



42L07NW0019 OP92-488 MAUN LAKE

010

TECHNICAL REPORT  
ON THE 1992  
GEOLOGICAL, GEOCHEMICAL  
AND  
GEOPHYSICAL SURVEYS  
ON THE  
HURD LAKE PROPERTY  
O'SULLIVAN LAKE AREA, N.W. ONTARIO  
MAUN LAKE (G-362) STAKING SHEET  
THUNDER BAY MINING DIVISION

ONTARIO PROSPECTORS ASSISTANCE PROGRAM  
FILE NUMBER OP92-488

LAT -50°27'  
LONG -86°59'  
NTS - 42 L/7

Toronto, Ontario  
December 1992

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Michael Smith, B. Sc.

## 1.0      SUMMARY

The Hurd Lake Property, consisting as six unpatented mining claims and surrounding crown land, were the focus of a follow-up program of geological mapping, geophysical surveying, and selective geochemical sampling in 1992. Objectives of this work were to examine in detail anomalous areas located in the 1991 field work. In particular, a shear zone at B/L, 3+00E 3+00E returned very anomalous gold in rock chip values in 1991 but on follow-up, these results were not duplicated or expanded. Also, anomalous gold values in outcrop on LZE at the northern end of the grid were examined and sampled in detail.

The present program focussed on established of a 50 metre grid interval from L0E to L7+50E, VLF-EM and magnetic surveys, and detailed prospecting plus selective geochemical sampling of 1991 anomalies.

On resampling, the New Athona copper - silver - gold occurrence returned anomalous gold values in fractured and mineralized felsic porphyry. The best grab sample returned was 0.07 oz/ton (214.8 ppb) gold, 19,100 ppm copper, 565 ppm zinc.

Several other VLF-EM and/or magnetic anomalies were anomalous in gold and base metals but the anomalies are located in swamp areas and cannot be traced by geochemical sampling or test pits within present budget limitations.

In view of the downgraded gold and base metal values returned from 1992 work, no further work is warranted on the Hurd Lake claims.

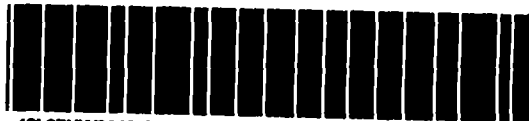


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## 2.0 INTRODUCTION

This summary report was prepared to fulfil 1992 Ontario Prospectors Assistance Program requirements. The area of study, referred to as the Hurd Lake Property, is situated on the northeast arm of O'Sullivan Lake, about 37 km north northwest of Nakina, Ontario.

The present program consisted of cutting a detailed grid, follow up geological and geophysical surveys, accompanied by geochemical rock and soil sampling of previous anomalous areas.

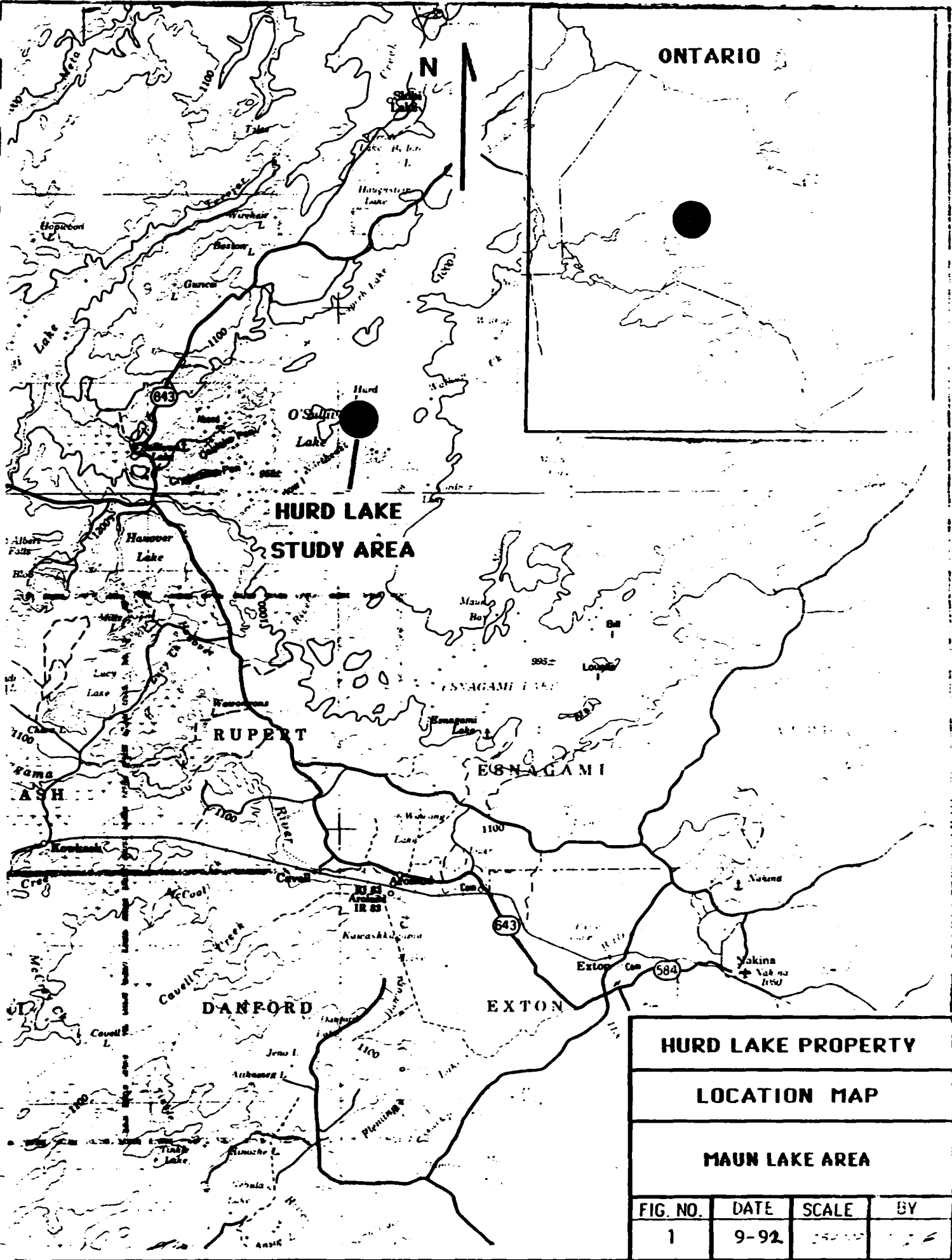
## 3.0 LOCATION AND ACCESS (see fig. 1)

The Hurd Lake Property is located immediately north of the north shore of the North East Arm of O'Sullivan Lake, 37 km NNW of Nakina, Ontario.

