

THE MUNRO PROSPECT

MUNRO TOWNSHIP (N.T.S. 42A/09), ONTARIO

LARDER LAKE MINING DIVISION

GEOLOGICAL & GEOPHYSICAL (MAX-MIN) SURVEYS

POWER STRIPPING PROGRAM

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#### MUNRO PROSPECT - FINAL O.P.A.P. REPORT

#### 1.0) INTRODUCTION

The following report describes a work program completed in the fall of 1991 on the Munro Prospect. Funding for the program was provided by two sources:

- Incentives Office (M.N.D.M. Sudbury)
- Trinity Explorations

Reference is directed to the original project proposal forwarded to the incentives office on March 19, 1991.

The 1991 survey work consisted of two portions:

- geological mapping
- geophysical (max-min) survey

Survey work was performed in September, 1991 by Randon Ferderber (Val d'Or, Quebec) and assisted by Glenn J. Mullan (Kirkland Lake, Ontario). Power stripping & wajaxing were performed by Harry Ferderber, Daniel St.-Pierre, and Randon Ferderber between October 22 - 26, 1991.

#### 2.0) LOCATION AND ACCESS

The property consists of 17 unpatented mining claims (1 unit, or 16 hectares each) located in east central Munro Township, Ontario.

See Figure #1 - Location Sketch - Claim Map. See Figure #2 - Location/Compilation Sketch

The area is approximately 23 km northeast of Matheson or  $50 \, \text{km} \, \text{NNW}$  of Kirkland Lake. The east boundary of the group is located  $400 \, \text{metres}$  west of Munro Lake.

As Munro is a surveyed township, the specific legal descriptions follow:

- Lot 5, Concession 4, East Half (NE & SE 1/4's of N 1/2; NE & SE 1/4's of S 1/2)
- Lot 4, Concession 4, N 1/2, NW & SW & SE 1/4's
  - S 1/2, NW & NE & SE & SW 1/4's
- Lot 3, Concession 4, N 1/2, SW & SE 1/4's S 1/2, NW & NE & SW & SE 1/4's

Geographic coordinates are 80.11' west & 48.30' north.

Access to the claims is excellent via the maintained Hedman Mine (5 km north) road. Secondary trails provide direct access to 12 of the claims and could easily be improved as required (esker country).

Figure 1
Location Stock

MUNRO TOWNSHIP
CLAW MANAGEMENT

# TOWNSHIP SUBJECT TO TO FORESTRY OPERATIONS

1 Lot 5 | Lot 4 | Lot 3 53314 53315 W (D MRO D MRO MRO 801111 801112 71383 71282 800151 MRO MRO 53318 65438 MRO T 378 54724 59620 ©/<sub>MRO</sub> 1800152 3 ╚ 59621 59619 58870 DATE OF ISSUE (58761) 44232 2135 44233 | 58762 LARDER LAKE ∟ 53946 666320 866346 53947 6 53948 (P) 365 499941 1049615 (LLL) 41525C2 152501 072522 1152480 | 1152481 63/778 1152490 1155655 11155648 1152322 83772 83/773

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PATENTED LAN CROWN LAND LEASES LOCATED LANG LICENSE OF 0 MINING RIGHT SURFACE RIGH ROADS IMPROVED RO KING'S HIGHW RAILWAYS POWER LINES MARSH OR MI MINES CANCELLED PATENTED S.

400' Surface shores of a

#### 3.0) TOPOGRAPHY & QUATERNARY GEOLOGY

Topography within the township reflects the Pleistocene deposits (lacustrine clays and esker sands) of glacial Lakes Ojibway & Barlow.

Map sheet #P. 2735 ("Quaternary Geology of the Matheson Area") indicates the claim group is underlain by two deposit types:

- glaciolacustrine offshore coarse-grained deposits (sand & minor gravel)
- glaciofluvial ice-contact deposits (sand, gravel, cobbles, boulders)

Several kettle lakes and esker ridges are observed both throughout the township and within the claim group (ie: kettle lake @ northeastern corner).

Recent work (1985: B.R.I.M. Program - Maps #P. 2735, P. 3136 {Sonic Drilling}, Map 80853 {Sonic Drill Hole 35-10}) has indicated that the last ice mass having affected the area was of Late Wisconsinian age. Directional features (striae, etc.) indicate a general flow direction to the southeast (165 azimuth).

Most of the esker and delta deposits were left by the retreating ice fronts some 10,000 years B.P. Five main esker systems are observed in the Matheson area with the Munro Esker being the most extensive (Michaud Twp to the south to Knox Twp. to the north). Relief along the esker in excess of 40m is seen with kettle and crest topography yielding a gentle rolling appearance through most of the area.

In the map area, the Munro Esker is flanked by coarse grained glaciolacustrine deposits. Most of these consist of sands and gravels, fining away from the esker.

In 1985, as part of the B.R.I.M. program, a single overburden sonic drill hole (#85-10) was completed within the present claim group along the Hedman Mine access road. The general overburden stratigraphy was described as 41.1m of sand & silt overlying 0.3m of poorly sorted, gritty, silty sand on bedrock (pyroxenite).

Elevated values in Cu, Cr, & Co were observed in all three fractions ("H" {-10 mesh non-magnetic heavy minerals}, "G" {-250 mesh}, & "T" {-10 mesh}). These anomalous values may be related to the underlying bedrock (1986: O.G.S., Sonic Drill Hole #85-10, Map 80 853).

Several small beaver ponds and creeks were mapped along the western and southwestern portion of the claim group.

#### 2.0) PREVIOUS EXPLORATION SUMMARY

Four files on record at the office of the Resident Geologist in Kirkland Lake describe work within the present claim group with several other files describing work on contiguous claims.

