



32E13NE0055 2.5963 HOPPER LAKE

010

Westmin Resources Limited

Assessment Report on the Geology of the

Detour-Lower Detour Lake Claims

Lower Detour Lake Area, M2603

and Hopper Lake Area, M2601

Porcupine Mining District

N.T.S. 32 E-13

Latitude  $49^{\circ}56'$  -  $49^{\circ}59'N$

Longitude  $79^{\circ}39'$  -  $79^{\circ}47'30''W$

by

C. J. Rockingham, B.Sc., M.Sc.,

September 28, 1983.

RECEIVED

OCT 31 1983

MINING LANDS SECTION

*See 2.3162*



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Expenditure Breakdown

### Introduction:

The following report pertains to geological mapping carried out by the author and an assistant in June 1983 on the Detour-Lower Detour Lake claim block. Previous geological mapping on the property in July and August 1980 by the author and D. J. Robinson with two assistants had examined all outcrops on the property with considerable emphasis on stripping moss. The present programme was carried out in order to tie in all outcrop, diamond drill, and overburden drill data to picket line grids.

### Location and Access:

The Detour-Lower Detour Lake property consists of 278 contiguous mining claims (Table 1) which constitute approximately 4448 hectares. The property is located 130 km NNE of Cochrane, Ontario and 5 km south of the Detour Lake gold mine. Access is available all year by fixed wing aircraft or by all terrain vehicles from the mine site along the winter road.

Table 1  
Land Status

Detour-Lower Detour Lake Claims

Owner: Westmin Resources Limited

Location: Lower Detour Lake Area M2603  
Hopper Lake Area M2601  
Porcupine Mining District

Latitude  $49^{\circ}56'$  -  $49^{\circ}59'$   
Longitude  $79^{\circ}39'$  -  $79^{\circ}47'30''$

Property: 278 mining claims (4448 hectares)

Claims	Anniversary Date
P.549918 - 549931 (14)	January 4, 1983
P.553303 - 553483 (181)	January 4, 1983
P.553503 - 553562 (60)	January 4, 1983
P.577751 - 577767 (17)	July 10, 1983
P.575672 - 575673 (2)	October 10, 1983
P.709761 - 709764 (4)	March 25, 1984

### Linecutting:

A picket line grid of approximately 444 km was cut over the Detour-Lower Detour Lake claims in order to facilitate geological mapping and geophysical surveys. Selected portions were cut in January-February of 1982 by Ingamar Exploration of Connaught, Ontario and the remainder cut in January-March 1983, by Jean Alix and Co. of Val d'Or, Quebec. An east-west base line ten kilometres long was established with north-south cross lines every 100 m. On the south-west corner of the property the strike of the rocks necessitated a grid with a base line oriented northeast-southwest. Numbered pickets were placed every 25 m along all lines. Tie lines were established along the northern boundary and along the Taylor survey line.

### Summary of Exploration:

Previous to the claim block being staked by Westmin Resources portions of the property had been staked by a number of companies namely;

Penarroya 1971-1972 (File 2.823)

Penarroya conducted ground VHEM and fluxgate magnetometer surveys on five geophysical anomalies within the present claim block. The Penarroya anomalies correspond to the Westmin anomalies as follows:

Penarroya	Westmin
H east	INPUT #10
H west	Formational conductor
#21	INPUT 7
J	INPUT 3
K	INPUT 2A
L	INPUT 2B

One of these conductors was diamond drill tested (Anomaly L) although no assessment record or drill core is available.

Inco 1971 (Lower Detour Lake DDH Report 15)

One hole of 115 m tested the formational conductor near the Taylor Base Line intersecting graphitic metasediments and mafic tuff.

Amoco 1974-1976 (File 2.2139  
Hopper Lake DDH Report 25-1)

Ground geophysical surveys (EM and magnetometer) evaluated the claims and one drill hole of 132 m tested the formational conductor near the Taylor Base Line west of the Inco hole. This also intersected graphitic metasediments and mafic tuff.

Noranda 1974-76 (Files 2.1833, 2.2137, and 2.2157)

File 2.2157 reports on the electromagnetic and magnetic surveys on what is now the east end of the Westmin claims north of the Taylor Base Line. Files 2.1833 and 2.2137 report on the geophysical surveys over what is now the northwest corner of the Westmin property. In both cases geophysical conductors were

detected, that in general correspond to conductors located by Westmin geophysical surveys. No follow up diamond drilling was reported by Noranda.

#### Westmin 1980

An airborne Mark VI INPUT survey conducted by Questor on behalf of Westmin detected ten discrete conductors on the property as well as a large formational conductor that is essentially coincident with the Taylor Base Line.

#### Westmin 1981

Westmin conducted an overburden reverse circulation drill programme with 60 holes being drilled on this property.

#### Westmin 1982

Nine diamond drill holes (2071 m) tested Max-Min II (HLEM) conductors and thirteen reverse circulation drill holes were completed to further define anomalous values reported from the 1981 work.

#### Westmin 1983

The Max-Min II HLEM and magnetometer surveys were completed over the entire claim block and a further eight holes were drilled (1228 m) on this property.

## Geology

### Pleistocene Geology

The Detour-Lower Detour Lake claim block is covered by extensive areas of muskeg with a few small ridges down ice from the outcrops or bedrock highs. These ridges or "crag and tail" structures are prominent on the airphotos and have a consistent strike of  $160^{\circ}$  that is parallel to the glacial striae. They are composed of well sorted calcareous sand that is in part derived from the James Bay Lowlands during one of the late Cochrane re-advances. The material underlying the muskeg is a poorly sorted calcareous sand and gravel with a high clay content that makes this material impermeable to water thus resulting in the muskeg bog. The Cochrane till averages 10 - 20 m in thickness. Below the Cochrane till is the Matheson till that is derived from the New Quebec ice advance from the northwest. This till has a sandy to silty matrix with only 2% clay and coarse gravel to boulder sized clasts of gneiss, metavolcanic, and metasedimentary rocks with a minor Paleozoic clast content. The average depth to bedrock over the entire property is approximately 30 metres, although the deepest overburden encountered to date is 60 m and there is generally deeper overburden on the north half of the property.

### Archean Geology

Limited outcrop exposure and a general lack of reliable geopetal structures prevent the presentation of a true stratigraphic column with measured thicknesses and relative age relationships. Instead the rock types will be described in the



order that they appear in the legend although no age relations are specifically implied.

#### Ultramafic rocks

One outcrop of ultramafic rock, a serpentized ultramafic rock, was mapped west of the winter road and north of the Taylor survey line 35E. The weathered surface is orange-brown in colour with a rough surface resulting from the positive weathering of magnetite crystals. A well developed granular texture is defined by white euhedral crystals ( $< 1\text{mm}$ ) in the brown-orange matrix. The fresh surface is a soft, very fine-grained, blue-green serpentine and magnetite that is slightly talcose with thin veins of magnesite ( $< 1\text{ mm}$ ). There are no textures diagnostic of either an intrusive or extrusive origin for this unit. The high magnetite content of this rock gives it a characteristic expression on the magnetic map indicating an approximate thickness of 50 - 100 metres and a strike length of five kilometres. This suggests that this unit is either an extrusive ultramafic flow or a sill.

Ultramafic rocks south of the Taylor Base Line have been intersected by drilling in holes D-82-2, 3, 4 and D-83-12 along a strike length of 2.7 km and across an apparent stratigraphic interval of 500 metres. They are best described as a talc chlorite, biotite, carbonate rock depending on the relative proportion of these minerals. The rock is fine grained grey-white to blue-grey to green-brown with a well developed foliation. Magnetite content is extremely variable. No specific volcanic or intrusive textures have been recognized to date.

## Mafic Volcanic Rocks

Mafic volcanic rocks form the major rock type on the southern half of the property. They occur as a thick sequence of mafic volcanic flows and tuffs with minor felsic and intermediate members. The rocks of this formation are typical lower amphibolite-greenschist facies volcanic rocks, that is they are light to dark green, soft, extremely fine-grained and generally exhibit volcanic textures, such as pillows, venticularity, amygdales, and tuffaceous bedding. On the magnetic map this formation is characterized by relatively high magnetic intensity with numerous elliptical zones of greater magnetic intensity, some of which are sub-volcanic gabbro and others are mafic volcanic rocks.

