



41N13SW0006 41N13SW0016 MICHIPICOTEN ISLAND

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GEOLOGY OF THE  
ADVANCE RED LAKE GOLD MINES LIMITED  
CLAIMS ON THE NORTH SHORE OF  
MICHIPICOTEN ISLAND, LAKE SUPERIOR

BY: *H. S. Robinson*  
H. S. ROBINSON, G.A.C.

DATED, OCTOBER 27TH, 1967

GENERAL STATEMENT

This report on the Geology of the North Shore of Michipicoten Island is confined to notes on the Advance Red Lake Claims staked in July, 1965. The information consists of notes taken in the fall of 1965 when a Brunston Survey was made along the north shore from the east boundary of Claim No. 75700 to station 77A near No. 6 Drill Hole and MacDougall Station No. 123, an examination of the cores from Hole Nos. 1 to 9, notes along the MacDougall Survey of roads from Coldwater Lake to the Drill Holes and traverses from the shore along claim lines from June 11th to July 2nd, 1967.

Most of the early notes (1965 and 1966) were taken when other duties made it possible to make geological surveys intermittently. For this reason, the man hours in 1965 and 1966 were estimated. The MacDougall Survey was made in early 1966 by Wilson and MacDougall, Ontario Land Surveyors of Sault Ste Marie. It is a stadia and transit survey with stations on blazed trees about 1/4 mile apart and was used to tie in the drill setups. From June 11th to July 2nd, 1967 the writer made geological observations along claim lines from the lake south. Steep cliffs made it impossible to traverse all of the lines but about 19 - 10 hour days were included.

HR

GENERAL STATEMENT    Cont'd ..

SUMMARY OF GEOLOGICAL SURVEYS

	<u>GEOLOGIST</u>	<u>HELPER</u>
From September 15th to November 1st, 1965 and from June 15th to October 1st, 1966 .....	250	150
From June 11th to July 2nd, 1967 .....	150	150
Along MacDougall Surveys .....	50	
Office Work .....	50	
Langridge & Company .....	25	
	<hr/>	<hr/>
	525	300
 TOTAL MAN HOURS .....		<u>825</u>

*HR*

## TOPOGRAPHY

The topography of the north shore has two marked features, the present beach consists of coarse, boulder to pebble beaches (90%) and intermittent gravel beaches (10%). Dense forest comes within 25 feet of the beach line. The beaches are interrupted by rocky prominences extending right to the shore with numerous reefs offshore. The offshore waters are shallow and it is generally impossible to bring in any boat with more than 2½' draught. Even the wave action is normally too strong to anchor on the beach. No harbours were found anywhere on the Advance Claims. Large planes could land on the north shore only rarely in extremely calm weather.

About 50 feet above the present beach, there is an old beach of similar character. It extends from zero to 200 feet back from the present beach interrupted by monad-nocks of rock that intrude the present beach. This old beach is heavily forested but it was used for a large part of the access roads to the drill setups.

Steep cliffs rise abruptly from the old beach and face the north shore in a line broken only by steep approaches, descending to Camp No. 2, Camp No. 3 and north of Camp No. 1. It was difficult to find a road down to the beaches and these roads were difficult to maintain. The high ground behind the cliffs contains many beaver ponds and few outcrops, and is obscured by dense hardwood forest, underbrush and particularly ground hemlock. Streams crossing the roads had shallow, stoney bottoms suggesting the gravelly overburden was relatively shallow.

*HAR*  
CONT'D .....

TOPOGRAPHY Cont'd..

The entire island is heavily forested with maple, ash, birch and minor spruce and balsam. A dense growth of ash and ground hemlock makes it difficult to travel and hinders mapping. Outcrops may be hidden only a few feet off the trail.

HSR



GEOLOGY Cont'd ....

The Flows and Sediments dip south at some angle between 10 and 20 degrees and strike generally about S80W to S60W. If the Sandstone is Jacobville instead of Keweenaw, there would be an erosion contact truncating the flat lying flows and the Sandstone would have even flatter dips or none at all.

SANDSTONE . Grit, Quartzite, Chalcedonic Sediments

The Best exposures of Sandstone are in drill holes No. 3 and 6. It is usually bleached and there are marked, seasonal variations. Narrow bands of medium-grained Sandstone marking the winter months, and coarse Grit, often bleached, marking the milder months. The best exposure of Grit is on a hillside on No. 75709 above Camp No. 3. Quartzite can be seen on the road near MacDougall Station No. 72 and all along the road west of No. 72 and south towards Clearwater Lake. Chalcedonic Sediments occur in the collar of Hole No. 3 and on the hills south of Hole No. 4. The Sandstone is interbedded with a pebble Conglomerate near MacDougall Station No. 25, and with Amygduloidal Basalt on Claim No. 75571. There is a short section from MacDougall Station Nos. 114 to 125 where there may be some shale as the beach is clayey.

CONGLOMERATE is exposed in Drill Hole No. 4 for its full length. A coarser variety occurs along the beach east from No. 4 Hole to at least station No. 197 (MacDougall) and there is a small pillar of pebble Conglomerate East of Camp No. 2. The Conglomerate in Hole No. 4 has stains of Copper Carbonate or Sillicate.

HBR

CONT'D .....

GEOLOGY Cont'd.....

FELSITE Some of the Felsite is definitely intrusive as shown in Drill Hole Nos. 7 and 8. It cuts across the south dipping flows and rises to the south apparently about 50 degrees. Felsitic rocks are exposed abundantly along the north shore and on the cliffs above the old beach. Some felsitic rocks when examined on the north shore contain round areas of a darker rock and are of doubtful sedimentary character. These pebble-like areas are only evident when the rock has been polished by ice and so many of the cliffs classed as Felsite may be this rock, which is believed to be a sediment. Some rocks exposed on the shore and originally classed as Ash-rocks now appear to be coarse Grits related to Sandstone.

BASALT, ANDESITE Amygduloidal Basalt was cut in Hole Nos. 1, 2, 7 and 8. The flows can be separated into Amygduloidal Top, grading to a medium or coarse-grained centre followed by a foot or two of fine-grained base. However, it is difficult to trace individual flows even in closely adjacent holes ( see 7 and 8). The Amygdules are filled with Calcite and Zeolite. The Calcite seems to be a late filling and commonly occurs in veins and veinlets. The Zeolites are Prehnite, Chlorite, Stilbite (or Thomsonite) and Analcite.

Some of the flows have a bleached, red appearance. This is partly due to the oxidation of Ferric Iron but it is also due to mineralization by Analcite. This is particularly noticeable in Hole No. 4 as well as in No. 1, 7 and 8. The Analcite is salmon-coloured and occurs in fine-granular form or as veinlets associated with Calcite.

HER  
CONT'D ...



GEOLOGY Cont'd .....

The Basalts are usually quite narrow but occasionally they attain a width of 100 to 300 feet. These the centres resemble coarse Gabbro with considerable Magnetite. The flows are generally quite Magnetic.

ANDESITE.

Basalt Tuff occurs in Hole No. 9 and on the stripping between Hole No. 9 and Camp No. 1. A dense, black lava termed Andesite is found: on the cliffs from Hole No. 7 east to the east boundary.

NATIVE COPPER Native Copper was found in coarse slugs, round grains the size of shot, fine flakes in the Basalts in No. 1, 7 and 8 Holes and in Calcite-Analcite Veinlets in the intrusive Felsite in No. 7 and 8 Holes. It seemed to be rather uniformly distributed in an altered section of a wide flow No. 15 in Hole No. 1 and in flow Nos. 21 and 22 of Hole No. 7, and just below the Felsite in Hole No. 8. Small slugs of Copper are found along the north shore.

The occurrence of Copper in the coarse parts of the larger flows may indicate an original Copper content, and the Copper in veinlets, in Amygdules and in the Felsite may indicate redistribution from the original Copper in the flows.

The significance of secondary Copper in the Conglomerate of Hole No. 4 is unknown but there is a possibility that it may be derived from a shale bed in the overlying Sandstone or that it came from a nearby Basalt flow uncovered by the erosion of the flows before the deposition of the Jacobville Sandstone.

*HSR*

CONT'D .....

GEOLOGY Cont'd .....

The following samples show the best assay results:-

<u>HOLE NO.</u>	<u>FROM</u>	<u>TO</u>	<u>WIDTH</u>	<u>% CU.</u>
1	600	605	5.0	.41
	605	610	5.0	.12
	610	615	5.0	.14
	615	620	5.0	.09
7	691	694	3.0	.14
	705	708	3.0	.19
	710	715	5.0	.25
8	830	835	5.0	.20
	835	840	5.0	.53
	1175	1180	5.0	.35
	1180	1185	5.0	.16

*H. S. Robinson*

H. S. ROBINSON, G.A.C.



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REPORT ON THE GEOLOGY OF ADVANCE RED  
LAKE GOLD MINES LIMITED CLAIMS ON  
THE NORTH SHORE OF MICHIPICOTEN ISLAND,  
LAKE SUPERIOR . . . . .

*H. S. Robinson*  
.....  
H. S. ROBINSON, G.A.C.  
February 15th, 1967

GENERAL STATEMENT

A Report on the Geology of the North Shore of Michipicoten Island is confined to notes on the Advance Red Lake Claims staked in July, 1965. The information consists of notes taken in the fall of 1965 when a Brunton Survey was made from the East Boundary of Claim No. 75700 to Brunton Station 77A near MacDougall Station 123, notes taken along MacDougall's Survey of roads to drill hole Nos. 1 to 9, and examination of cores from drill holes Nos. 1 to 9.

Many of the notes were taken when other duties made it possible to continue geological surveys and for this reason, the manhours are estimated for the period from September 15th to November 1st, 1965 and from June 15th to October 1st, 1966 a total of five months. The MacDougall Survey, which was used to tie in all drill holes and geological data, was contracted to Wilson & MacDougall, Ontario Land Surveyors of Sault Ste Marie. The shoreline survey took 425 manhours and office work 50 manhours. Final maps were prepared from field maps by Langridge & Company who charged 10 manhours.