Access to the property is by plane or boat, but most easily by boat across O'Sullivan Lake, which is accessed via Hwy. 643 from Nakina, about 50 km away.

## 4.0 PROPERTY (see fig. 2)

The Hurd Lake property consists of 6 contiguous unpatented mining claims and their immediate environs, located on the Maun Lake (G-362) Staking Sheet, Thunder Bay Mining Division.



**HURD LAKE  
STUDY AREA**

ONTARIO

**HURD LAKE PROPERTY**

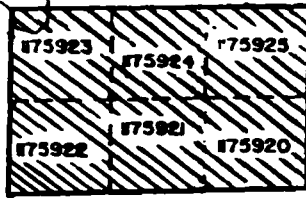
**LOCATION MAP**

**MAUN LAKE AREA**

FIG. NO.	DATE	SCALE	BY
1	9-92	1:50,000	J.S.



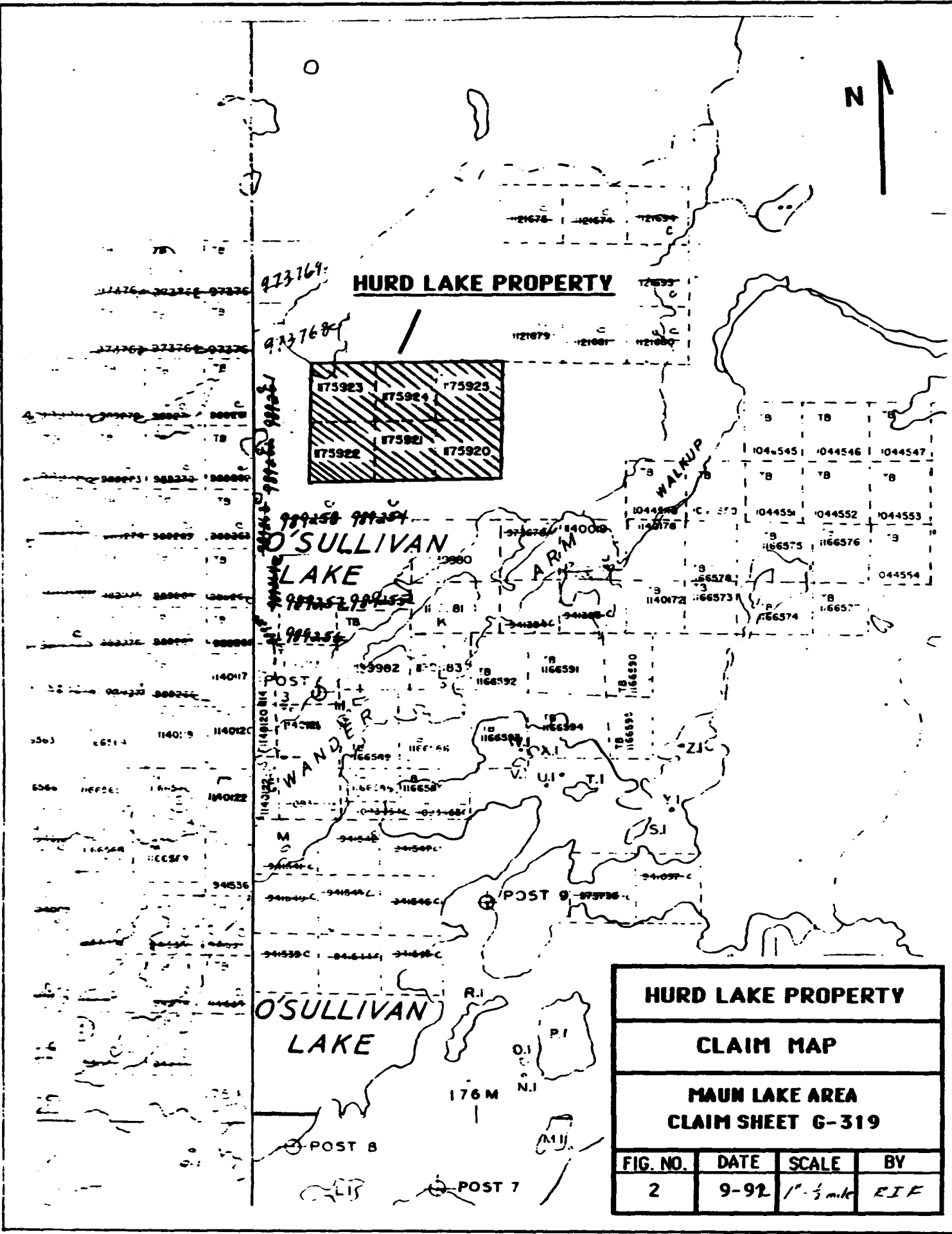
**HURD LAKE PROPERTY**



**O'SULLIVAN LAKE**

**O'SULLIVAN LAKE**

<b>HURD LAKE PROPERTY</b>			
<b>CLAIM MAP</b>			
<b>MAUN LAKE AREA</b>			
<b>CLAIM SHEET G-319</b>			
<b>FIG. NO.</b>	<b>DATE</b>	<b>SCALE</b>	<b>BY</b>
2	9-92	1" = 1/2 mile	RIF



## 5.0 EXPLORATION HISTORY

The area has been mapped by the Geological Survey of Canada (Wilson and Collins, 1904) and the Ontario Geological Survey (Stott, 1984) as well as early mapping by the Ontario Department of Mines (Hopkins, 1916; Kindle, 1929; Moorehouse, 1955).

