42A01SE0053 OP92-122 OTTO



# REPORT ON THE OTTO TOWNSHIP PROPERTY
# LARDER LAKE MINING DIVISION
# FOR
# FERNAND RIVARD

S.J. Carmichael Consultants
Kirkland Lake, Ontario

Nov. 25, 1992
NTS 42/SE
OPAP # OP92-122

42A01SE0053 OP92-122 OTTO



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## SUMMARY

*This report on the Otto Township property has been prepared by S.J. Carmichael, B.Sc., FGAC at the request of Fernand Rivard, 876 Government Rd. West, Kirkland Lake, Ontario. This report is intended to complete the OPAP reporting obligations, of which Mr. Rivard has applied for, and been accepted for a total sum of $10,000.00 (ten thousand dollars). Mr. Rivard's OPAP grant number is OP92-122. The grant was approved in June, 1992. A second grant was awarded to Mr. Rivard's partner, (50-50%) for an additional $10,000.00, the results of which were covered in a previous report dated Sept. 1, 1992 and covered an initial program of geophysics and diamond drilling. (OP92-123)*

*This report will also be submitted to the Ministry of Northern Development and Mines for assessment credits.*

*The property comprises ten contiguous staked claims with a total area of 400 acres. The claims are located in the north-central portion of Otto Township, District of Timiskaming, Larder Lake Mining Division, approximately six kilometres west of Kirkland Lake and two kilometres south of the town of Swastika.*

*Previous work on the claims includes that by Chavigny Gold Mines Limited (1948) who completed 3 diamond drill holes. Since then, the claims have been worked by Mr. Rivard who has completed two diamond drill holes and power stripping in 1989-1990.*

*In 1991, Mr. Rivard completed ground magnetometer, VLF-EM and geological mapping under the guidance of S.J. Carmichael Consultants. This work was also completed under an OPAP grant.*

*This years program included a preliminary program of an advanced Multi frequency EM survey termed Maxi-Probe and the drilling of three drill holes. This preliminary program has already been completed and submitted with approval from OPAP.*

*A second phase of work covered in this report includes the drilling of one hole totalling 139.6m as a follow-up to a 1989 drill hole which intersected 0.107 oz/ton Au over 3.97m which appeared to have a corresponding weak Maxi Probe anomaly.*

*Results from this drill hole were disappointing in that no anomalous mineralization was encountered. Either the assay results from hole OT-89-1 were false due to contamination or the mineralization was due to a north-south striking structure which was missed in drill hole OT4-92. Because the lithologies between the two holes are quite different, and the extension of a mapped north-northeast structure would intersect OT-89-1, the latter explanation is a possibility.*

*One additional drill hole is required to test a possible north-south structure and a number of moderate to strong Maxi Probe anomalies remain to be tested.*

*The total expenditures incurred during this phase of diamond drilling is $13,226.50.*

# Report on the Otto Township Property
# Larder Lake Mining Division
# for
# Fernand Rivard

## INTRODUCTION

This report on Fernand Rivard's Otto Township mining exploration property has been prepared by S.J. Carmichael at the request of Mr. Rivard. It is an assessment of recent exploration completed on the property and is intended to fulfil both OPAP and assessment requirements.

Information on the property is derived from the records of the Ministry of Northern Development and Mines and publications by the Ontario Geological Survey. The author of this report supervised the following drilling program. All work on the claims was performed between and August 15 and October 20, 1992.

## PROPERTY LOCATION ACCESS AND FACILITIES

The Rivard claim group is located in the north central portion of Otto Township (NTS 41A/SE), District of Timiskaming and within the Larder Lake Mining Division, approximately six kilometres west of Kirkland Lake. Access to the property is through Culver Park, located immediately west of the town of Swastika. A narrow trail, reconditioned by Mr. Rivard leads southeast a distance of two kilometres to the claims. The Blanche River flows through the south portion of the group and a beaver pond located in the middle of the property provides an ample water supply for diamond drilling.