On the southern edge of the property is a sequence (~500 m) of mafic volcanic flows and tuffs with minor interflow sedimentary rocks that extend in an arcuate belt from the southwest corner of the Detour claim block across the north end of Detour Lake and southeast to the Detour River. These rocks have been subjected to regional metamorphism of lower to middle amphibolite facies with later contact metamorphism in proximity to the Detour Lake granodiorite-diorite stock. The mineralogy is simple consisting of 10 - 80% pyrospite (Mg, Fe, Mn) garnet in a very fine grained hornblende matrix with minor quartz and no feldspar. Within the contact aureole of the Detour Lake stock Ca-rich almandine garnet of a second composition co-exists with hedenbergite (Barnett, 1980). In mafic flows and pillows the garnets are most numerous on flow contacts and pillow rims. Garnets occur throughout mafic tuffs, often associated with minor

magnetite and/or pyrrhotite and may be so numerous that they have coalesced giving the rock an appearance similar to a breccia or felsic fragmental rock. Within interflow sedimentary rocks fine-grained garnets are present as massive beds or are associated with sugary textured quartz (meta-chert).

#### Meta-Sedimentary Rocks

##### a) Turbiditic wackes

These rocks are not present in outcrop on the property, although they were intersected in drill core in hole D-82-9. Where they are exposed in outcrop north of the property and in Quebec they have a light brown soft weathered surface with a well defined bedding that is both very thin bedded and thick bedded in a regular sequence. Quartz veins are prominent parallel to the foliation where the foliation is not parallel to bedding. The fresh surface is light grey, soft, slightly carbonated with a grain size that varies from clay and silt size to sand size particles in scour channels. With the exception of graded beds, sedimentary structures are poorly exposed although cross-beds, flame structures, and soft sediment deformation structures are present on a wave washed outcrop on the Turgeon River in Quebec. The stratigraphic thickness of this unit, as interpreted from the aeromagnetic data, is several thousand metres although the trendless magnetic features make it impossible to detect any possible repetition by folding.

b) Volcanic Conglomerate

The volcanic conglomerate or laharic breccia unit is a thin unit (< 200 m thick) that is traceable across the entire claim block. It is polymictic consisting entirely of volcanic clasts (felsic, mafic, porphyritic mafic, intermediate rocks with quartz eyes, quartz feldspar porphyry, and massive to semi-massive pyritic clasts). These clasts are predominantly elliptical with the long axis parallel to foliation. Maximum clast size is 50 cm x 10-20 cm. The matrix of this unit is a dark green, soft chlorite-sericite rock with a well developed foliation.

c) Graphitic Metasedimentary Rock

This unit is not exposed in outcrop however it is expressed on the INPUT survey as a five or six channel conductor on every flight line from the Ontario-Quebec border until its termination eleven flight lines from the western end of the claim block. There is generally no magnetic correlation suggesting that this unit is dominantly graphite and pyrite. Where this unit has been intersected in drilling, by Amoco and Inco, both the north and south contacts are mafic volcanic tuff. The unbroken and non-repetitive nature of this horizon suggest that there is no major folding or faulting on the south side of the regional fold.

## Intrusive Rocks

### Gabbro

Gabbroic rocks have a soft dark green weathered surface and a grey green weathered surface that is medium to coarse grained, equigranular, crystalline, and massive to slightly foliated. Quartz and to a lesser extent epidote veins are common. Constituent minerals include feldspar, actinolitic hornblende, biotite, chlorite, epidote, quartz, and carbonate + magnetite. The gabbro intrusions are variable in size but discrete entities that are believed to be sub-volcanic intrusions and sills. Evidence for this synvolcanic age of emplacement is their similarity of magnetic expression and weathering characteristics to some mafic volcanic rocks, their small discrete nature, and the gabbro on the Detour River east of the winter road is cut by a foliated quartz feldspar porphyry dyke. The aeromagnetic expression of these is variable. Some of them such as the two on the north limb of the regional anticline have an oval magnetic pattern although smaller intrusions are not easily recognized on the magnetic map.

### Pyroxenite

Metapyroxenite rocks have a soft dark green knobby weathered surface with megacrysts 1 - 2 cm in diameter that are altered to actinolitic hornblende. The fresh surface is a massive beige grey to dark green. This unit is distinguished from the gabbro by the absence, or minor amounts, of feldspar on the weathered rind.

## Granite

Granitic rocks exposed on Detour Lake have a massive white to pink weathered surface with a very poorly developed foliation. They are medium to coarse-grained, equigranular and consist of quartz, alkali feldspar, plagioclase, biotite and hornblende. There is a marginal phase of gabbro, quartz gabbro and diorite that is exposed along the Detour River. These rocks are also massive, medium to coarse-grained, equigranular and slightly foliated, as well as being slightly foliated. These intrusive rocks are believed to be related to the Kenoran orogeny and unrelated to the gabbro's discussed above. The aeromagnetic expression of these rocks is a trendless pattern that is similar to that of the turbidite wackes.

## Diabase

No diabase dykes are exposed on this property although there is one exposed on the Amoco-Campbell Red Lake-Dome property (Johns, 1979) that has a north north-west trend. This has a weak magnetic expression in the turbidite wacke unit and is projected to continue in the eastern part of Lower Detour Lake.

### Structural Geology

The Detour-Lower Detour Lake claims are located on the south limb of a large east-west trending fold (Johns, 1979) that may be either a synform or antiform. The south limb appears to be a homoclinal sequence that is vertical to steeply south dipping with no major faulting or folding. Evidence for this is the unbroken and non-repetitive nature of the formational conductor along the Taylor base line, the east-west linear magnetic high north of the Taylor base line that marks the ultramafic sill or flows, and the outcrop expression of the lahar that can be traced across the entire property. The structure on the southern part of the property has been modified by the intrusion of the Detour Lake granite such that the garnetiferous mafic volcanic rocks form an arcuate pattern around the north end of Detour Lake.

### Economic Geology

Exploration to date has not defined any zones of economic significance. Diamond drill testing of HLEM targets has intersected either graphite + pyrite + pyrrhotite or pyrite and pyrrhotite.

## References

Assessment Files, Porcupine Mining District,  
Lower Detour Lake Area and Hopper Lake Area.

Johns, G.W., 1982; Geology of the Burntbush-Detour Lakes  
Area, District of Cochrane; O.G.S.  
Report 199, 82 p., accompanied by  
Map 2453, scale 1:100,000.

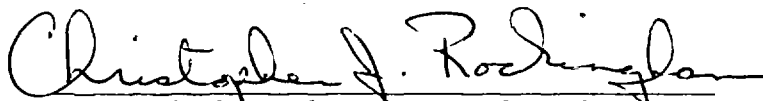


## Certification

I, Christopher J. Rockingham, of 261 Booth Avenue, Toronto, Ontario, M4M 2M7, certify the following:

- 1) I am a Fellow of the Geological Association of Canada.
- 2) I hold a B.Sc., in Chemistry and Biology obtained from the University of Toronto, in 1972 and a M.Sc. in geology obtained from the University of Western Ontario, in 1979.
- 3) I have practised my profession for 9 years working in Canada, Australia and Southern Africa.
- 4) I have supervised the work and interpreted the results mentioned in the foregoing report.
- 5) I have no financial interest in this property.

September 28, 1983.

  
Christopher J. Rockingham

Detour-Lower Detour Claim Group

- Expenditure Breakdown -

Geological Mapping 1983

Salaries	\$ 7,717.00	
Travel & Transportation	\$ 1,340.78	
Food & Accommodation	<u>\$ 1,121.60</u>	
	\$10,179.38	≈ \$10,180.00

Linecutting

February 1982	\$14,000.00
Jan.Feb.Mar.1983	<u>\$83,371.21</u>
	\$97,371.21



Westmin Resources Limited  
Toronto, Ontario

CONTROL NO. 0073

TO THE BANK OF MONTREAL  
MAIN BRANCH  
VANCOUVER, B.C.

WESTERN  
MINES LTD. \$ 14,000 and 00cts

DATE March 10, 1982

AMOUNT \$ 14,000.00  
Westmin Resources Limited

PAY TO THE ORDER OF Ingamar Explorations Limited

*R.H. McMillan*  
NOT NEGOTIABLE

0073

MITTANCE VOUCHER - DETACH BEFORE DEPOSITING CHEQUE

EXPLANATION	BALANCE
Invoice No. 20065 dated January 12, 1982	<u>\$14,000.00</u> C B 150



Westmin Resources Limited  
Toronto, Ontario

*Accounting*



**Westmin Resources Limited**  
Toronto, Ontario

CONTROL NO. **0792**

**WARRANTED**

TO THE BANK OF MONTREAL  
MAIN BRANCH  
VANCOUVER, B.C.