Gold and copper were first discovered in the O'Sullivan Lake area in the 1920's, centered on showings on the Osulak Peninsula and northeast of the lake, resulting in a rush after World War II, when Osulake Mines started to sink shaft and carry out underground development. Since that time, several operators have attempted to resurrect the property, and the most recent, by Mining Corp. of Canada, removed 90,500 tons of 0.33 oz/ton gold. Since 1950, both gold and base metals exploration has been undertaken along the belt around O'Sullivan Lake, but with only limited success to date.

In the immediate area of the Hurd Lake property, the New Athona Mines copper - silver - gold occurrence, located 200 m south west of Hurd Lake, was investigated by means of nine drill holes in 1955.

The showing consists of two mineralized fracture zones containing minor amounts of arsenopyrite, chalcopyrite, pyrite, marcasite and quartz veining, accompanied by carbonate alteration. No strike length was determined but most holes showed low copper values at depth.



About 400 m east of the claims an unknown operator drilled about four short holes into what is referred to as the Megan - Hurd gold occurrence. The drill target was a narrow sulfide rich shear zone or zones in felsic metavolcanics. Several trenches exposed similar mineralization on L22E, 1+00S. The Warren copper - nickel occurrences, located directly south of the property has been the focus of intermittent exploration activity since the 1950's.

All of the previous exploration activity has been sporadic in nature, but has resulted in significant polymetallic occurrences, confirming the mineral potential.

## 6.0 REGIONAL GEOLOGY

The Hurd Lake property is situated within the Kowkash Greenstone Belt, a fairly typical northeast trending greenstone sequence consisting of a mafic to felsic transition, younging to the north, intercalated with intermediate to felsic meta-sediments. The interflow sediments are mainly tuffs and siliceous meta sediments, which locally carry disseminated to massive iron and copper sulfides, with lesser sphalerite and magnetite.

The greenstones are locally intruded by syn to post tectonic sills and dykes, mostly gabbro and diabase. Late stage granite to granodiorite hinterland is located to the north and south of the greenstone belt.

Metamorphic grades varies from lower greenschist facies in the centre of the belt to upper amphibolitic facies adjacent to the granitic hinterland.

Structurally, the Kowkash Belt has been mainly faulted, in a northeast trending strike slip fashion, resulting locally in strongly sheared, highly schistose volcanic units. Recent government airborne geophysics suggest fault offsets of greater than 600 metres.

#### 7.0 PRESENT WORK PROGRAM

The 1992 field program was completed during July, 1992 and consisted of the following personnel:

Michael Smith	Geologist/Geophysical operator
Graham Stone	Geophysical operator/line cutter

The 1991 baseline was reused in 1992, but all of the north south grid lines from 0+50E to 7+00E were rerun at 50 metre line intervals. An E-W tie line at 6+25N, was used for grid line control. A total of 11.2 km of lines were established.

Following grid preparation, ground magnetic and VLF-EM coverage was completed.

After interpretation of the VLF-EM and Mag, the anomalous areas from 1991 were prospected and sampled. Most of the multi-line VLF-EM and magnetic anomalies were sampled, except where prevented by swamp. A total of 12 rock and 31 soils were collected and analyzed for gold, silver, zinc, and five accessory elements. *Sampling was done using shovels, soil horizon was normally AH, BM, or BF, and samples were air dried, sieved to -80 mesh or coarser, then analyzed (Sigen) by fire assay pre-con - OCP finish.*  
*The 1992 sample population precludes a rigorous statistical treatment of the data, or anomaly description.*

The work program varies from the original proposal by deletion of the HLEM survey. The targets are narrow shears which don't respond well to HLEM, so detailed VLF-EM and magnetics were thought to be the best tools to outline structure within crew size and budget limitations.

## 8.0 PROPERTY GEOLOGY

### Introduction

The Hurd Lake Property was acquired for its gold potential, based on evaluation of recent government helicopter geophysical results for the area, strong photolinear suggestion of a regional strike slip fault, and the presence of two gold showings in the project area.

The geological and geochemical surveys were conducted following delineation of target areas based on prospecting and geophysical data. The property has about 20% outcrop.

## Geology

The Hurd Lake property is underlain by a north easterly trending sequence of mafic and intermediate volcanics, intercalated with small amounts of felsic pyroclastics, which appear mainly as thin discontinuous units under the western third of the claim block. Occasional narrow lensoidal to sill like gabbroic intrusions locally interfinger with the volcanics.

The mafic to intermediate rocks occur as unsubdivided andesitic to basaltic flows with no discernible top directions. Alteration minerals observed on the claims include pervasive chlorite found along shear and cleavage planes. Magnetite is found as fine disseminations and ankerite along fractures, especially within the felsic pyroclastics.

The dacitic to rhyolitic units occur as narrow (1.5 m) "pinch and swell" units, trending foliation parallel, forming thin interflow tuff horizons containing pyrite. There is a preferred orientation parallel to the northeast trending regional strike slip faults.

## Structure

Deformation and metamorphism in the area has developed a strong northeast trending S1 foliation evidenced by well developed schistosity. Regional studies by the OGS point to a northerly younging direction but there is no evidence of tops on

the property. All structural features are vertical and subvertical, including the quartz veins.

## 9.0 GEOPHYSICAL SURVEY

Magnetic data were collected at 25 m intervals from L0+00E to L7+00E and plotted as total field value relative to a 59,000 gamma base value.