#### A) Previous Work Within the MUNRO Prospect:

File #KL-0566 Cons. Ranwick Uranium Mines Ltd Munro, McCool, Michaud, & Guibord Twp's

KL-1931 Mullan, Glenn Munro Twp.

KL-2748 Union Carbide Exploration Ltd.
Munro Twp.

## 4.1) File #KL-0566 Cons. Ranwick Uranium Mines Ltd Munro, McCool, Michaud, & Guibord Twp's

1954 airborne work (radem & mag) concentrated along a large north-trending property of which only a single claim is included in the MUNRO Prospect (SE claim in Lot 3, Con. 4, S 1/2, SE 1/4). File consists of maps only, no report. Extreme mag high identified in claim of interest.

## 4.2) File #KL-1931 Mullan, Glenn Munro Twp.

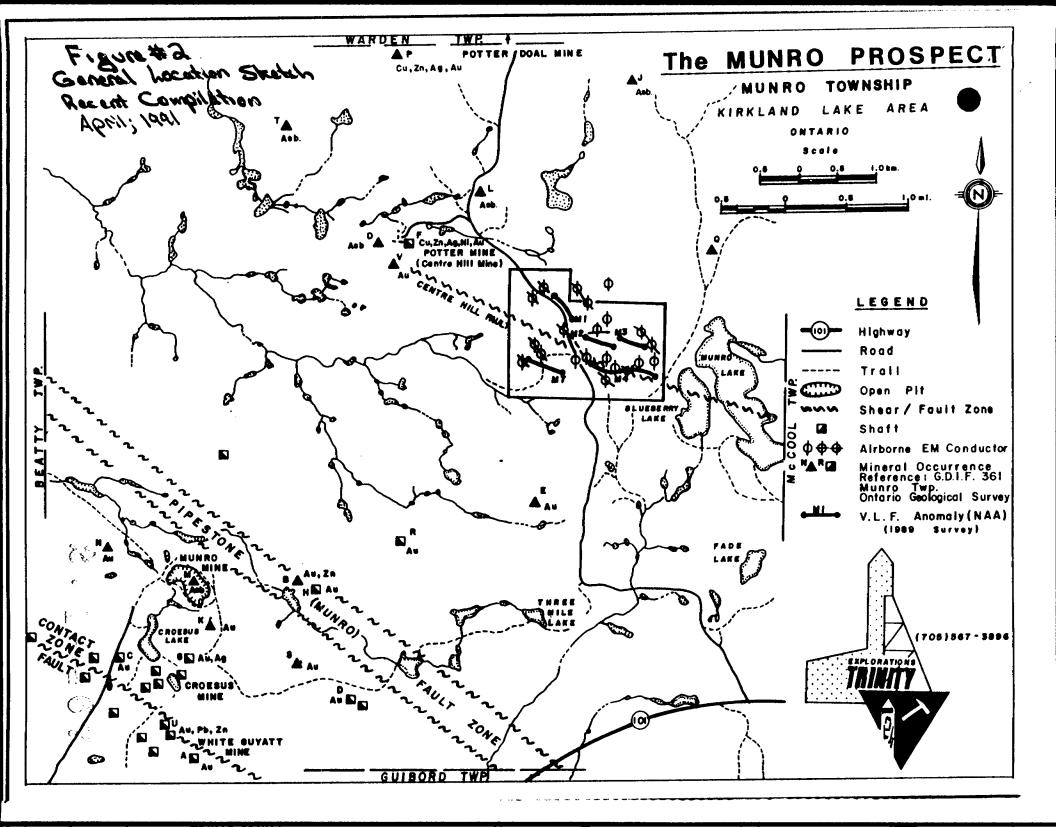
1985 A.E.M. (VLF - Seattle, Wa.; ) report over the MUNRO Prospect (then consisted of 15 claims).

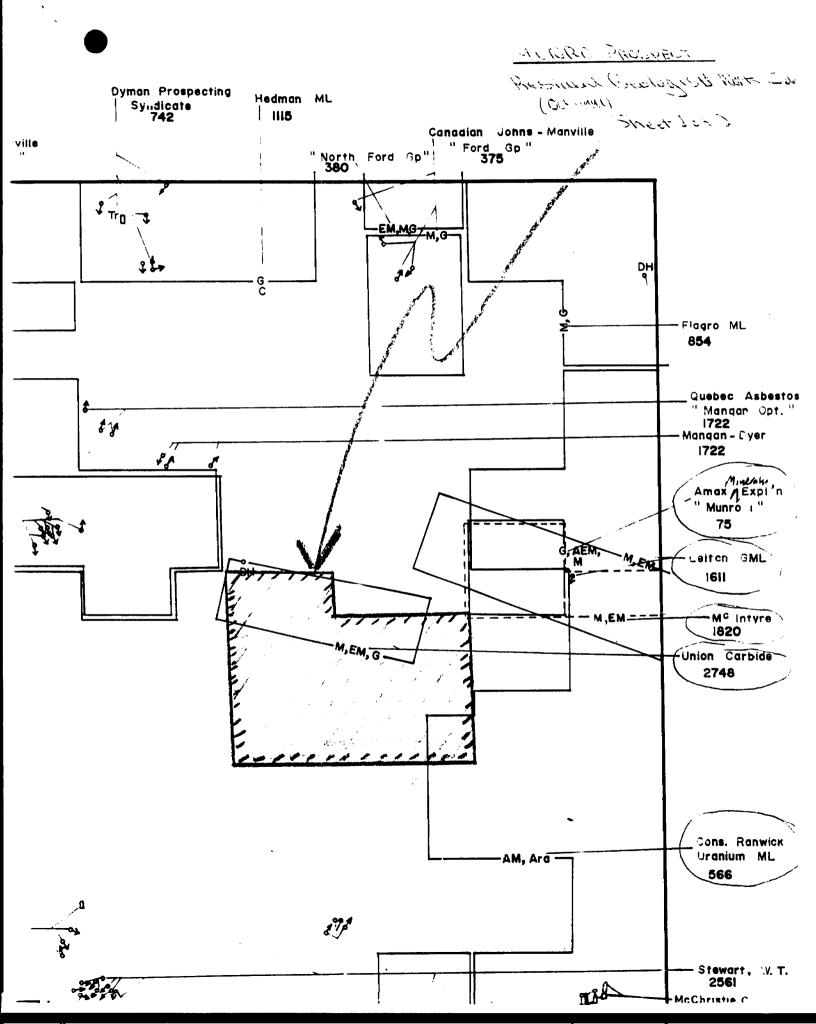
Mag portion shows general distribution of peridotite cumulate sequence (NE half of group) and volcanics to SW. Several anomalies were briefly described as representing possible bedrock sources:

#3 (trending off northern boundary to NW), follows mag low
 #4W, #4S, #4E (central portion of claims) correspond to oval mag high representing cumulate sequence

Most of the other conductive sources are isolated. However, the ground surveys (NAA & NSS) completed in 1989 showed good correlation.

Strike of all conductors is WNW to NNW, conformable to regional geological strike.





4.3) File #KL-2730 Tundra Gold Mines Ltd. "Munro Prospect" Munro Twp.

In 1989, the MUNRO Prospect was one of 7 properties optioned by the author to Tundra Gold Mines Ltd. Following linecutting, magnetometer and VLF surveys (NAA) were completed. A second VLF (NSS) survey was contracted later in the year.

Principal targets were the Centre Hill Fault Zone (trending WNW across the centre of the claims) and a small isolated INPUT anomaly near the approximate centre of the property.

Both the mag (GSM-18, 50' readings) and VLF (both frequencies) appear to have mapped both of the targets, or possibly alternate structures in the same areas.

The mag survey outlined two features crossing the claims in a northwesterly direction. A north - south trending fault is indicated near the western boundary of the group (November, 1989: "Geophysical Report..." by Jens Hensen) and merits attention in two areas:

- claim L-1049615 where it intersects the assumed position of the Centre Hill Fault Zone
- near Lines 15+00 W and 18+00 W (stations 9+00 S & 12+00S)
   near the strong negative mag. anomalies

The VLF anomalies were described by J. Hensen as follows (using data from NAA):

- M-1 = broad anomalies, coincident mag high (+1500 gammas)
- M-2 & M-3 = coincident mag high, may correspond to INPUT shown on map 80586 (Munro Twp, A.E.M. sheet)
   sharp features on "M-2" may indicate shearing or faulting
- M-4 = possibly caused by conductive material in Centre Hill Fault Zone
- M-5 = weak & lower priority
- M-6 = single line anomaly coincident with mag low located along north - south fault
- M-7 = weak, without any magnetic signature

4.4) File #KL-2748 Union Carbide Exploration Ltd. Munro Twp.

1965 mag and Turam (em) report by Huntec Ltd. Survey followed test over one of the known copper zones at Centre Hill Mines Ltd.

As the E.M. maps are missing from the report (along with the test data over the copper zone), little can be added to the authors comments. No follow up work was recommended.

- B) Work on Contiguous Claim Blocks:
- 4.5) File #KL-0075 Amax Minerals Exploration "Munro-1" Munro Twp

The file is a record of work by McIntyre Mines (VEM = E.M.-17) in the mid-1970's and the subsequent follow up work by Amax-Canamax. The property lies directly north of Munro Lake. The program was designed to test the long conductors thought to represent similar targets to "Munro Copper" (past producer).

Work done included airborne e.m. & mag (regional followed up with helicopter) and geological mapping. The property was later expanded from 4 claims to 16 with additional geological mapping completed on all claims.

There is no record of drilling by the Canamax interests.

The two main conductors of interest correlate well with those subsequently identified in the 1984 Questor INPUT survey. Both of the conductors are located northwest of the MUNRO Prospect (approx. 900m and 1200m NW, respectively).

4.6) File #KL-0166 Ateba Mines Inc
Munro & McCool Twp.

Note: Ateba Mines was a junior company controlled by A.C.A.
Howe interests of Toronto

1987 - 1988 program consisting of mag & VLF directed towards gold exploration over 52 claim property in McCool & Munro. This group is contiguous and north & northeast of the MUNRO Prospect. It lies on the mafic intrusive complex striking through McCool & Munro Twp's (Munro Lake Sill?).

Two overburden drill programs (17-ddh's in 1987; 18-ddh's in 1988) followed the reconnaisance geophysics.

In 1988, a small grid program of mag, VLF, & geology was completed over 6 of the claims in McCool Twp. with an HLEM (Max-Min) survey over the entire grid. The max-min survey located several areas of interest, grouped into 3 main conductive "zones" (= A, B, & C) all thought to be related to the Munro Lake Sill.

Zone C is of interest to the MUNRO Prospect as it was interpreted as related to the Centre Hill Fault zone.

Zone B, striking through the contiguous claims north of the MUNRO Prospect, is believed to represent the same conductors tested by Amax - Canamax in the 1970's. The conductors outlined (on VLF as well) correlate with the INPUT anomalies shown on the Munro Twp (1984: O.G.S. - B.R.I.M. Program) Map 80586.

