was conducted by G. G. Richards, M. W. Oforsagd and R. A. Thomas, under the direction of D. L. Cooke, Ph.D., and J. Richardson, P. Eng.

The Theban claims are located in the Omineca Mining Division, at latitude N 57° 19', and longitude W 126° 57'. The claim group is situated at the headwaters of Jock Creek, six miles south of the west end of Toodoggone Lake. Access is by fixed and rotary winged aircraft, 180 miles north from Smithers. Elevation of the claim group ranges from 4,500' to 6,500' and the area is sparsely wooded below 5,200'.

HISTORY

No previous staking or work is known to have been done on the ground covered by the Theban claims. The Spartan claims adjoin the northern boundary and the Xenos claims adjoin the eastern boundary of the Theban group. The Theban claims were staked on June 27, July 26 and July 27, 1968.

GEOLOGY

The Theban claims cover a copper prospect associated with strongly fractured intrusive rocks which have penetrated a series of volcanic units in the Toodoggone River area.

The claim group is underlain partly by andesite tuffs and partly by an intrusive complex consisting of equigranular and porphyritic monzonite, syenite, and diorite (Plate PC-68-7). This intrusive complex forms a lob-like protuberance from a larger monzonite intrusion exposed north of the claims. Numerous quartz feldspar porphyry and trap dykes cross-cut the tuffs and the main intrusive mass.

Within the intrusion, the syenite phase appears to be the oldest, followed by diorite and finally monzonite. Hybrid siliceous zones are evident at the contacts between intrusive phases and at the contacts between intrusive and volcanic rocks. To the southwest, assimilation of tuffaceous material is apparent up to a distance of 1,000 feet from the intrusive contact.

The intrusive complex is conspicuous because it is strongly fractured and permeated by disseminations of pyrite. Most of the biotite and hornblende in these rocks has been altered to chlorite. Sericite and clay alteration are also evident, but their distribution appears erratic.

Chalcopyrite is localized in narrow quartz-epidote stringers and hairline fractures, mainly within siliceous zones at the contacts of the various intrusive phases. Some mineralization was also noted within the monzonite and at the contacts between diorite and tuffs. Malachite is more prevalent than chalcopyrite at the surface, and many of the exposures are intensely weathered. Abundant pyrite occurs as disseminations and fracture-fillings within the intrusive and volcanic rocks.

The claims are underlain mainly by an intrusive complex that consists of equigranular and porphyritic syenite, quartz diorite and monzonite. The intruded rocks are andesite tuffs tentatively correlated with the Takla group of Triassic age. The intrusive complex is strongly fractured and permeated by disseminations of pyrite.

Chalcopyrite is localized within narrow quartz-epidote stringers and hairline fractures in siliceous zones which appear at the contacts of the various intrusive phases. Trenching and sampling of two mineralized areas indicated less than 0.15% copper over lengths of 30' and 50'.

Although moderate amounts of copper are present in the soil cover on the Theban claims, the degree to which this dispersion reflects underlying copper mineralization is not known.

REFERENCES

- (1) Lord, C.S., 1948, McConnell Creek Map-Area, Cassiar District, British Columbia, G.S.C. Memoir 251.
- (2) Theban Group - Field Notes and maps: D.L. Cooke, G.G. Richards, M.W. Oforsagd, R.A. Thomas.

ATTACHMENTS

- (1) Statement of Expenditures
- (2) Statutory Declaration of Expenditures
- (3) Statement of Qualifications
- (4) Plate PC-68-7, Geology, Theban Group, 1" = 400'
- (5) Plate PC-68-7A, Soil and Silt Survey, Theban Group, 1" = 400'.

