



December 13th, 1973.

The Honourable Ian Somers, Minister,
Department of Indian Affairs,
100 Queen's Park,
Toronto, Ontario.

OFFICE OF THE MINISTER
AFFAIRS, MINISTRY OF NATURAL RESOURCES

DEC 12 1973

Mr. Somers: Re: Exploration Assistance-Contract # 00-46

During this season we carried out the new work shown in red on the enclosed sketch map. In area "A" an existing trench was deepened a further two feet for a length of seventy feet. The top on all sides of this trench are well mineralized with chalcocite, pyrite and pyrochroite in a predominately quartz carbonate matrix. I believe that this trench should average better than 3% copper over its exposed length which is about 120 feet. The pit in area "B" was sunk to a depth of seven feet but did not reach bed-rock. In area "C" this trench showed minor pyrite and chalcocite. All of the above mentioned work was carried out on claim # T.61491 in Cynthia Township.

A 500 pound bulk sample believed to be representative and taken from all the pits and trenches shown on the enclosed sketch map was sent to the Dept. of Mines Energy & Resources, Mineral Processing Division, Ottawa and they are presently working out a flow sheet for this ore. To date I have not received their final report, however I'll enclose copies of the reports which I have received to date.

Due to a poorly planned road layout to our property, the contractor we had hired to strip the area and then drill and blast out the trenches was unable to get his Back-hoe and loader onto the ground. So, reluctantly we have had to abandon this part of the program till next spring.

THE WORK WHICH WE DID AS OUTLINED ABOVE RESULTED IN EXPENSES TOTALLING \$8,100.00 WHICH WAS EXPENDED AS FOLLOWS:

| | |
|---|-----------|
| Explosives, fuse, Gas, Oil, Supervision & Report preparation and miscellaneous expense. | \$600.00 |
| Drilling & Blasting - Wages | \$500.00 |
| Loading & Trenching - Wages | \$1000.00 |
| Total | \$2100.00 |

This new work has shown that the ore is continuing down and visual examination indicates it to be as good or better than the upper parts which lends encouragement to completion of the program as planned.

Since due to circumstances as they were we have been unable to expend the total of \$25,000.00. I am wondering, if the unexpended portion namely, \$22,900.00 could be appropriated to us from your 1974-75 budget or will it be necessary to apply for a new grant.