## TOPOGRAPHY

The north section of the group is covered by rocky bedrock

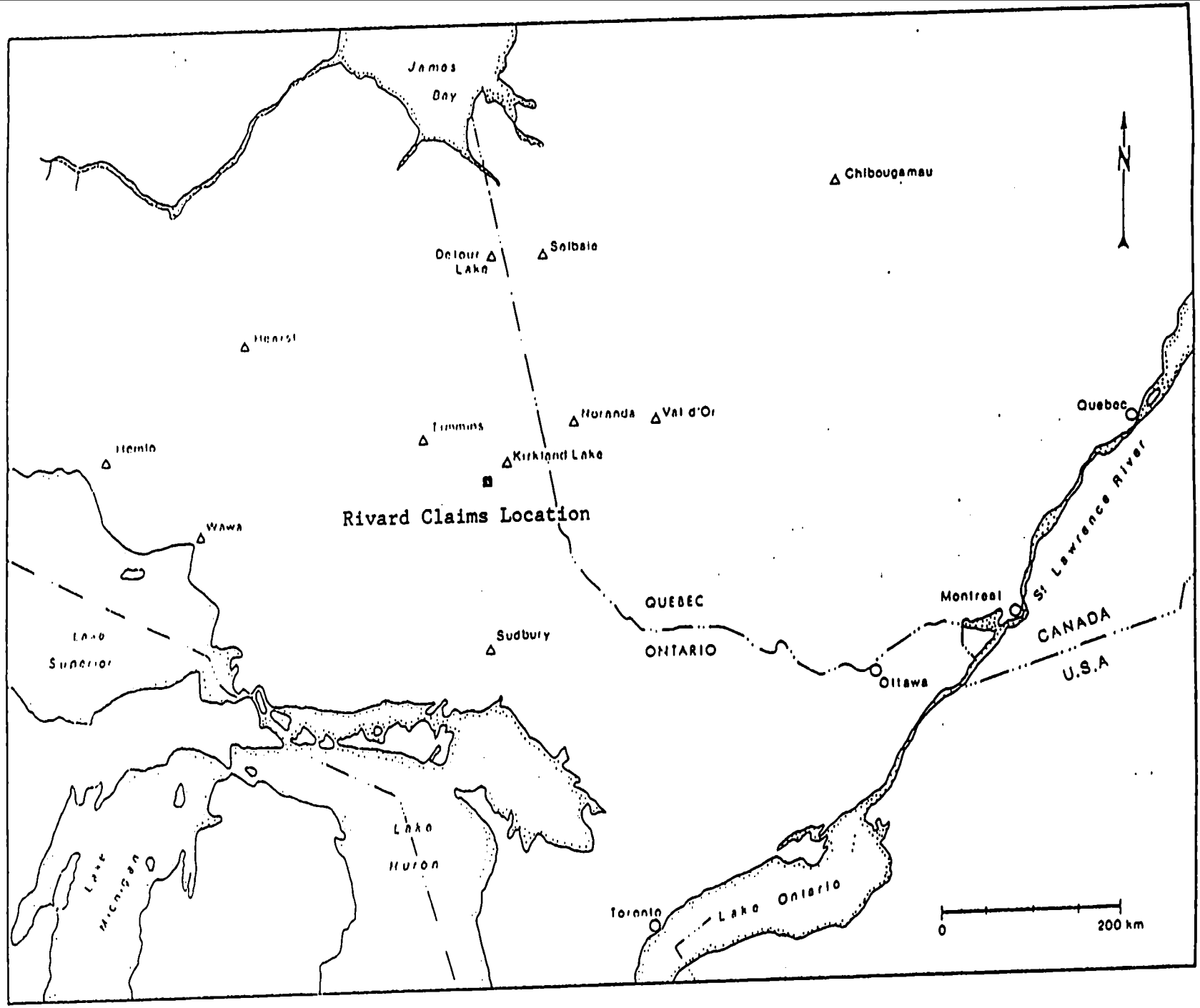



Figure 1 General Location Plan

exposures with a 200' south-facing cliff located just north of the baseline. The central portion is covered by lacustrine clay deposits cut by several deep ravines. These ravines were dry in the fall but may be active with running creeks during spring run off. Bedrock exposure occurs over the south portion towards the Blanche River. Murdock Creek empties into the Blanche River at the east boundary of the claims. The Maxi-Probe survey indicated that the overburden is generally less than thirty feet in depth over the entire property.

## LAND TENURE AND OWNERSHIP

The Otto Township property comprises 10 staked contiguous unsurveyed mining claims with a total area of approximately 400 acres. The claim numbers, recorded dates and applied assessment credits are listed in the following table:

| CLAIM NUMBER | RECORDED DATE | APPLIED CREDITS | COMMENTS |
|---|---|---|---|
| L-982689 | August 4, 1987 | $3480.00 | Requires $400.00 by August 4, 1996 |
| L-982690 | August 4, 1987 | $3400.00 | Requires $400.00 by August 4, 1996 |
| L-982691 | August 4, 1987 | $3480.00 | Requires $400.00 by August 4, 1996 |
| L-982692 | August 4, 1987 | $3400.00 | Requires $400.00 by August 4, 1996 |
| L-982693 | August 4, 1987 | $3400.00 | Requires $400.00 by August 4, 1996 |
| L-982694 | August 4, 1987 | $3572.00 | Requires $400.00 by August 4, 1997 |
| L-982695 | August 4, 1987 | $3400.00 | Requires $400.00 by August 4, 1996 |
| L-982696 | August 4, 1987 | $3400.00 | Requires $400.00 by August 4, 1996 |
| L-982697 | August 10, 1987 | $3400.00 | Requires $400.00 by August 4, 1996 |
| L-982698 | August 10, 1987 | $3400.00 | Requires $400.00 by August 4, 1996 |

All claims are in good standing until 1996. The programs completed under this year's OPAP programs should maintain the claims until 2001.

## PROPERTY HISTORY

The first government map published covering the present Rivard group was by J. Thomson, 1948 titled Geology of Teck Township and the Kenogami Lake Area, map No. 1946-1. The area was mapped again in 1967-68 by H. Lovell (Map No. 2239 - Eby-Otto Area). Lovell