Zone A was thought to represent the northern limb of the Munro Lake Sill with Zone C reflecting the southern limb.

## 4.7) File #KL-1611 Leitch Gold Mines Ltd Munro & McCool Twp's

1963 - 1964 mag, e.m., gravity, & drill program (1 hole) to follow up conductors located in private airborne e.m. survey.

Drill hole cut 126' of sedimentary breccia & conglomerate interbedded with black shaly carbonaceous material, all of which were well mineralized with pyrite & pyrrhotite. Serpentinized peridotite & fine to medium grained diorite followed for 367'.

Claims located north of MUNRO Prospect (same horizon described above as Zone B by Ateba Mines & tested by Canamax in mid-1970's).

## 4.8) File #KL-1820 McIntyre MInes Ltd Munro Twp.

1974 - 1975 program of EM-17 (Geonics), mag & VLF on claims located north of MUNRO Prospect. Purpose was to conduct additional work along the main conductor first outlined by the Leitch program (see File KL-1611, Section 4.7).

A long conductive source with a flanking mag high was outlined and targeted for follow-up work. See Section 4.5, file #KL-0075 (Amax - Canamax who subsequently acquired this property).

## 4.9) File #KL-2356 Reoplata Mines Ltd Munro Twp.

Program conducted in early to mid-1950's directed towards placer gold deposits in Munro Lake area (NE, E, & SE of MUNRO Prospect).

A fairly large scale operation was designed & implemented (200' mechanical sluice box, etc.) the chief weakness of which was a generally poor sampling program (the large property {103 claims, 69 in Munro} was never systematically explored).

At a later date, Cons. Ranwick Uranium optioned the property & examined the esker for uranium. Reoplata later conducted mag surveys and 3 short ddh's to examine the property's asbestos possibilities (in light of the nearby Can. Johns-Manville operation).

A letter in the above file from a Mr. Garry Colautti in 1979 indicates that an attempt was made to reaquire the property (leases having expired). No further information is on file.

4.10) File #KL-2422 Rumelski, O. Munro twp.

Brief file (1987) containing location sketches of pits \$ trenches south of MUNRO Prospect. Nearest trench is immediately south of south boundary.

#### C) Significant Occurrences, Deposits, Past Producers:

Several other significant properties have been developed in the Munro Township area for gold (ie: Croesus), copper (ie: Potter Mine {Centre Hill or Munro Copper}), copper-zinc (ie: Potter-Doal) and asbestos (Munro Mine, and the still producing Hedman Mine {lizardite/"hedmanite"} in adjacent Warden Township).

Brief descriptions (1990: O.F.R. 5735 "Mineral Occurrences, Deposits, & Mines of the Black River-Matheson Area" by O.G.S.) of the most significant occurrences follow:

#### 4.11) Potter Mine (Lot 7, Concession 5, S 1/2)

Originally discovered in 1952 and developed by Centre Hill Mines Ltd (through 1966) and Munro Copper Mines Ltd (through 1968). Renamed Potter Mine by Patrick Harrison Compnay Ltd. (owners) who continued mining through 1972.

Reported development includes a 1,272' shaft with 9 levels @ 200', 350', 476', 602', 725' 850', 976', 1102', 1228'. Total tonnage milled reported to be 477,575 tons with an average grade of 1.63% Cu & 1.5% 2n.

Host rocks are ultramafic to felsic volcanics & volcaniclastics as well as mafic intrusives of the Centre Hill Complex, all included in the Stoughton-Roquemaure Group. The mine area stratigraphy is controlled by the McCool Hill Syncline, a regional scale southeast striking and northwest plunging fold. The mine is located along a portion of the south limb.

Volcanic stratigraphy in the mine area strikes southeast and dips steeply to the north, and faces north. In addition to the layered mafic intrusive complex, a granitic (dioritic?) body occupies part of the area south of Centre Hill Complex (also seen in the NW corner of the MUNRO Prospect).

The Centre Hill Fault occurs south of the Centre Hill Complex and continues southeast into McCool Township. It is parallel to other faults in the Porcupine-Destor Fault system.

Sulphide minerals are hosted by rocks stratigraphically overlying the Centre Hill Complex, a portion of the Munro Lake Sill. The Munro Lake Sill is a 400m - 600m thick ultramafic to mafic layered sill extending southeast from the Centre Hill area through the closure of the McCool Hill Syncline (central McCool Twp.) and back through Munro into Warden Twp. to the northwest, a total distance of some 20 km. The sill is interpreted to have intruded the Stoughton-Roquemaure volcanics.

Ore at the Potter was hosted in thin carbonaceous horizons of Mg-tholeiitic basalt fragmentals +/- hyaloclasites +/- thin dacite ash/tuffs, all overlying the Centre Hill complex and underlying the intercalated tholeiitic and komatiitic volcanic flows.

The fragmentals were reported to be in sheared but conformable contact with the underlying uppermost gabbroic phase of the Centre Hill Complex and overlying mafic and ultramafic volcanics.

The ore consisted of sulphides within a fragmental breccia matrix and as fine-grained, finely-laminated (ie: bedded?) massive sulphides atop the fragmental horizon and/or within the dacitic ash horizon. The ore shoots had considerable down dip extent but were limited to approx. 1m thickness and 15m - 30m width in the horizontal dimension.

Metal zoning was displayed with copper-rich bases and zinc-rich tops. Origin of the Potter Mine sulphides was considered by Paul Coad to indicate replacement and subaqueous exhalitive origin.

The possibility that similar deposits might occur elsewhere along the Munro Lake Sill has not been investigated to any significant degree. It was in this context that the MUNRO Prospect was acquired.