**WESTMIN RESOURCES LTD. \$66,384 and 81 cts**

DATE **March 28, 1983**

AMOUNT \$ **66,384.81**  
Westmin Resources Limited

PAY  
TO THE  
ORDER OF

**JEAN ALIX COMPANY LTD.**  
P. O. Box 910  
VAL D'OR, Quebec  
J9P 4P8

*Raymond O. Desjardins*

**NOT NEGOTIABLE**

EMITTANCE VOUCHER - DETACH BEFORE DEPOSITING CHEQUE

**0792**

EXPLANATION	BALANCE
Invoice No. 83-16 dated March 18, 1983	\$13,818.79
" 83-17 " March 18, 1983	32,268.04
" 83-18 " March 18, 1983	16,618.18
Plus Adjustments per Letter dated March 25, 1983	<u>3,679.80</u>
	<u>\$66,384.81</u>
<i>Mailed March 30/83 M. Borden</i>	<u>CB 180</u>



Westmin Resources Limited  
Toronto, Ontario

*Final cutting*



**Westmin Resources Limited**

Toronto, Ontario

CONTROL NO. **0793**

**PAY TO THE ORDER OF**

**BANK OF MONTREAL  
MAIN BRANCH  
VANCOUVER, B.C.**

**WESTMIN RESOURCES LTD. \$20,665 and 10cts**

DATE **March 28, 1983**

AMOUNT \$ **20,665.10**

**Westmin Resources Limited**

PAY TO THE ORDER OF

**PROSPEX ASSOCIES**

**R. R. 1  
LA SARRÉ, Quebec  
J9Z 2X1**

*K.H. McMillan*

**NOT NEGOTIABLE**

REMITTANCE VOUCHER - DETACH BEFORE DEPOSITING CHEQUE

**0793**

EXPLANATION	BALANCE
Invoice No. 026490 dated March 3, 1983	\$ 180.00
" 026492 " March 3, 1983	19,385.10
" 026494 " March 14, 1983	<u>1,100.00</u>
	<u>\$20,665.10</u>
	CB180



**Westmin Resources Limited**  
Toronto, Ontario

*Simmenthal  
return  
10,986.40*

PROSPEX ASSOCIES

R.R. 1, La Sarre, P.Q.  
J9Z 2X1

NOTRE NUMÉRO  
OUR NUMBER 026492

DATE March 3rd, 1988

COMM. DU CLIENT  
CUSTOMER'S ORDER

VENDEUR  
SALESMAN

CONDITIONS  
TERMS

F.A.B.  
F.O.B.

VENDU À  
SOLD TO

Westmin Resources Ltd

LIVRÉ À  
SHIPPED TO  
ADRESSE  
ADDRESS

Suite 1414, 370 Bay Street  
TORONTO, ONT M5H 2Y2

VIA

FACTURE  
INVOICE

DESCRIPTION	QUANTITE	UNITÉ	TAUX	TOTAL
<u>LINE CUTTING</u>				
<u>PRECIOUS METALS</u>				
<u>SUNDAY LANE GRID</u>	<u>99.930</u>	<u>Km.</u>		
<u>MASSICOTTE GRID</u>	<u>17.110</u>	<u>Km.</u>		
	<u>114.030</u>	<u>Km @</u>	<u>170/Km</u>	<u>19385.10</u> ✓
<u>DETOUR 205</u>			<u>16986.40</u>	
<u>TURGEON 205</u>			<u>2398.70</u>	
<u>P141 CR</u>				<u>19,385.10</u>

THE PENALTY FOR MAKING A FALSE STATEMENT IN THIS REPORT AND/OR CERTIFICATE IS \$500. OR SIX MONTHS IMPRISONMENT OR BOTH

32E13NE0055 2.5963 HOPPER LAKE  
900



THE MINING ACT R

P-549918 #2

Amorok #248  
Nov 18 1983

Ministry of Natural Resources



To the Recorder of Porcupine Mining Division

Westmin Resources Limited name of Recorded Holder

390 Bay Street, Suite 1414, Toronto, Ontario M5H 2Y2 Post Office Address

do hereby report the performance of days of Geological Engineering

not before reported to be applied on the following contiguous claims

Claim No. Days Claim No. Days

P.549918-549931 (14)	40/each	P.57751-57767 (17)	40/each
P.553303-553381 (79)	40/each		
P.553383-553483 (101)	40/each		
P.553503-553518 (16)	40/each		
P.553520-553562 (43)	40/each		
P.575672	( 1 ) 40	266	

All the work was performed on Mining Claim (s) where more than 18 claims are involved attach a schedule

READ CAREFULLY: THE FOLLOWING INFORMATION IS REQUIRED BY THE MINING RECORDER.

- For Manual Work, Stripping or Opening up of Mines, Sinking Shafts or Other Actual Mining Operations - Names and addresses of the men who performed the work and the dates and hours of their employment.
- For Diamond and other Core Drilling - Footage, No. and angle of holes and diameter of core. Name and address of owner or operator of drill. Dates when drilling was done. Signed core log and sketch in duplicate.
- For Compressed Air or Other Power Driven or Mechanical Equipment
- Type of drill or equipment. Names and addresses of men engaged in operating equipment and the dates and hours of their employment.
- For Power Stripping - Type of equipment. Name and address of owner or operator. Amount expended. Dates on which work was done. Proof of actual cost must be submitted within 30 days of recording.
- With each of the above types of work sketches are required to show the location and extent of the work in relation to the nearest claim post. In the case of diamond or other core drilling the sketch must be submitted in duplicate.
- For Geophysical, Geological, Geochemical Surveys and Expenditure Credits - the name of author of report. Covering dates of survey (linecutting & office). Type of instrument used. Total amount of expenditure. Technical reports, maps, expenditure breakdown, receipts must be filed in duplicate with the Minister within 60 days of recording.
- For Land Survey - the name and address of Ontario Land surveyor.

The Required Information is as Follows: (Attach a list if this space is insufficient)

Author of the Report: C.J. Rockingham

Expenditure: \$10,800.00

See Statement

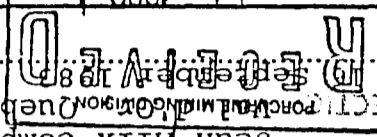
RECORDED  
1 SEP 19 1983  
Receipt No.

Dates of Survey: June-July 1983  
Linecutting; February 1982 by Ingamar Expl. Ltd. Cedar Hill, Connaught Ontario P0N 1A0

Jan., Feb., March 1983 by Jean Ailix Company Ltd. Ontario P0N 1A0

107,551.21

Signature of Recorded Holder or Agent



MINING LANDS SECTION

Date: 11/12/1983

The Mining Act Certificate Verifying Report of Work

390 Bay Street, Suite 1414, Toronto, Ontario M5H 2Y2 (Post Office Address)

hereby certify:

1. That I have a personal and intimate knowledge of the facts set forth in the report of work annexed here-to, having performed the work or witnessed same during and/or after its completion.

2. That the annexed report is true.

Dated 16 September 1983

Signature

Geological Mapping to be applied to the following claims:

<u>Claims</u>	<u>Days</u>	<u>Total Days</u>
P.549918-549931 (14)	40/each =	560
P.553303-553349 (47)	40/each =	1,880
P.553350 (1)	20 =	20
P.553351-553352 (2)	40/each =	80
P.553353 (1)	20 =	20
P.553354-553381 (28)	40/each =	1,120
P.553383-553434 (52)	40/each =	2,080
P.553435 (1)	20 =	20
P.553437 (1)	20 =	20
P.553438-553445 (8)	40/each =	320
P.553446 (1)	20 =	20
P.553447-553455 (9)	40/each =	360
P.553456 (1)	20 =	20
P.553458 (1)	20 =	20
P.553459-553472 (14)	40/each =	560
P.553473-553475 (3)	20/each =	60
P.553476-553478 (3)	40/each =	120
P.553479 (1)	20 =	20
P.553482 (1)	20 =	20
P.553483 (1)	40 =	40
P.553503-553518 (16)	40/each =	640
P.553520-553562 (43)	40/each =	1,720
P.575672 (1)	40 =	40
P.577751-577762 (12)	40/each =	480
P.577763 (1)	20 =	20
P.577765 (1)	30 =	30
P.577766-577767 (2)	40/each =	80

266

10,370 days

October 27, 1983

not before reported to be applied on th

Claim No. Days  
P.549918-549931 (14) 40/each P.5  
.....  
P.553303-553381 (79) 40/each  
P.553383-553483 (101) 40/each  
.....  
P.553503-553518 (16) 40/each  
.....  
P.553520-553562 (43) 40/each  
P.575672 (1) 40  
.....

All the work was performed on Minin  
(In the case of geological and/or ge

READ CAREFULLY: THE FOLLOW

For Manual Work, Stripping or Open  
addresses of the men who performed  
For Diamond and other Core Drilling  
owner or operator of drill. Dates wi  
For Compressed Air or Other Powe  
Type of drill or equipment. Names  
their employment.  
For Power Stripping - Type of equi  
work was done. Proof of actual co  
With each of the above types of w  
to the nearest claim post. In the  
For Geophysical, Geological, Geo  
dates of survey (linecutting & of  
maps, expenditure breakdown, rece  
For Land Survey - the name and o

The Required Information is as f

Author of the Report

Dates of Survey:

Geology; June-July  
Linecutting; February

Ingamar  
Cedar H  
Ontario  
Jan., F  
Jean AI

Date .....