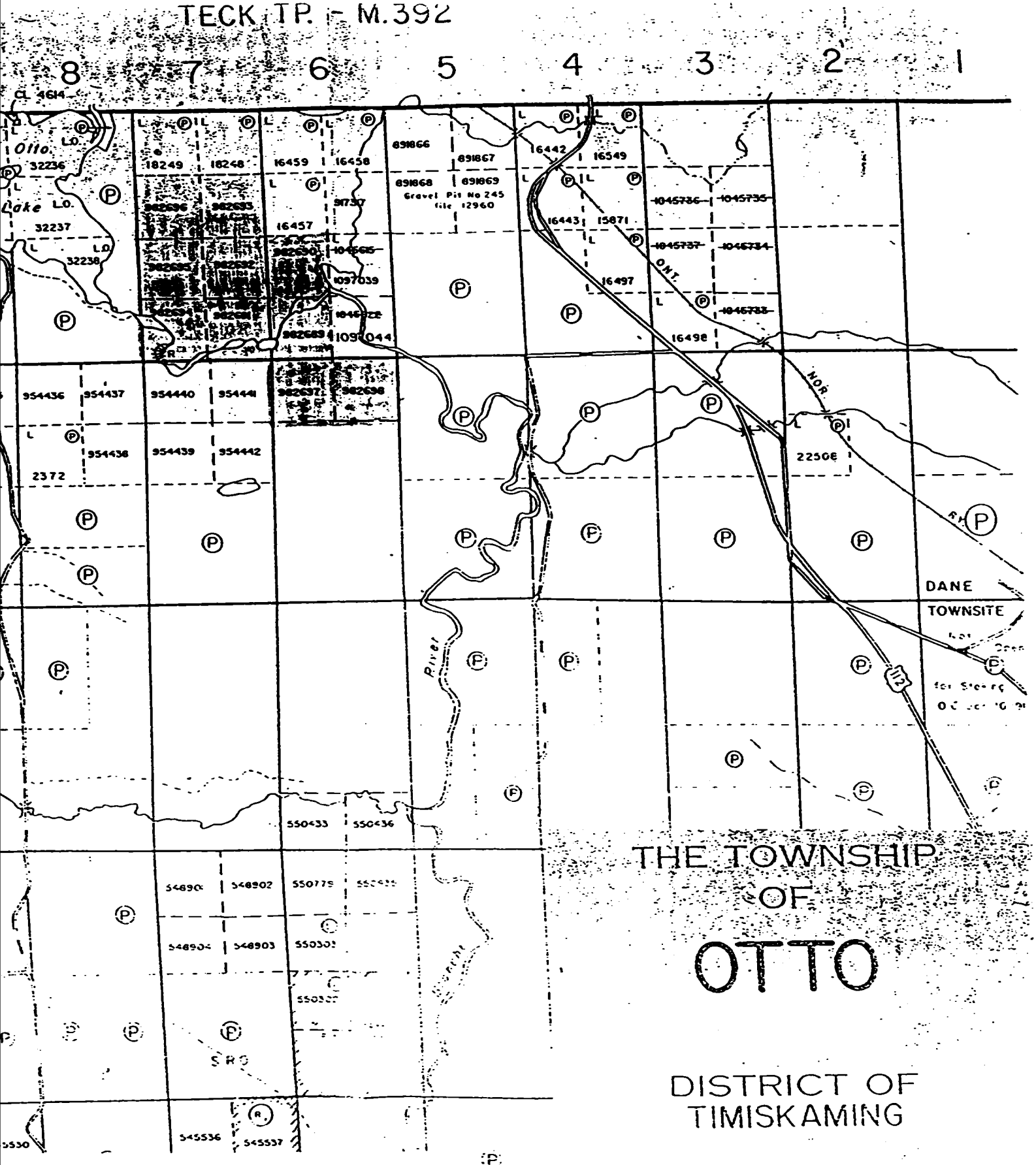



Figure 2

Claim Location Plan 1"=1/2 Mile

reported the outcrops to be basalt to andesite in composition with two northeast tending faults passing through the present claims. Further mapping by L.S. Jenson was completed in the late 1980's but never published.

Exploration on the claims has been limited in the past. The only recorded work was by Chavigny Gold Mines Limited which completed three diamond drill holes. The first two were completed on present claim 982690 in July of 1948. The first hole was drilled at a dip of -80 deg. and a southwest azimuth. Altered greenstone was intersected throughout with alteration and shearing intersected from 403.8 to 407.0'. A fault was also intersected at 638.0' and widespread narrow carbonate stringers were intersected to the end of the hole which was drilled to a depth of 1043 feet. An assay of 0.04 oz/ton Au was reported from this hole in rusty altered greenstone from 202.0 to 202.5'. The second hole, drilled at a -70 deg. dip and an azimuth of 250 deg. reached a depth of 945' with negligible results. A third hole was drilled on present claim 982694 intersected a major fault with a sludge assay of 0.02 oz/ton Au from 230.0 to 237.5'. Details from this hole are lacking. All collars from the Chavigny drilling were located during the 1991 geological mapping program. The property remained dormant until being staked by Rivard in 1987. Rivard completed one drill hole (EX) in 1989 (OT-89-1) at 0+75E, 0+50S, close to the first two Chavigny holes. The Rivard hole intersected mixed komatiitic to tholeiitic flows and returned an assay on 0.107 oz/ton Au over 13.0'. Core recovery from this section was poor and the sample was

from a composite chip sample. This assay could not be reproduced from the remaining core leading to some question to its validity. Rivard also completed some stripping and washing in the area of 0+00, 4+00S which uncovered a series of faults, shears and interflow graphitic/carbonaceous sediments. No significant gold assays were found. In 1990, Rivard completed an additional drill hole located at 7+50W, 3+75S. No significant gold assays were reported from this hole.

Earlier this summer, Rivard completed three drill holes (OT1-92, OT2-92, OT3-92) which tested two Maxi Probe anomalies under OPAP grant OP92-123.

Other projects active in the immediate area include those by Golden Crescent Resources, HSK Minerals, Jomi Minerals and Battle Mountain Gold. Previous producers in the area include the Golden Gate and Swastika Mines.

**REGIONAL GEOLOGY**

The Rivard claims are underlain by Archean meta-volcanics and sediments of the Larder Lake Group and close to, and perhaps part of the Skead Group. The prominent cliffs and ridges over the north half of the property are comprised of basaltic komatiite flows of the Larder Lake Group. To the south the volcanic chemistry changes to a tholeiitic to calk-alkalic, or a transitional change from the Larder Lake to Skead Group.

The Larder Lake Fault zone passes within 2 kilometres north of the Rivard claims.

**PROPERTY GEOLOGY**

Geological mapping of the Rivard claims was completed at a scale of 1:2500 Metric on grid lines cut at 100 m centres. The grid was cut on claims north of the Blanche River as the airborne INPUT survey indicated anomalies in this area. The mapping was completed in 1991.

Three distinct lithologies were mapped during the program. This include a massive to spinifex textured basaltic komatiite flows of the Larder Lake Group, transitional tholeiitic to calc-alkaline basalt, possibly part of the Skead Group and an intermediate diorite intrusive plug. Late diabase dikes cut all of the above lithologies. Stratigraphic indicators such as pillow tops and sedimentary bedding were poorly developed or absent from the property, however the volcanic stratigraphy appears to strike 100-120 deg. with a steep north dip. Late east-west trending mafic dikes, possibly diabase, were mapped just above the cliff face and within basaltic komatiite.

## 1992 EXPLORATION PROGRAM

**SUMMARY**

The 1992 exploration program on the Rivard claims included a total of 3.5 km of Maxi-Probe EM surveying followed by diamond drilling. Two Maxi-Probe anomalies were tested with three holes; two of which were completed for a total of 212m with one hole abandoned due to blocky ground at 13.7m. These holes were completed under OPAP grant OP92-123. (Phil Rivard) Both holes were located on line 7+00W on the west section of the property. One additional hole, OP4-92 was

completed under Fernand Rivard's OPAP grant (this report) which was a follow up hole to DDH OT-89-1.

A) Diamond Drilling

In 1989, Rivard drilled one hole OT-89-1. This hole was logged by O.D.M. geologist H. Lovell and intersected mixed basaltic komatiite and Mg-tholeiitic basalt. An assay of 0.107 oz/ton Au over 13.0' was returned from a section of broken core and chips from 399.0-412.0'. A check assay from the remaining core returned negligible gold. DDH OT4-92 drilled under Mr. Rivard's OPAP was intended to reproduce this intersection using a larger core diameter and hopefully better core recovery. The mineralized intersection from OT-89-1 also appeared to have an associated weak east-west trending Maxi Probe anomaly.