Report by:



D.L. Cooke, Ph.D., Geologist

Endorsed by:



J. Richardson
Professional Engineer

DLC:ma

July 2, 1969

Distribution

Mining Recorder, Smithers (2)

Vancouver, Exploration (1)

COMINCO LTD.EXPLORATIONWESTERN DISTRICT

1968 GEOLOGICAL-GEOCHEMICAL SURVEY
EXPENDITURES
THEBAN GROUP, SIX MILES SOUTH OF TOODOGGONE LAKE
OMINECA MINING DIVISION
94E-7W

SALARIES

1 Geologist (G. G. Richards)		
16 days during period July 18 to August 2, 1968		
@ \$40/ man day	\$640	
1 Field Assistant (M. Oforsagd)		
16 days during period July 18 to August 2, 1968		
@ \$30/ man day	480	
1 Senior Geologist (D. I. Cooke)		
2 days during period July 18 to August 2, 1968		
@ \$50/ man day	100	\$1,220

CAMP SERVICES

430

TRENCHING

Drill Rental	100	
3 man days @ \$30 (driller)	90	
Labour 3 man days @ \$25 (helper)	75	265

TRANSPORTATION

Charter helicopter 8 hrs. @ \$140/hr.	1,120	
Fixed Wing (Otter) 582 miles @ \$1.10/mile	640	1,760


SOIL SAMPLING

500 Cu analyses @ \$1.50/sample		750
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TOTAL EXPENDITURES		\$1,425
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J. Richardson, P. Eng.

This is Exhibit "A" to the Statutory
Declaration of J. Richardson, declared
before me the 8th day of August, 1969 A.D.


A Commissioner for taking Affidavits for
British Columbia

DOMINION OF CANADA:
PROVINCE OF BRITISH COLUMBIA.
To Wit:

In the Matter of

STATUTORY DECLARATION RELATING TO
EXPENDITURES ON A GEOLOGICAL-
GEOCHEMICAL SURVEY OF THE THEBAN
MINERAL CLAIMS PROPERTY OF COMINCO
LTD. OMINECA MINING DIVISION.

I, JAMES RICHARDSON, Professional Engineer

of the City of Vancouver

in the Province of British Columbia, do solemnly declare that

1. I do personally know D. L. Cooke who prepared the accompanying geological-geochemical report as a result of a survey carried out under my supervision on certain mineral claims situated in the Omineca Mining Division, owned by Cominco Ltd.
2. Copies of the said report are being filed with the Mining Recorder in Vancouver.
3. Attached hereto and marked with the letter "A" upon which I have signed my name at the time of declaring hereof, is a statement of expenditures incurred in connection with the geological-geochemical survey of the said claims showing in addition the dates during which those making the said survey performed their work.

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City
of Vancouver, in the
Province of British Columbia, this 8th
day of ~~July~~ August 1969, A.D.

J. Richardson

[Signature]
A Commissioner for taking Affidavits for British Columbia

In the Matter of

Statutory Declaration
(CANADA EVIDENCE ACT)

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

STATEMENT OF QUALIFICATIONS

D. L. Cooke was responsible for carrying out the geological-geochemical survey on the THEBAN Group of claims and for the preparation of this report. Dr. Cooke graduated as Bachelor of Science from the University of New Brunswick in Honours Geology 1959. He obtained his MA degree in Geology from the University of Toronto in 1961 and obtained his Ph.D in Geology at Toronto in 1966 and has been working in a responsible capacity with Cominco Ltd. since May 1, 1966.

I consider him to be an experienced and capable geologist.



J. Richardson, P. Eng.

COMINCO LTD.

EXPLORATION

WESTERN DISTRICT

GEOLOGICAL AND GEOCHEMICAL REPORT

THEBAN GROUP, 94E-7

Six miles south of Toadoggon Lake, Omineca MD

57°19' N, 126°57' W

ADDENDUM: TO

SUMMARY AND CONCLUSIONS

.....Less than 60 ppm. copper in stream sediment and soil samples is considered background. Threshold values lie in the range 60-100 ppm copper. Greater than 100 ppm copper is believed to be anomalous and indicative of copper mineralization. Stream silts which were analysed for molybdenum, all returned background amounts of molybdenum that are less than 3 ppm. Anomalous silts would probably contain in excess of 5 ppm molybdenum.