SUMMARY OF MANHOURS ON  
GEOLOGICAL REPORT

Shoreline Survey and Tie in Surveys to Drill Holes .....	400
Langridge Maps .....	<u>16</u>
	416
 Claims Traversed . . . . .	 33

ITSR

## TOPOGRAPHY

The topography of the north shore has two marked features. The present beach consists of course, pebble beaches (90%) and intermittent gravel beaches (10%). Dense forest comes within 25 feet of the beach line. The beaches are interrupted by rocky prominences extending right to the shore and numerous reefs offshore. The offshore waters are shallow and it is generally impossible to bring in any boat with more than 2½ foot draught. Even then wave action is normally too strong to anchor on the beach. No harbours were found anywhere on the Advance Claims. Large planes could land on the north shore only rarely during extremely calm weather.

About 50 feet above the present beach, there is an old beach of similar character. It extends from zero to 200 feet back from the present beach interrupted only by the monadnocks of rock that intrude the present beach. This old beach is heavily forested but it was used for a large part of the access roads to drill setups.

Steep cliffs rise abruptly from the old beach and face the north shore in a line broken only by steep approaches descending to Camp 3 and north of Camp 1. It was extremely difficult to find a road down to beaches and these roads, which paralleled water courses, were difficult to maintain. The high ground behind the cliffs is usually covered either with ponds, beaver swamps or gravel. Few outcrops exist and these are often to right or left of the road and flanked by gravel deposits. Streams crossing the road had shallow, stoney bottoms suggesting that the gravelly overburden was shallow. Many slabs of Quartzite suggested that the roads were underlain by sediment (or Felsite) at a shallow depth.

The entire island is heavily forested with maple, ash, birch and minor spruce and balsam. A dense growth of ash and ground hemlock makes it difficult to travel and hinders detailed mapping.

MSR

## GEOLOGY

Sandstone: All of the formations are believed to be Keweenaw except for a short section between station 114 and 125. Here there are clay hills above the water's edge and from an examination of hole Nos. 5, 6A and 6B, it is believed that Sandstone underlies the clay and sand. A short section of the cliff above the old beach shows the same clayey nature as if a fault extends inward. This Sandstone may be Cambrian. If so, it is a down-faulted block. The rock is totally devoid of signs of mineralization. No Copper was found though some of the sludge from No. 5 and 6A was panned.

The argillite in Sandstone at the White Pine Mine in Ontonagon, Michigan is thought to be Cambrian. It is mineralized with Chalcocite. No argillite was found in Nos. 5, 6A or 6B.

Felsite, Felsite Porphyry, Felsite Flows and Ashbeds: Felsite is exposed frequently along the north shore and on the cliffs above the old beach. A few of the cliffs examined are even-granular rather coarse Felsite with a usual reddish shade. The exposures on the shore vary from coarse Felsite to Feldspar Porphyry. Some are obviously flows and some ash rocks, tuffs or flow breccias. Such a rock was noted west of station 10, plate 3. There is no doubt that the road from Coldwater Lake dock to station 72 is in part underlain by Felsite flows and tuffs but detailed work east and west of the road and south from 75 to 97 is needed to map them. The Felsite in hole Nos. 8 and 9 is definitely intrusive. It cuts across the southerly dipping Basalt flows, dipping north about  $45^{\circ}$ . It varies in grain and is Porphyritic with Phenocrysts of twinned Feldspar. Cracks in the Felsite are mineralized with Calcite, some pink Zeolite and native Copper so that the rock is definitely pre-ore. Intrusive Felsite does not extend to hole No. 1.

175R

## SEDIMENTS

Interbedded with Felsite flows and cut by the Felsite intrusive are four types of Sediments. The legend does not indicate their age grouping. Probably, the oldest is cut in hole No. 4. It is the type of Keweenaw Conglomerate represented by specimens from the C. & H. Conglomerate. The pebbles are angular or sub-angular pebbles of Basalt and Felsite in a matrix of coarse grit and sand. Copper was found in the Amygdules in the Basalt pebbles and in the matrix near the bottom of the hole. Secondary Copper, believed to be Chrysocolla, was rather liberally deposited but the grade was extremely low. It looks as if the secondary Copper was leached from a deposit in Conglomerate or Basalt, which the hole failed to reach - similar to the ore in the Quebec Mine two miles west. There are reefs offshore that may be the extension of the Quebec Mine formation. A vertical hole from No. 4 setup might clear this up.

Another type of Conglomerate is exposed as an erosion pillar on the shore just east of Camp 2 (Sheet 5) and on the road near station 25 (Sheet 1). It is a fine pebble Conglomerate and is probably interbedded with red Quartzite or is an erosion interval after a Felsite flow. The pebbles are well rounded. Fine banded Sediment is exposed in hole No. 3 and in the stripping east of No. 2 camp area corner of No. 75715 and 75716. This rock is thoroughly water sorted and on sawn surfaces almost like Agate.

Quartzite is frequently exposed in slabs along the road from Coldwater dock to station 72 and at the turn of the road (station 75). Sample No. 1 shows an even granular rock which might be a Felsite flow. However, it is not Porphyritic. Quartzite probably underlies a large part of the area traversed by the road to Coldwater Lake from Station 72 to Station 1.

CONT'D

## SEDIMENTS

Greywacke: This is one rock that is difficult to define though it is cut in hole No. 6B and well exposed on the shore north of No. 6B. Some ice-polished outcrops show the character of the rock very well. The matrix is a dark, grey, medium, fine-grained rock. The pebbles are not closely packed but scattered around at intervals of a foot or so. Actually, they remind one of the concretions in the Animikie slates near Port arthur except that the matrix is not slaty. The pebbles are similar to the matrix except slightly darker.

1732



BASALT, AMYGDULOIDAL BASALT, BASALT TUFF

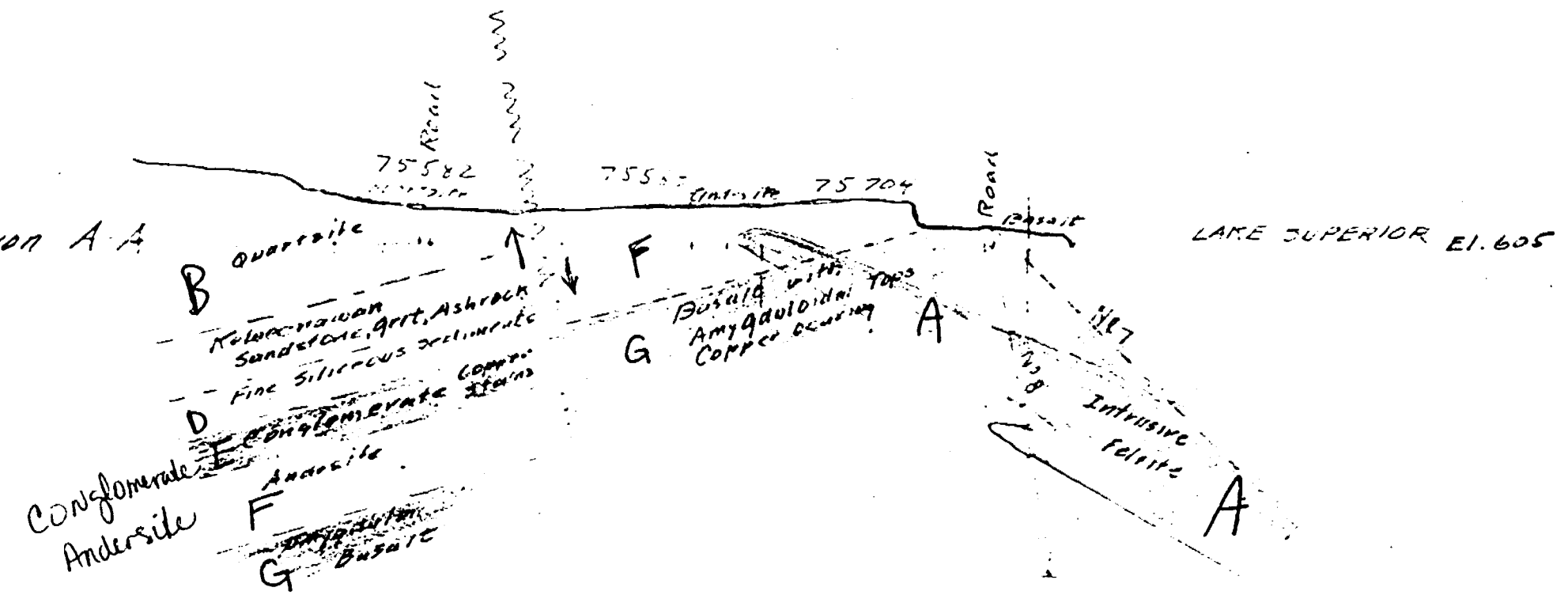
Amygduloidal Basalt was cut in hole Nos. 1, 7 and 8. The flows can often be separated into an Amygduloidal Top, grading to a medium to coarse grained centre followed by a foot or two of fine grained base. However, it is difficult to trace individual flows even in closely adjacent holes (7 and 8). The Amygdules are from 3MM. to 1 C.M. in diameter and are filled or partly filled with Calcite and Zeolites. The calcite seems to be a late filling and commonly occurs as veins and veinlets. The zeolites are probably (rare) Chlorite, Stilbite (or Thomsonite). Copper comes as a very late mineral in the Frehnite Amygdules.

Some of the flows have a bleached red appearance. This may be due to oxidation of ferrous iron but it is also due to mineralization with Analcite. This is particularly noticeable in hole No. 4 (Conglomerate) as well as in hole Nos. 1, 7 and 8. This mineralization is a good sign that Copper is present. The Analcite is salmon coloured and occurs as a fine granular mineral scattered in the rock or associated with Calcite in fine cracks, veinlets and veins.

Basalt Tuff occurs in hole No. 9 and on the stripping between hole No. 9 and Camp 1. A thin section shows a fine grained rock with patches of coarse Basalt. It probably extends east to the hills around Bonner Creek.

