

4713

GEOCHEMICAL & GEOPHYSICAL SURVEY

HILO CLAIM GROUP

forty-four miles northwest of Cranbrook
in the

Fort Steele Mining Division

49°116' N.E.

N.T.S. 82 F/16

Report by: J.R.Deighton and B.Boonstra

Supervised by: R.G.Gifford

Work by: Texasgulf, Inc.

Field Work: September 19 - September 27, 1973.

September 29, 1973

Vancouver, B.C.

Department of	
Mines and Geology	
A.C.E. ...	
NO. 4713	MAP

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HILO

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GEOCHEMICAL AND GEOPHYSICAL SURVEY
HILO CLAIM GROUP
Fort Steele Mining Division, 49°116'N.E.

INTRODUCTION

The Hilo mineral claims were staked in 1970 to cover a base-metal prospect in southeastern British Columbia. The property covers the geologic possibility of massive sulphide mineralization contained in clastic rocks of Precambrian age.

This report details the results of a geochemical soil, E.M. and magnetic survey that were undertaken on the claim group to assist in evaluating the economic potential of the prospect. The work was carried out by Texasgulf, Inc. in the period from September 19 to September 27, 1973.

The geochemical survey was conducted by J.R.Deighton and the geophysical surveys were conducted by B.Boonstra under the supervision of J.R.Deighton.

PROPERTY AND OWNERSHIP

The property totals 10 claims, named Hilo. All the claims were recorded September 11, 1970. All are wholly owned by Texasgulf, Inc.

LOCATION AND ACCESS

The Hilo claim group is in the Fort Steele Mining Division at latitude 49°48', longitude 116°20' and N.T.S. 82 F/16. The

elevation on the property ranges from 6,000 feet to 8,600 feet. Water resources are plentiful. Timber is limited to the valleys.

Major air, rail and trucking services as well as natural gas and hydroelectric power are available 44 miles to the southeast at Cranbrook which, with a population of 12,000 is the principal supply centre.

Access to the prospect is gained by helicopter from Cranbrook.

PHYSICAL FEATURES

The Hilo property lies on the eastern margin of the rugged Purcell Mountain Range. The property straddles a series of well-defined ridges and cirques sculptured by glacial action. The relief between the valley floor and the ridges is approximately 1500 to 2000 feet.

Numerous streams and five glacier-formed lakes drain the property area. These lakes range in length from 150 feet to 2000 feet and are generally shallow in depth.

GEOLOGY

General Statement

The geology, underlying the property can be stated as consisting of a northerly plunging anticline of interbedded sedimentary and intrusive rocks. This anticline is major in size and has an overall length of approximately 15 miles and an average width of 5 miles.

The Hilo property encompasses the contact region between the Middle and Lower Aldridge formations. Acidic rocks of the White Creek batholith lie to the north of the claim area.

Outcrop is exposed over approximately 45 percent of the property. Talus slopes cover about 15 percent with the remaining area covered by overburden. The depth of overburden varies from one to ten feet.

GEOCHEMISTRY

62 soil samples were collected from the property during the programme. The samples were collected from shallow holes, dug by a mattock at 100 foot intervals on five lines located at right angles to the stratigraphy.

Soil profiles on the property are poorly developed in this alpine region. The "C" horizon was sampled in all cases. The soils are derived from talus material and/or glacial moraines.

All samples were placed in Kraft paper envelopes and shipped to Bondar-Clegg and Company Laboratories in North Vancouver for zinc and mercury analysis.

The analytical techniques are summarized as follows:-

For zinc the samples are dried and sieved to -80 mesh and then a $\frac{1}{2}$ gram portion is weighed out. This portion is digested with hot aqua regia solution for three hours, then diluted to 20% acid concentration. The solutions are homogenized then allowed a uniform settling period. They are then run by atomic absorption with constant comparisons with synthetic and matrix standards. The results are permanently recorded on chart paper.

For mercury the samples are dried under low heat and sieved to -80 mesh and a $\frac{1}{2}$ gram portion is weighed out. This portion is then digested by a three step hot aqua regia process. All the mercury in the soil is reduced to a vapour state and passed through a closed cell and measured by atomic absorption with constant comparisons with synthetic and matrix standards. The results are permanently recorded on chart paper.