The location of drill hole OT4-92 is as follows:

| Hole No. | Lat. | Long. | Dip | Az. | Depth |
|---|---|---|---|---|---|
| OT4-92 | 0+50S | 1+00E | -45 deg. | 180 deg. | 139.63m |

This hole intersected basalt which is probably Mg-tholeiite in composition. One short section of basaltic komatiite was intersected from 125.91-131.25m. By contrast, drill hole OT-89-1, drilled 25m west and obliquely to section 1+00E intersected 50% by volume basaltic komatiite with spinifex texture. No spinifex textured flows were observed in OT4-92.

All core which exhibited quartz/hematite stringers (thought to be a host for the intersection in OT-89-1) was split and assayed, however, only nil gold values were returned.

If the litholgies intersected in OT-89-1 and OT4-92 were identical,

the assay in OT-89-1 may have attributed to contamination. However, because the lithologies between the two holes are remarkably different, the mineralization may have been caused by a north-northeast trending structure with a westerly dip not intersected in OT4-92. It should be noted that geological mapping identified a number of north-northeast trending faults with associated carbonate alteration. In fact, a projection of the N-26 deg. E striking fault located at 0+25W, 4+25S intersects exactly with the location of the gold assay in OT-89-1.

B) Conclusions and Recommendations

Drill hole OT4-92 failed to reproduce or intersect gold mineralization intersected in DDH OT-89-1. If the mineralization in OT-89-1 is associated with a north-northeast structure, DDH OT4-92 would have failed to have intersected such a structure.

Diamond drilling is recommended to test the above hypothesis. In addition, similar north-south striking structures could be tested as well as a number of moderate to strong Maxi Probe anomalies.

Respectfully Submitted

S. J. Carmichael

S.J. Carmichael, B.Sc., FGAC

GEOLOGICAL ASSOCIATION OF CANADA
FELLOW

Appendix A

## CERTIFICATE OF QUALIFICATIONS

I, Stewart J. Carmichael, of the Town of Kirkland Lake, in the District of Timiskaming, in the Province of Ontario, Canada, do hereby certify that:

1) I am a consulting geologist with address 42 Rand Avenue East Kirkland Lake, Ontario, P2N 1X1.

2) I am a graduate of McMaster University, Hamilton, Ontario, having received the degree of Bachelor of Science, Geology from the Faculty of Science in 1982. I have since practised in the field of mineral exploration continuously since graduation.

3) I am a Fellow of the Geological Association of Canada.

4) I have no direct interest, nor do I expect to receive any interest in the Rivard claims.

5) In addition to my personal knowledge of the area, I have made use of the records of the Ministry of Natural Resources of Ontario, and of Mr. Rivard's records in the preparation of this report.

Dated this 25 day of November, 1992

Stewart J. Carmichael

Stewart J. Carmichael, B.Sc., FGAC

*Appendix B*

## ***LIST OF EXPENDITURES***

***A) DIRECT COSTS***

| | |
|---|---|
| *1) Labour, 76 days at $100.00/day* | *$7,600.00* |
| *2) Helper* | *760.00* |
| *3) Geological Consultant)* | *500.00* |
| *5) Assays* | *226.46* |
| *6) Fuel* | *1,261.88* |
| *7) Drill Equipment* | *1,621.58* |
| *8) Repairs* | *1,049.12* |
| *9) Supplies* | *207.46* |
| *Total* | *$13,226.50* |

# *Appendix C*

## *DIAMOND DRILL LOG*

FERN RIVARD GPAP

DIAMOND DRILL RECORD



HOLE NO.: DT4-92

Co-ords -50.0 N 100.0 E

Azimuth: 180.0

Dip: -45.0

Elevation 1000.0

Length: 139.6

Property: DITO RIVARD

Purpose: Test mineralization intersected in DT-89-1

Drilled by: Fern Rivard
Date Started: August 15, 1992
Date Completed: October 14, 1992
Logged by: S.J. Carmichael, Oct. 20, 1992
Core Size: IEX
Claim Number: L-982690

Dip Tests

| from (m) | to (m) | Description | Sample No. | from (m) | to (m) | Length (m) | AU PPB | Au-2 oz/ton |
|---|---|---|---|---|---|---|---|---|
| .00 | 5.49 | CASING | | | | | | |
| 5.49 | 125.91 | BASALT<br>Dark green fine-grained basalt, possibly a Fe-tholeiite with local weak magnetism. Generally massive with minor quartz +- calcite +- hematite stringers. Sections of the volcanics appear to be fragmental in places and may be tuffaceous. Core is moderately blocky and broken. | | | | | | |
| | | 24.39 25.00 Sparry calcite breccia from 24.54-24.60m, weak fuchsitic alteration, nil sulfides. | 224551 | 24.39 | 25.00 | .61 | <5.0 | nil |
| | | 26.62 26.68 Diabse dike, very fine-grained, moderately magnetic. | | | | | | |
| | | 37.20 38.72 1-2% quartz/calcite stringers. Trace pyrite. | 224552 | 37.20 | 38.72 | 1.52 | <5.0 | nil |
| | | 38.72 Fault Ground core with clay gouge, foliation at 38.87m at 46 deg. To C.A. | | | | | | |
| | | 40.82 1/2 inch vuggy quartz/clacite vein, barren. | | | | | | |
| | | 54.57 54.88 Ground core, possible fault. | | | | | | |
| | | 62.50 64.02 Minor quartz/calcite stringers, barren. | 224553 | 62.50 | 64.02 | 1.52 | <5.0 | nil |
| | | 64.02 65.55 As above. | 224554 | 64.02 | 65.55 | 1.53 | <5.0 | nil |
| | | 65.55 67.07 As above. | 224555 | 65.55 | 67.07 | 1.52 | <5.0 | nil |
| | | 67.07 68.60 1 ft of ground core from 68.29-68.60m. | 224556 | 67.07 | 68.60 | 1.53 | <5.0 | nil |
| | | 69.21 69.36 Possible flow top or tuffaceous section, sub angular fine siliceous fragments followed by a fine-grained flow. Tops may be up hole. | | | | | | |
| | | 69.82 70.43 As above. | | | | | | |
| | | 72.74 72.93 Fine-grained magnetic diabase dike, irregular contacts. | | | | | | |
| | | 86.22 Fault Possible fault, ground clay gouge and gravel. | | | | | | |
| | | 93.60 96.89 Fragmental section, may be tuffaceous. | | | | | | |
| | | 96.86 96.89 Weak shear. | | | | | | |