1732

Section A-A

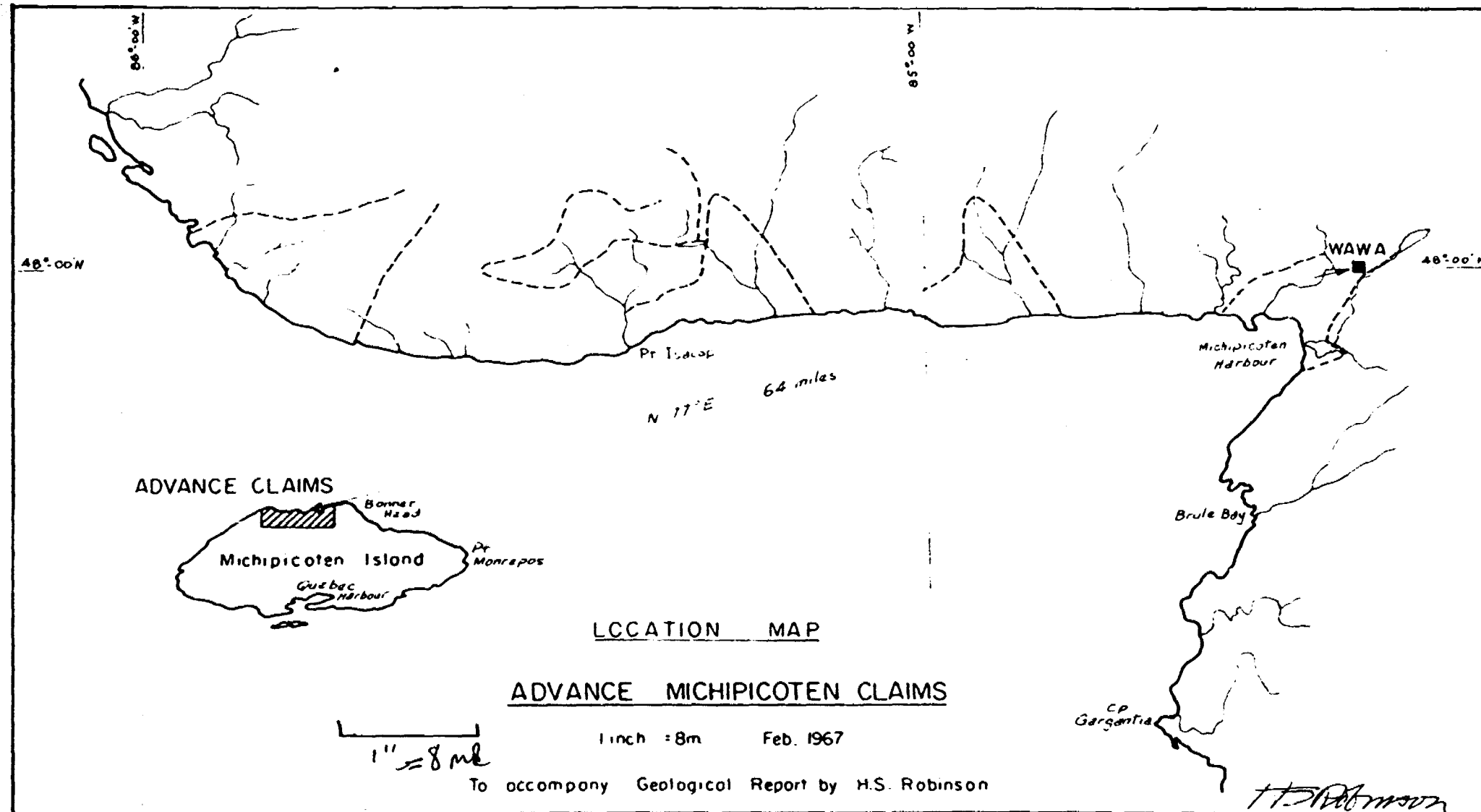


Conglomerate  
Andersite

SECTION A-A

1" = 500'  
1" = 500'

H. S. Hartmann



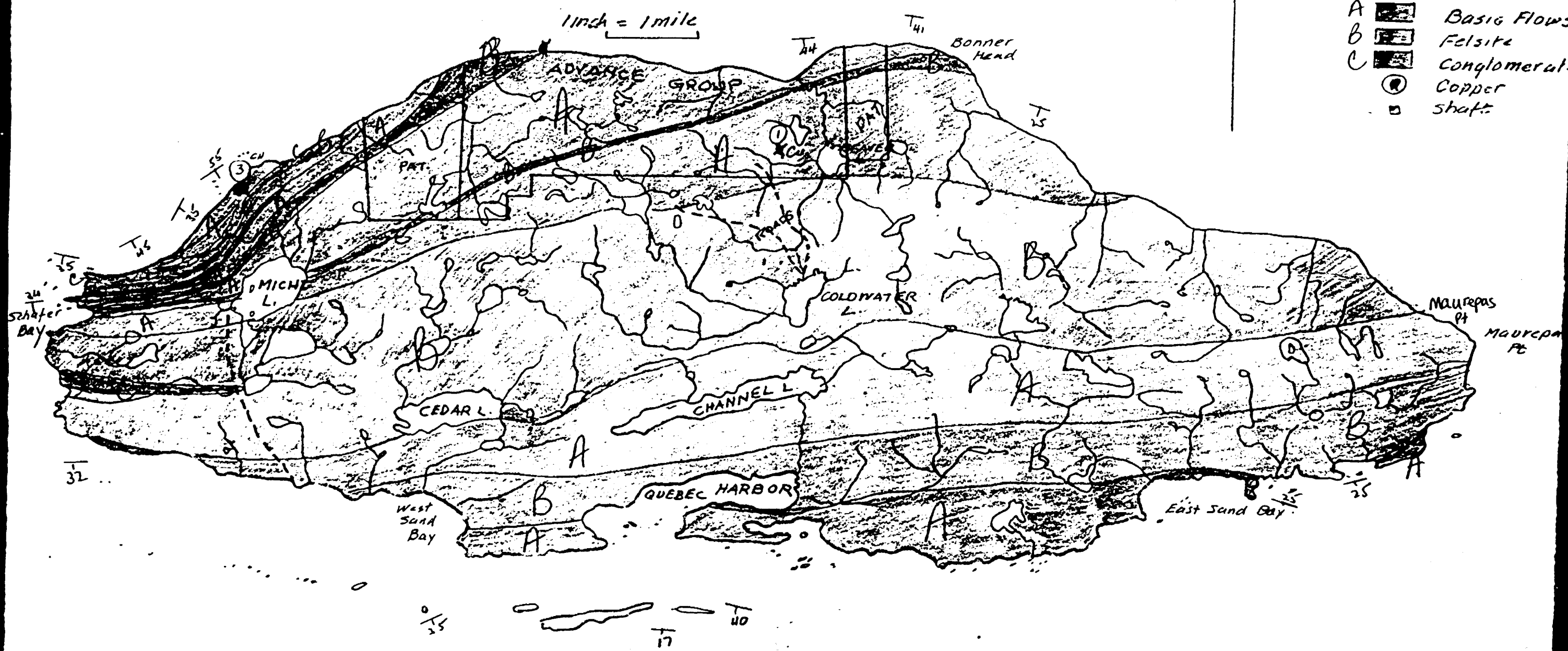
# MICHIPICOTEN ISLAND

FROM ALGOMA CENTRAL MAP

1 inch = 1 mile



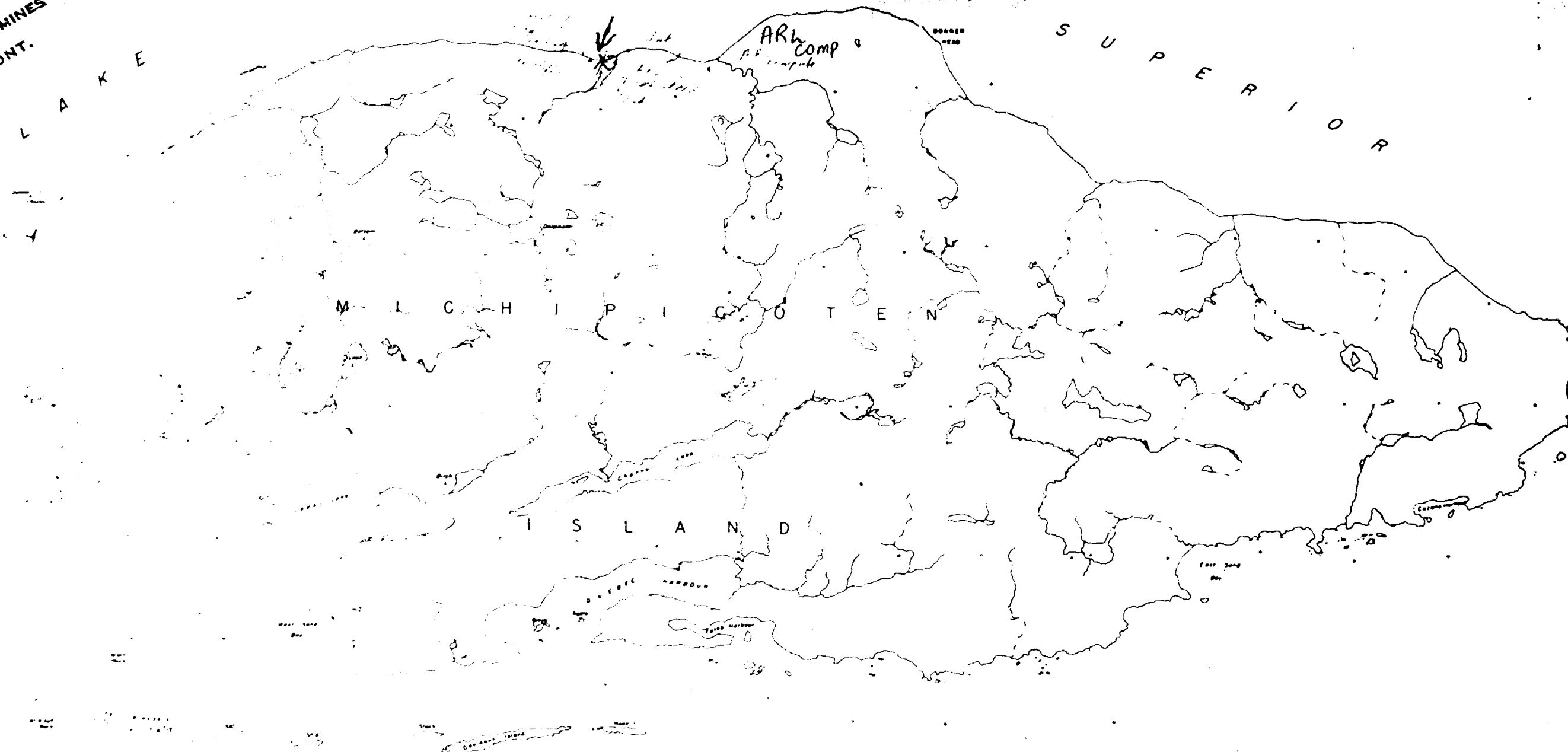
- LEGEND**
- A Basic Flows
  - B Felsite
  - C Conglomerate
  - Copper
  - Shaft