Portugal, m...  
.....  
.....

.....  
.....





GEOPHYSICAL - GEOLOGICAL - GEOCHEMICAL TECHNICAL DATA STATEMENT

TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT
FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT
TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Geophysical and Geological
Township or Area Hopper Lake & Lower Detour Lake Areas
Claim Holder(s) Westmin Resources Limited
25 Adelaide St.E., #1400, Toronto, Ont.M5C 1Y2
Survey Company Westmin Resources Ltd. & Phantom Expl.
Author of Report C.J. Rockingham
Address of Author 25 Adelaide St.E., #1400, Toronto M5C 1Y2
Covering Dates of Survey Jan.-Mar.1982, Jan.-June 1983
(linecutting to office)
Total Miles of Line Cut 444 km

MINING CLAIMS TRAVERSED
List numerically

(prefix) (number)

See attached list

SPECIAL PROVISIONS
CREDITS REQUESTED

ENTER 40 days (includes line cutting) for first survey.
ENTER 20 days for each additional survey using same grid.

Table with 2 columns: Method (Geophysical, Geological, Geochemical) and Days per claim (20, 40, 20)

AIRBORNE CREDITS (Special provision credits do not apply to airborne surveys)

Magnetometer Electromagnetic Radiometric
(enter days per claim)

DATE: October 28/83 SIGNATURE: [Signature]
Author of Report or Agent

Res. Geol. Qualifications

Previous Surveys

Table with 4 columns: File No., Type, Date, Claim Holder

TOTAL CLAIMS 272

If space insufficient, attach list

	Claims	Geology	Mag.	E. M.
231)	P.553539 ✓	40	20	20
232)	P.553540	40	20	20
233)	P.553541	40	20	20
234)	P.553542	40	20	20
235)	P.553543	40	20	20
236)	P.553544	40	20	20
237)	P.553545	40	20	20
238)	P.553546	40	20	20
239)	P.553547	40	20	20
240)	P.553548	40	20	20
241)	P.553549	40	20	20
242)	P.553550	40	20	20
243)	P.553551	40	20	20
244)	P.553552	40	20	20
245)	P.553553	40	20	20
246)	P.553554	40	20	20
247)	P.553555	40	20	20
248)	P.553556	40	20	20
249)	P.553557	40	20	20
250)	P.553558	40	20	20
251)	P.553559	40	20	20
252)	P.553560	40	20	20
253)	P.553561	40	20	20
✓ 254)	P.553562	40	20	20
255)	P.575672 ✓	40	20	20
256)	P.575673 ✓	--	20	20
257)	P.577751 ✓	40	20	20
258)	P.577752	40	20	20
259)	P.577753	40	20	20
260)	P.577754	40	20	20
261)	P.577755	40	20	20
262)	P.577756	40	20	20
263)	P.577757	40	20	20
264)	P.577758	40	20	20
265)	P.577759 ✓	40	20	20
266)	P.577760 ✓	40	20	20
267)	P.577761	40	20	20
268)	P.577762	40	20	20
269)	P.577763	20	10	10
270)	P.577765	30	15	15
271)	P.577766	40	20	20
272)	P.577767 ✓	40	20	20

.....5

	<u>Claims</u>	<u>Geology</u>	<u>Mag.</u>	<u>E. M.</u>
188)	✓ P.553476	40	20	20
189)	P.553477	40	20	20
190)	P.553478	40	20	20
191)	P.553479	20	20	20
192)	P.553480	--	20	20
193)	P.553481	--	20	20
194)	✓ P.553482	20	20	20
195)	✓ P.553483	40	20	20
✓196)	P.553503	40	20	20
197)	P.553504	40	20	20
198)	P.553505	40	20	20
199)	P.553506	40	20	20
200)	P.553507	40	20	20
201)	P.553508	40	20	20
202)	P.553509	40	20	20
203)	P.553510	40	20	20
204)	P.553511	40	20	20
205)	P.553512	40	20	20
206)	P.553513	40	20	20
207)	P.553514	40	20	20
208)	P.553515	40	20	20
209)	P.553516	40	20	20
210)	P.553517	40	20	20
✓211)	P.553518	40	20	20
✓212)	P.553520	40	20	20
213)	P.553521	40	20	20
214)	P.553522	40	20	20
215)	P.553523	40	20	20
216)	P.553524	40	20	20
217)	P.553525	40	20	20
218)	P.553526	40	20	20
219)	P.553527	40	20	20
220)	P.553528	40	20	20
221)	P.553529	40	20	20
222)	P.553530	40	20	20
223)	P.553531	40	20	20
224)	P.553532	40	20	20
225)	P.553533	40	20	20
226)	P.553534	40	20	20
227)	P.553535	40	20	20
228)	P.553536	40	20	20
✓229)	P.553537	40	20	20
230)	P.553538	40	20	20

	Claims	Geology	Mag.	E. M.
141)	P.553429 ✓	40	20	20
142)	P.553430	40	20	20
143)	P.553431	40	20	20
144)	P.553432	40	20	20
145)	P.553433	40	20	20
146)	P.553434	40	20	20
147)	P.553435	20	20	20
148)	P.553436	--	20	--
149)	P.553437	20	20	20
150)	P.553438	40	20	20
151)	P.553439	40	20	20
152)	P.553440	40	20	20
153)	P.553441	40	20	20
154)	P.553442	40	20	20
155)	P.553443	40	20	20
156)	P.553444	40	20	20
157)	P.553445	40	20	20
158)	P.553446	20	20	20
159)	P.553447	40	20	20
160)	P.553448	40	20	20
161)	P.553449	40	20	20
162)	P.553450	40	20	20
163)	P.553451	40	20	20
164)	P.553452	40	20	20
165)	P.553453	40	20	20
166)	P.553454	40	20	20
167)	P.553455	40	20	20
168)	P.553456	20	20	20
169)	P.553457	--	20	--
170)	P.553458	20	20	--
171)	P.553459	40	20	20
172)	P.553460	40	20	20
173)	P.553461	40	20	20
174)	P.553462 ✓	40	20	20
175)	P.553463	40	20	20
176)	P.553464	40	20	20
177)	P.553465	40	20	20
178)	P.553466	40	20	20
179)	P.553467	40	20	20
180)	P.553468	40	20	20
181)	P.553469	40	20	20
182)	P.553470	40	20	20
183)	P.553471	40	20	20
184)	P.553472	40	20	20
185)	P.553473	20	20	20
186)	P.553474	20	20	20
187)	P.553475 ✓	20	20	20

	Claims	Geology	Mag.	E. M.
96)	P.553384 ✓	40	20	20
97)	P.553385	40	20	20
98)	P.553386	40	20	20
99)	P.553387	40	20	20
100)	P.553388	40	20	20
101)	P.553389	40	20	20
102)	P.553390	40	20	20
103)	P.553391	40	20	20
104)	P.553392	40	20	20
105)	P.553393	40	20	20
106)	P.553394	40	20	20
107)	P.553395	40	20	20
108)	P.553396	40	20	20
109)	P.553397	40	20	20
110)	P.553398	40	20	20
111)	P.553399	40	20	20
112)	P.553400	40	20	20
113)	P.553401	40	20	20
114)	P.553402 ✓	40	20	20
115)	P.553403 ✓	40	20	20
116)	P.553404	40	20	20
117)	P.553405	40	20	20
118)	P.553406	40	20	20
119)	P.553407	40	20	20
120)	P.553408	40	20	20
121)	P.553409	40	20	20
122)	P.553410	40	20	20
123)	P.553411	40	20	20
124)	P.553412	40	20	20
125)	P.553413	40	20	20
126)	P.553414	40	20	20
127)	P.553415	40	20	20
128)	P.553416	40	20	20
129)	P.553417	40	20	20
130)	P.553418	40	20	20
131)	P.553419	40	20	20
132)	P.553420	40	20	20
133)	P.553421	40	20	20
134)	P.553422	40	20	20
135)	P.553423	40	20	20
136)	P.553424	40	20	20
137)	P.553425	40	20	20
138)	P.553426	40	20	20
139)	P.553427	40	20	20
140)	P.553428 ✓	40	20	20