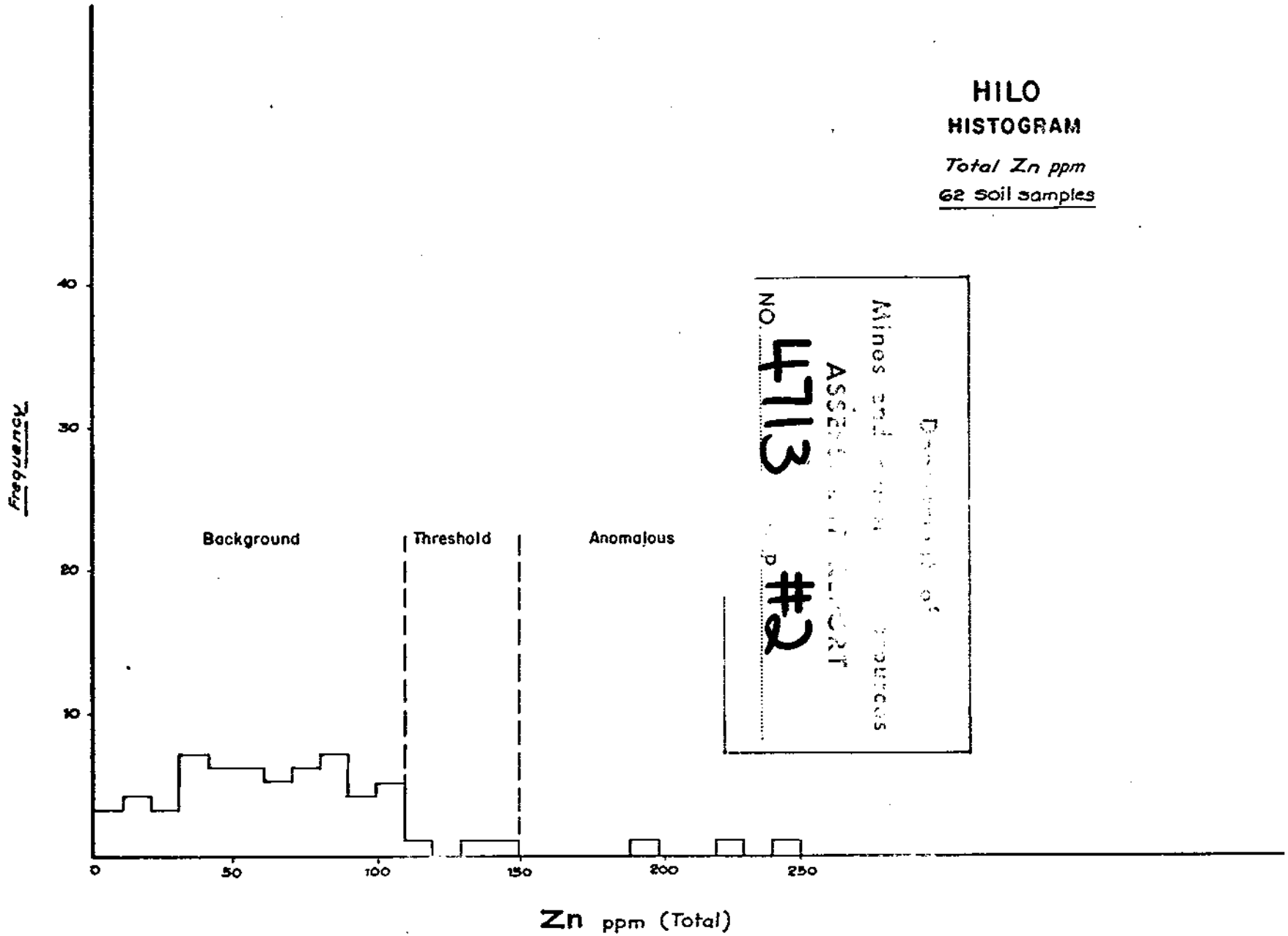
Histograms were prepared from the analytical results. Because of the small number of samples collected, a good distribution of results was not obtained. The trend of the results indicate that the following ranges may be used as a guide for evaluating the sampling:

for total Zn	background	0 - 100	ppm
	threshold	101- 150	ppm
	anomalous	> 150	ppm
for total Hg	background	0 - 50	ppb
	threshold	51- 90	ppb
	anomalous	> 90	ppb

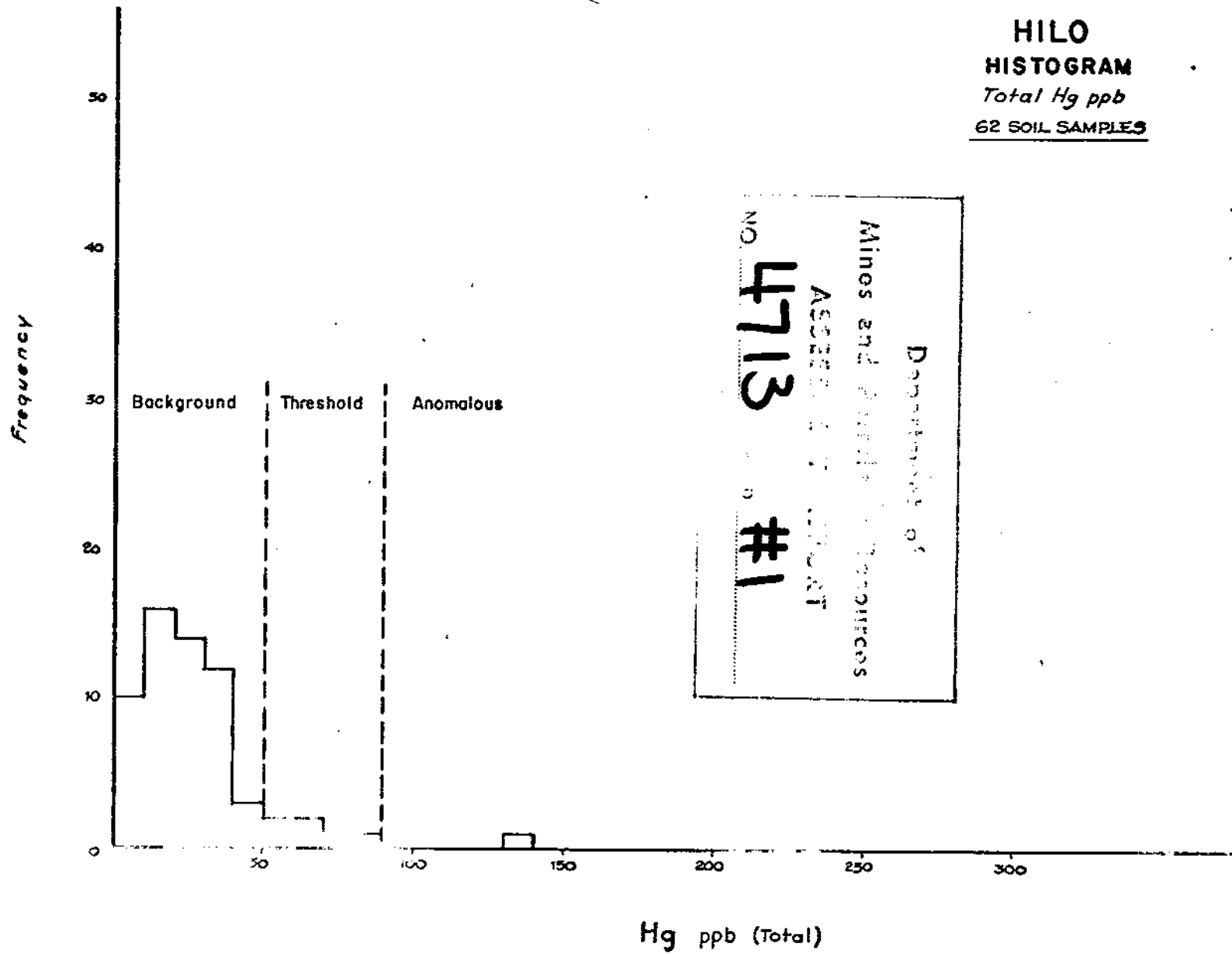
The sampling does not show any large anomalous area either for zinc or mercury. The anomalous values for zinc occur on the southern end of the second line from the west. These three samples are on the bottom of the cirque floor and contained a higher organic content than the other samples. They thus may reflect an unusually high concentration of zinc in the organic material and not be a reflection of mineralization underlying the area. There are several scattered threshold values in zinc. One of these, on the middle line at station 1635, is a reflection of