- Attached:
1. Claims Map
 2. Sketch Map
 3. Flotation Test Reports

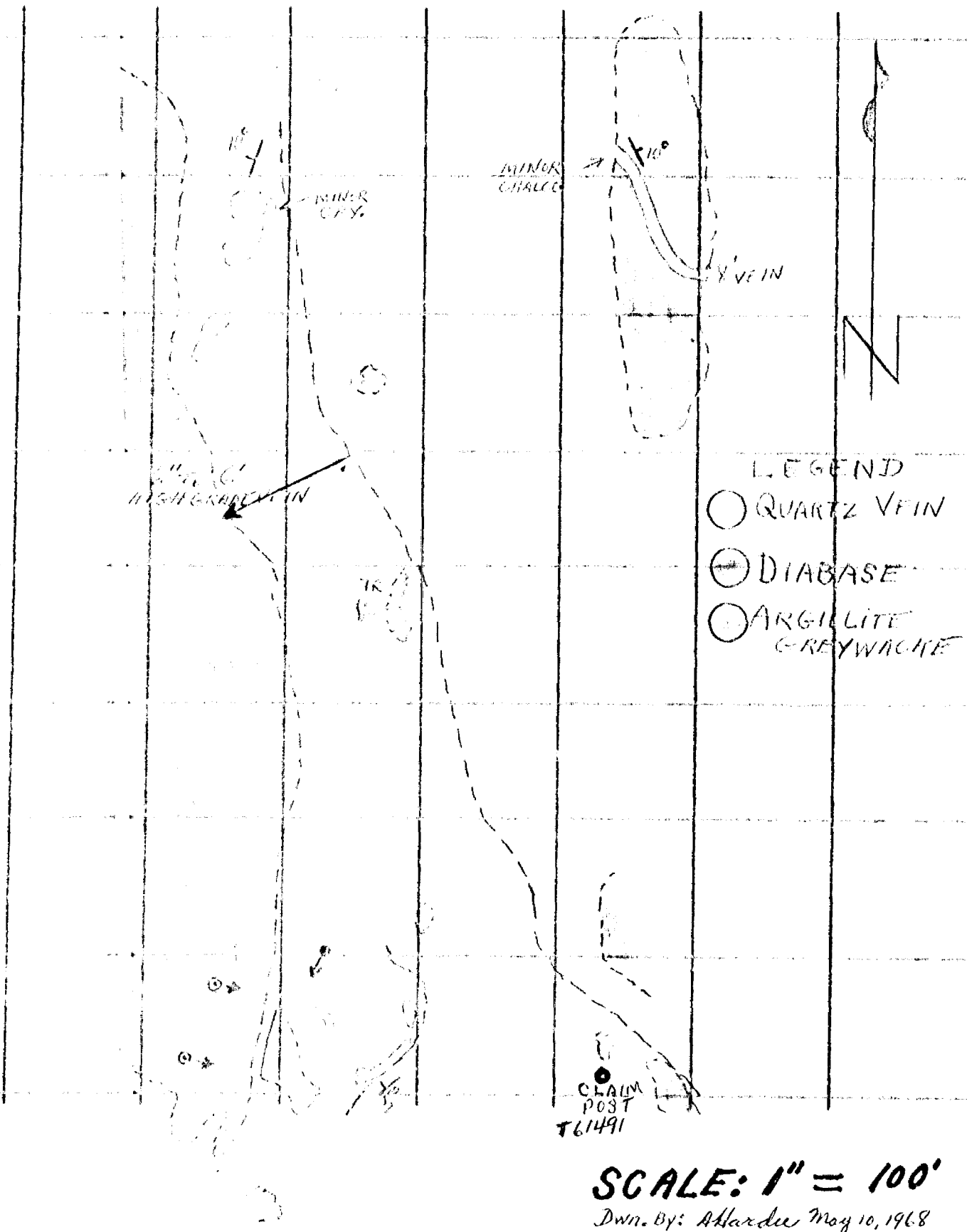
Thanking you kindly and compliments of the season,

Yours very truly,
Arnold A. Hardie
Arnold A. Hardie,
110 Samson Avenue,
Toronto, Ontario.

AS:ch
M.S.S.

CONTOUR MAP OF TOWN OF

Cynthio Swp. ALPINE DIST., Ontario.



MINES BRANCH FLOTATION TEST REPORT

| | | | |
|-----------------|--------------------------------|---|------------------|
| TEST NO. | 5 | SAMPLE: Cynthia Township Copper Ore: A. A. Hardie | DATE: 13-2-73 |
| OBJECT OF TEST: | Rougher flotation and cleaning | | CHARGE: 2000 gms |
| | | | TESTED BY: |

| OPERATION | Time min | % Solids | pH | Unit used | Reagents, lb per ton | | | | | | | | | | | | | | | |
|--------------|----------|----------|-----|----------------|----------------------|--------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | Z-6 | DF 250 | | | | | | | | | | | | | | |
| Grinding | 15 | 60 | | 12" Steel Mill | | | | | | | | | | | | | | | | |
| Conditioning | 5 | | 7.8 | 2000 g cell | 0.01 | | | | | | | | | | | | | | | |
| Ro Flotation | 4½ | | | " " | 0.03 | 0.054 | | | | | | | | | | | | | | |
| 1st Cleaner | 3.0 | | | 500 g cell | | | | | | | | | | | | | | | | |
| 2nd " | 2.0 | | | " " | | | | | | | | | | | | | | | | |
| 3rd " | 1½ | | | " " | | | | | | | | | | | | | | | | |