Routine VLF-EM coverage was completed over the grid at 25.0 and 12.5 m intervals. Station NLK in Seattle was used, and all readings were taken facing grid north normal to station direction.

### DISCUSSION OF VLF-EM RESULTS (see fig. 3)

1991 data was extremely noisy, with high amplitude in phase swings, however 1992 data is much more muted in amplitude. The big difference noticed between 1991 and 1992 data are 5 new short multiline anomalies parallel to the 1991 anomalies, located near the baseline from L0+00W to L5+00E. These anomalies parallel schistosity, so may be due to minor disseminated sulfides emplaced during regional faulting. The mineralization near the baseline at 3+50 to 4+00E may be explained by the Anomaly C-C'.

Another multi conductor Anomaly F-F at 5+50E, 4+05N, which is co-incident with a fault in outcrop which returned 11 ppb gold (soil 920125) in soil immediately to the south of the fault.

## 10.0 MINERALIZATION

Several noteworthy gold enriched mineral showings were noted during the present program.

1. The Hurd Lake copper - silver - gold occurrence was relocated on L6E, 6+00N. The showing is situated at the edge of the Hurd Lake pluton, a quartz - feldspar porphyry which has intruded a rhyolitic unit. The rhyolite has been shattered by a northeast trending fault which has resulted in a brittle kink fold of the rhyolite. The mineralized rhyolite is exposed in a series of four northwest trending trenches located between 5+75E and 7+05E, for a total strike length of 130 m. Width of the fractured mineralized zone averages 6 m, but pinches towards grid west and is covered by overburden to the grid east. Sulfide content varies from 2 - 25% and is composed mainly of chalcopyrite, pyrite and pyrrhotite. Carbonate alteration is common, as is quartz feldspar veining parallel to the mineralized zone. Since the copper and silver values have been measured by numerous previous samplers, it was decided to assay the trench samples only for gold. Of the 11 rock samples taken in 1991,

the highest value returned was sample number 910007, which returned 2148 ppb gold. Resampling of the trench in 1992 on L6+00E returned 560 ppb gold, 19,100 ppm copper, and 565 ppm zinc. Further west, on L2+00E, detailed prospecting and sampling of the 1991 anomalies returned 12 and 25 ppb gold in adjacent samples (samples 920134, 92013). Numerous thin felsic units containing 5 - 10% pyrite strike grid east west through this area, and probably carry minor gold values. East of L2E, this trend is swamp covered.

2. At L3+50E, B/L, the gold showing located in 1991 was resampled and prospected in detail, but no further outcrop exposures of fractured felsics containing pyrite were found. One rock chip, 920109, at L5E, 0+35N, returned 29 ppb gold, with no other anomalous metals returned. Since three of the 1991 sample sites, resampled in 1992 returned trace to barely anomolous gold, either the 1991 or 1992 analytic technique is at fault. Two different labs were used in the two programs.

## 11.0 CONCLUSIONS

1. The very promising outcrop showing located in 1991 along the baseline at 3+30E does not appear to contain appreciable gold values when resampled in 1992. Analytic technique may

be at fault. Of the three anomalous sites, only sample 920109-29 ppb, versus 1991 sample 910006-838 ppb, remotely shows a correlation. Extensive grubhoe work in 1992 did not expose further sheared outcrop or arenopyrite mineralization.

2. Further to the north along to 2+00E, narrow felsic tuff units containing minor pyrite were found to be anomalous in 1992 sampling, but values were orders of magnitude smaller than 1991 results.
3. It is likely that the east west train of sub parallel VLF-EM anomalies near the baseline are coincident with the sulfides noted in that area.

## 12.0 RECOMMENDATIONS

1. Since none of the showing or values located in 1991 could be extended by grubhoe work and prospecting in 1992, it is unlikely, even if the 1991 analyses are correct, that further sampling will improve the viability of this prospect. Therefore, the work should be filed for assessment to keep the 6 claims in good standing, but no further work is recommended at this time.



## 13.0 REFERENCES

Hinzer, J. B. 1983. Preliminary Report on the O'Sullivan Lake Area, Ontario Property of Syngold Exploration Inc. MNDM Assessment File No. 2.6868.

Ministry of Northern Development and Mines. Selected Assessment Files. Toronto, Ontario.

Ontario Geological Survey. 1989. Airborne Electromagnetic and Total Intensity Magnetic Survey. Tashota - Geraldton - Longlac Area. District of Thunder Bay by Aerodat Limited for the Ontario Geological Survey. Geophysical / Geochemical Series Maps 81269, 81270 and 81282. Scale 1:20000. Survey and Compilation, June to December. 1988.

Smith, M.D., 1991, Technical Report on the 1991 Geological, Geochemical and Geophysical Survey on the Hurd Lake Property, O'Sullivan Lake area, N.W. Ontario, Maun Lake (G-362) Staking Sheet, Thunder Bay Mining Division, December 1991.

Stott, G. M. 1984. Ogoki Lake Sheet, Thunder Bay and Cochrane Districts: Ontario Geological Survey, Map P. 274 (Rev.) Compilation Series - Preliminary Map. Scale 1:126740. Compilation 1984.

**APPENDICES**

**APPENDIX A**

**CERTIFICATE OF QUALIFICATIONS**

AUTHORS CERTIFICATE

I, Michael D. Smith, of 70 - 23rd Street, Etobicoke, Ontario do hereby state -

1. That I have been a consulting geologist practising my profession from the above address since 1986, and have been engaged actively in mineral exploration since 1961.
2. That I hold a professional degree B. Sc (Hons.) in Geology.
3. That I am the author of the appended report of the Hurd Lake Property, and that I personally supervised and carried out the field program.
4. That the data contained in the report is true to the best of my knowledge.