#### 4.12) Croesus Mine (Lot 10, Concession 1, NE 1/4 of N 1/2)

One of area's first discoveries (pre-1920's). Spectacular gold showings (5333 tons milled yielding 14,578 oz Au {2.7 oz/t}) resulted in rapid development of quartz vein (shear/fault controlled) occurrences throughout area (Munro, Beatty, Guibord, etc).

The mine area is located within the Stoughton-Roquemaure volcanics between two regional scale southeast striking shear/fault zones: the Contact Fault and the Munro Fault Zone (= Pipestone?).

Most of the ore mined came from a single 200 foot long quartz vein within a shoot located above the 200' level averaging 85' in length and 2.5' in width.

#### 4.13) Munro Mine (Lots 10 & 11, Con. 2)

Ontario's largest asbestos mine (chrysotile) in the 1950's with production totalling approx. 7.7 million tons yielding some 356,000 tons of asbestos fibre (grade 4.61%) between 1949-1964. Open pit and underground development (1204' production shaft, 936' service shaft, etc.).

Serpentinized peridotite & dunite host chrysotile asbestos and intrude Stoughton-Roquemaure volcanics along the south limb of the SE striking McCool Hill Syncline. The ore bodies are hosted in layered mafic to ultramafic sill-like bodies which are themselves SE striking & dipping steeply southwards.

Host sequence of peridotite-pyroxenite-dunite-gabbro has been traced along strike for approx. 5 1/2 km and averages 300m in width. "A"-orebody was 500m long, 260m wide, a extended to several hundred metres depth.

Host was initially thought to be a differentiated sill but more recent work has been directed towards idea that the mass is complex with both intrusive & extrusive portions along strike with several semi-discordant peridotite-dunite bodies intruding.

#### 4.14) Potter-Doal Mine (Lot 7, Con. 6, N 1/2)

Cu-Zn sulphides discovered in 1926 and initially developed by 120' inclined shaft and 200' vertical shaft. Limited production (several thousand tons?) grading up to 15% Cu, 4% Zn, .045 oz/t Au.

Stoughton-Roquemaure mafic to ultramafic volcanics & intrusives strike east to southeast, dip near vertically, and occupy part of north limb of the SE striking, NW plunging McCool Hill Syncline.

Fine to medium grained Cp-Po-Sph are observed at the contact of the ultramafic - mafic flows as discontinuous lenses. Sulphide lenses reported to be dipping northward in contrast to host volcanics (discordant).

Speculated to be of volcanogenic (exhalitive-type) origin. Stringer mineralization & chloritic alteration reported to be north of (stratigraphically beneath) sulphide lenses.

Alex Bath (B.R.I.M. Geologist from 1984 - 1990) noted from assessment files that the Potter-Doal and Potter (Centre Hill) Mines appear to represent similar stratigraphic horizons within the Stoughton-Roquemaure Group. He also suggested exploration in the area should focus on the tholeiltic portion of the Stoughton-Roquemaure Group, in particular along the same stratigraphic horizons hosting the two main deposits (Potter-Doal & Potter), and where underlain by larger comagmatic mafic to to ultramafic intrusives.

#### 4.15) White-Guyatt Mine (Lot 11, Con. 1)

Gold bearing quartz-carbonate veins are hosted in Porcupine Group sediments (turbidites). In the showing area, the sediments face north, are steeply south dipping (overturned) and southeast striking. The veins appear to be spatially associated with the Stoughton-Roquemaure (volcanics) - Porcupine Group (sediments) contact.

No. 1 vein was tested along 1600' of strike to the 500' level. The veins are hosted by sericitized and iron dolomitized bedded turbidites and appear to be controlled by faults and shears.

Vein widths to 47' were reported. Underground development via two small shafts (90' & 60'?) & limited drifting. Reports of a 31" wide & 110' long section of #1 vein averaging .31 oz/t Au near the west shaft (above 250' level).

Recent work in 1987 appears to have been directed by Lac Minerals who now control the company.

#### 4.16) Placer Dome - Belore Mines Ltd. Joint Venture

The following is excerpted from private files:

52 ddh's following reverse circulation drilling § VLF-em surveys determined that a shear/fault structure - the "Centre Hill Fault" - controls high-grade gold mineralization near the north contact of a syenite plug.

Work to 1988 indicated a "mineral inventory" of approx. 50,000 tons @ 11 gm/tn Au.

The significance of the occurrence is that it is the first reported gold mineralization within the "Centre Hill Fault" deformation zone. As most of the area is overlain by thick glacial drift of the Munro Esker, the results of the program demonstrate the value of electromagnetic surveys towards delineation of structures believed to control gold mineralization in the area.

## 4.17) Mickle Occurrence (Lot 12, Con. 3 - Munro Twp) (Lot 1, Con. 3 - Beatty Twp.)

Work (pits, trenches) dating back to 1915 on "veins" of massive pyrrhotite reported to be up to 5' wide in outcrop. Described as similar to Alexo deposit (Dundonald Twp.)

Host rocks are ultramafic to felsic suites of the Stoughton-Roquemaure Group. Showing area lithologies are SE striking & steeply dipping, north facing and occupy part of the south limb of the McCool Hill Syncline. A regional scale NW-SE striking fault zone (Munro Fault zone) is several hundred metres to the NE.

Mineralization is composed of matrix-sulphide type with subordinate massive sulphides. The main lens in outcrop was described as 5m long and 1m wide. The sulphides consisted of pentlandite, chalcopyrite, violarite, chromite & magnetite.