**HILO
HISTOGRAM**

Total Zn ppm
62 soil samples



HILO
HISTOGRAM
Total Hg ppb
62 SOIL SAMPLES



weak zinc mineralization noted in rock exposure above the sample site.

The mercury results do not form any pattern. As there is only one anomalous sample, it seems that mercury sampling is not applicable to this area.

GEOPHYSICS

Independent fluxgate magnetometer and reconnaissance-style vertical-loop E.M. prospecting were carried out on the Hilo claims from September 19th to September 27th, 1973. Magnetometer readings were taken at stations 50 feet apart on five lines at right angles to the stratigraphy on the property. The readings were later corrected for drift. The magnetometer profiles were plotted and are accompanying the report (in pocket).

Four lines were traversed with McPhar vertical-loop E.M. system using a broadside technique. The transmitter-receiver separation was approximately 250 feet. Readings were taken at 100 foot stations, with fill-in stations at 50 feet where conductors were indicated.

This work was done primarily as a feasibility study to determine whether or not E.M. methods have any potential for further investigation of the property by this method. Two of the lines gave no indication of conductors, perhaps because of deep talus. Two other lines gave definite indications of conductors which may be extensions of pyrrhotite-rich zones noted in previous geological reports.

The results of this geophysical survey indicates potential

for E.M. methods, provided a systematic grid is available and lines are cut where necessary. If the surveyed lines followed topographic contours, horizontal-loop E.M. could most likely be used with reasonable success. If desired, the cut lines would also permit the use of I.P. methods in areas away from talus.

RECOMMENDATIONS AND CONCLUSIONS

1. Geochemical methods of prospecting do not appear to indicate carrying out further soil sampling of the property.
2. A good distribution of values was not obtained from the small number of samples collected.
3. The magnetometer survey did not show any anomalies and does not appear to aid mapping in covered areas.
4. The reconnaissance vertical-loop E.M. system survey was reasonably successful in indicating conductors present on two lines.
5. A further E.M. survey is recommended and a horizontal-loop E.M. system should be considered.
6. A grid should be cut on the property for control.



J.R. Deighton

STATEMENT OF QUALIFICATIONS

B.Boonstra, B.Sc. Graduated from U.B.C. in 1973 with a B.Sc. in Geophysics. He has worked for Texasgulf, Inc. since graduation. He has had two previous summers employment with Texasgulf in various capacities. He is a student member of the Society of Exploration Geophysists.

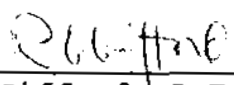
STATEMENT OF QUALIFICATIONS

J.R.Deighton, B.Sc. is a fellow of the Canadian Institute of Mining and Metallurgy and of the Geological Association of Canada; graduated from U.B.C. in 1965 with a B.Sc. in Geology; has worked for Texasgulf, Inc. since 1970 as an exploration geologist.

C E R T I F I C A T I O N

I, Robert G. Gifford certify that:

1. I am a practising geological engineer with residence at 1256 Alderside Road, Port Moody, B.C.
2. I am a graduate of the University of British Columbia with a degree of Bachelor of Applied Science.
3. I am a member of the Association of Professional Engineers of British Columbia, and have been engaged continuously in mining and exploration geology for fifteen years.
4. I supervised the evaluation programme for the Hilo Claim Group, Fort Steele Mining Division near Cranbrook, British Columbia in the period from September 19 to September 27, 1973.