Toronto, Ontario  
December 1992

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Michael Smith

**APPENDIX B**

**ANALYTICAL CERTIFICATES**

SAMPLE	AU-1AT PPB	CO PPM	NI PPM	CU PPM	ZN PPM	MO PPM	AG PPM	CD PPM	PB PPM
920100	5	27	68	129.	36.3	1	.7	<1	<2
920101	2	25	63	12.0	47.2	1	.5	<1	<2
920102	2	37	111	169.	59.9	<1	.7	<1	<2
920103	3	44	118	144.	57.0	1	.6	<1	<2
920108	1	6	10	12.6	47.5	<1	<.5	<1	<2
920109	29	9	17	22.4	24.1	1	<.5	<1	<2
920126	3	30	86	260.	39.7	1	.8	<1	<2
920128	560	119	232	19100.	565.	1	30.7	13	<2
920129	6	23	68	88.0	21.1	2	.5	<1	<2
920130	4	33	93	91.8	37.3	1	.7	<1	<2
920131	2	11	28	106.	46.9	<1	<.5	<1	<2
920132	20	32	91	359.	42.8	1	.9	<1	<2
920104	10	2	5	9.1	71.6	2	.7	<1	<2
920105	2	3	6	3.8	10.4	<1	<.5	<1	<2
920106	3	9	16	6.8	33.7	<1	<.5	<1	<2
920107	1	4	7	2.4	12.9	<1	<.5	<1	<2
920109A	1	7	15	6.4	20.4	<1	<.5	<1	<2
920110	<1	7	19	6.7	27.4	<1	<.5	<1	<2
920111	<1	6	11	6.2	19.8	<1	<.5	<1	<2
920112	1	7	16	6.9	34.4	<1	<.5	<1	<2
920113	2	3	5	6.6	17.1	<1	<.5	<1	4
920114	2	9	19	13.0	35.7	<1	<.5	<1	<2
920115	1	7	16	7.2	22.2	<1	<.5	<1	<2
920116	3	22	30	28.5	95.3	<1	<.5	<1	8
920117	1	14	28	15.3	56.0	<1	<.5	<1	3
920118	3	8	16	7.0	27.9	<1	<.5	<1	2
920119	4	9	18	10.0	33.2	<1	.9	<1	<2
920120	11	24	81	162.	101.	2	.8	1	9
920121	4	15	60	166.	57.4	1	.7	1	3
920122	2	8	16	10.5	31.5	<1	<.5	<1	<2
920123	1	5	10	4.6	22.5	<1	<.5	<1	<2
920124	1	10	19	7.4	31.0	2	<.5	<1	5
920125	16	9	22	12.1	32.8	2	<.5	<1	2
920127	3	4	8	11.1	18.1	1	<.5	<1	7
920133	3	3	4	6.0	16.8	<1	<.5	<1	8
920134	12	2	6	11.2	42.0	<1	.7	1	<2
920135	29	13	25	31.2	58.9	<1	.9	<1	<2
920136	4	8	20	15.3	45.5	<1	<.5	<1	<2
920137	<1	15	30	23.7	83.8	<1	<.5	<1	<2
920138	6	11	18	9.3	32.2	1	<.5	<1	3
920139	5	7	12	14.9	35.0	<1	<.5	<1	<2
920140	6	6	12	32.4	32.9	<1	1.0	<1	<2
920141	2	3	8	22.7	34.9	<1	.8	1	<2

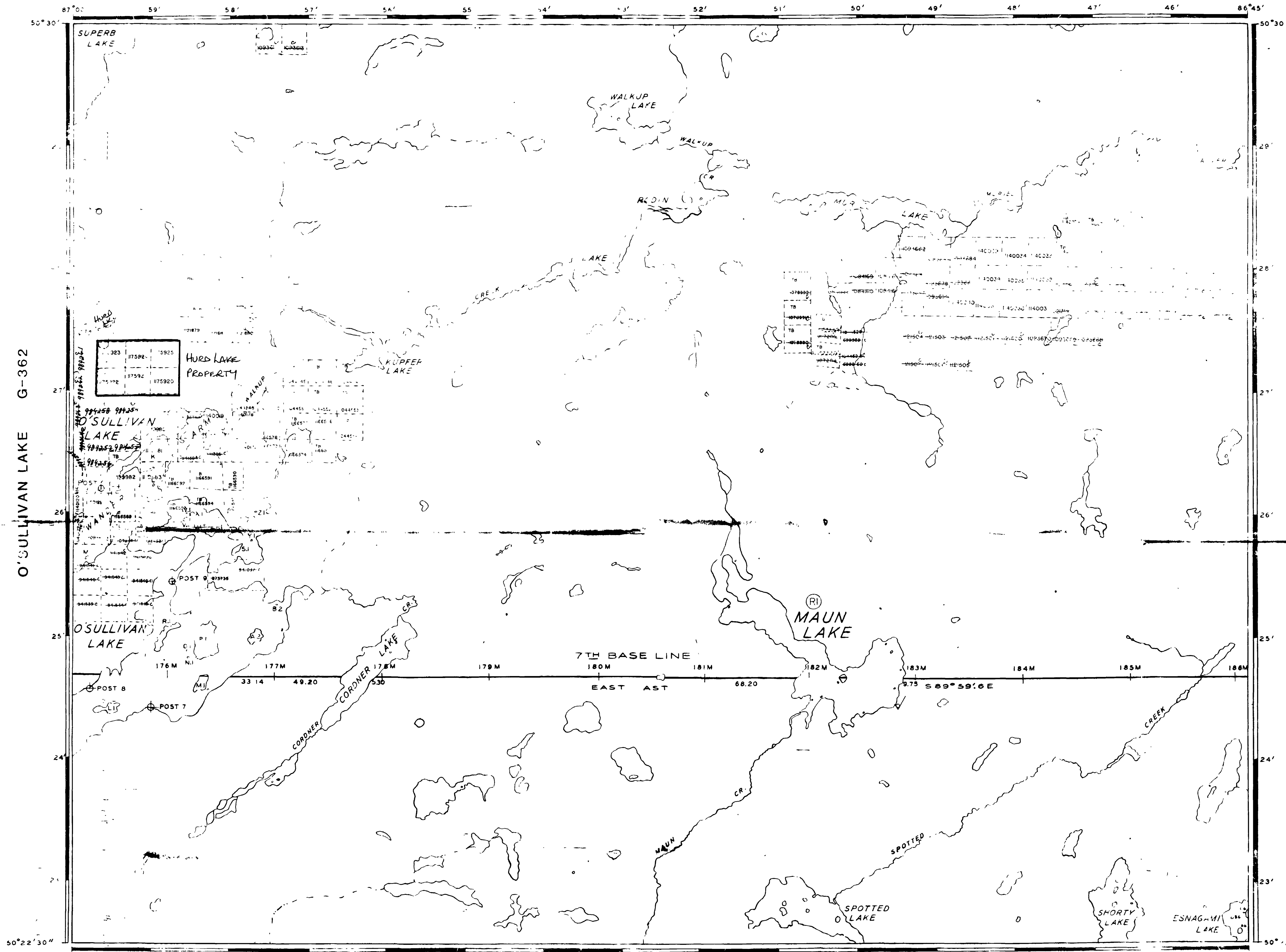
AU-1AT PPB - ASSAY PERFORMED ON 30 GRAM ALIQUOT