	Claims	Geology	Mag	E. M.
48)	P.553336 ✓	40	20	20
49)	P.553337	40	20	20
50)	P.553338	40	20	20
51)	P.553339	40	20	20
52)	P.553340	40	20	20
53)	P.553341	40	20	20
54)	P.553342	40	20	20
55)	P.553343	40	20	20
56)	P.553344	40	20	20
57)	P.553345	40	20	20
58)	P.553346	40	20	20
59)	P.553347	40	20	20
60)	P.553348	40	20	20
61)	P.553349	40	20	20
62)	P.553350	20	10	10
63)	P.553351	40	20	20
64)	P.553352 ✓	40	20	20
65)	P.553353 ✓	20	10	10
66)	P.553354	40	20	20
67)	P.553355	40	20	20
68)	P.553356	40	20	20
69)	P.553357	40	20	20
70)	P.553358	40	20	20
71)	P.553359	40	20	20
72)	P.553360	40	20	20
73)	P.553361	40	20	20
74)	P.553362	40	20	20
75)	P.553363	40	20	20
76)	P.553364	40	20	20
77)	P.553365	40	20	20
78)	P.553366	40	20	20
79)	P.553367	40	20	20
80)	P.553368	40	20	20
81)	P.553369	40	20	20
82)	P.553370	40	20	20
83)	P.553371	40	20	20
84)	P.553372	40	20	20
85)	P.553373	40	20	20
86)	P.553374	40	20	20
87)	P.553375	40	20	20
88)	P.553376	40	20	20
89)	P.553377	40	20	20
90)	P.553378	40	20	20
91)	P.553379	40	20	20
92)	P.553380	40	20	20
93)	P.553381	40	20	20
94)	P.553382	--	20	20
95)	P.553383 ✓	40	20	20

HOPPP LAKE AND LOWER DETOUR LAKE AREA

WORK TO BE APPLIED

Claims	Geology	Mag.	E. M.
1) P.549918 ✓	40	20	20
2) P.549919	40	20	20
3) P.549920	40	20	20
4) P.549921	40	20	20
5) P.549922	40	20	20
6) P.549923	40	20	20
7) P.549924	40	20	20
8) P.549925	40	20	20
9) P.549926	40	20	20
10) P.549927	40	20	20
11) P.549928	40	20	20
12) P.549929	40	20	20
13) P.549930	40	20	20
14) P.549931 ✓	40	20	20
15) P.553303 ✓	40	20	20
16) P.553304	40	20	20
17) P.553305	40	20	20
18) P.553306	40	20	20
19) P.553307	40	20	20
20) P.553308	40	20	20
21) P.553309	40	20	20
22) P.553310	40	20	20
23) P.553311	40	20	20
24) P.553312	40	20	20
25) P.553313	40	20	20
26) P.553314	40	20	20
27) P.553315	40	20	20
28) P.553316	40	20	20
29) P.553317	40	20	20
30) P.553318	40	20	20
31) P.553319	40	20	20
32) P.553320	40	20	20
33) P.553321	40	20	20
34) P.553322	40	20	20
35) P.553323	40	20	20
36) P.553324	40	20	20
37) P.553325	40	20	20
38) P.553326	40	20	20
39) P.553327	40	20	20
40) P.553328	40	20	20
41) P.553329	40	20	20
42) P.553330	40	20	20
43) P.553331	40	20	20
44) P.553332	40	20	20
45) P.553333	40	20	20
46) P.553334	40	20	20
47) P.553335 ✓	40	20	20

2.5963

1984 01 23

Your File: 248  
Our File: 2.5963

Mr. Bruce Hanley  
Mining Recorder  
Ministry of Natural Resources  
60 Wilson Avenue  
Timmins, Ontario  
P4N 2S7

Dear Sir:

RE: Geological Survey on Mining Claims P 544918  
et al in the Hopper Lake and Lower Detour  
Lake Areas

---

The Geological Survey assessment work credits as  
shown on the attached statement have been approved  
as of the above date.

Please inform the recorded holder of these mining  
claims and so indicate on your records.

Yours very truly,

J.R. Morton  
Acting Director  
Land Management Branch

Whitney Block, Room 6643  
Queen's Park  
Toronto, Ontario  
M7A 1W3  
Phone: (416)965-1380

M.E. Anderson:mc

cc: Westmin Resources Ltd  
Suite 1400  
25 Adelaide Street East  
Toronto, Ontario  
M5C 1Y2

cc: Mr. G.H. Ferguson  
Mining & Lands Commissioner  
Toronto, Ontario

cc: Resident Geologist  
Timmins, Ontario

Encl.





Ontario

Ministry of  
Natural  
Resources

# Technical Assessment Work Credits

File  
2.5963

Date  
1984 01 23

Mining Recorder's Report of  
Work No. 248

Recorded Holder <b>WESTMIN RESOURCES LTD</b>
Township or Area <b>HOPPER LAKE AND LOWER DETOUR LAKE AREAS</b>

Type of survey and number of Assessment days credit per claim	Mining Claims Assessed
<b>Geophysical</b>	
Electromagnetic _____ days	P 549918 to 31 inclusive
Magnetometer _____ days	553303 to 81 inclusive
Radiometric _____ days	553383 to 435 inclusive
Induced polarization _____ days	553437 to 56 inclusive
Other _____ days	553458 to 79 inclusive
	553482 - 83
	553503 to 18 inclusive
	553520 to 62 inclusive
	575672
	577751 to 63 inclusive
	577765
	577766 - 67
Section 77 (19) See "Mining Claims Assessed" column	
Geological _____ 40 _____ days	
Geochemical _____ days	
Man days <input type="checkbox"/> Airborne <input type="checkbox"/>	
Special provision <input checked="" type="checkbox"/> Ground <input checked="" type="checkbox"/>	
<input type="checkbox"/> Credits have been reduced because of partial coverage of claims.	
<input type="checkbox"/> Credits have been reduced because of corrections to work dates and figures of applicant.	

**Special credits under section 77 (16) for the following mining claims**

**No credits have been allowed for the following mining claims**

not sufficiently covered by the survey       Insufficient technical data filed

The Mining Recorder may reduce the above credits if necessary in order that the total number of approved assessment days recorded on each claim does not exceed the maximum allowed as follows: Geophysical — 80; Geological — 40; Geochemical — 40; Section 77(19)—60;



**Westmin Resources Limited**  
Suite 1400, 25 Adelaide Street East  
Toronto, Ontario, Canada  
M5C 1Y2  
416 364-8116 Telex: 06-22072

January 17, 1984.

**RECEIVED**

JAN 18 1984

MINING LANDS SECTION

Ministry of Natural Resources,  
Land Management Branch,  
Whitney Block, Room 6643,  
Queen's Park,  
Toronto, Ontario.  
M7A 1W3.

Dear Sir: Your File: 2.5963 and letter dated January 6, 1984

We are returning the geological maps with the coloured outcrops as requested. As the last page of the report has not been enclosed (as indicated in your letter) we can not oblige your request. I have checked the last page of this report and the last page has been signed and dated.

Thank you, and I hope you will find everything in order.

Yours truly,

WESTMIN RESOURCES LIMITED

A handwritten signature in cursive script, appearing to read "S. Kuprejanov".

(Mrs.) S. Kuprejanov,  
Administrative Geologist.

SK/hmc  
Encls.

January 6, 1984

Your File: 248

Our File: 2.5963

Westmin Resources Ltd  
390 Bay Street  
Suite 1414  
Toronto, Ontario  
M5H 2Y2

Dear Sirs:

RE: Geological Survey submitted on Mining Claims  
P 549918 et al in the Areas of Hopper Lake  
and Lower Detour

---

Enclosed are the plans, in duplicate, and the last page of the report for the above-mentioned survey. Please have the author of the report date and sign the report and indicate geological outcrops outlined by a colour code.

Please return all material to this office as soon as possible.

Yours very truly,

J.R. Morton  
Acting Director  
Land Management Branch

Whitney Block, Room 6643  
Queen's Park  
Toronto, Ontario  
M7A 1W3  
Phone: (416)965-1380

M.E. Anderson:mc

cc: Mining Recorder  
Timmins, Ontario

Encl.



Mining Lands Comments

*- report not signed*  
*- geology maps not colour*

To: Geophysics

Comments

Approved     Wish to see again with corrections    Date    Signature

To: Geology - Expenditures *M. C. Kustia*

Comments

*not worth sending back for coloring*

Approved     Wish to see again with corrections    Date *Dec 19/83*    Signature *C Kustia*

To: Geochemistry

Comments

*L.D.*

Approved     Wish to see again with corrections    Date    Signature

To: Mining Lands Section, Room 6462, Whitney Block. (Tel: 5-1380)

1983 11 04

Mining Recorder  
Ministry of Natural Resources  
60 Wilson Avenue  
Timmins, Ontario  
P4N 2S7

Dear Sir:

We have received reports and maps for a Geological survey submitted under Special Provisions (credit for Performance and Coverage) on mining claims P 549918 et al in the Areas of Hopper Lake & Lower Detour.

This material will be examined and assessed and a statement of assessment work credits will be issued.