| from (m) | to (m) | Description | Sample No. | from (m) | to (m) | Length (m) | AU PPB | Au-2 oz/ton |
|---|---|---|---|---|---|---|---|---|
| | | 108.08 109.15 1% quartz/calcite +- hematite stringers, barren. | 224557 | 108.08 | 109.15 | 1.07 | <5.0 | nil |
| | | 114.02 116.01 Fragmental section, may be tuffaceous. | 224560 | 116.31 | 117.07 | .76 | <5.0 | nil |
| | | 119.79 Fault Seam of gouge. | | | | | | |
| | | 120.52 121.95 1% quartz/clacite stringers, barren. | 224561 | 120.52 | 121.95 | 1.43 | <5.0 | nil |
| | | 122.23 Fault Possible fault with ground gravel core. | | | | | | |
| | | 122.93 123.63 2% quartz/calcite flooding and stringers, barren. | 224558 | 122.93 | 123.54 | .61 | <5.0 | nil |
| 125.91 | 131.25 | BASALTIC KOMATIITE | | | | | | |
| | | Dark green fine-grained weakly talcose basaltic komatiite. No spinifex or polysuturing present. Relatively soft compared to above basalt. Weakly fractured with 4% quartz stringers. Trace euhedral pyrite throughout. | | | | | | |
| | | 129.70 130.61 1% euhedral pyrite. | 224559 | 129.70 | 130.61 | .91 | <5.0 | nil |
| 131.25 | 139.63 | BASALT | | | | | | |
| | | Dark green fine-grained basalt. Weakly fractured with <1% epidote stringers. Minor quartz calcite stringers. | | | | | | |
| | | 135.61 136.52 1% quartz/clacite stringers, trace chalcopyrite in stringer at 135.79m. | 224562 | 135.61 | 136.52 | .91 | <5.0 | nil |
| | | 139.63 End of Hole. | | | | | | |
| | | Casing Pulled. | | | | | | |
| | | Core Stored At Rivard Residence. | | | | | | |
| | | SLUDGE ASSAYS. | | | | | | |
| | | 99.01-106.68 <5 PPB. | | | | | | |
| | | 106.68-115.98 <5 PPB. | | | | | | |
| | | 115.98-122.22 <5 PPB. | | | | | | |
| | | 122.22-133.91 <5 PPB. | | | | | | |
| | | 133.81-137.16 8 PPB. | | | | | | |

GEOLOGICAL ASSOCIATION OF CANADA
S. J. Carmichael
Nov. 25/92
FELLOW

*Appendix D*

*ASSAY CERTIFICATES*

# ACCURASSAY LABORATORIES

A DIVISION OF BARRINGER LABORATORIES LIMITED, REXDALE, ONTARIO
BOX 426
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TEL.: (705) 567-3361

President: Dr. GEORGE DUNCAN, M.Sc., Ph. D., C. Chem (Ont.), C. Chem (U.K.), M.C.I.C., M.R.S.C., A.R.C.S.T.


46250 # Certificate of Analysis



Rivard, Mr. Fern
P.O. Box 1091
KIRKLAND LAKE, Ontario
P2N 3L1

October 28 92

Work Order # : 920396
Project :

| SAMPLE NUMBERS Accurassay | Customer | Gold ppb | Gold Oz/T | |
|---|---|---|---|---|
| 261051 | 224551 | <5 | <0.001 | |
| 261052 | 224552 | <5 | <0.001 | |
| 261053 | 224553 | <5 | <0.001 | |
| 261054 | 224554 | <5 | <0.001 | |
| 261055 | 224555 | <5 | <0.001 | |
| 261056 | 224556 | <5 | <0.001 | |
| 261057 | 224557 | <5 | <0.001 | |
| 261058 | 224558 | <5 | <0.001 | |
| 261059 | 224559 | <5 | <0.001 | |
| 261060 | 224560 | <5 | <0.001 | |
| 261060 | 224560 | <5 | <0.001 | Check |
| 261061 | 224561 | <5 | <0.001 | |
| 261062 | 224562 | <5 | <0.001 | |
| 261062 | 224562 | <5 | <0.001 | Check |

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Dr. G. Duncan
CHEMIST

LF-30

Per: G. Duncan

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46054 # Certificate of Analysis



Rivard, Mr. Fern
P.O. Box 1091
KIRKLAND LAKE, Ontario
P2N 3L1

October 14 92

Work Order # : 920376
Project :

| SAMPLE NUMBERS Accurassay | Customer | Gold ppb | Gold Oz/T | |
|---|---|---|---|---|
| 260755 | 224517 | 8 | <0.001 | |
| 260755 | 224517 | 5 | <0.001 | Check |

SLUDGE 439-450 FT

Oh

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Per: G. Duncan

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46120

# Certificate of Analysis



Rivard, Mr. Fern
P.O. Box 1091
KIRKLAND LAKE, Ontario
P2N 3L1

October 6 92

Work Order # : 920360
Project :

| SAMPLE NUMBERS Accurassay | Customer | Gold ppb | Gold Oz/T | |
|---|---|---|---|---|
| 260309 | 224516 | <5 | <0.001 | |
| 260309 | 224516 | <5 | <0.001 | Check |

04-92 401-439 FT

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CHARTERED
Dr. G. Duncan
CHEMIST

LF-30

Per: G. Duncan

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46081 # Certificate of Analysis



Rivard, Mr. Fern
P.O. Box 1091
KIRKLAND LAKE, Ontario
P2N 3L1

October 1 92

Work Order # : 920337
Project :

| SAMPLE NUMBERS Accurassay | Customer | Gold ppb | Gold Oz/T | |
|---|---|---|---|---|
| 260159 | 224515 | 10 | <0.001 | |
| 260159 | 224515 | 10 | <0.001 | Check |

SLUDGE 380½ - 401 FT

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Dr. G. Duncan
CHEMIST

Per: G. Duncan

LF-30

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President: Dr. GEORGE DUNCAN, M.Sc., Ph. D., C. Chem (Ont.), C. Chem (U.K.), M.C.I.C., M.R.S.C., A.R.C.S.T.