Sulphides were deposited in a "paleodepression" along the contact between underlying (south) komatiites and an overlying (north) thick mafic to ultramafic unit variously described as komatiite flows (120m thick) or a sill.

The geological reports of the area by J. Satterly (Beatty: A.R. 56-7, Munro: A.R. 60-8, etc.) remain among the most detailed accounts of the early production and development history.

Recent work (1984 - 1990) by the O.G.S. (B.R.I.M. Program) has included detailed mapping of the Munro Lake Sill, remapping of Munro (O.F.M. #159) & Beatty (O.F.M. #158) Townships, everburden (sonic) drilling, etc.

#### 5.0) REGIONAL GEOLOGY (Kirkland Lake - Matheson Area)

The MUNRO Prospect is located in the central portion of the Abitibi Greenstone Belt. The greenstone belt is itself located within the Superior Province (Abitibi Subprovince) of the Canadian Shield.

The Abitibi Greenstone Belt extends in an east - west general direction ("S"-shape) for over 800 km from Chibougamou, Quebec (northeast) to the Wawa area in Ontario (west) making it the largest greenstone belt in the world. The belt is bounded to the south by the Southern Province and Pontiac Subprovince, to the west by the Kapuskasing Structural Zone, and to the north by the Opatica Subprovince.

The Timmins-Kirkland Lake-Rouyn/Noranda area forms a large east trending synclinorium ("Blake River Synclinorium"; 1985: L. Jensen, in Geology and Petrogenesis of the Archean Abitibi Belt in the Kirkland Lake Area, Ontario, M.P. #123) extending between the Lake Abitibi and Round Lake batholiths. Both limbs of the synclinorium are cut by major geological structures, the Destor-Porcupine Fault Zone (north) and Kirkland Lake-Larder Lake Fault Zone (south).

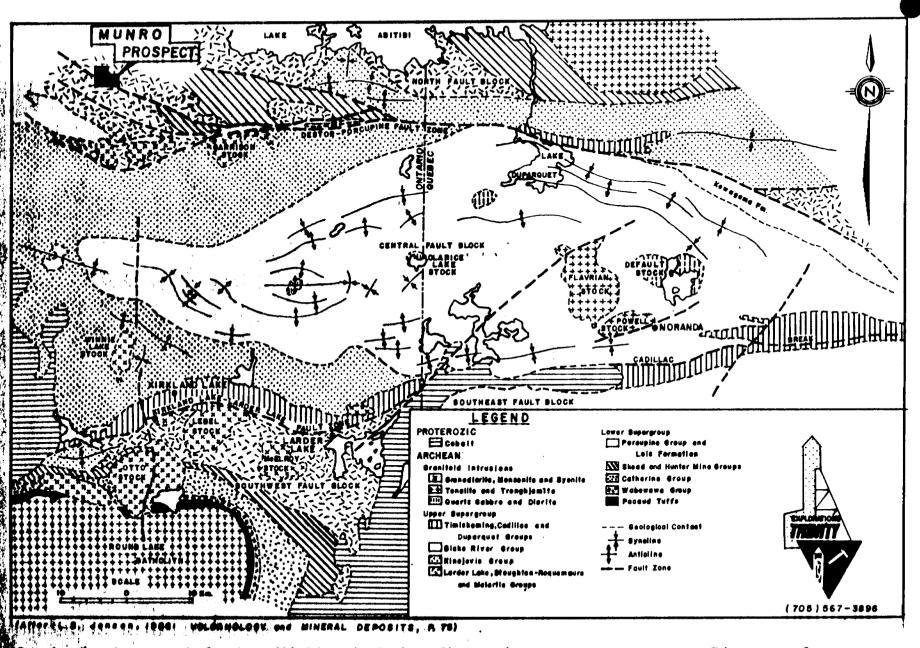
See Figure #4 - General Geological Sketch: Kirkland Lake-Rouyn-Noranda Area.

The property area is located along the north limb of the synclinorium in the Stoughton-Roquemaure Group ("SRG") north of the Destor-Porcupine Fault Zone. The ultramafic komatiites exposed in Munro Township lie at the base of the "Upper (younger) Supergroup" and correlate with the Tisdale Group (Lower Formation) ultramafic komatiites seen in the Timmins area (1986: J.A. Fyon in Excursion Guidebook to Gold '86, page 44).

The SRG is separated from the calc-alkaline Blake River Group by the tholeites of the Kinojevis Group. These Groups have been traced around the nose of the Blake River Synclinorium where they are also observed on the south limb (SRG = Larder Lake Group).

The Munro Lake Sill (largest in the area) is a peridotite-pyroxenite gabbro body from which thick-layered Fe-rich tholeitic flows erupted (?). A belt of similar differentiated sills (cumulates?), peridotite-pyroxenite sills, and ultramafic bodies tend to parallel regional stratigraphy possibly representing a common rift-grabben structure active during formation of the Destor-Porcupine Fault Zone (1986: Geology of the Northwestern B.R.I.M. Region, Ontario by R.M. Johnstone of O.G.S. in GOLD '86 - Poster Paper Abstracts, pp. 77-79).

The largest regional structure (apart from the DPFZ) is the McCool Hill Syncline. It is a tight, slightly overturned (north), southeast trending feature with a gentle plunge to the northwest.



Sealegical map set, the Kirkland Lake - Noranda area.

Figure

Three branches of the Destor-Porcupine Fault Zone (DPFZ) have been mapped within the area: the north branch (at the SRG - Hunter Mine Group contact), the well documented southern branch (extending from Quebec through to the Timmins area) and the middle branch (seen in the Munro area as the Munro Fault Zone {= "Pipestone"?}).