REFERENCES

TERRIER LAKE G-429

REFERENCES

RECEIVED  
THUNDER BAY  
MINING DIVISION  
91 DEC 19 AM 9 34



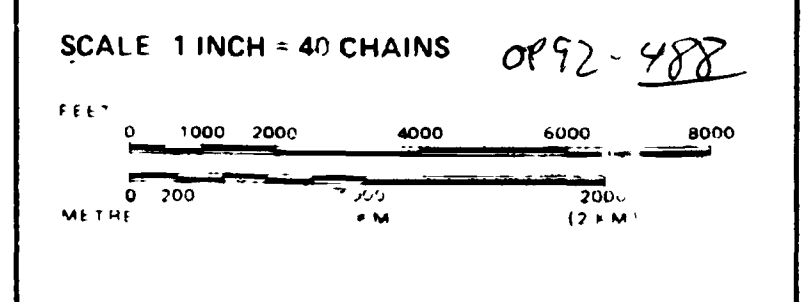
LEGEND

- HIGHWAY AND OTHER ROAD
- TRAILS
- SHRUB BELT
- TOWNSHIP BOUNDARY
- LOT LINES
- PARCEL BOUNDARY
- MINING CLAIMS
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKEG
- MINES
- TRAVERSE MONUMENT

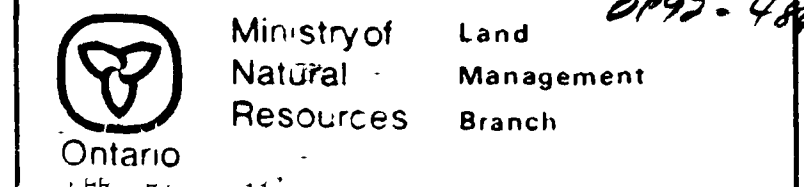
DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT SURFACE & MINING RIGHTS	●
SURFACE RIGHTS ONLY	○
MINING RIGHTS ONLY	□
LICENSE OF OCCUPANCY	○
ORDER IN COUNCIL	OC
RESERVATION	○
CANCELLED	○
SAND & GRAVEL	○
LAND USE PERMIT FOR TOURISM/OUTDOOR CAMP	○

NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1912 VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LAND ACT R.S.O. 1970 CHAP 380 SEC 43 SUBSEC 1



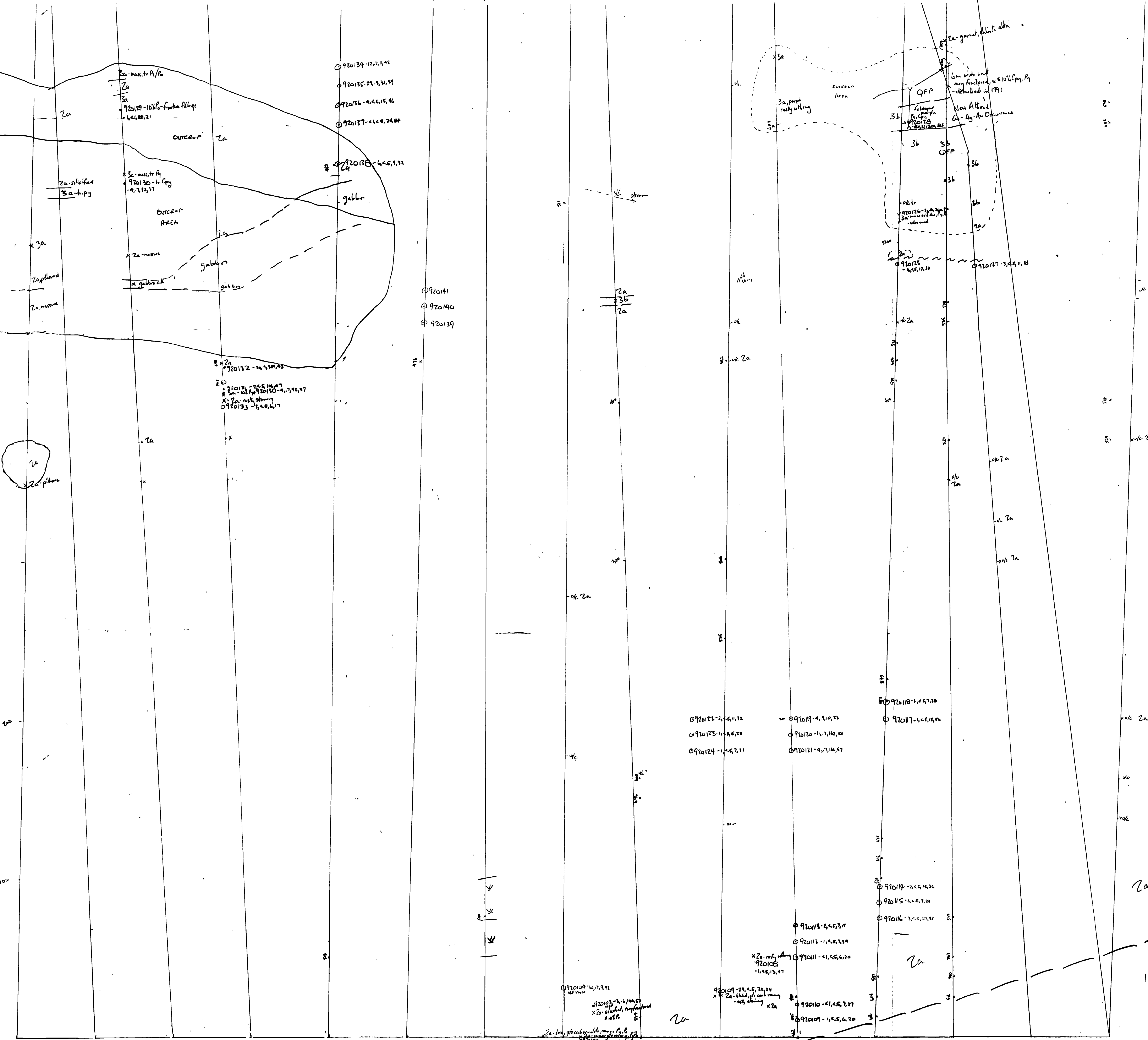
AREA  
**MAUN LAKE**  
M.N.R. ADMINISTRATIVE DISTRICT  
**GERALDTON**  
MINING DIVISION  
**THUNDER BAY**  
LAND TITLES / REGISTRY DIVISION  
**THUNDER BAY**