45990 # Certificate of Analysis



Rivard, Mr. Fern
P.O. Box 1091
KIRKLAND LAKE, Ontario
P2N 3L1

September 30 92

Work Order # : 920333
Project :

| SAMPLE NUMBERS Accurassay | Customer | Gold ppb | Gold Oz/T | |
|---|---|---|---|---|
| 259871 | 224514 | 7 | <0.001 | |
| 259871 | 224514 | 13 | <0.001 | Check |

SLUDGE 04/92 350-380½ FT

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Dr. G. Duncan
CHEMIST

Per: G. Duncan

LF-30

CUSTOMER COPY

# ACCURASSAY LABORATORIES

A DIVISION OF BARRINGER LABORATORIES LIMITED, REXDALE, ONTARIO
BOX 426
KIRKLAND LAKE, ONTARIO, CANADA P2N 3J1
TEL.: (705) 567-3361

President: Dr. GEORGE DUNCAN, M.Sc., Ph. D., C. Chem (Ont.), C. Chem (U.K.), M.C.I.C., M.R.S.C., A.R.C.S.T.


45916 # Certificate of Analysis



Rivard, Mr. Fern
P.O. Box 1091
KIRKLAND LAKE, Ontario
P2N 3L1

September 23 92

Work Order # : 920328
Project :

| SAMPLE NUMBERS Accurassay | Customer | Gold ppb | Gold Oz/T | |
|---|---|---|---|---|
| 259667 | 224513 | <5 | <0.001 | |
| 259667 | 224513 | <5 | <0.001 | Check |

SLUDGE 04/92 325-350 FT

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Dr. G. Duncan
CHEMIST

Per: G. Duncan

LF-30

CUSTOMER COPY

TRIM LINE

TECK TP. - M.

12 11 10 9 8 7 6 5 4 3 2 1

VI

V

IV

III

II

I

BY TP. - M.345

ROUTON TP. - M.332

MARQUIS TP. - M.362

DANE TOWNSITE Not Open for Staking O.C. Jun 10 1911

Blanche River

T.C.R.R.

Rossignol Beach

Round Lake

THE TOWNSHIP OF OTTO

DISTRICT OF TIMISKAMING

LARDER LAKE MINING DIVISION

SCALE: 1-INCH=40 CHAINS

LEGEND

| | |
|---|---|
| PATENTED LAND | |
| CROWN LAND SALE | C.S. |
| LEASES | Ls. |
| LOCATED LAND | |
| LICENSE OF OCCUPATION | |
| MINING RIGHTS ONLY | M.R.O. |
| SURFACE RIGHTS ONLY | S.R.O. |
| ROADS | |
| IMPROVED ROADS | |
| KING'S HIGHWAYS | |
| RAILWAYS | |
| POWER LINES | |
| MARSH OR MUSKEG | |
| MINES | |
| CANCELLED | |
| PATENTED S.R.O | |

NOTES

400' surface rights reservation along the shores of all lakes and rivers.

(1) Sec 36/173, m/9/80 24/01/86 MTS

* Applies under the Public Lands Act - Sec 31(b) of The Mining Act.

DATE OF ISSUE SEP 16 1987

PLAN NO. M-379

(ONTARIO)