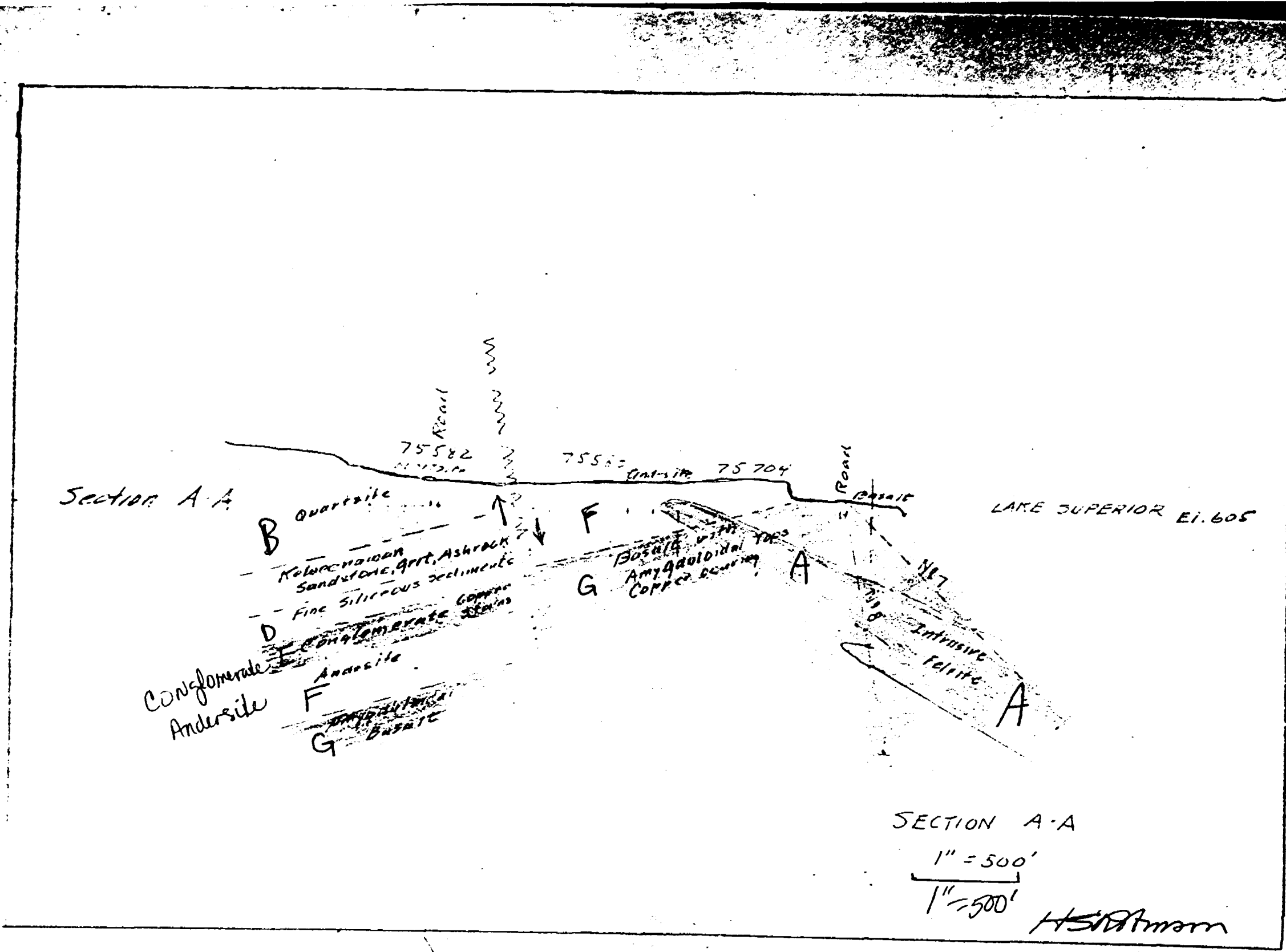
H2

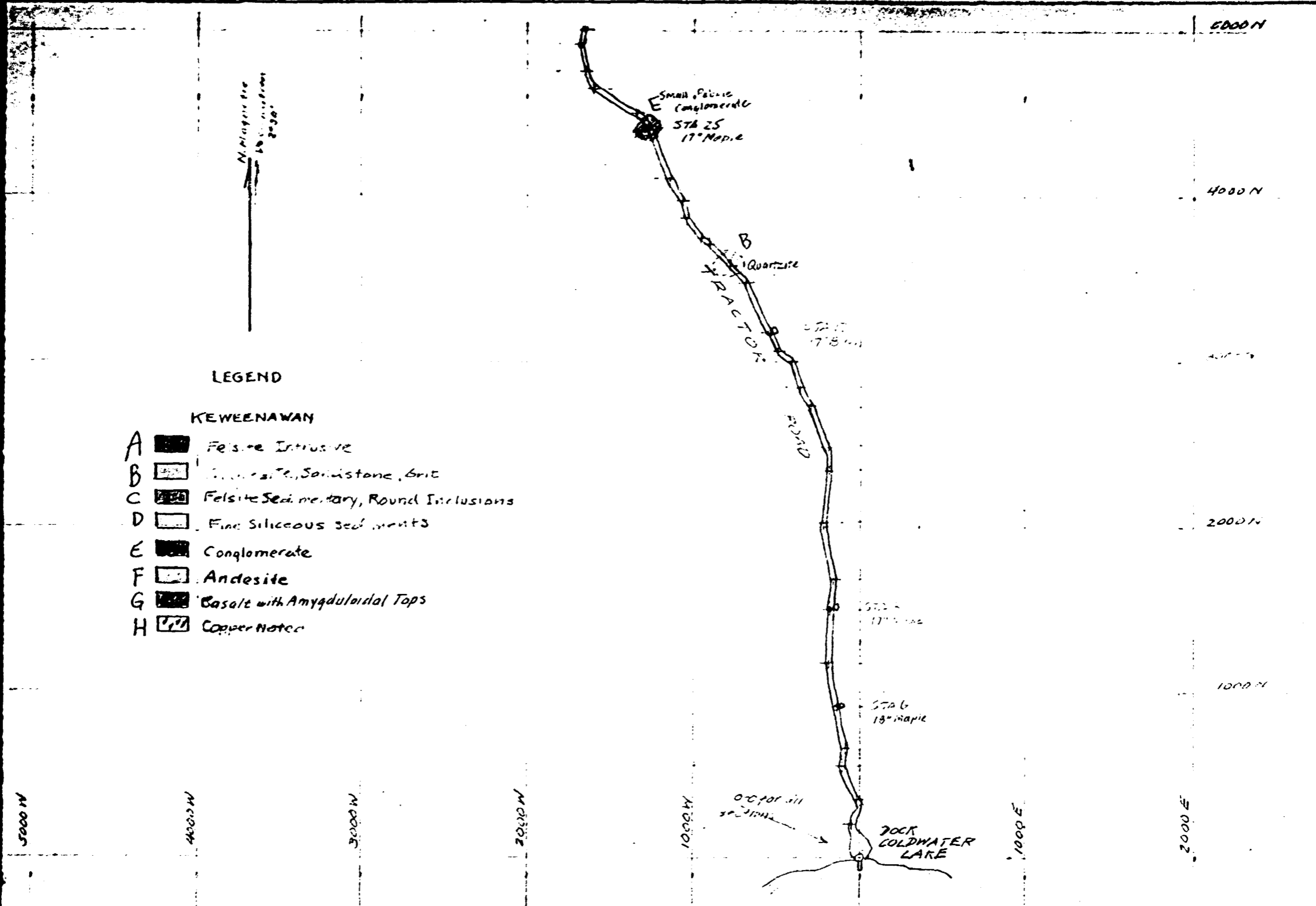
PROVINCE OF ONTARIO  
DEPARTMENT OF LANDS AND FORESTS

TO BE REMOVED FROM  
OFFICE OF THE RESIDENT  
GEOLOGIST, ONT. DEPT. OF MINES  
SAULT STE. MARIE, ONT.