R.G.Gifford, P.Eng.

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

In the Matter of Assessment work carried out on the Hilo Mineral Claims situated forty-four miles northwest of Cranbrook in the Fort Steele Mining Division

I, J.R. Deighton

of 701-1281 West Georgia Street, Vancouver 5, B.C.

in the Province of British Columbia, do solemnly declare that

During the period September 19 - September 27, 1973, I caused assessment work to be done on the Hilo Mineral Claims to the value of \$2,158.05. The expenses were incurred as follows:

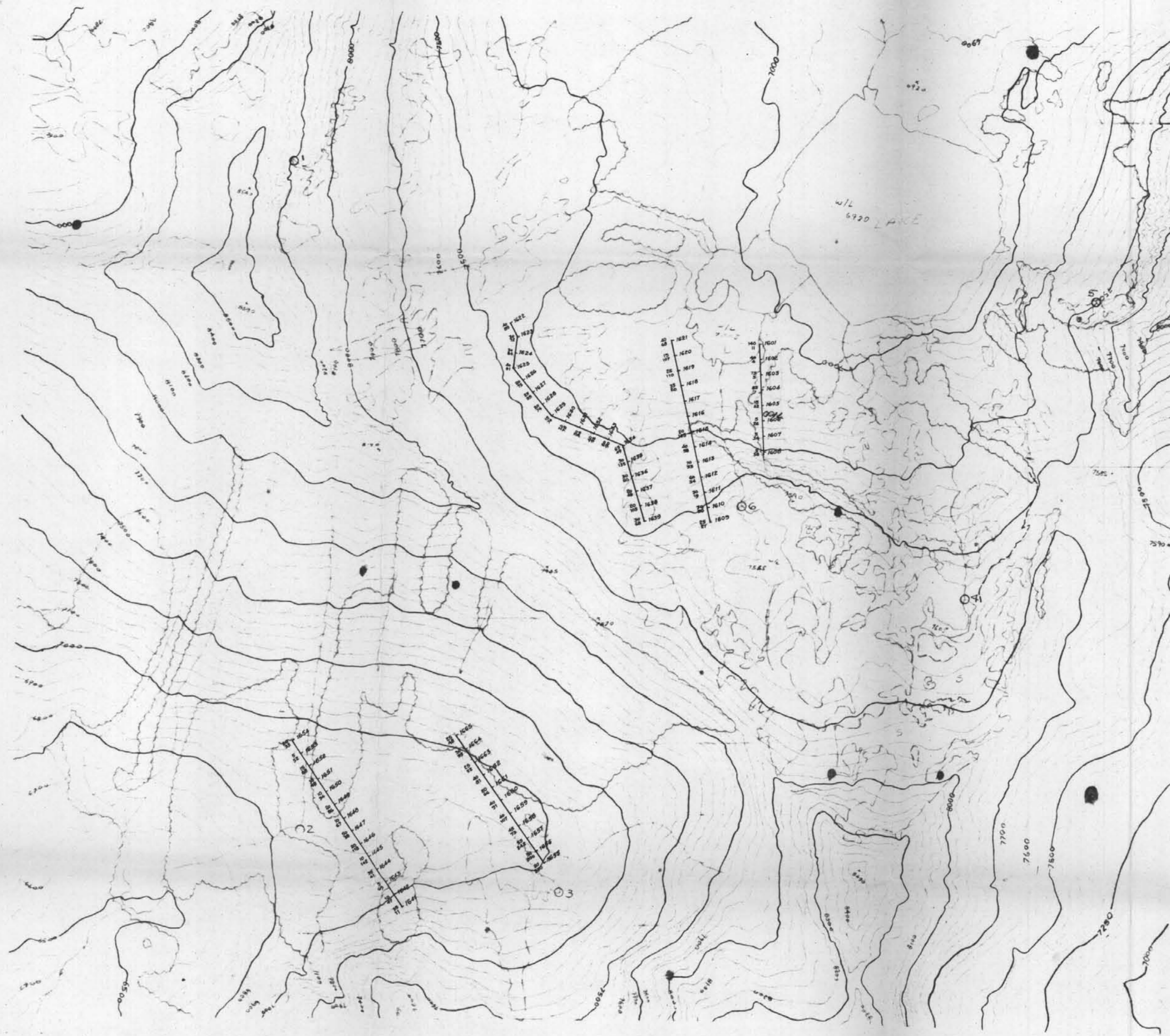
Geochemical & geophysical survey		
J.R. Deighton	9 days @ \$65	\$ 585.00
B. Boonstra	8 days @ \$35	280.00
63 geochemical analyses		244.78
equipment rental		190.00
Room and board		100.00
Transportation		558.27
Report, drafting etc.		<u>100.00</u>
Total expenditures		\$ 2,158.05

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 *19th*
day of *November, 1973*, A.D.



Jean Paul SUB-MINING RECORDER
A Commissioner for taking Affidavits for British Columbia or
A Notary Public in and for the Province of British Columbia.



WJ
4713

LEGEND

MERCURY | SAMPLE NO.
ZINC |

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4713 MAP #3

To accompany Geochemical / Geophysical Report
on the HILO CLAIM GROUP by J.R. Deighton.