| PRODUCT | WT % | ANALYSIS % | | | | | DISTRIBUTION % | | | | |
|-------------------------------|-------|------------|------|-------|------|-------|----------------|-------|-------|-------|-------|
| | | Cu | Ni | Au | Ag | Fe | Cu | Ni | Au | Ag | Fe |
| Final Cu conc | 9.0 | 31.03 | 0.15 | 0.040 | 5.49 | 34.30 | 52.9 | 9.7 | 36.4 | 42.3 | 18.4 |
| 3rd Cl tail | 5.8 | 22.44 | 0.26 | 0.100 | 4.86 | 33.00 | 24.7 | 10.8 | 58.6 | 24.2 | 11.4 |
| 2nd Cl tail | 5.2 | 10.53 | 0.54 | 0.010 | 2.92 | 45.00 | 10.4 | 16.7 | 5.0 | 13.0 | 13.9 |
| 1st Cl tail | 4.0 | 3.31 | 0.48 | tr | 1.24 | 51.20 | 2.5 | 13.8 | - | 4.2 | 12.2 |
| Flot tailing | 76.0 | 0.66 | 0.09 | tr | 0.25 | 9.75 | 9.5 | 49.0 | - | 16.3 | 44.1 |
| Head (calcd) | 100.0 | 5.28 | 0.14 | .099 | 1.17 | 16.80 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Final Conc: 3rd + 2nd cl tail | 20.0 | 23.20 | | | | | 88.0 | | | | |

REMARKS: Z-6 - potassium amyl xanthate tr - trace amount
D F 250 - Dowfroth 250

MINES BRANCH FLOTATION TEST REPORT

| TEST NO. 6 | SAMPLE: Cynthia Township Copper Ore - A. A. Hardie | | | | | | DATE: 13-2-73 | | | | | | | | | |
|---|--|-------------|------|----------------|----------------------|-----------------|----------------|-------|-------|-------|------|--|--|--|--|--|
| OBJECT OF TEST: Repeat Test 5 - Regrind Ro conc and refloat and clean | | | | | | CHARGE: 2000 gm | | | | | | | | | | |
| | | | | | | TESTED BY: | | | | | | | | | | |
| OPERATION | Time min | % Solids | pH | Unit used | Reagents, lb per ton | | | | | | | | | | | |
| | | | | | Z-6 | DF 250 | | | | | | | | | | |
| Grinding | 15 | 60 | | 12" steel mill | | | | | | | | | | | | |
| Conditioning | 5 | | 7.75 | 2000 g cell | 0.01 | | | | | | | | | | | |
| Ro Flotation | 4½ | | | | 0.03 | 0.054 | | | | | | | | | | |
| Regrind | 10 | | | Steel Abbe | | | | | | | | | | | | |
| 1st cleaner | | | | 500 g cell | | | | | | | | | | | | |
| 2nd cleaner | | | | " " | | | | | | | | | | | | |
| 3rd cleaner | | | | " " | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| PRODUCT | WT % | ANALYSIS % | | | | | DISTRIBUTION % | | | | | | | | | |
| | | Cu | Ni | Au | Ag | Fe | Cu | Ni | Au | Ag | Fe | | | | | |
| Final cu conc | 6.2 | 30.93 | 0.12 | 0.06 | 6.04 | 33.70 | 40.0 | 4.9 | 42.0 | 31.9 | 11.4 | | | | | |
| 3rd reg cl tail | 2.4 | 25.39 | 0.22 | 0.025 | 5.33 | 36.25 | 12.7 | 3.4 | 6.8 | 10.9 | 4.7 | | | | | |
| 2nd " " " | 6.3 | 21.04 | 0.29 | 0.02 | 4.63 | 39.05 | 27.6 | 11.9 | 14.8 | 24.8 | 13.4 | | | | | |
| 1st " " " | 9.9 | 6.12 | 0.48 | 0.01 | 2.09 | 48.99 | 12.6 | 30.9 | 11.4 | 17.6 | 26.3 | | | | | |
| Flot tailing | 75.2 | 0.45 | 0.10 | 0.003 | 0.23 | 10.82 | 7.1 | 48.9 | 25.0 | 14.8 | 44.2 | | | | | |
| Head (calc.) | 100.0 | 4.80 | 0.15 | 0.09 | 1.17 | 18.41 | 100.0 | 100.0 | 100.0 | 100.0 | | | | | | |
| Final conc +3rd+2nd cl tail | 14.9 | 25.86 | | | | | 80.3 | | | | | | | | | |
| REMARKS: -6 - potassium amyl xanthate DF 250 - Dowfroth 250 | | | | | | | | | | | | | | | | |