SCALE - 1 INCH - 1 MILE





LEGEND

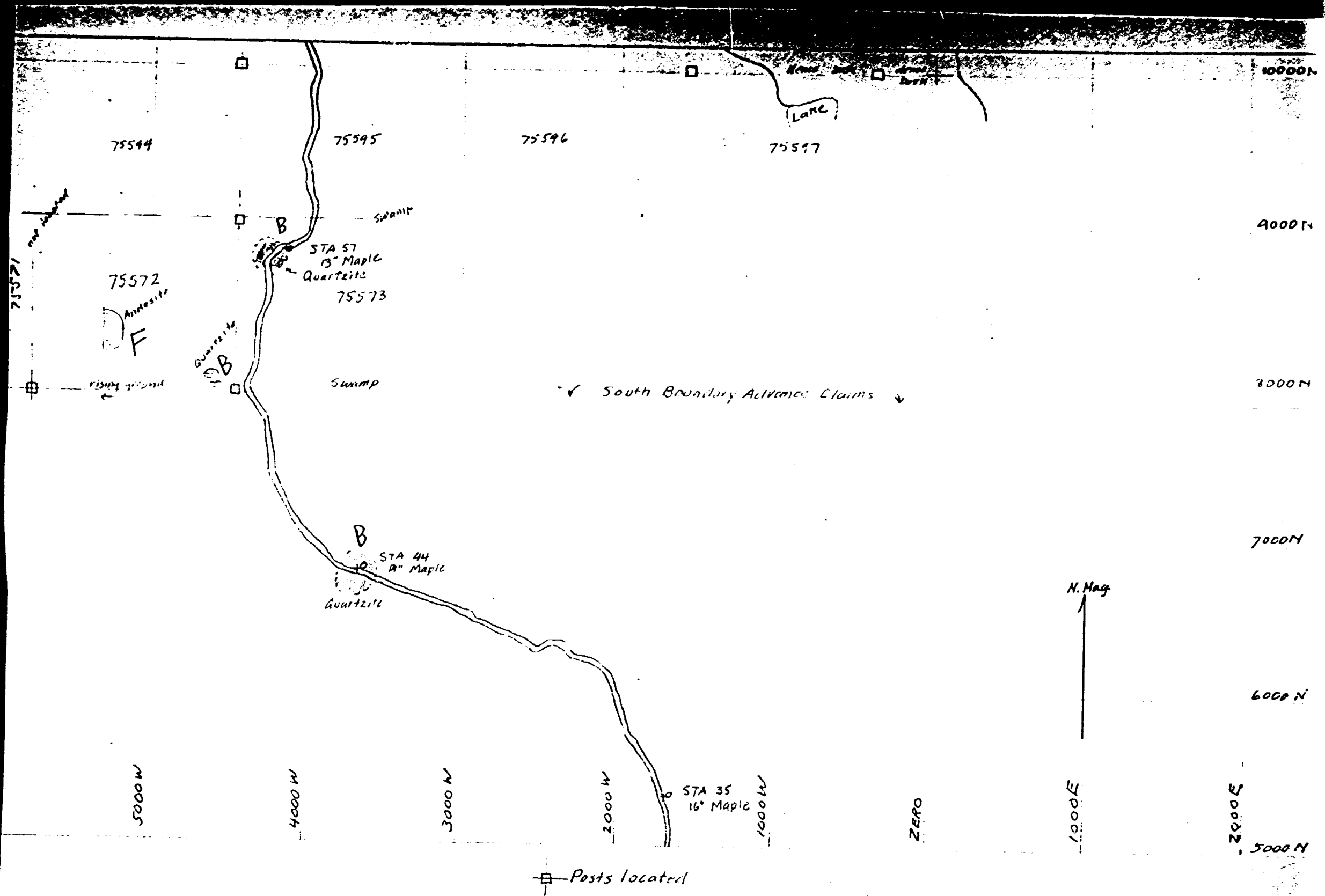
KEWEENAWAN

- A Felsite Intrusive
- B Andesite, Serpentine, Grit
- C Felsite Sedimentary, Round Inclusions
- D Fine Siliceous sediments
- E Conglomerate
- F Andesite
- G Basalt with Amygduloidal Tops
- H Copper Notes

ADVANCE RED LAKE GOLD MINE LTD

1" = 500' SHEET NO 1  
Scale 1" = 500'

H. B. Brown

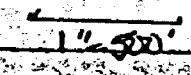


□ Posts located

ADVANCE RED LAKE GOLD MINE LTD

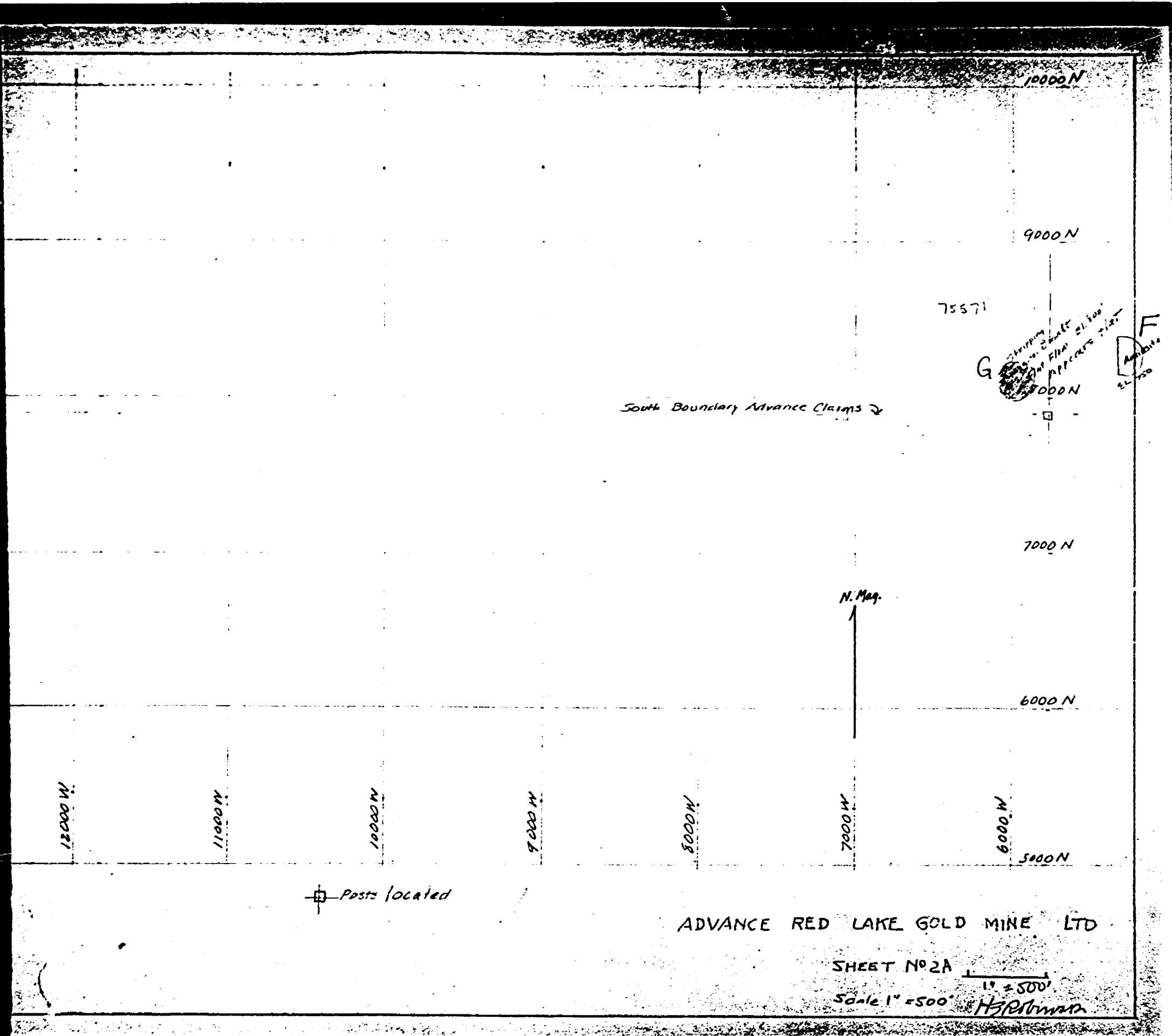
SHEET NO 2

Scale 1" = 500'



ITSR/mtm





South Boundary Advance Claims ↘

75571

G  
SHIPPING CHARGE  
APPLICABLE TAX  
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F  
21,750

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9000N

8000N

7000N

6000N

5000N

11000W

10000W

9000W

8000W

7000W

6000W

5000W

☐ Posts located

ADVANCE RED LAKE GOLD MINE LTD

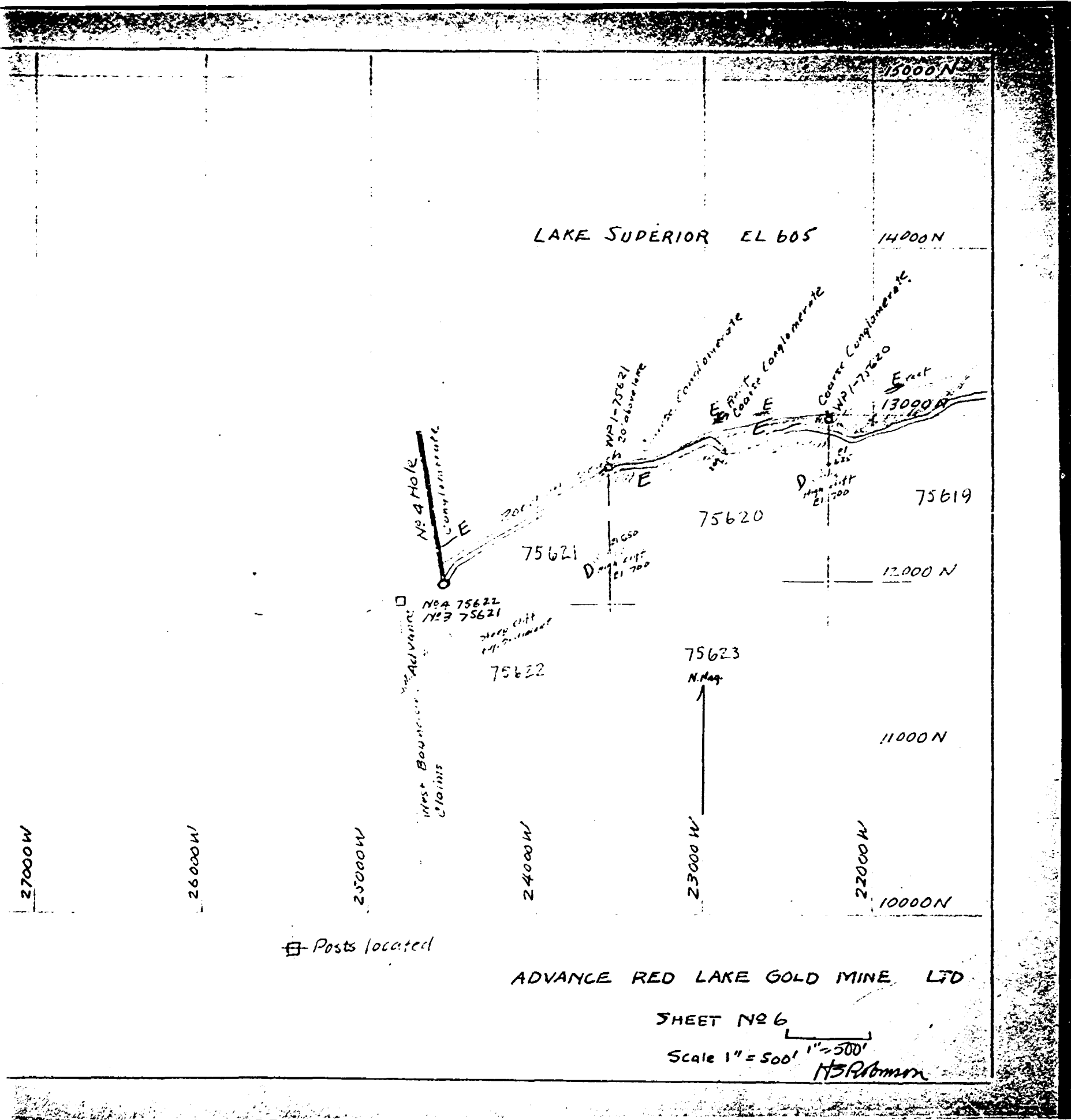
SHEET NO 2A

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1" = 500'