Yours very truly,

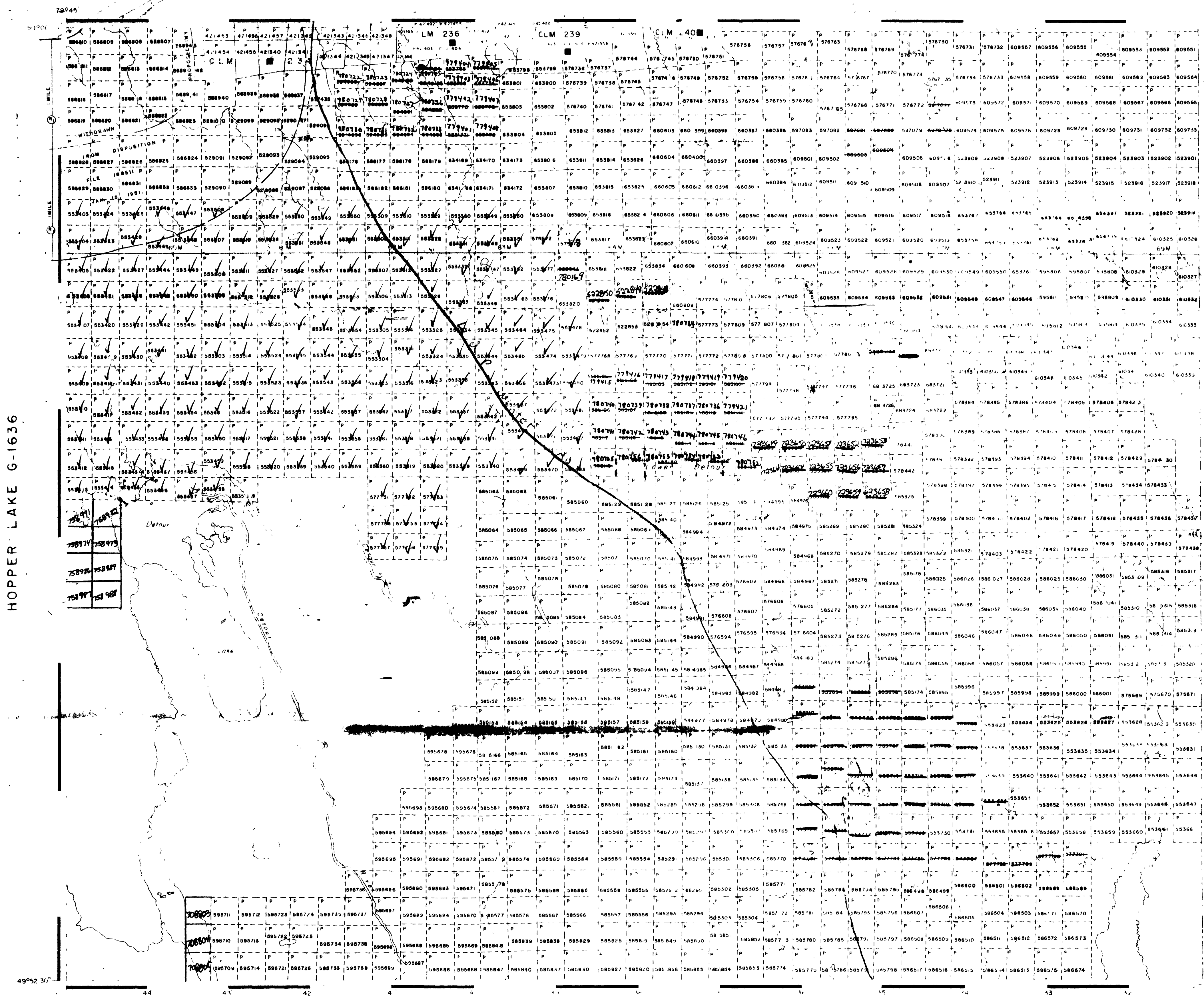
E.F. Anderson  
Director  
Land Management Branch

Whitney Block, Room 6643  
Queen's Park  
Toronto, Ontario  
M7A 1W3  
Phone:(416)965-1380

A. Barr:mc

cc: Westmin Resources Ltd  
390 Bay Street  
Suite 1414  
Toronto, Ontario  
M5H 2Y2

SUNDAY LAKE G-1677



REFERENCES

- AREAS WITHDRAWN FROM DISPOSITION
- M R O MINING RIGHTS ONLY
  - S R O SURFACE RIGHTS ONLY
  - M + S MINING AND SURFACE RIGHTS
- | Description | Order No | Date     | Disposition | File |
|-------------|----------|----------|-------------|------|
| NR W / 81   |          | (S / 78) | S R C       | 8651 |
|             |          |          |             |      |

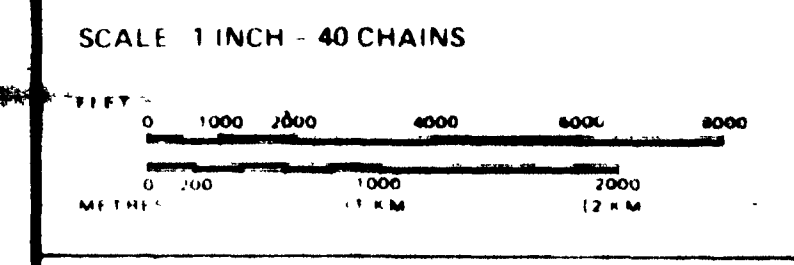
Received Aug 4/83

LEGEND

- HIGHWAY AND ROUTE No.
- OTHER ROADS
- TRAILS
- SURVEYED LINES
  - TOWNSHIPS BASE LINES ETC.
  - LOTS MINING CLAIMS PARCELS ETC.
- UNSURVEYED LINES
  - LOT LINES
  - PARCELS BOUNDARY
  - MINING CLAIMS ETC.
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKIEG
- MINES
- TRAVERSE MONUMENT

DISPOSITION OF CROWN LANDS

- | TYPE OF DOCUMENT               | SYMBOL |
|--------------------------------|--------|
| PATENT SURFACE & MINING RIGHTS | ●      |
| SURFACE RIGHTS ONLY            | ○      |
| MINING RIGHTS ONLY             | ◐      |
| LEASE SURFACE & MINING RIGHTS  | ■      |
| SURFACE RIGHTS ONLY            | ◼      |
| MINING RIGHTS ONLY             | ◻      |
| LICENCE OF OCCUPATION          | ◑      |
| ORDER IN COUNCIL               | ◒      |
| RESERVATION                    | ◓      |
| CANCELLED                      | ◔      |
| SAND & GRAVEL                  | ◕      |
- NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6 1913 VESTED IN ORIGINAL PATENTEES BY THE PUBLIC LANDS ACT R.S.O. 1910 CHAP. 300 SEC. 83 SUBSEC. 1