MINES BRANCH FLOTATION TEST REPORT

| TEST NO. | SAMPLE: Cynthia Township Copper Ore A. A. Hardie. | | | | | | DATE: 15-2-73 | | | | | | | | | | | |
|-------------------------------|--|-------------|------|----------------|----------------------|--------|-----------------|----------------|-------|-------|--|------------|--|--|--|--|--|--|
| OBJECT OF TEST: | Cell aeration - Ro flotation - Scavenger flotation | | | | | | CHARGE: 2000 gm | | | | | | | | | | | |
| | | | | | | | | | | | | TESTED BY: | | | | | | |
| OPERATION | Time min | % Solids | pH | Unit used | Reagents, lb per ton | | | | | | | | | | | | | |
| | | | | | Z-6 | DF 250 | | | | | | | | | | | | |
| Grinding | 15 | 60 | | 12" steel mill | | | | | | | | | | | | | | |
| Aeration | 20 | | 7.8 | 2000 g cell | | | | | | | | | | | | | | |
| Conditioning | 5 | | 8.0 | " " | 0.02 | | | | | | | | | | | | | |
| Ro flotation | 3½ | | | | 0.01 | 0.036 | | | | | | | | | | | | |
| Scav. flotation | 3 | | | " " | 0.03 | 0.018 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| PRODUCT | WT % | ANALYSIS % | | | | | | DISTRIBUTION % | | | | | | | | | | |
| | | Cu | Ni | Fe | | | | Cu | Ni | Fe | | | | | | | | |
| Copper concentrate | 18.7 | 23.16 | 0.27 | 38.55 | | | | 81.5 | 31.9 | 39.7 | | | | | | | | |
| Scavenger " | 14.9 | 5.73 | 0.50 | 50.71 | | | | 16.1 | 47.1 | 41.6 | | | | | | | | |
| Flotation tail | 66.4 | 0.19 | 0.05 | 5.11 | | | | 2.4 | 21.0 | 18.7 | | | | | | | | |
| Head (calcd) | 100.0 | 5.31 | 0.16 | 18.15 | | | | 100.0 | 100.0 | 100.0 | | | | | | | | |
| REMARKS: | | | | | | | | | | | | | | | | | | |
| Z-6 - potassium amyl xanthate | | | | | | | | | | | | | | | | | | |
| DF 250 - Dowfroth 250 | | | | | | | | | | | | | | | | | | |

MINES BRANCH FLOTATION TEST REPORT

| | | |
|---|---|-----------------|
| TEST NO. { | SAMPLE: Cynthia Township Copper ore: A. A. Hardie | DATE: 16-2-73 |
| OBJECT OF TEST: Pachuca aeration - incremental flot conc. | | CHARGE: 2000 gm |
| | | TESTED BY: |

| OPERATION | Time min | % Solids | pH | Unit used | Reagents, lb per ton | | | | | | | | | |
|-----------------|-------------|-------------|----|----------------|----------------------|--------|-------|--|--|--|--|--|--|--|
| | | | | | Z-6 | DF 250 | | | | | | | | |
| Grinding | 15 | 60 | | 12" steel mill | | | | | | | | | | |
| Aeration | 20 | | | pachuca | | | | | | | | | | |
| Conditioning | 5 | | | 2000 g cell | 0.02 | | | | | | | | | |
| Flot conc No. 1 | ½ | | | " " | | 0.018 | | | | | | | | |
| No 2 | ½ | | | | | | | | | | | | | |
| No 3 | ½ | | | | | | | | | | | | | |
| No 4 | 1 | | | | | 0.01 | 0.018 | | | | | | | |
| No 5 | 1 | | | | | | | | | | | | | |
| No 6 | 1½ | | | | | 0.01 | 0.018 | | | | | | | |
| No 7 | 1½ | | | | | 0.01 | 0.018 | | | | | | | |