H. B. B. B. B.





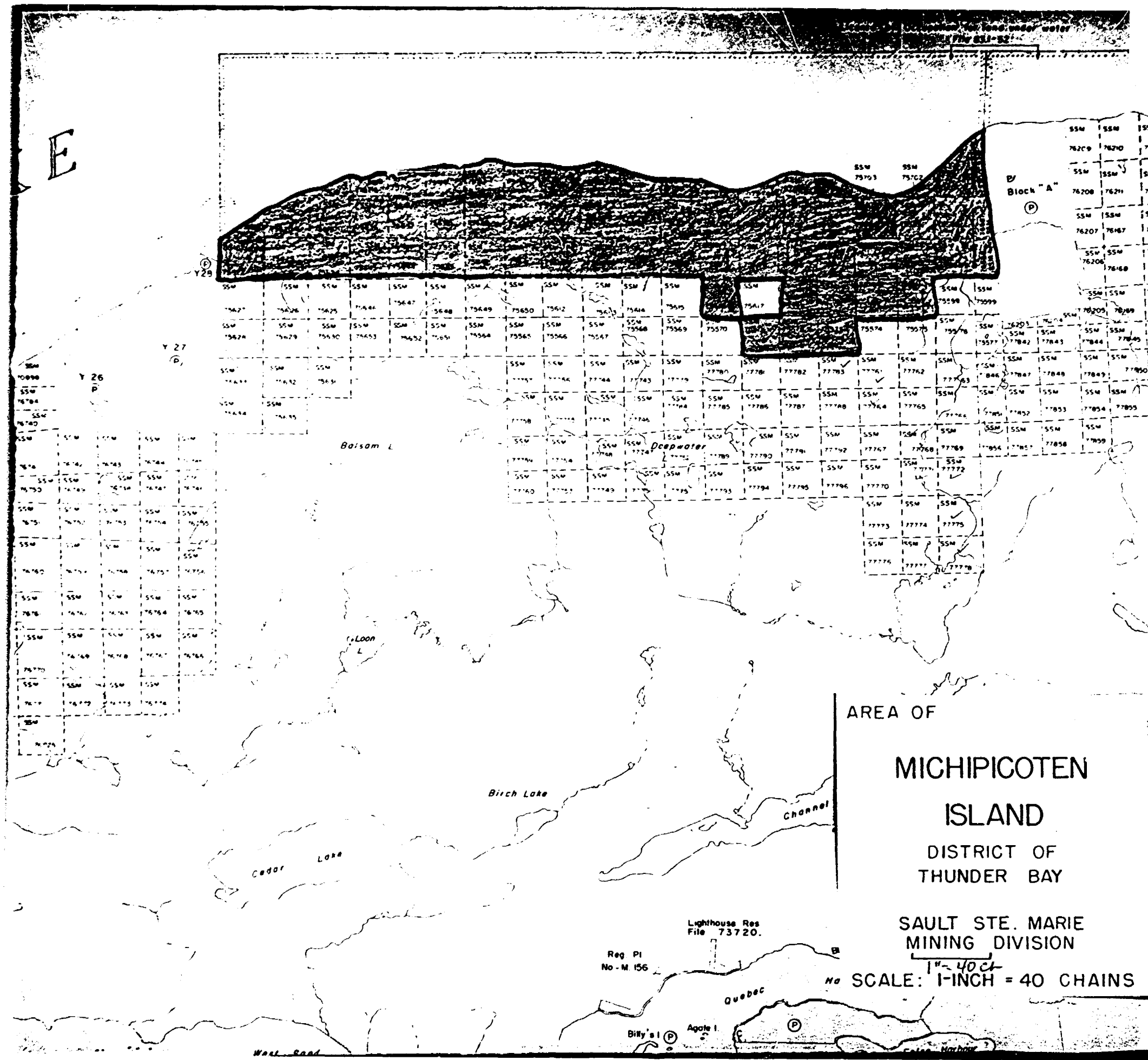
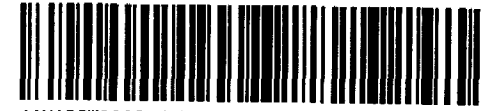
ADVANCE RED LAKE GOLD MINE LTD

SHEET NO 6

Scale 1" = 500'

H. S. Robinson

⊕ Posts located



AREA OF  
**MICHIPICOTEN**  
**ISLAND**  
 DISTRICT OF  
 THUNDER BAY  
 SAULT STE. MARIE  
 MINING DIVISION  
 1" = 40 ch  
 SCALE: 1-INCH = 40 CHAINS

Reg. Pl  
 No. M. 156

Lighthouse Res  
 File 73720.

Billy's I  
 Agate I

Quebec

Channel

Birch Lake

Cedar Lake

Balsam L.

Deepwater

Block "A"

E

Y 27

Y 26

Y 28

Y 25

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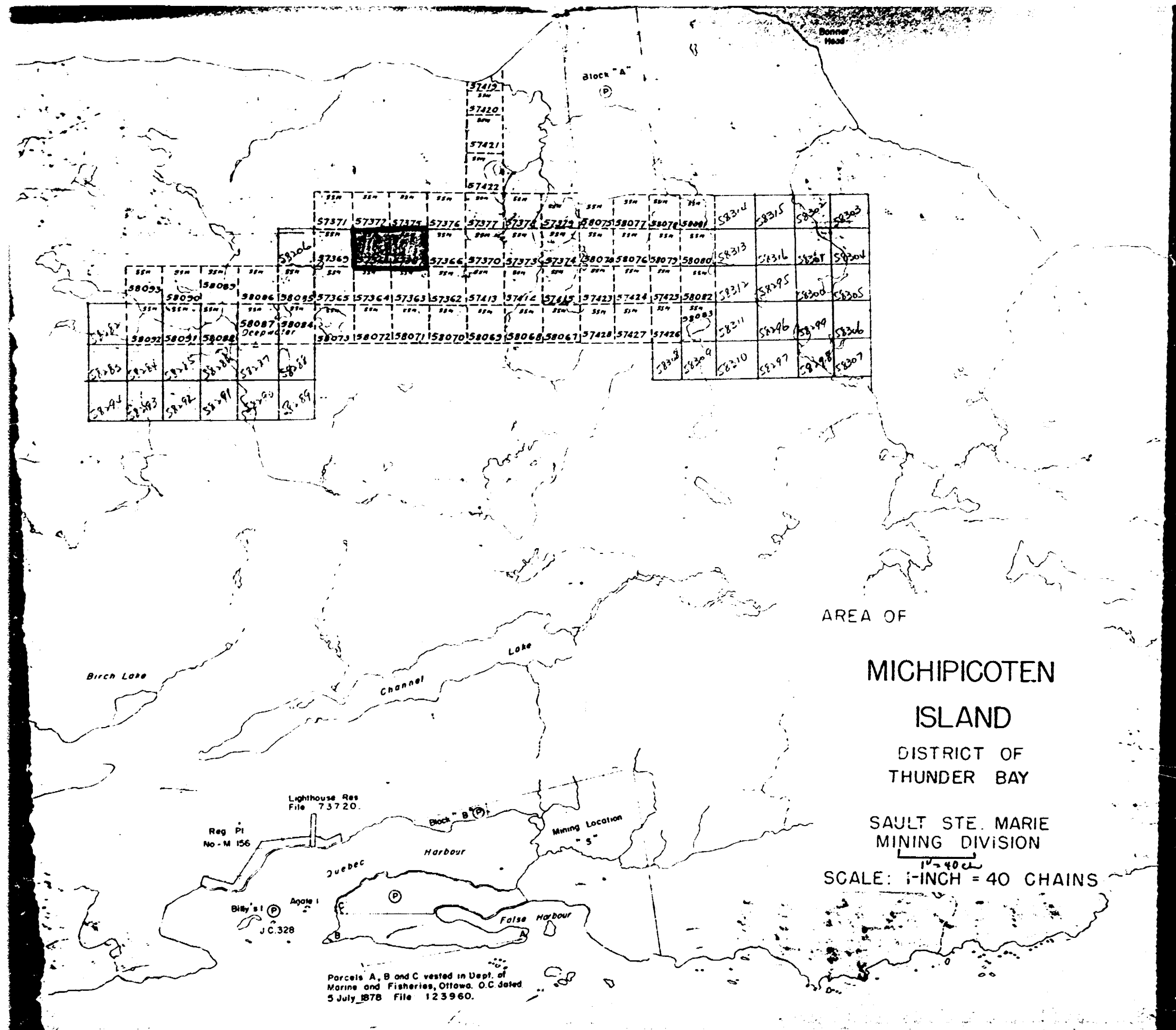
Y 25

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AREA OF  
**MICHIPICOTEN  
 ISLAND**  
 DISTRICT OF  
 THUNDER BAY

SAULT STE. MARIE  
 MINING DIVISION

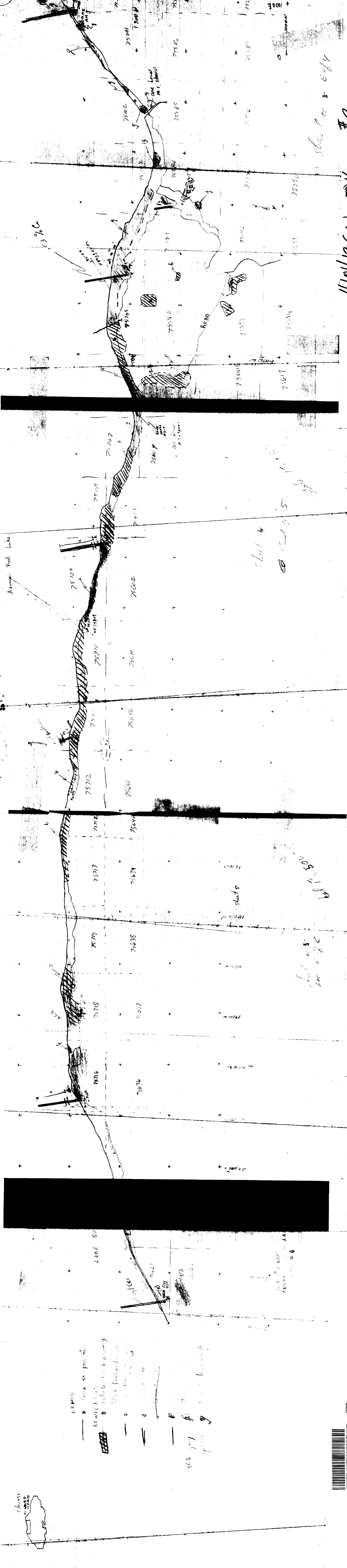
SCALE: 1-INCH = 40 CHAINS

Parcels A, B and C vested in Dept. of  
 Marine and Fisheries, Ottawa. O.C. dated  
 5 July 1878 File 123960.