Both the middle and southern branches have associated fuchsite-enriched pods of locally intense carbonatization ("green carbonate" ie: Glimmer Property in Beatty Twp.). Gold bearing quartz and quartz-carbonate veins have been located within major fault zones and associated splays and cross faults.

The Kirkland Lake - Matheson area is situated near the widest section ("core") of the Abitibi Greenstone Belt such that only low to middle greenschist facies metamorphic effects are normally observed.

Age dating within the Stoughton-Roquemaure Group has determined ages of 2765 ( $\pm$ /- 42 Ma) for the komatiites in northern Munro Township and 2714 ( $\pm$ /- 14 Ma) for the calcalkaline rhyolites in central Beatty township.

The north-south trending dykes ("Matachewan") post date (2633  $\pm$ /- 93 Ma) all of the regional shear syestems.

All known economic massive (VMS) & base metal deposits of volcanic origin in the Timmins area are hosted by rocks younger than 2800 Ma. As well, most of the lode gold deposits in the Abitibi Greenstone Belt are spatially associated with regional ductile shear/fault zones (ie: Destor-Porcupine) which were active more recently in the tectonic history (<2690 Ma) of the region.

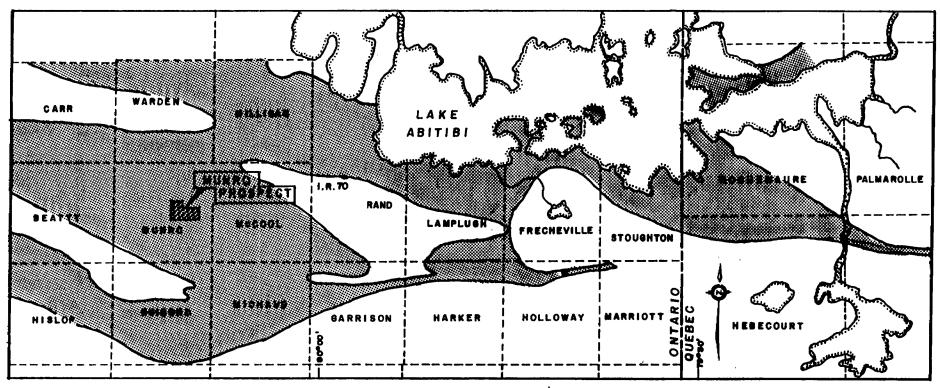
#### 5.1) GENERAL GEOLOGY (Munro Township Area)

The township has been mapped by the Ontario Department of Mines (1951: Munro Township; J. Satterly; A.R. #60-8) and more recently as part of the regional B.R.I.M. program (1984-1990) by the Ontario Geological Survey (ie - 1985: M.P. #123; 1986: M.P. #129; 1988: M.P. #141, O.F.R. #5785, etc).

O.F.R. (Open File Report) #5785, "The Geology of the Northwestern Black River-Matheson Area, District of Cochrane" by R.M. Johnstone (1991) details the local and regional geological features of the area.

Historically, most of the past exploration in the immediate map area (north 1/2 of Munro Township) has been for asbestos and/or base metals. Much of the recent work by the O.G.S. has emphasized the regions' gold potential (in terms of structures within the Stoughton-Roquemaure Group).

Economic implications regarding mineral exploration are clear (1986: L.S. Jensen, <u>Volcanology and Mineral Deposits</u>, Ch. 5, pp. 69 - 87) as specific volcanic suites have been demonstrated to be favourable hosts for various deposit-types:

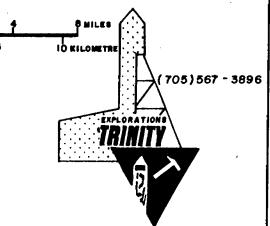


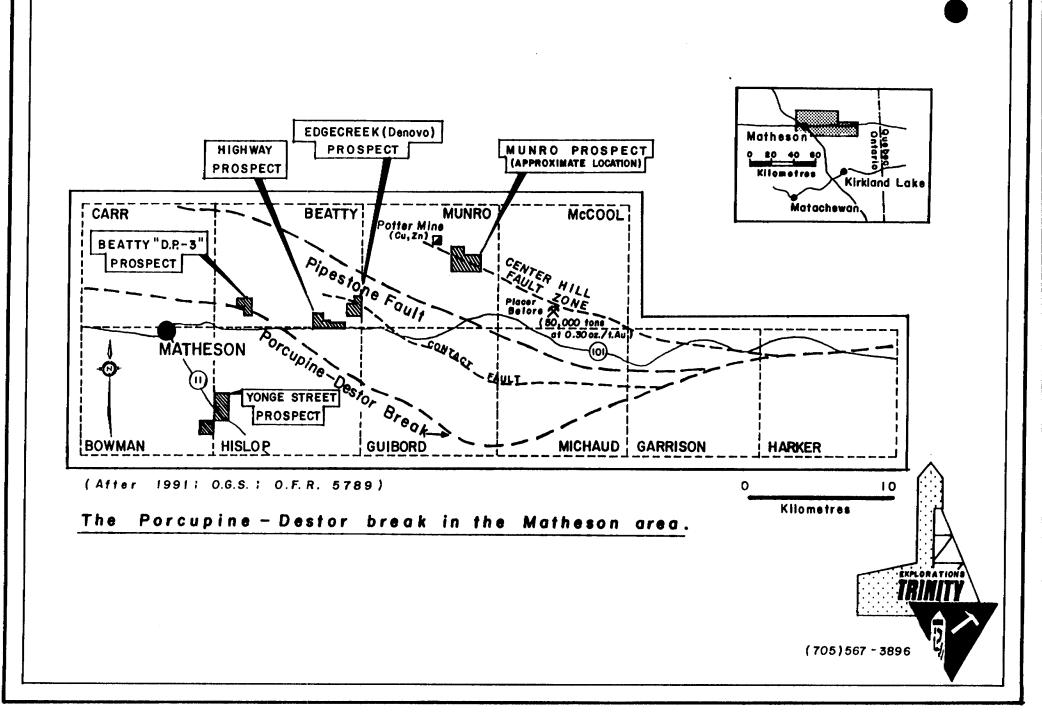
(After R.M. Johnstone, 1991: O.F.R. 5785 (p.17)