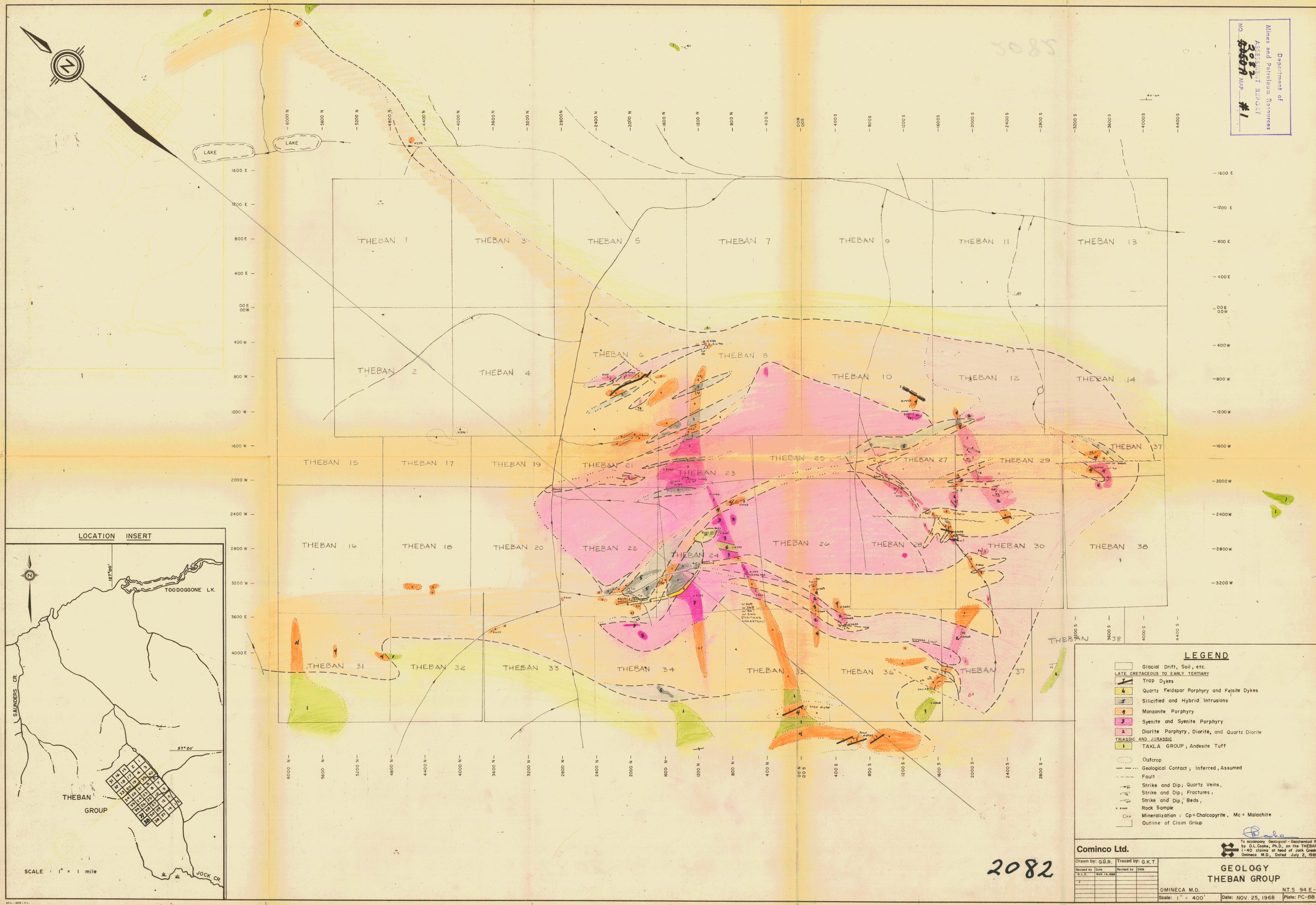
Report by: 

D.L. Cooke

Endorsed by: 