SCALE: 1" = 500'

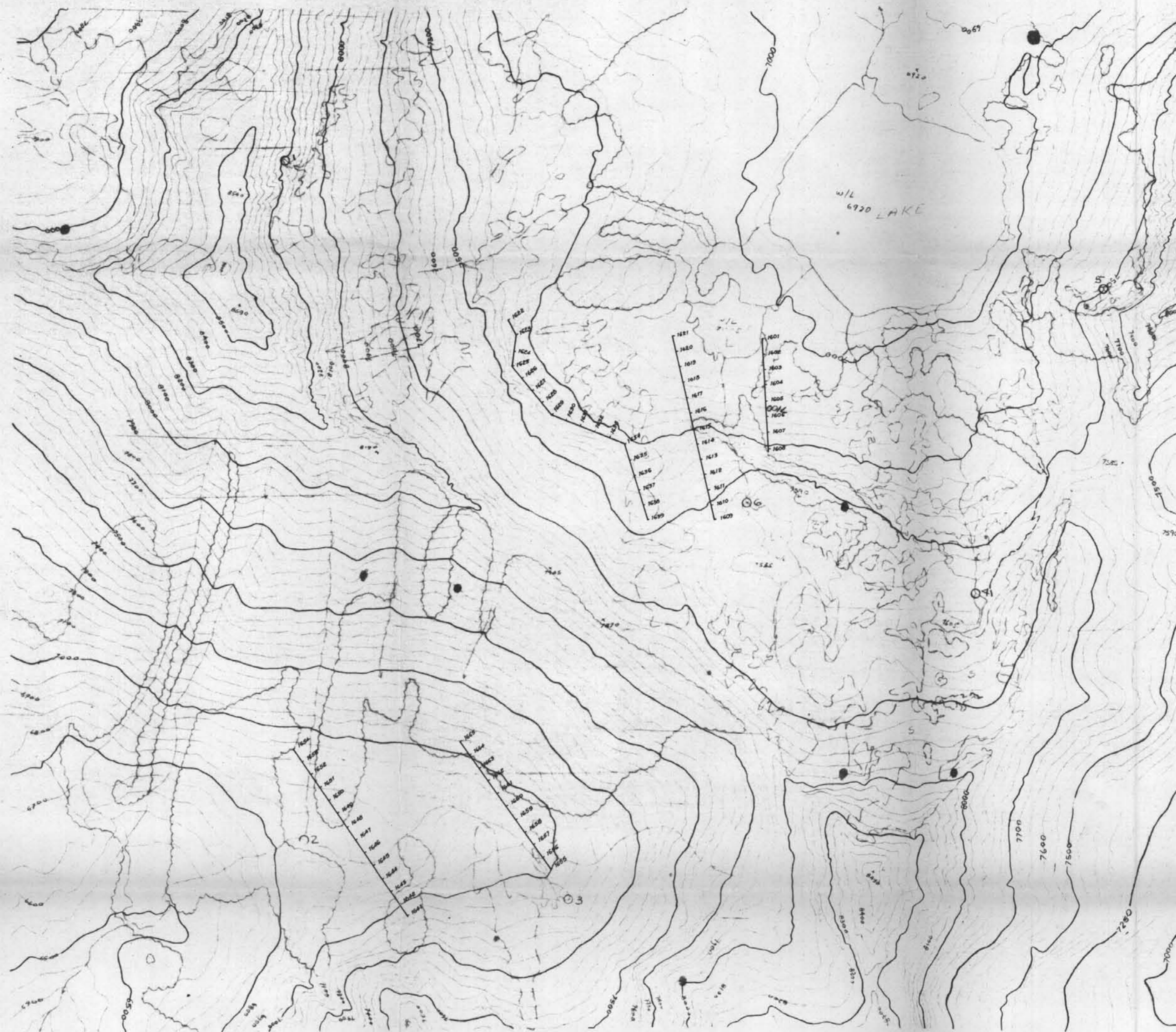
TEXASGULF INC.