41N/135W - 0016

#2

Sheet # 3 of 4



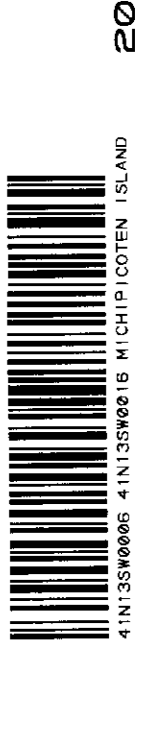
- 1. ELEVATION
- 2. Contour lines
- 3. NEWELL'S
- 4. Filled in area
- 5. Lake (unshaded area)
- 6. Road
- 7. Lane SW
- 8. Contour lines
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Sheet # 3 of 4

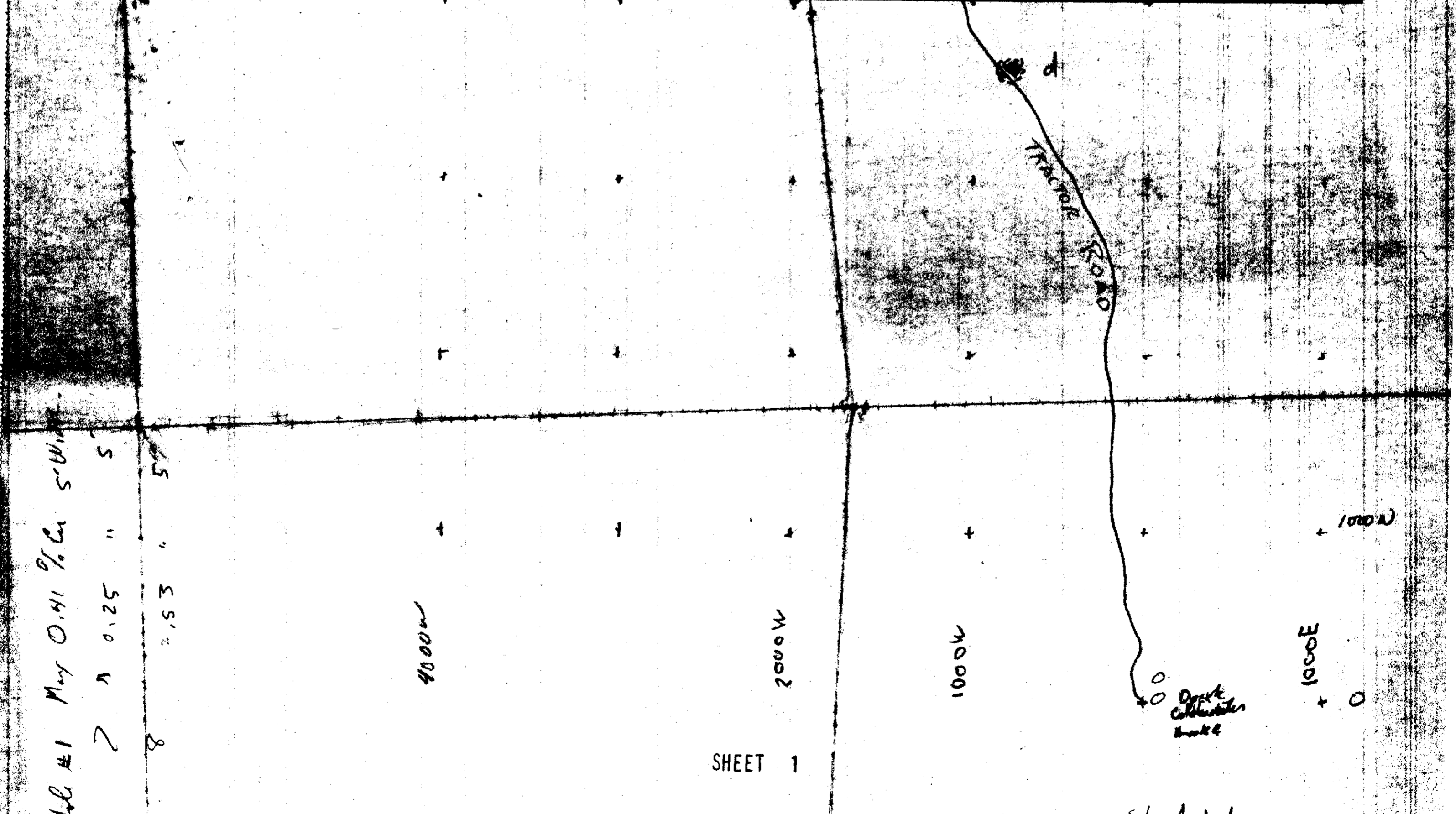
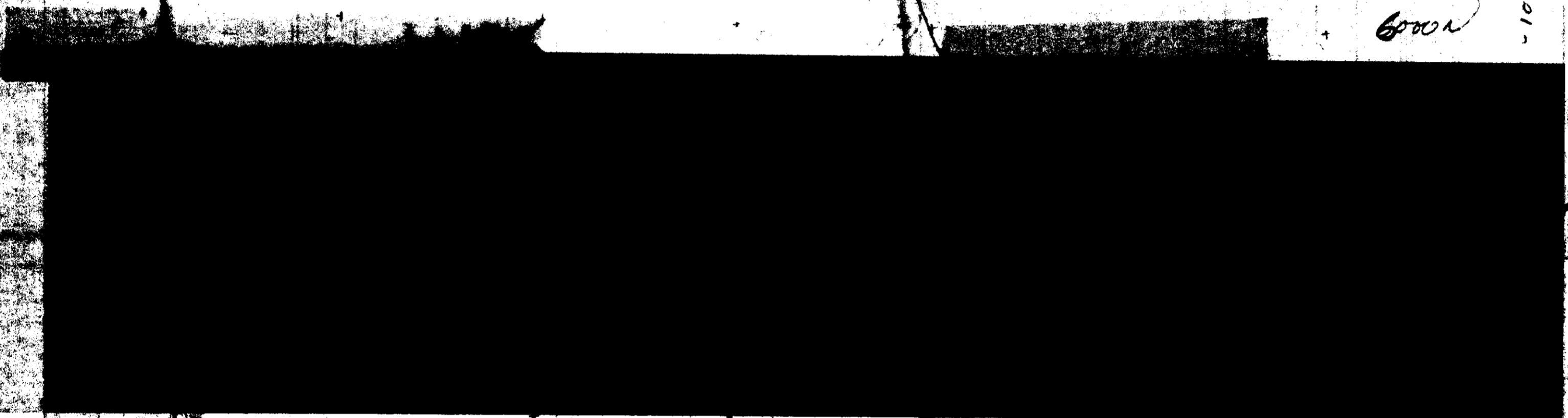
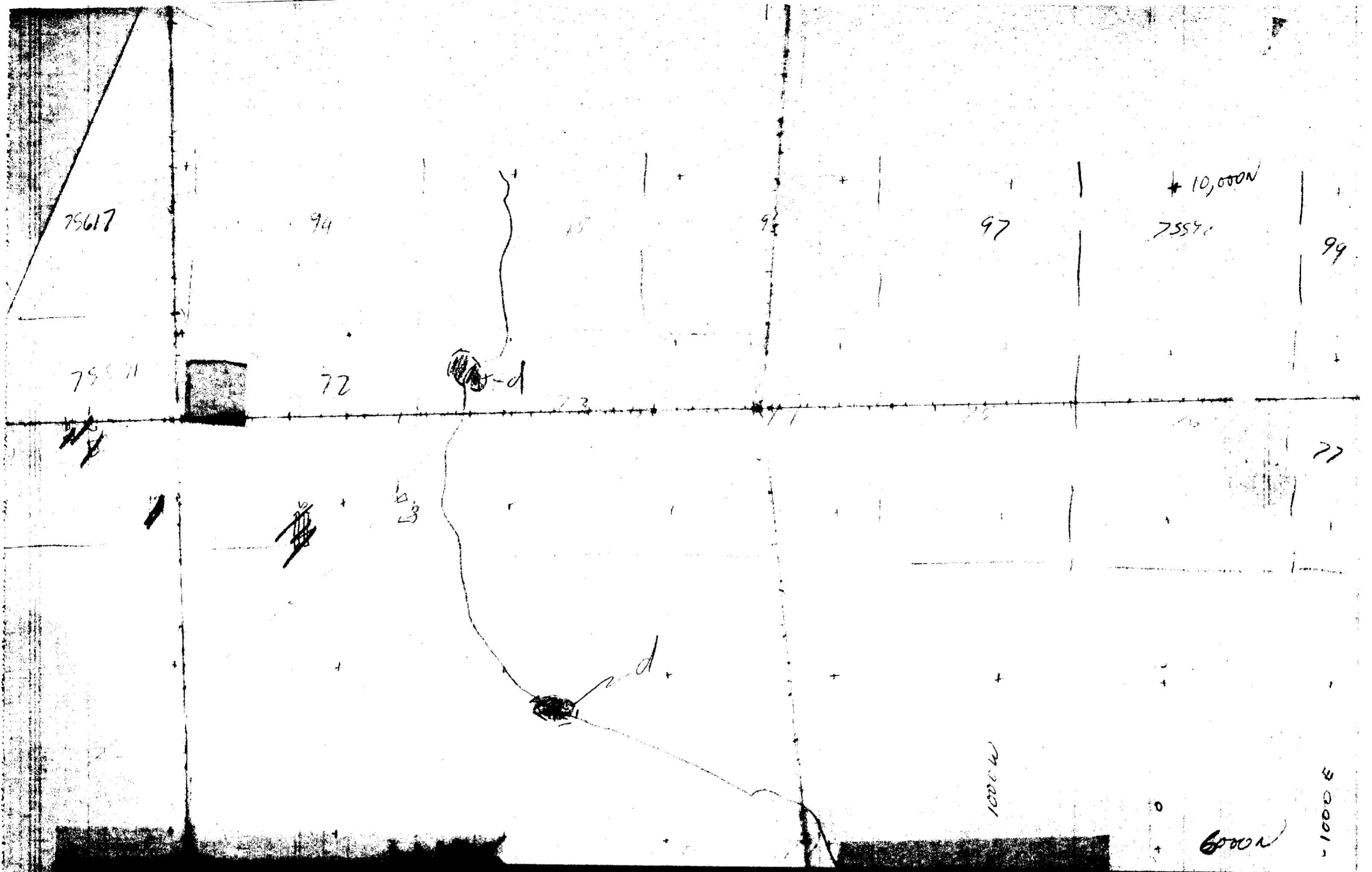
Sheet # 4 of 4