J. Richardson P. Eng.

DLC/ah



2082

LEGEND

- Glacial Drift, Soil, etc.
- LATE CRETACEOUS TO EARLY TERTIARY
- Trap Dykes
- Quartz Feldspar Porphyry and Felsite Dykes
- Silicified and Hybrid intrusions
- Monzonite Porphyry
- Syenite and Syenite Porphyry
- Diorite Porphyry, Diorite, and Quartz Diorite
- TRIASSIC AND JURASSIC
- TAKLA GROUP; Andesite Tuff
- Outcrop
- Geological Contact; Inferred, Assumed
- Fault
- Strike and Dip; Quartz Veins, Strike and Dip; Fractures, Strike and Dip; Beds, Rock Sample
- Mineralization: Cp = Chalcopyrite, Mc = Malachite
- Outline of Claim Group

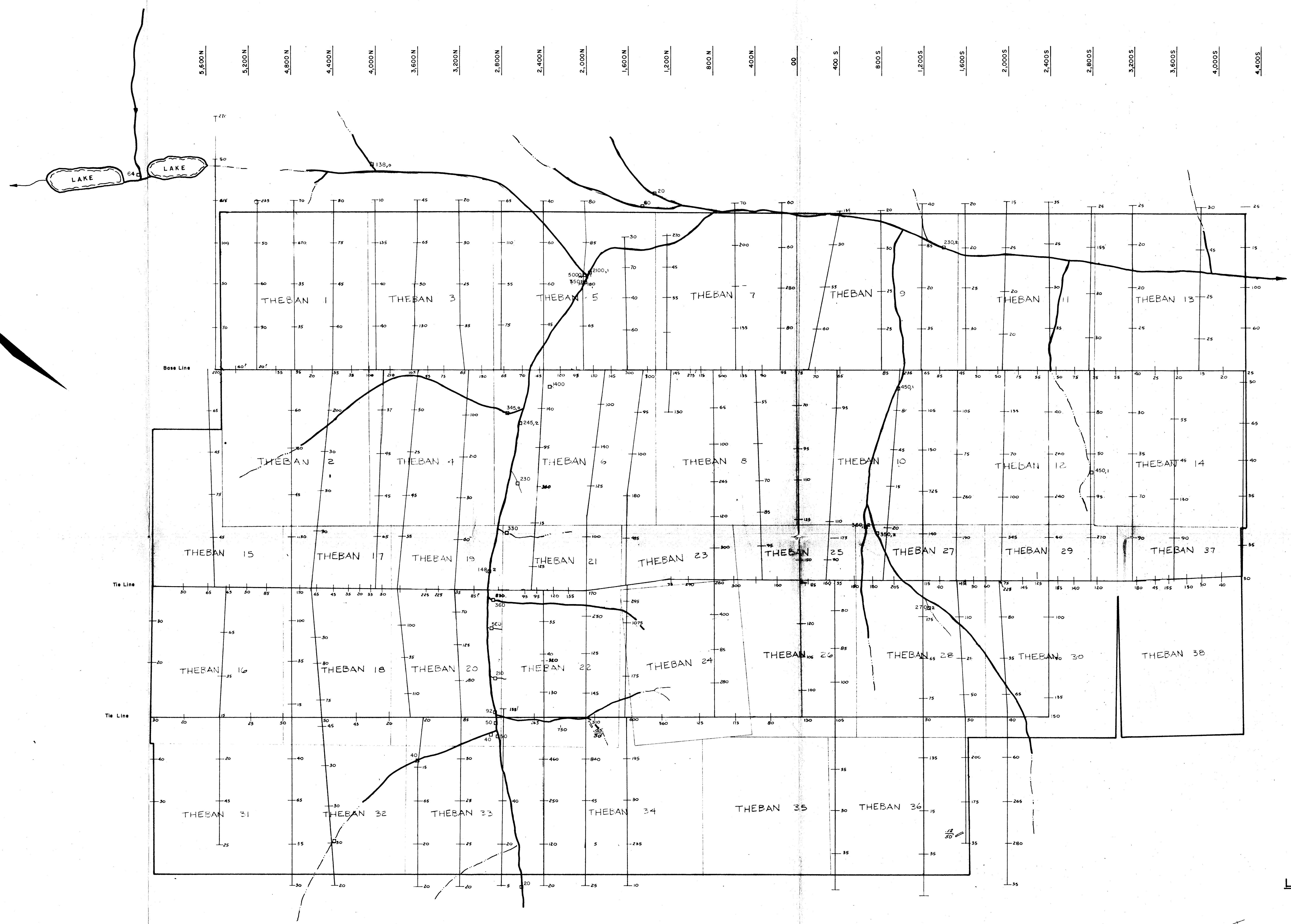