HILO PROPERTY
GEOCHEMICAL SOIL SURVEY
Total Hg/Zn

NTS 82 F/16	WORK BY:	DRAWN BY:	DATE:	FORT STEELE M.D.
	J.R.D.	C.D.	OCTOBER, 1973	

M-217A

4713-M3



LEGEND

— STATION No.
—

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. **4713** MAP **#4**

R. W. H. H.

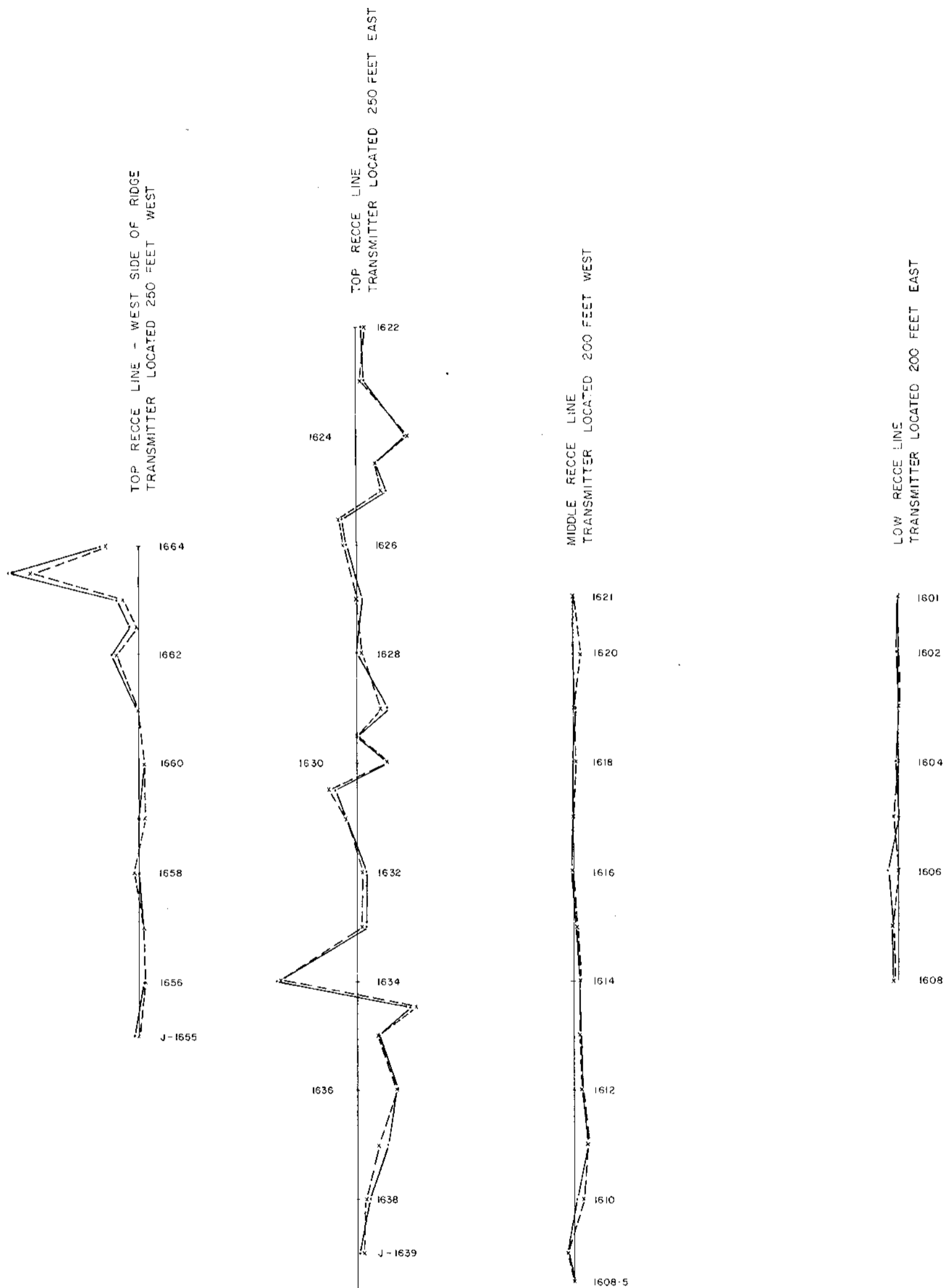
To accompany Geochemical/Geophysical Report
on the HILO CLAIM GROUP by J.R. Deighton.

SCALE: ONE INCH = 500'

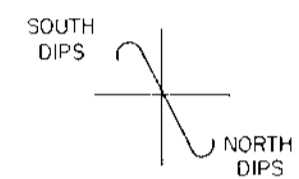
TEXASGULF INC.		
HILO PROPERTY RECONNAISSANCE GEOPHYSICAL SURVEY LINES		
NTS 82 F/16	FORT STEELE M.D.	
WORK BY:	DRAWN BY:	DATE:
J.R.D. and B.B.	C.D.	OCTOBER 1973

4713-1A

4713-1A



LEGEND



----- LOW FREQUENCY
 - - - - - HIGH FREQUENCY

VERTICAL SCALE 1" = 20'
 MAP SCALE 1" = 200 FEET

TO ACCOMPANY GEOCHEMICAL AND GEOPHYSICAL
 REPORT ON THE HILO CLAIM GROUP BY J.R. DEIGHTON.

Department of *Ribbford*
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. **4713** MAP # **5**

Texasgulf Inc.