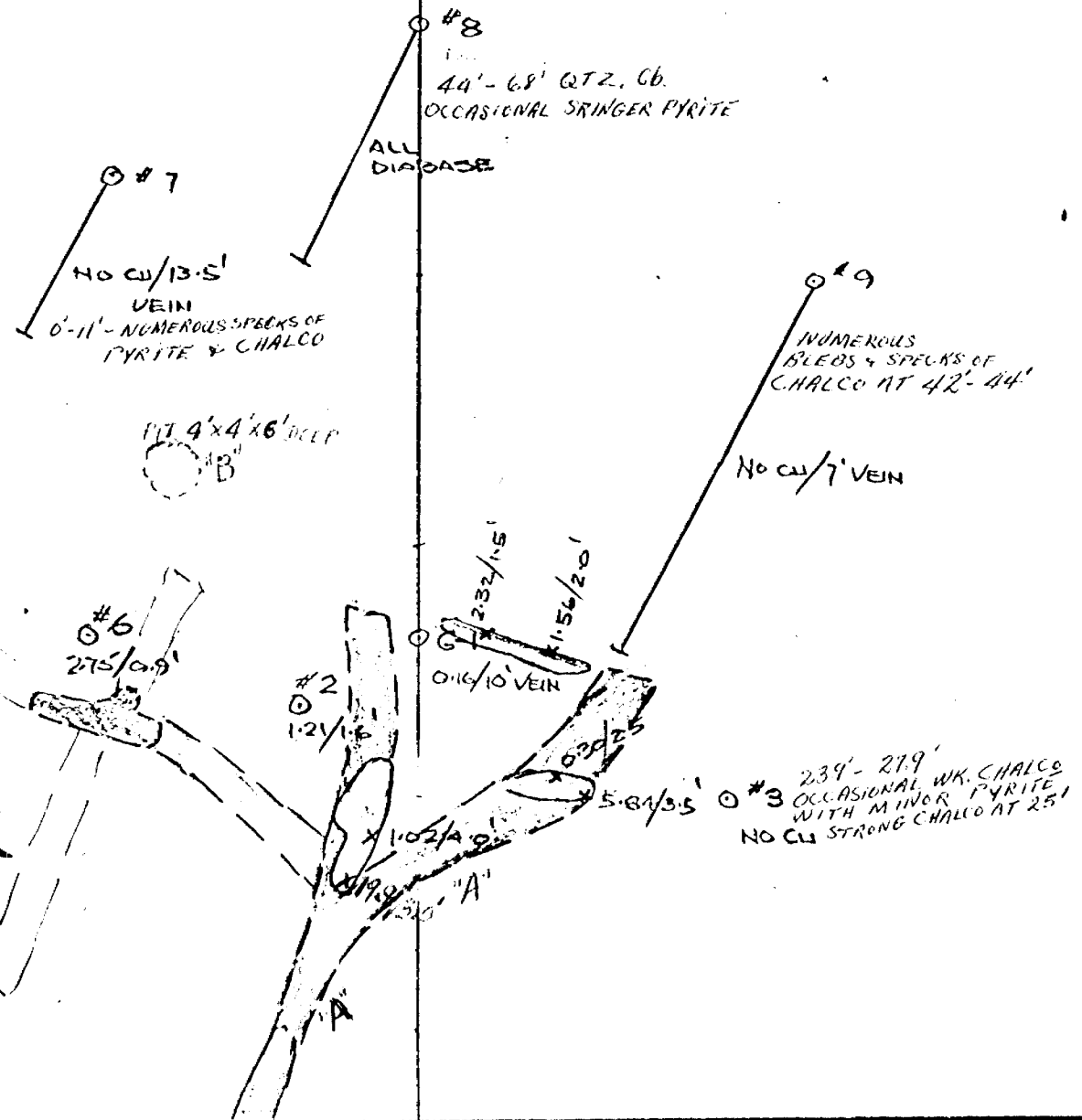
| PRODUCT | WT % | ANALYSIS % | | | | | | DISTRIBUTION % | | | |
|-----------------------|---------|------------|------|-------|--|--|--|----------------|--------|-------|--|
| | | Cu | Ni | Fe | | | | Cu | Ni | Fe | |
| Flotation Conc. No. 1 | 6.6 | 33.70 | 0.10 | 31.64 | | | | 41.1 | 4.4 | 11.7 | |
| " " 2 | 3.9 | 33.20 | 0.12 | 32.54 | | | | 23.9 | 3.1 | 7.1 | |
| " " 3 | 3.3 | 30.05 | 0.20 | 34.29 | | | | 18.3 | 4.4 | 6.3 | |
| " " 4 | 6.4 | 8.42 | 0.49 | 47.23 | | | | 10.0 | 20.8 | 16.9 | |
| " " 5 | 3.1 | 4.58 | 0.53 | 50.51 | | | | 2.6 | 10.9 | 8.8 | |
| " " 6 | 6.9 | 1.29 | 0.54 | 54.37 | | | | 1.6 | 24.7 | 21.0 | |
| " " 7 | 4.1 | 1.16 | 0.53 | 54.32 | | | | 0.9 | 14.4 | 12.4 | |
| Flot Tailings | 65.7 | 0.13 | 0.04 | 4.31 | | | | 1.6 | 17.3 | 15.8 | |
| Head (calc) | 100.0 | 5.41 | 0.15 | 17.89 | | | | 100.0 | 100.00 | 100.0 | |