MINISTRY OF NATURAL RESOURCES

SURVEYS AND MAPPING BRANCH

Recd. August 10/84

200

TRIM LINE

OP93-122

DATE OF ISSUE
MAR 11 1991
LARDER LAKE
MINING RECORDER'S OFFICE

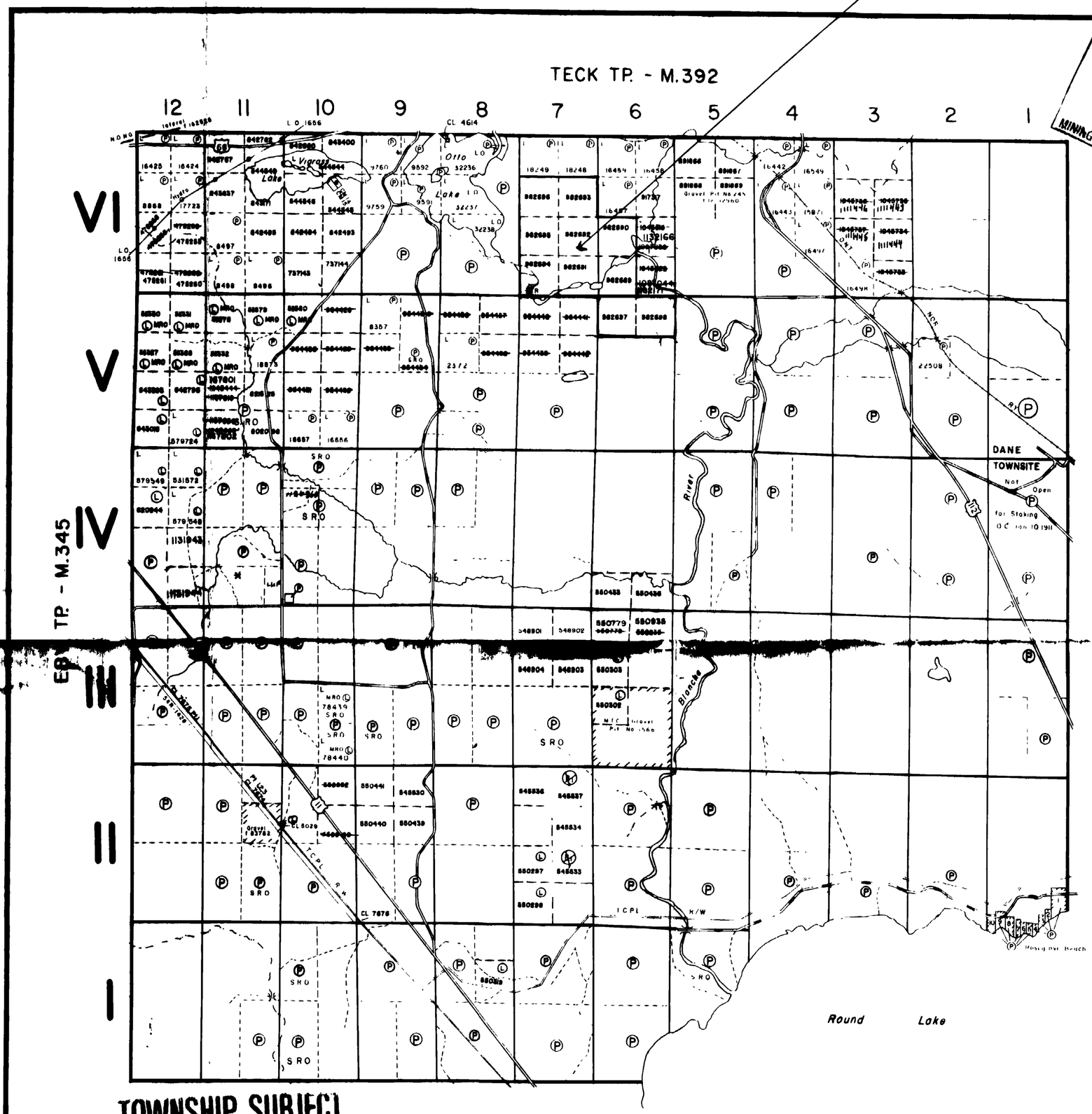
# THE TOWNSHIP OF OTTO

DISTRICT OF TIMISKAMING

LARDER LAKE MINING DIVISION

SCALE: 1-INCH=40 CHAINS

BLOCK OF CLAIMS TARGETED FOR WORK PROGRAM




## LEGEND

| | |
|---|---|
| PATENTED LAND | ● or (P) |
| CROWN LAND SALE | C.S. |
| LEASES | (L) |
| LOCATED LAND | Loc. |
| LICENSE OF OCCUPATION | L.O. |
| MINING RIGHTS ONLY | M R O. |
| SURFACE RIGHTS ONLY | S R O |
| ROADS | |
| IMPROVED ROADS | |
| KING'S HIGHWAYS | |
| RAILWAYS | |
| POWER LINES | |
| MARSH OR MUSKEG | |
| MINES | |
| CANCELLED | C |
| PATENTED S.R.O. | |

## NOTES

400' surface rights reservation along the shores of all lakes and rivers

(R1) SURFACE AND MINING RIGHTS WITHDRAWN FROM STAKING SEC. 36/80, W.9/86, JAN. 24, 1986
O-L26-90 NR OPENS W9/86 DEC. 14, 1990

* APPLICATION UNDER THE PUBLIC LANDS ACT SEC. 31 (b) OF THE MINING ACT

CL 5029 DISPOSITION OF CROWN LAND

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 RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.

## NOTICE OF FORESTRY ACTIVITY

THIS TOWNSHIP / AREA FALLS WITHIN THE TIMISKAMING MANAGEMENT UNIT

AND MAY BE SUBJECT TO FORESTRY OPERATIONS. THE MNR UNIT FORESTER FOR THIS AREA CAN BE CONTACTED AT: P.O. BOX 129
SWASTIKA, ONT
P0K 1T0
705-642-3222