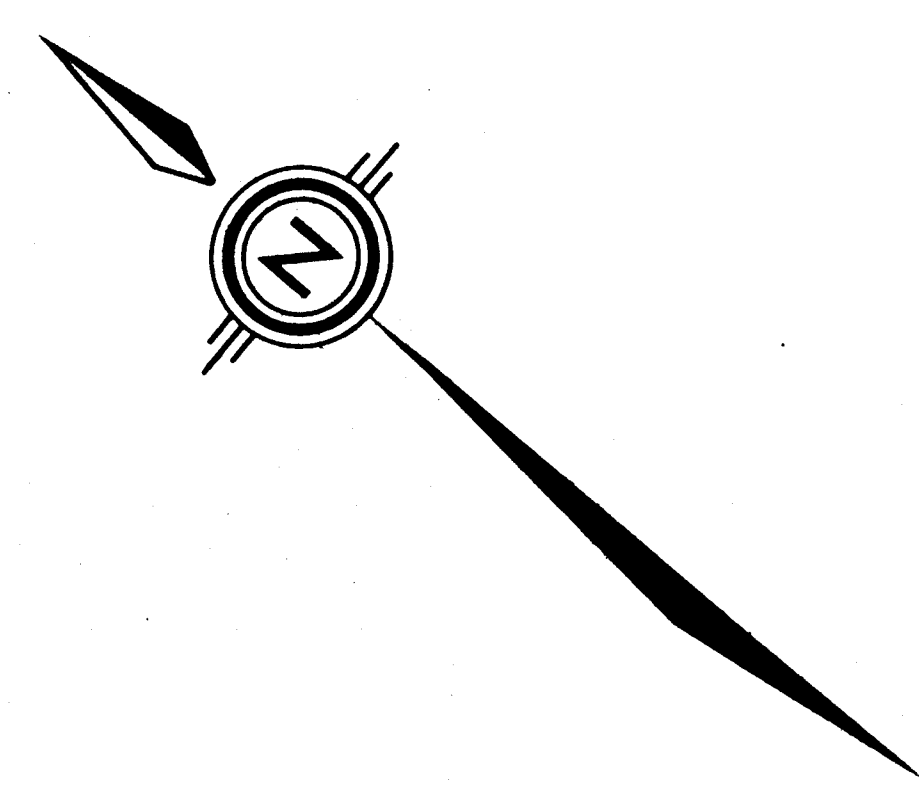
Cominco Ltd.

To accompany Geological - Geochemical Report by D.L. Cooke, Ph.D., on the THEBAN 1-40 claims at head of Jock Creek, Omineca M.D., Dated July 2, 1968

GEOLOGY THEBAN GROUP

OMINECA M.D. N.T.S. 94 E-7W
Scale: 1" = 400' Date: NOV. 25, 1968 Plate: PC-68-7

Drawn by: G.G.R. Traced by: G.K.T.
Revised by: Date: NOV 14, 1968



2,000E
1,600E
1,200E
800E
400E
00
400W
800W
1,200W
1,600W
2,000W
2,400W
2,800W
3,200W
3,600W
4,000W
4,400W

LEGEND

- TRAVERSE LINE AND SOIL SAMPLE LOCATION (120 p.p.m. Cu)
- SILT SAMPLE LOCATION (40 p.p.m. Cu), (2 p.p.m. Mo)
- CHIP SAMPLE: 0.12% COPPER OVER 50 FT.