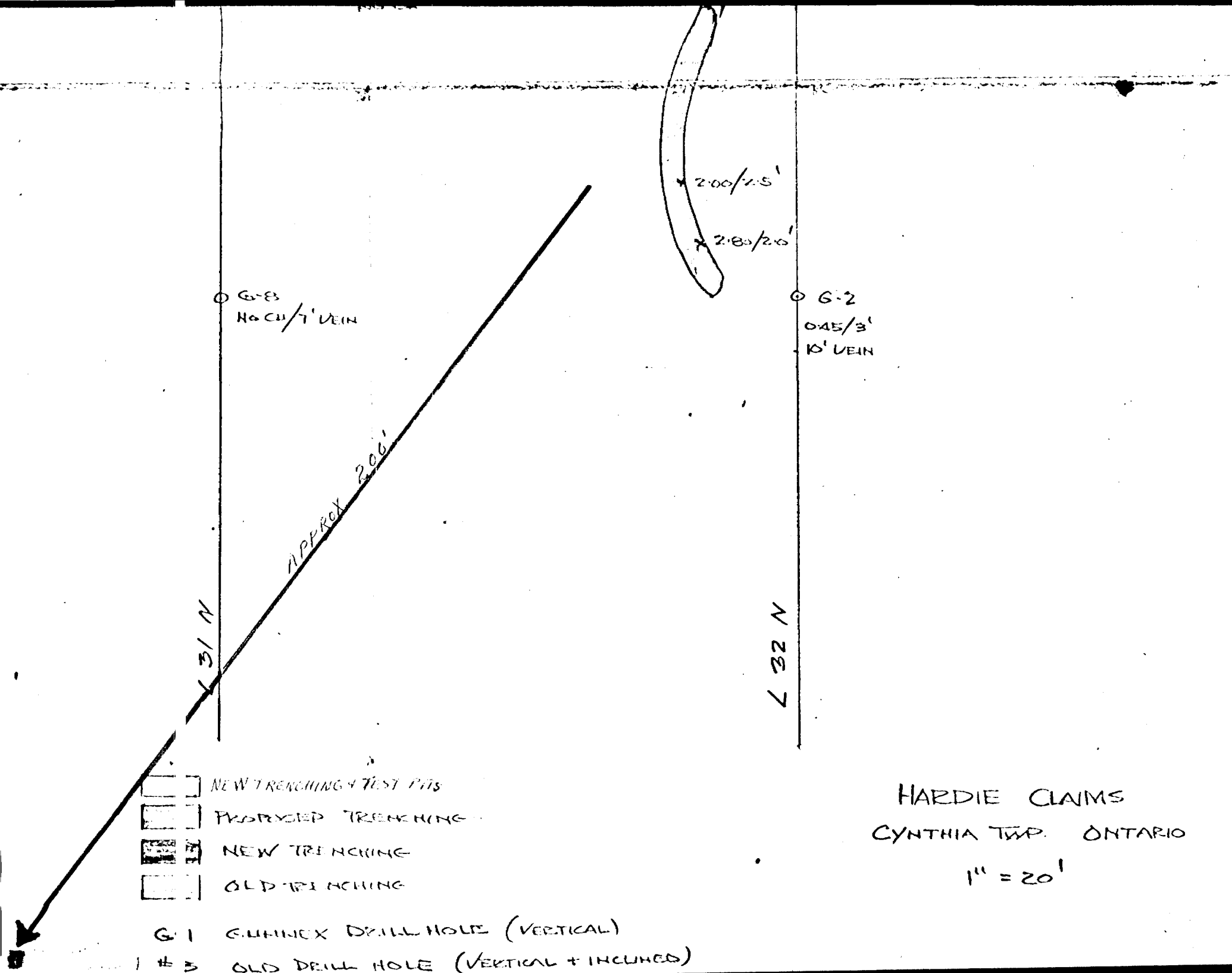
REMARKS: Z-6 - potassium amyl xanthate
 DF 250 - Dowfroth 250.