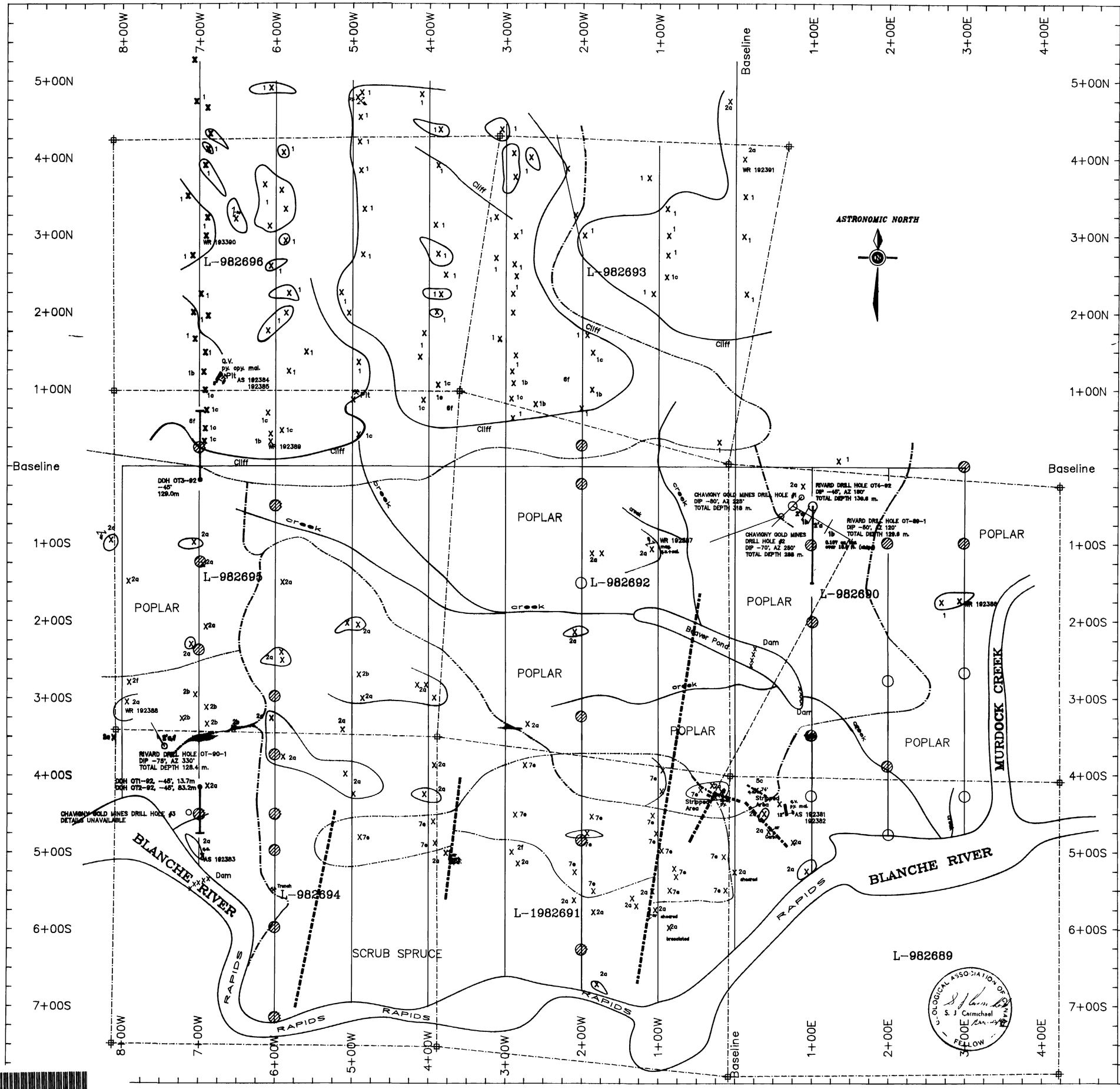
TOWNSHIP SUBJECT TO FORESTRY OPERATIONS

PLAN NO. M-379

MINISTRY OF NORTHERN DEVELOPMENT AND MINES

CIRCULATED NOV.3/88

M.379
OTTO TWP.
EP
TRIM LINE
42A01SE0053 OP92-122 OTTO
210
22.2609




## LEGEND

**FELSIC TO INTERMEDIATE INTRUSIVE ROCKS**

7 — 7 Undivided; 7a Granite; 7b Syenite; 7c Feldspar Porphyry; 7d Granodiorite; 7e Diorite; 7f Monzonite

**MAFIC TO ULTRAMAFIC INTRUSIVE ROCKS**

6 — 6 Undivided; 6a Gabbro; 6b Gabbro Anorthosite; 6c Anorthosite; 6d Pyroxenite; 6e Peridotite; 6f Diabase; 6g Lamprophyre

**SEDIMENTS**

5 — 5 Undivided; 5a Greywacke; 5b Chert; 5c Graphitic shale; 5d Conglomerate; 5e Sandstone; 5f Shale

**FELSIC METAVOLCANICS**

4 — 4 Undivided; 4a Rhyolite; 4b Rhyolite breccia; 4c Dacite; 4d Dacite breccia

**INTERMEDIATED METAVOLCANICS**

3 — 3 Undivided; 3a Massive andesitic flows; 3b Pillowed andesitic flows; 3c Andesitic tuff and lapilli tuff; 3d Andesitic breccia

**MAFIC METAVOLCANICS**

2 2 Fe Mg — 2 Undivided; 2a Massive flows; 2b Pillowed flows; 2c Massive to well foliated coarse-grained flows; 2d Variolitic flows; 2e Tuff and lapilli-tuff; 2f Flow-top breccia

**ULTRAMAFIC METAVOLCANICS**

1 — 1 Undivided; 1a Massive, weathered serpentinized flows; 1b Spinifex textured flows; 1c Ultramafic agglomerates; 1d Talc-carbonate alteration

## SYMBOLS

- Claim Post
- Claim Line
- Trail
- Creek
- Outcrop Boundary
- Small Outcrop or Station
- WR 192388 — Whole Rock or Assay Sample Location
- Strike and Dip of Foliation
- Strike and Dip of Bedding
- Geological Contact
- Fault
- q.s. — Quartz Stringers
- Q.V. 12 — Quartz Vein With Width and Dip
- cal. — Calcite Stringers
- mag. — Magnetic Attraction
- py. — Pyrite
- opy. — Chalcopyrite
- mal. — Malachite
- Carbonate Alteration
- spar. — Sparry Calcite
- Drill Hole
- Pit or Trench
- VLF-EM Anomaly

MAXI PROBE ANOMALY
RED – GOOD TO EXCELLENT
YELLOW – MEDIUM TO GOOD
BLACK – MINOR TO WEAK

SCALE 1:2500

50 0 50 100 150 200
METRES

# OTTO TWP. PROPERTY

## SURFACE GEOLOGY PLAN

OTTO TOWNSHIP
LARDER LAKE MINING DIVISION
DISTRICT OF TIMISKAMING, ONT.

| | | |
|---|---|---|
| NTS 42 A/SE | SCALE: 1:2500 | PROJECT: OP92-122 |
| DATE: JAN. 1992 | DRAWN BY: S.J.C. | REVISED: NOVEMBER, 1992<br>DRAWING NO. 1 |

GEOLOGICAL ASSOCIATION OF CANADA
S. J. Carmichael
FELLOW

42A01SE0063 OP92-122 OTTO

DRILL HOLE SECTION 1+00E
SECTION LOOKING WEST
CLAIM L-982690

1+00S

WEAK MAXI PROBE ANOMALY

DDH OT-89-1 DRILLED 25m WEST OF SECTION
AT AZIMUTH 120° OR 60° OBLIQUE TO SECTION
DIP -50°

50.00S
75.00E
100.00E

1000

1000

900

900

45°

NW/0.61m DIABASE DIKE

NW/1.52m

NW/1.98m
NW/1.52m
NW/1.52m
NW/1.52m

DIABASE DIKE

QTZ/CALCITE HEMATITE STRINGER'S

NW/1.07m
NW/0.76m
NW/1.43m
NW/0.61m
NW/0.91m
NW/0.91m

EOH
138.68m

OT4-92

0.107/35.97m

EOH
139.57m

OT-89-1

1+00S

1+00S

## LEGEND

CASE — CASING

ROCK CODES

SEDIMENTARY UNITS

- GRAPHITIC SHALE
- BRECCIATED GRAPHITIC SHALE
- SILTSTONE

VOLCANIC UNITS

- BASALTIC KOMATIITE
- CARBONATED ULTRAMAFIC
- BASALT
- BRECCIATED BASALTIC
- MINERALIZED ZONE
- MAFIC INTRUSIVE

ALL ASSAYS ARE IN OZ/TON Au/METERS

FAULT/SHEAR

SCALE 1:500

10 0 20 40

METRES

# OTTO TOWNSHIP PROPERTY

## DRILL HOLE SECTION 1+00E
## DRILL HOLES OT4-92, OT-89-1
## SECTION LOOKING WEST

OTTO TOWNSHIP
DISTRICT OF TIMISKAMING, ONT.
LARDER LAKE MINING DIVISION

| | | |
|---|---|---|
| NTS: 42 A/SE | Scale: 1:500 Metric | Revised: Date: Nov., 1992 |
| Project: OP92-122 | Drawn By: S.J.C. | Drawing No. 2 |

GEOLOGICAL ASSOCIATION OF CANADA
S.J. Carmichael
S.J. CARMICHAEL CONSULTANTS
FELLOW

42A01SE0063 OP92-122 OTTO