2082

Cominco Ltd.

To accompany Geological - Geochemical Report by D.L. Cooke, Ph.D., on the THEBAN 1 - 40 claims at the head of the Crean, Ontario, M.C., dated July 5, 1968.

SOIL AND SILT SURVEY

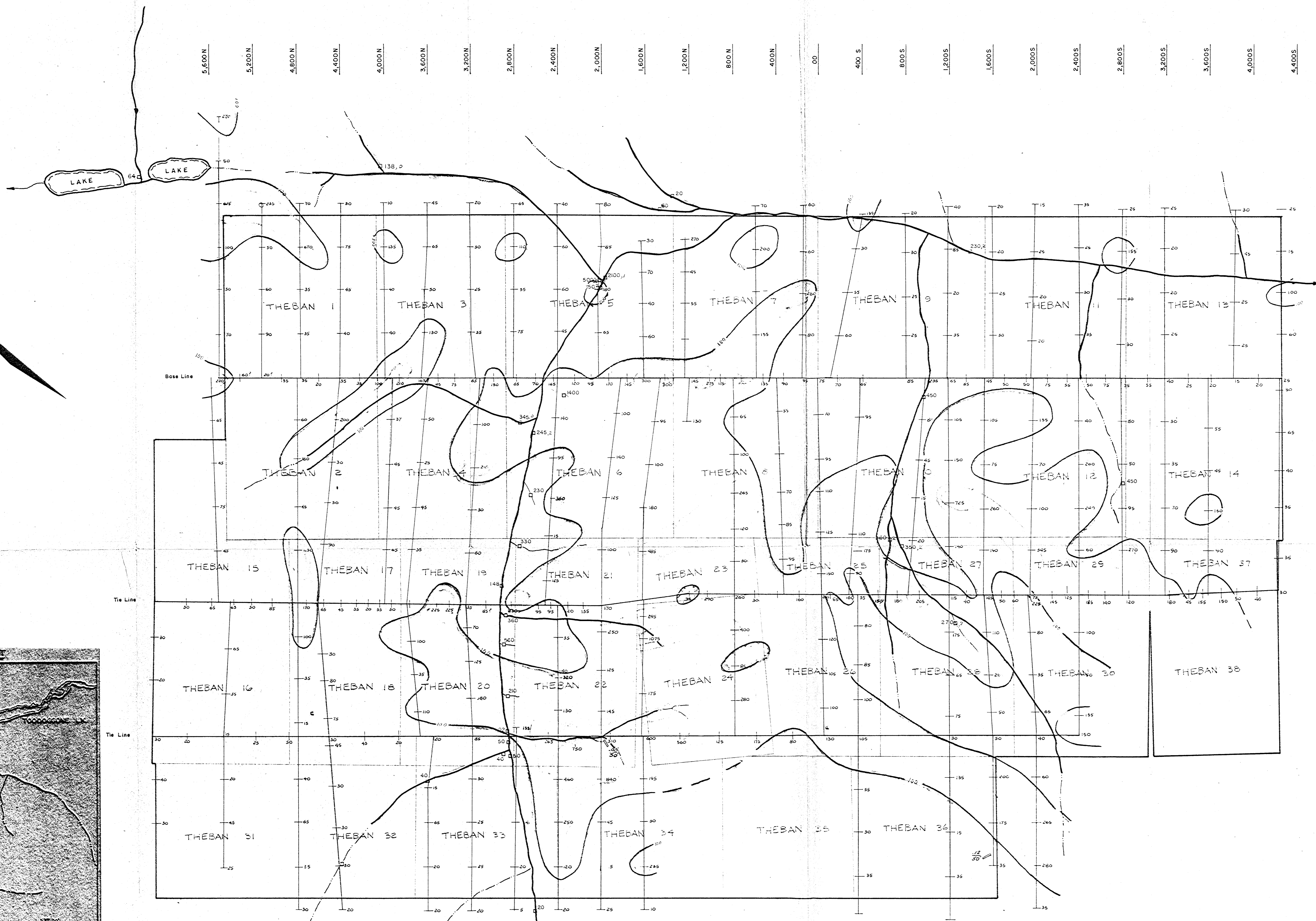
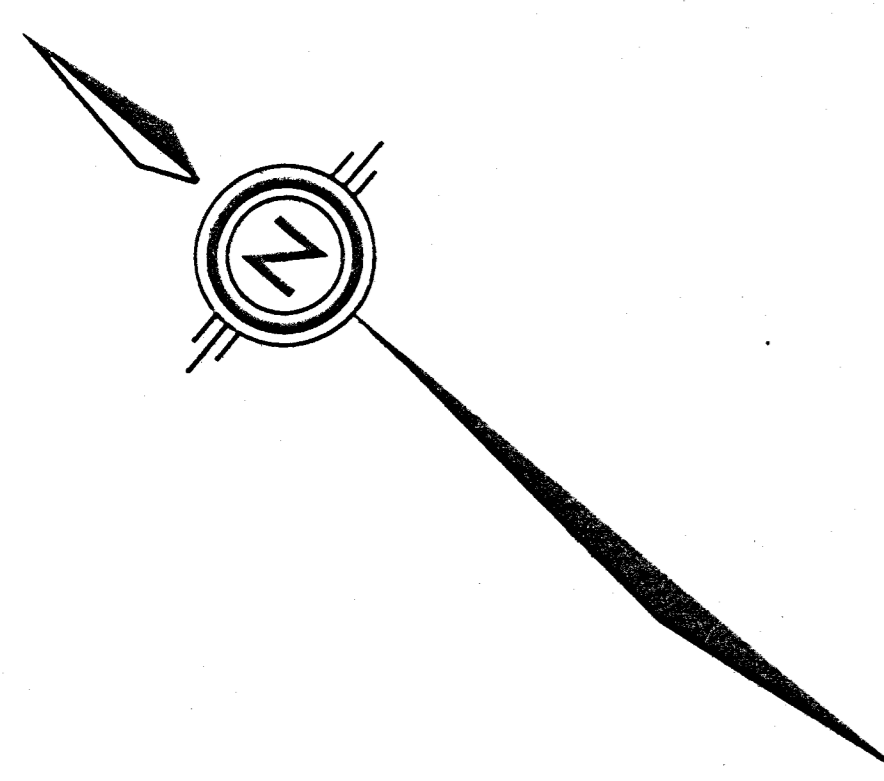
THEBAN GROUP