(#5
LO 1/A VEIN

5' suggested
additional new trending

#4
NO CU







Department of Energy, Mines
 Ministère de l'Énergie, des Mi
 MINERAL PROCESSING DIVISION



41P01NF 0004 63.3410 CYNTHIA

900

N° à rappeler

40 Lydia St.
 Ottawa, Ont.
 K1A 0G1

May 15, 1973.

Mr. Arnold Hardie,
 111 Samson Avenue,
 Toronto 6,
 Ontario.

Dear Mr. Hardie:

Re: Cynthia Township Copper Prospect

Since my last report to you I have been heavily engaged in work, preparatory to my spending seventeen days in England. Now home I shall be able to devote my full attention to the completion of the investigation on the sample of ore from your copper prospect. Some additional work was done, the results of which you have not yet received. These tests are appended to this report.

This rather high grade copper ore is amenable to concentration by flotation. At a grind of about 65% minus 200 mesh, a high grade copper concentrate with a high recovery can be obtained. For instance in Test No. 8 the first four concentrates combined to give a product assaying 24.99% Cu with a recovery of 93.3%. This result was obtained after 20 minutes of aeration in a pachuca and a rougher flotation time of 2½ minutes.

It is now proposed that this test be followed by tests using Z-200 as the collector at neutral and high pH in an attempt to decrease the iron in the final concentrate. Magnetic separation tests on the concentrate will also be tried.

Yours very truly,

T. F. Berry,
 Non Ferrous Minerals Section.

FB/cb
 ncls.

3-6-5/100/0
 100/0

Received by
 Date
 To
 On

Received by
 Date

For the purpose of this test, a sample of ore was obtained from the Progress Report of the 1947-48 season. The sample was crushed and one in which a copper to lead concentrate was obtained. The results were as follows:

Table 1

| Product | Assay | Grade | Composition | | Distribution % | | | | |
|-----------------------|-------|-------|-------------|-------|----------------|-------|-------|-------|-------|
| | | | Cu | Pb | Cu | Pb | Ag | Zn | As |
| Copper to concentrate | 15.2 | 11.5 | 95.3 | 4.7 | 95.3 | 55.9 | 50.9 | 100.0 | 81.9 |
| Copper to concentrate | 4.9 | 18.5 | 64.3 | 35.7 | 4.9 | 64.3 | 49.2 | - | 18.5 |
| Lead (entire) | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

The results of the test show that after 20 minutes of flotation time the copper to lead concentrate obtained in the previous tests that the copper to lead concentrate obtained in this test is a high concentrate of copper to lead concentrate.