AREA

**LOWER DETOUR LAKE**

M. N. R. ADMINISTRATIVE DISTRICT

**COCHRANE**

MINING DIVISION

**PORCUPINE**

LAND TITLES / REGISTRY DIVISION

**COCHRANE**

DATE OF ISSUE  
JAN 3 1984  
Ministry of Natural Resources  
TORONTO

Ministry of Natural Resources  
Land Management Branch  
Ontario

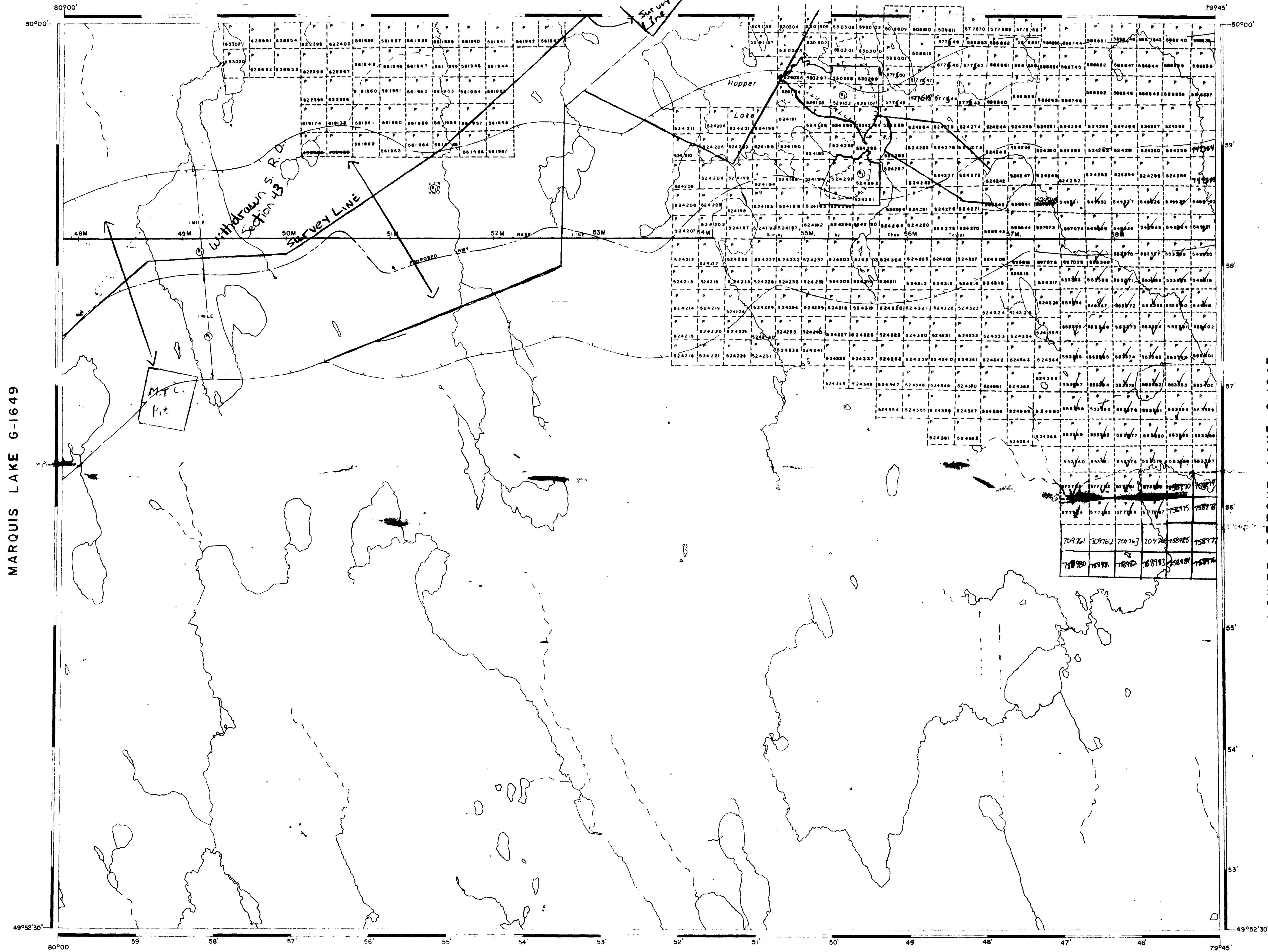
Date: DECEMBER 1982  
Number: **G-1647**

ATKINSON LAKE G-1626



DATE OF ISSUE  
 JAN 3 1984  
 Ministry of Natural Resources  
 TORONTO

WEST OF SUNDAY LAKE G-1680



REFERENCES

AREAS WITHDRAWN FROM DISPOSITION  
 M.R.O. - MINING RIGHTS ONLY  
 S.R.O. - SURFACE RIGHTS ONLY  
 M.S. - MINING AND SURFACE RIGHTS

Description	Order No.	Date	Disposition	Folio
①	NR.W.V. 8	15/7/81	SR	18801

SAND AND GRAVEL

② QUARRY PERMIT  
 RECEIVED  
 1984  
 ③ Withdrawn S.R.D. Section 43  
 Quarry permit area  
 Received Aug. 16/83

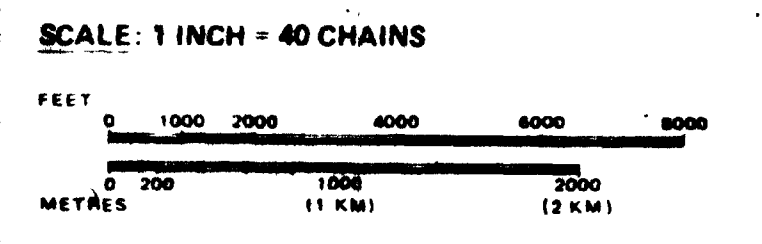
LEGEND

- HIGHWAY AND ROUTE No
- OTHER ROADS
- TRAILS
- SURVEYED LINES  
 TOWNSHIPS, BASE LINES, ETC  
 LOTS, MINING CLAIMS, PARCELS, ETC
- UNSURVEYED LINES  
 LOT LINES  
 PARCEL BOUNDARY  
 MINING CLAIMS ETC
- RAILWAY AND RIGHT OF WAY
- UTILITY LINES
- NON-PERENNIAL STREAM
- FLOODING OR FLOODING RIGHTS
- SUBDIVISION OR COMPOSITE PLAN
- RESERVATIONS
- ORIGINAL SHORELINE
- MARSH OR MUSKIEG
- MINES
- TRAVERSE MONUMENT
- L.U.P.

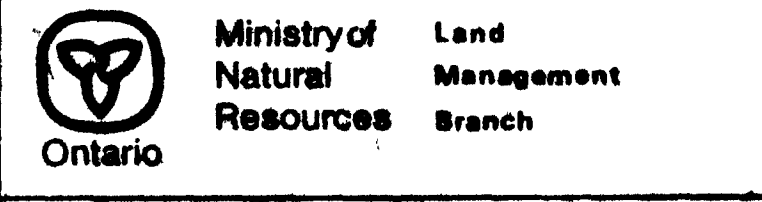
DISPOSITION OF CROWN LANDS

TYPE OF DOCUMENT	SYMBOL
PATENT, SURFACE & MINING RIGHTS	●
" SURFACE RIGHTS ONLY	○
" MINING RIGHTS ONLY	○
LEASE, SURFACE & MINING RIGHTS	■
" SURFACE RIGHTS ONLY	■
" MINING RIGHTS ONLY	■
LICENCE OF OCCUPATION	▼
ORDER-IN-COUNCIL	OC
RESERVATION	○
CANCELLED	○
SAND & GRAVEL	○

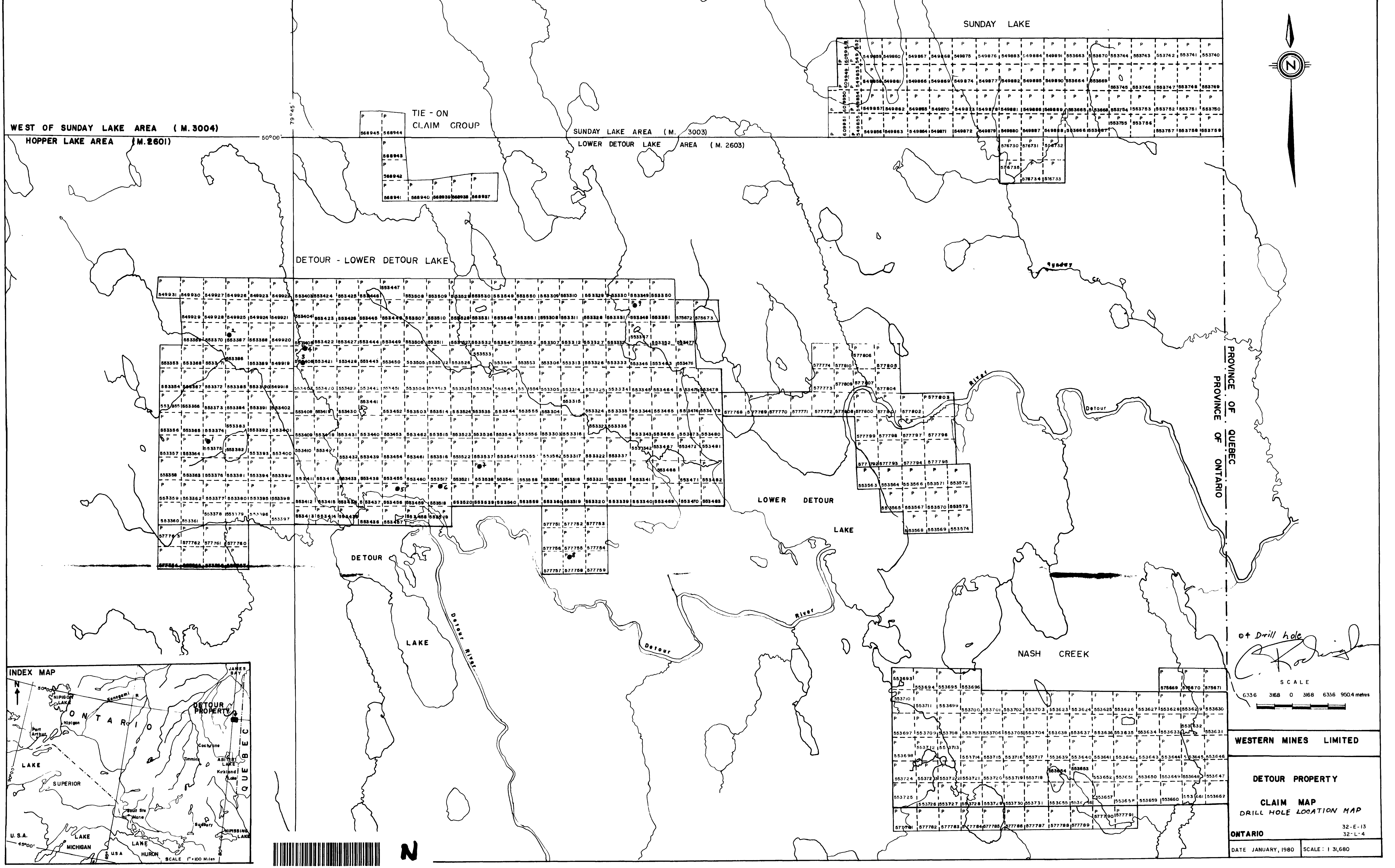
NOTE: MINING RIGHTS IN PARCELS PATENTED PRIOR TO MAY 6, 1913, VESTED IN ORIGINAL PATENTEE BY THE PUBLIC LANDS ACT, R.S.O. 1970, CHAP. 380, SEC. 63, SUBSEC. 1