OMINECA MIN. DIV. N.T.S. 94-E/7

Scale: 1 inch = 400 Feet Date: August 7, 1968 Plate: PC 68-7A

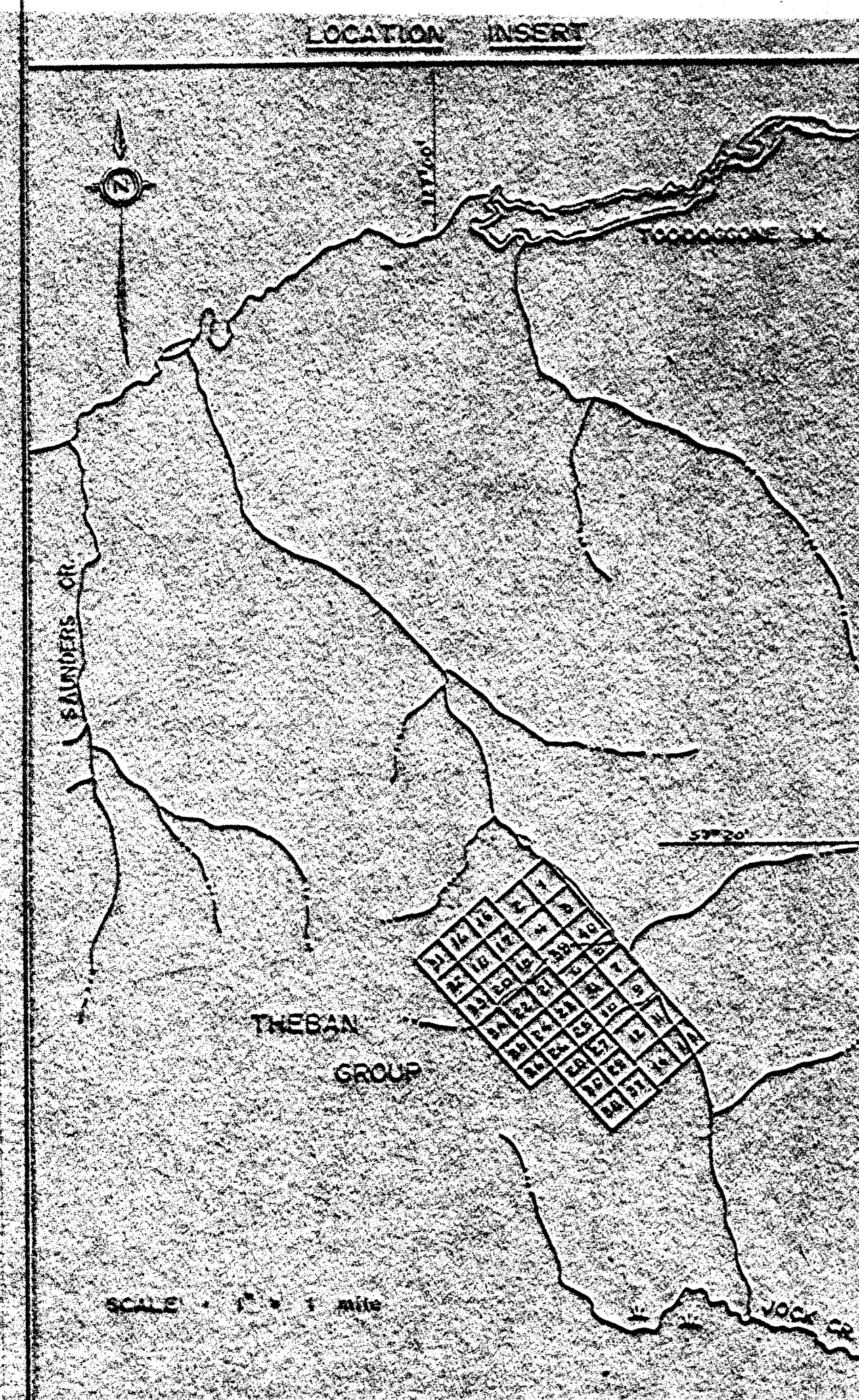
Drawn by: G.G.R.	Traced by: D.L.C.
Revised by: D.L.C.	Revised by: Date
5/25/68	

Document of
Mineral Rights
No. 2082
Map #3



Base Line
Tie Line
Tie Line

2,000 E
1,600 E
1,200 E
800 E
400 E
00
400 W
800 W
1,200 W
1,600 W
2,000 W
2,400 W
2,800 W
3,200 W
3,600 W
4,000 W
4,400 W



LEGEND

- TRAVERSE LINE AND SOIL SAMPLE LOCATION (120 ppm. Cu)
- SILT SAMPLE LOCATION (40 ppm. Cu) (2 ppm. Mo)
- CHIP SAMPLE 0.12% COPPER OVER 50 FT.

2082

Cominco Ltd.	
Drawn by: G.G.R.	Traced by: L.C.
Revised by: G.G.R.	Revised by: L.C.
SOIL AND SILT SURVEY	
THEBAN GROUP	
OMINECA MIN. DIV.	N.T.S. 94 - E/7
Scale: 1 inch = 400 Feet	Date: August 7, 1968
Plate: PC 68-7A	