Sheet # 5 of 4

Sheet # 6 of 4



200



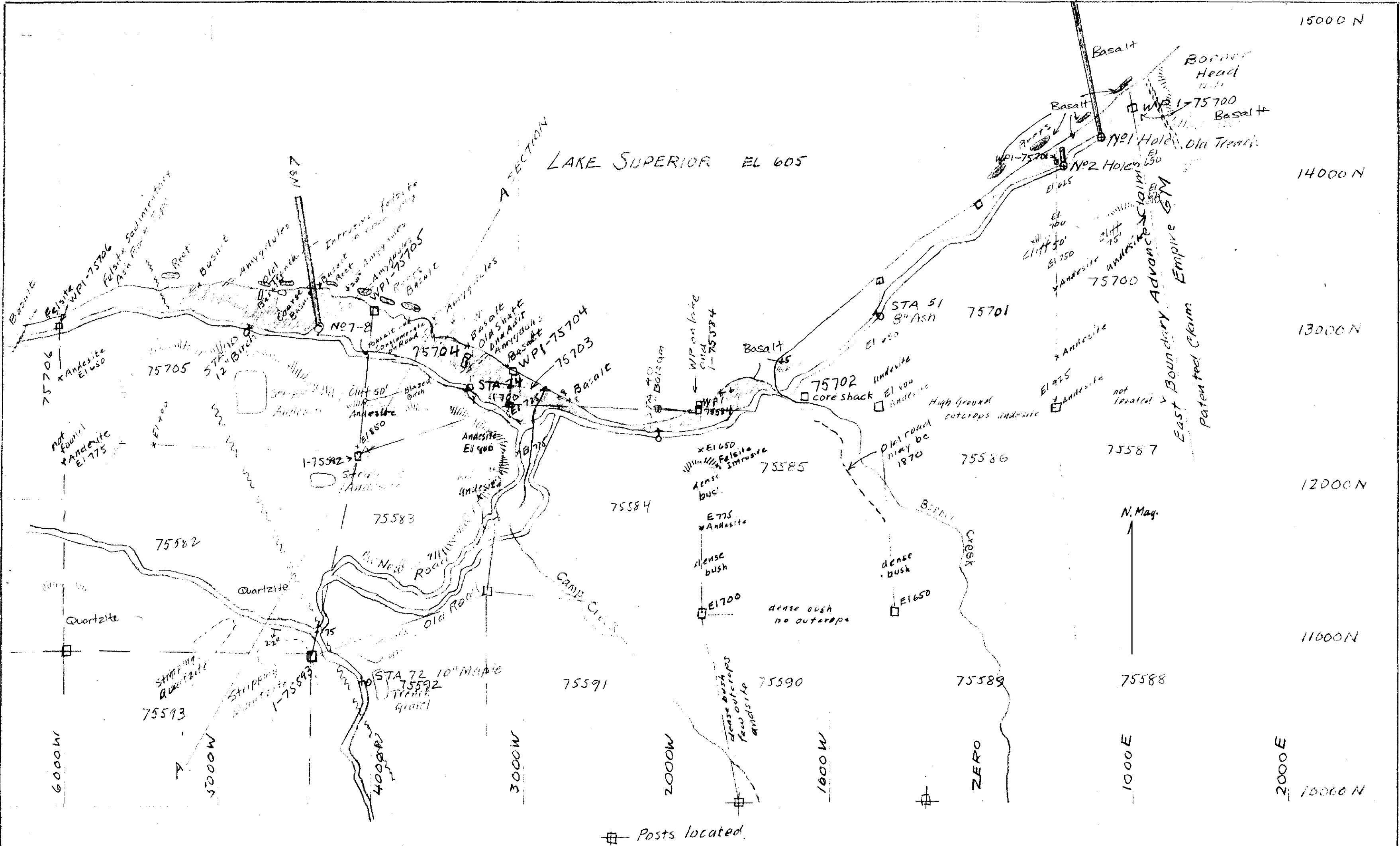
60 #1 May 0.41 % Ca S.W.  
 2 1 0.25 " S  
 8 0.53 " S

SHEET 1

sheet # 1  
 south of 2

41N/13SW-0016 #3





ADVANCE RED LAKE GOLD MINE LTD

SHEET NO 3

41N/13 SW-0016 #1 Scale 1" = 500'

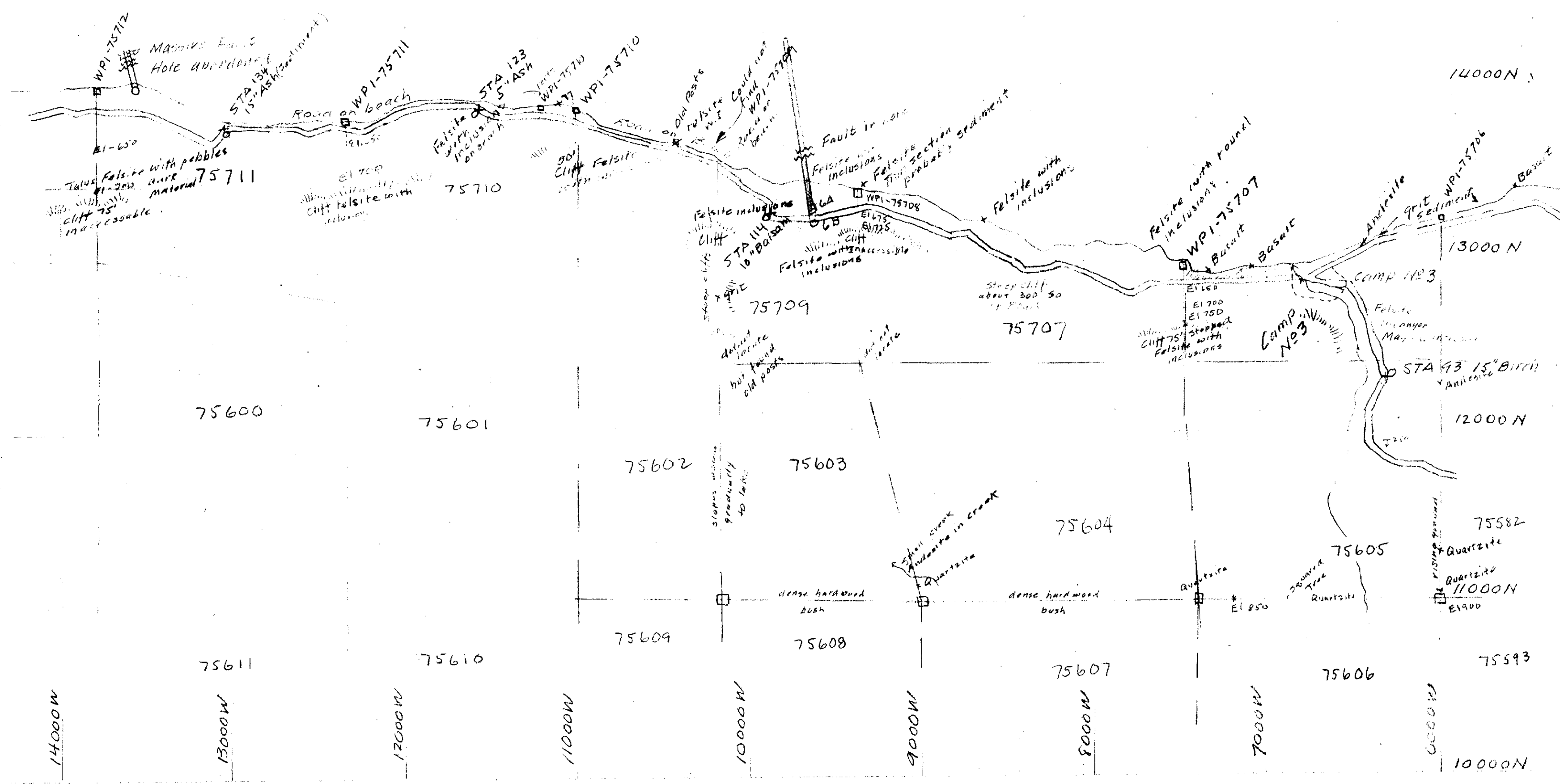
N.S.P. morn



41N13SW0005 41N13SW0016 MICHIPICOTEN ISLAND



LAKE SUPERIOR EL 605



□ Posts located

ADVANCE RED LAKE GOLD MINE LTD

SHEET No 4

Scale 1" = 500'

41N/13SW - 0016 #1

HSP/mem