AREA  
**HOPPER LAKE**  
 M.N.R. ADMINISTRATIVE DISTRICT  
**COCHRANE**  
 MINING DIVISION  
**PORCUPINE**  
 LAND TITLES / REGISTRY DIVISION  
**COCHRANE**



Date DECEMBER 1982 Number  
**G-1636**

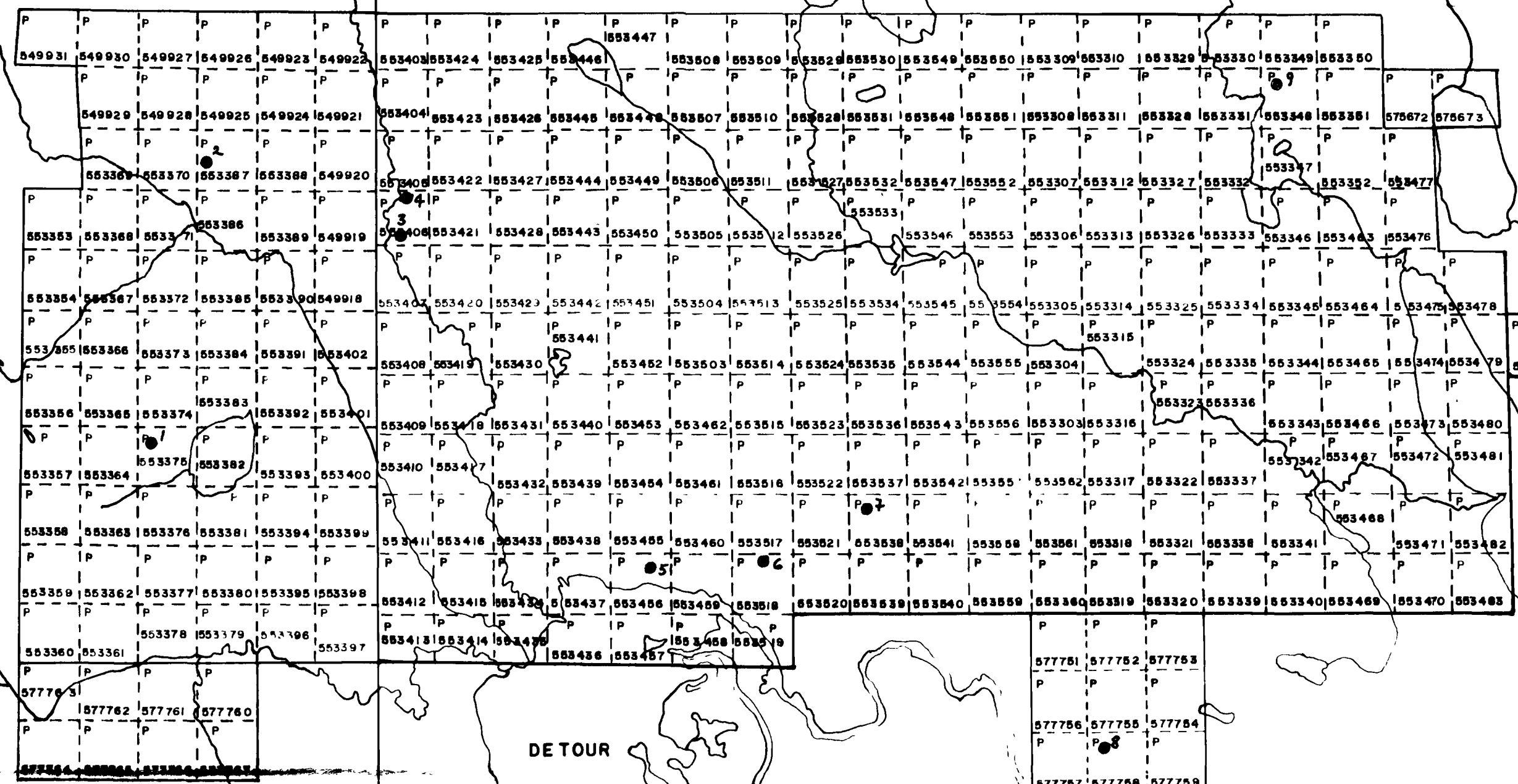


WEST OF SUNDAY LAKE AREA (M. 3004)  
HOPPER LAKE AREA (M. 2601)

TIE - ON  
CLAIM GROUP

SUNDAY LAKE AREA (M. 3003)  
LOWER DETOUR LAKE AREA (M. 2603)

DETOUR - LOWER DETOUR LAKE

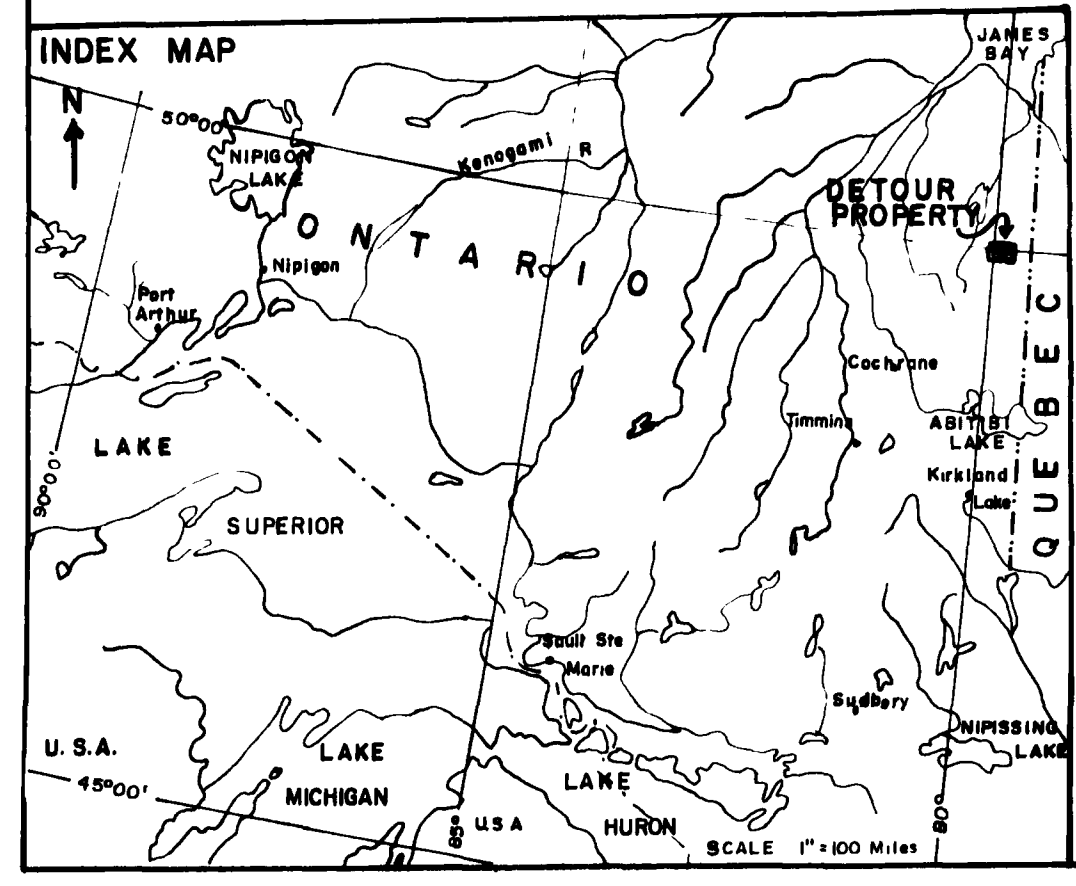


LOWER DETOUR  
LAKE

DETOUR  
LAKE

NASH CREEK

PROVINCE OF QUEBEC  
PROVINCE OF ONTARIO



220

Drill hole  
*[Signature]*

SCALE  
6336 3168 0 3168 6336 950.4 metres

WESTERN MINES LIMITED

DETOUR PROPERTY

CLAIM MAP  
DRILL HOLE LOCATION MAP

ONTARIO  
DATE JANUARY, 1980 SCALE: 1:31,680

32-E-13  
32-L-4