Ministry of Natural Resources  
Land Management Branch  
JULY, 1981  
Number  
**G-319**

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING REGISTRY DIVISION OF THE ONTARIO MINISTRY OF NATURAL RESOURCES FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LAND SHOWN HEREON.

L0 ROBE L1 ROBE L2 ROBE L3 ROBE L4 ROBE L5 ROBE



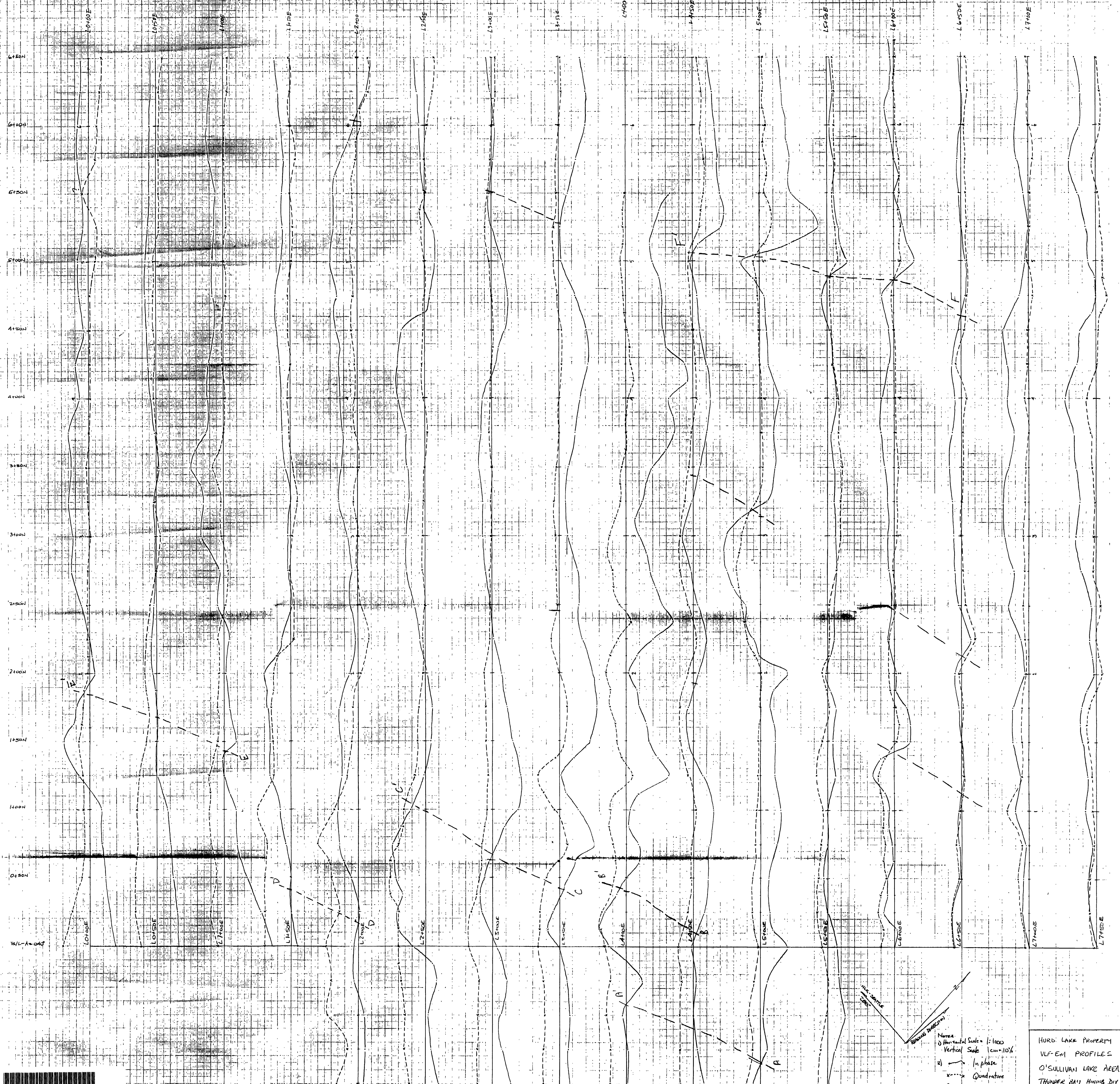
LEGEND

- Felsic Volcanics**
  - Za Unsubdivided Dacite & Rhyolitic flows
  - Zb Quartz-feldspar porphyritic flows
  - Zc Pyroclastic Rocks
- Intermediate Volcanics**
  - Za Unsubdivided Andesitic flows
- Mafic Volcanics**
  - 1a Unsubdivided Basaltic flows