RECONNAISSANCE E.M. PROFILES

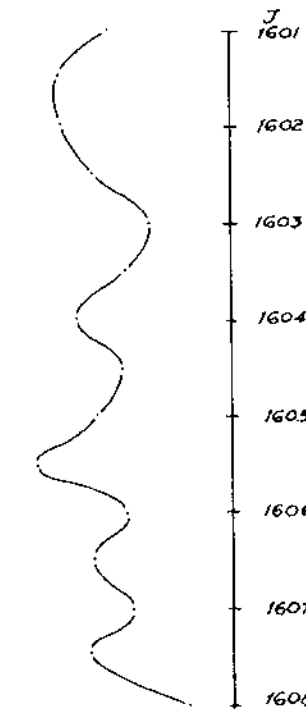
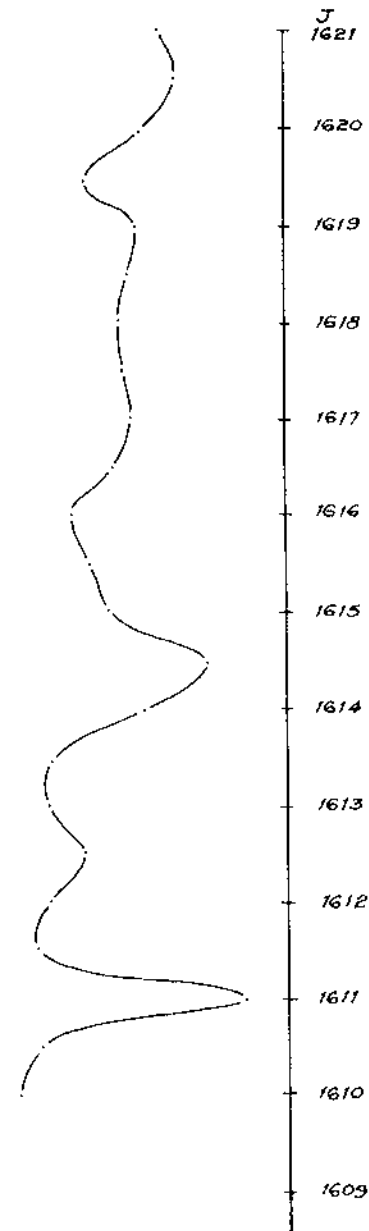
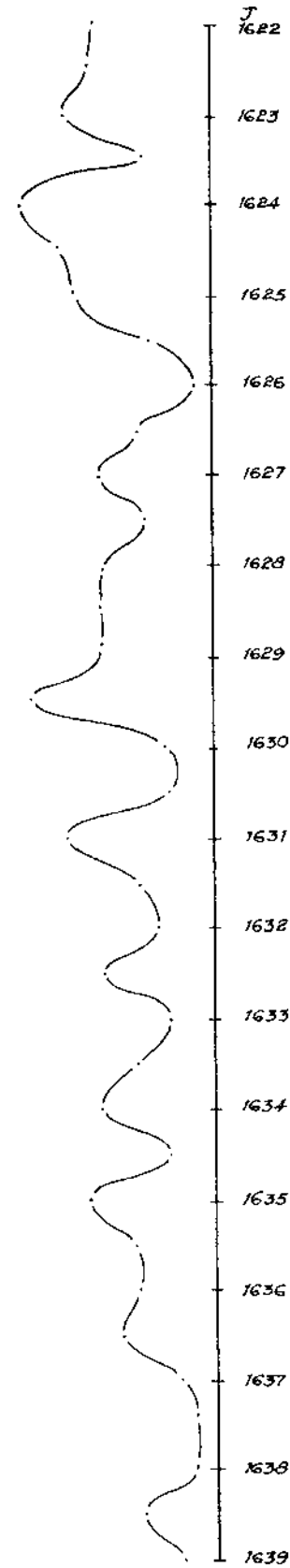
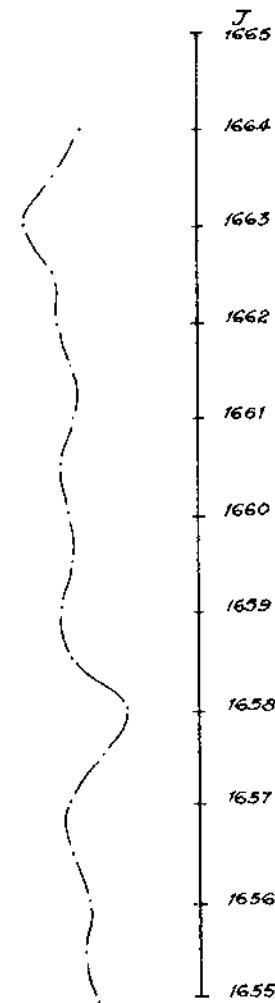
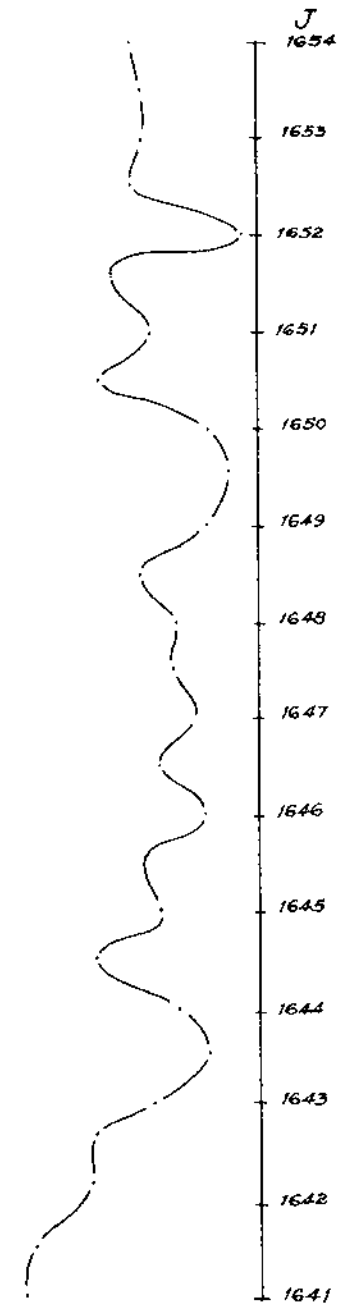
HILO CLAIM GROUP