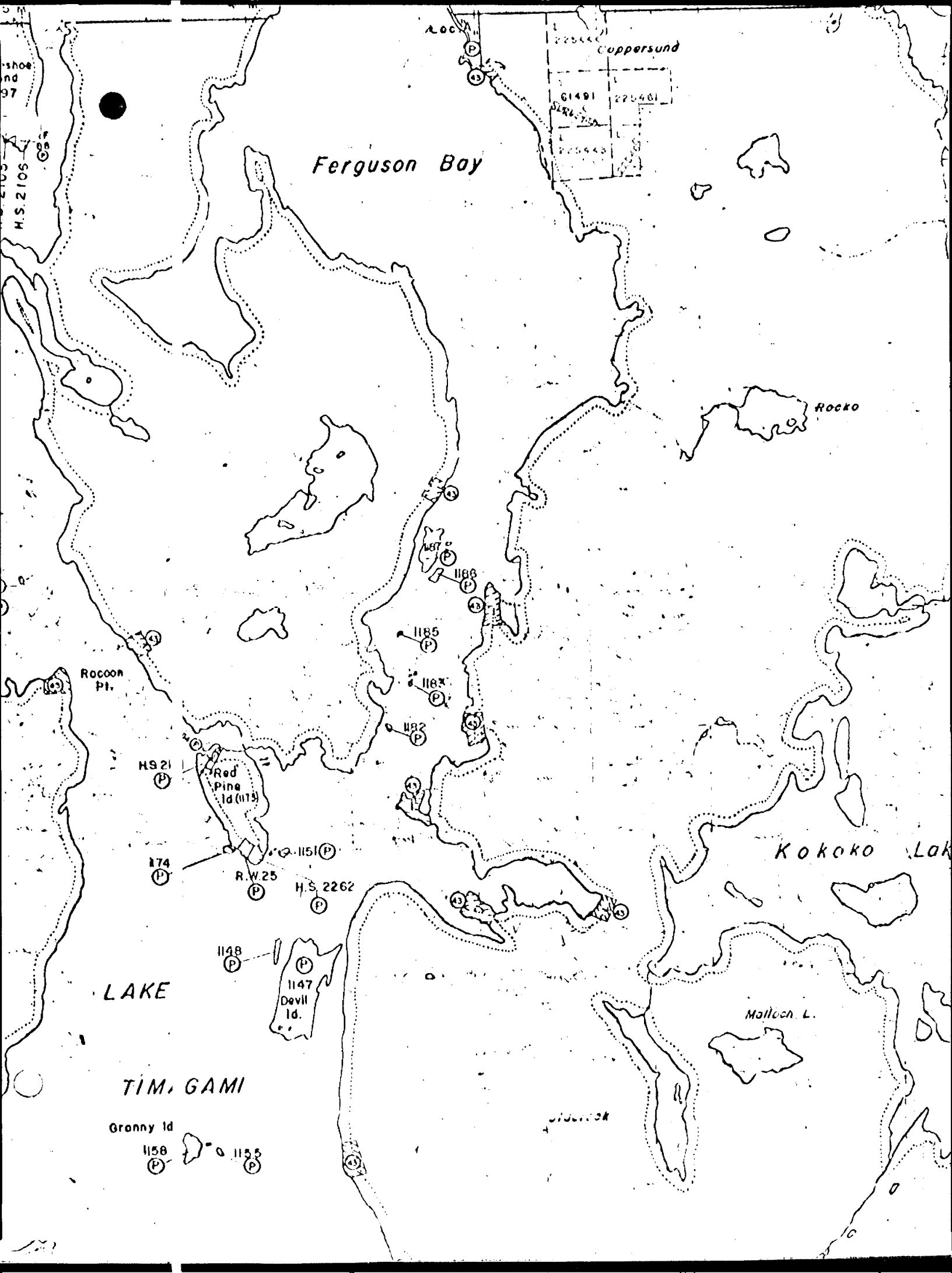
The results of the test show that this is essentially a copper ore concentrate. The results of the test show that these latter two elements are highly concentrated in the concentrate.

The results of the test show that the results of this test are entirely satisfactory. The results of the test show that the results of this test are entirely satisfactory. The results of the test show that the results of this test are entirely satisfactory.

The results of the test show that the results of this test will be sent to you as soon as possible.

Yours truly,

W. J.
 100/0
 100/0
 100/0
 100/0



Ferguson Bay

Coppersund

Rocco

Kokoko Lak

Malloch L.

LAKE

TIM, GAMI

Granny Id

1158 (P)

1155 (P)

HS 21 (P)

174 (P)

1148 (P)

H.S. 2262 (P)

1151 (P)

1182 (P)

1183 (P)

1185 (P)

1188 (P)

1187 (P)

1155 (P)

shoe
nd
97

H.S. 2106

A.O.C.

61491

225461

225443

2103

CS