- Rock sample location
- Sil sample location
- - 920103 - 80, 81, 100, 200
- - 920104 - 10, 20, 30, 40
- - 920105 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
- - 920106 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
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- - 920148 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
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- - 920150 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
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- - 920197 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
- - 920198 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
- - 920199 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
- - 920200 - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

HURD LAKE PROPERTY  
 GEOLOGICAL & GEOCHEMICAL SURVEY  
 O'SULLIVAN LAKE AREA, ONT  
 THUNDER BAY MINING DIVISION  
 Draw - M.S. 208 - 20/81 SCALE 1:1000 FIG. NO 3

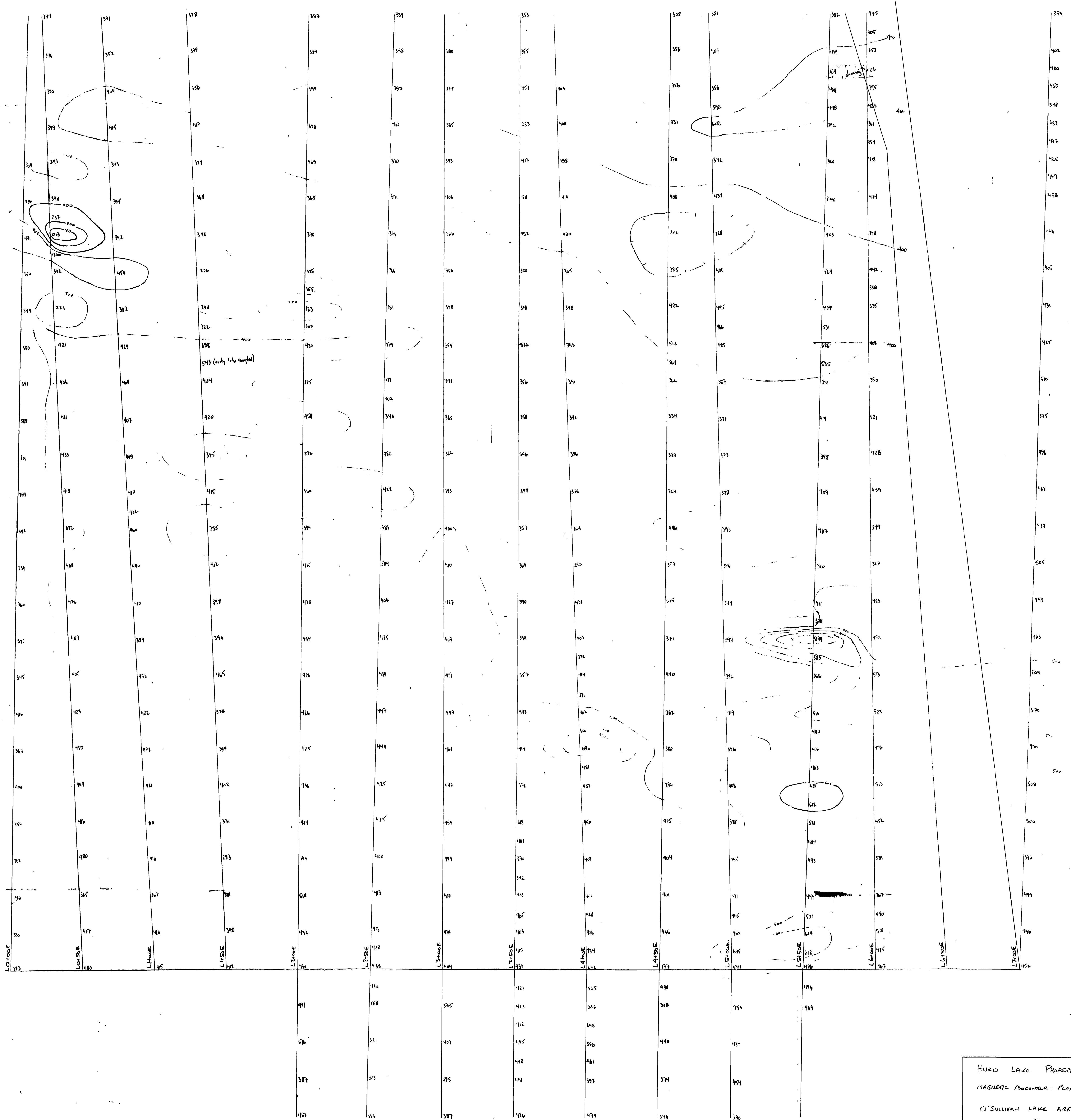




Notes:  
 1) Horizontal Scale = 1:1000  
 Vertical Scale = 1cm = 10ft  
 2) ——— In phase  
 - - - - - Quadrature  
 3) Survey Instrument - EM-16

HURD LAKE PROPERTY  
 VLF-EM PROFILES  
 O'SULLIVAN LAKE AREA  
 THUNDER BAY MINING LTD  
 Drawn by G.S. Scale 1:1000 FIG. No. 4  
 1984-MS.





HURD LAKE PROPERTY  
MAGNETIC ISOCOMPARI PLAN  
O'SULLIVAN LAKE AREA, ONT.  
THUNDER BAY, M. D.

Drawn - M	SCALE	FIG. No
Dec/92	1:1000	2