WORK BY B.B. DRAWN BY DATE OCT. / 73

4713-MS

FLUXGATE MAGNETIC PROFILES
HILO CLAIM GROUP

Magnetic Scale: 1" = 1000 gammas
 Profile Scale: 1" = 200 feet



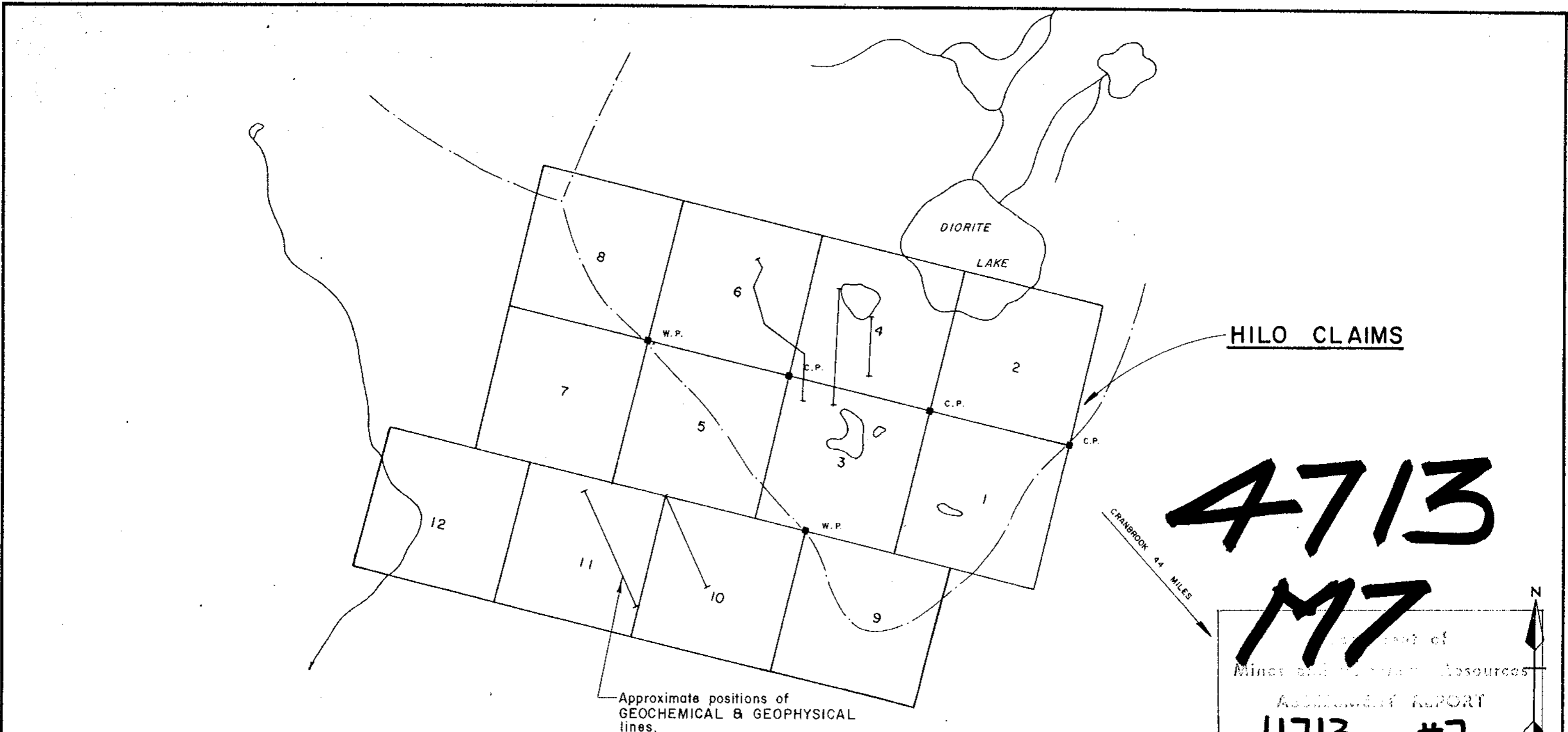
Department of
 Mines and Metallurgical Resources
 ASSESSMENT REPORT *R. B. Ford*
 NO. **4713** MAP **#6**

To accompany Geochemical & Geophysical Report
 on the HILO CLAIM GROUP by J.R. Deighton.

4713-M6
 SCALE: ONE INCH =



TEXASGULF INC.		
FLUXGATE MAGNETOMETER PROFILES		
<u>HILO CLAIM GROUP</u>		
WORK BY	DRAWN BY	DATE
B. B.	C. D.	October 1973



HILO CLAIMS

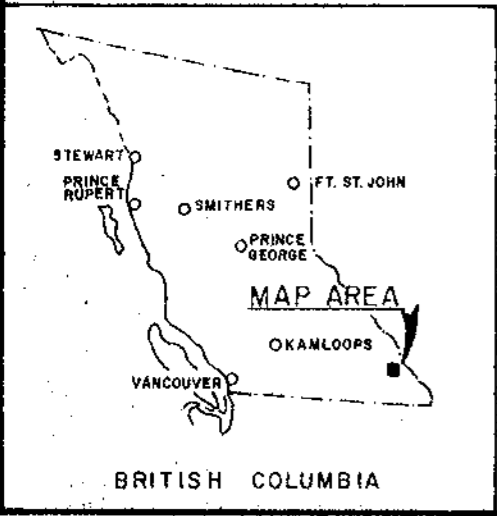
4713

M7

Department of
 Mines and Technical Surveys
 Assessment Report
 NO. **4713** MAP # **7**

SCALE: ONE INCH = 1000'

Approximate positions of
 GEOCHEMICAL & GEOPHYSICAL
 lines.



TEXASGULF INC.

HILO PROPERTY
 CLAIM MAP

NTS. 82 F/16 FORT STEELE MINING DIVISON

WORK BY	DRAWN BY	DATE
D. E. M.	VERSATILE INDUSTRIES LTD.	SEPTEMBER 10, 1971