General distribution of Stoughton-Roquemaure Group
(Matheson-Lake Abitibl Area)

STOUGHTON - ROQUEMAURE GROUP

THOLEIITIC and KOMATIITIC BASALTS





- komatiitic suites = magnesite, talc, asbestos, nickel +/- P.G.M.'s

The oldest rocks in the area (Hunter Mine Group) are exposed in northeastern McCool Township. The north branch of the DPFZ truncates the lower portion of the volcanic pile where it is in disconformable contact with the (overlying) Stoughton-Roquemaure Group. The Porcupine Group (sediments) - SRG contact is seen on the south limb of the McCool Hill Syncline in southwestern Munro Twp.

In terms of general lithologies within the map area, the SRG is composed of tholeitic basalts with subordinate komatiltic lavas. In the Munro area, these rocks consist of peridotitic and basaltic komatilte, Mg-/Fe-rich tholeites, finely layered cherts &/ felsic tuffs all interlayered with coarse grained mafic to ultramafic bodies variously interpreted as intrusives (gabbro, peridotite, dunite) or tabular flows (1990: Geology & Ore Deposits of the Timmins District, Ontario in Open File #2161, G.S.C.).

Peridotite sills and dykes, peridotite-pyroxenite sills, and large layered peridotite-pyroxenite-gabbro sills have intruded the volcanics throughout the map area. Most of the sills are high level intrusions which have variously erupted laterally as flows (ie: Munro Lake Sill grades westward into "Theo's Flow", a differentiated tholeitic flow).

The Munro Lake sill has been described as a crudely layered intrusion exposed in three areas: Centre Hill, McCool Hill and an area near the north boundary of township. Airborne and ground magnetic surveys indicate the intrusion to be continuous. The sill is approximately 11 km long by 500 - 1000 metres wide. It is folded along the McCool Hill syncline and interrupted by both longitudinal and cross-faults.

The McCool Hill Syncline defines most of the structure in the area with fold axes @ approx. 120 Az. The syncline is upright, slightly overturned to the north and tightly folded. Both limbs of the syncline appear to be defined by branches of the Destor-Porcupine Fault Zone.

Major faults in the area are either vertical or dipping steeply northwards. Normal faults include the DPFZ-Middle Branch (= Munro Fault), Contact Fault (Porcupine Group - SRG contact), and the DPFZ-North Branch (SRG - Hunter Mine Group contact). The Centre Hill Fault (within the MUNRO Prospect) is a strike slip fault.

The following table of formations (after 1991: O.F.R. 5785, page 8 {L. Jensen}) defines the general stratigraphic succession in the Kirkland Lake (Munro Township) area. Units marked with an asterix (\*\*) are observed along the north limb of the Blake River Synclinorium in the map area.

#### Table of Formations

#### Cenozoic

\*\* Recent & Pleistocene:

Sands, gravels, clays

Unconformity

#### Precambrian

Proterozoic:

"Keeweenawan"

Diabase Dykes (NE series)

Intrusive Contact

#### Archean:

\*\* "Matachewan"

\*\*

= Diabase Dykes (NS series)

Granitic Intrusives

= Granodiorite, monzonite, quartz monzonite, syenite

Massive to gneissic quartz diorite, tonalite, trondhjemite

#### Upper Supergroup

Temiskaming Group & Destor-Porcupine Complex Blake River Group Kinojevis Group

\*\* Larder Lake Group & Stoughton - Roquemaure Group

\*\* Porcupine Group

#### Lower Supergroup

Skead Group & Hunter Mine Group Catherine Group Wawbewawa Group Pacaud Tuffs

#### See Figures #4, #5

<sup>\*\* =</sup> Represented in the Munro Township area.

#### 5.20) GEOLOGY OF The MUNRO Prospect

Mapping was conducted over the group in two stages.

In 1989, a reconnaisance prospecting program was completed for Tundra Gold Mines Ltd by Dave Gliddon who compiled a base map indicating traverses and outcrop areas. Magnetic, and VLF-E.M. (NAA & NSS) surveys were also completed.

In September of 1991, full grid mapping was completed by Glenn Mullan and Randon Ferderber. Four rock samples (RF-91-01 to 04) were selected as type specimens. None were submitted for analysis. 10 days (September 14 - 23) were spent in the field mapping and sampling with one geologist and one prospector (20 man-days). Several of the showings described in Section 4.0 were examined as were outcrop areas shown on J. Satterly's map (1951-5).

In July of 1991, the O.G.S. released Open File Report #5785 covering Munro, Beatty, and portions of other townships in the area. The Munro geological map included (O.F.M. #159) was consulted regularly during compilation of our final base map. The 1989 (Tundra) magnetic survey defined several units which were not observed in the field (ie: V13 = komatiite) and are indicated as such on the final draft.

Purpose of the program was to determine the potential (& location) of the INPUT anomaly first identified in the 1984 A.E.M. survey (map 80586) and thought to have been picked up in the 1989 VLF surveys (anomaly "M-VA#2" on geological map).

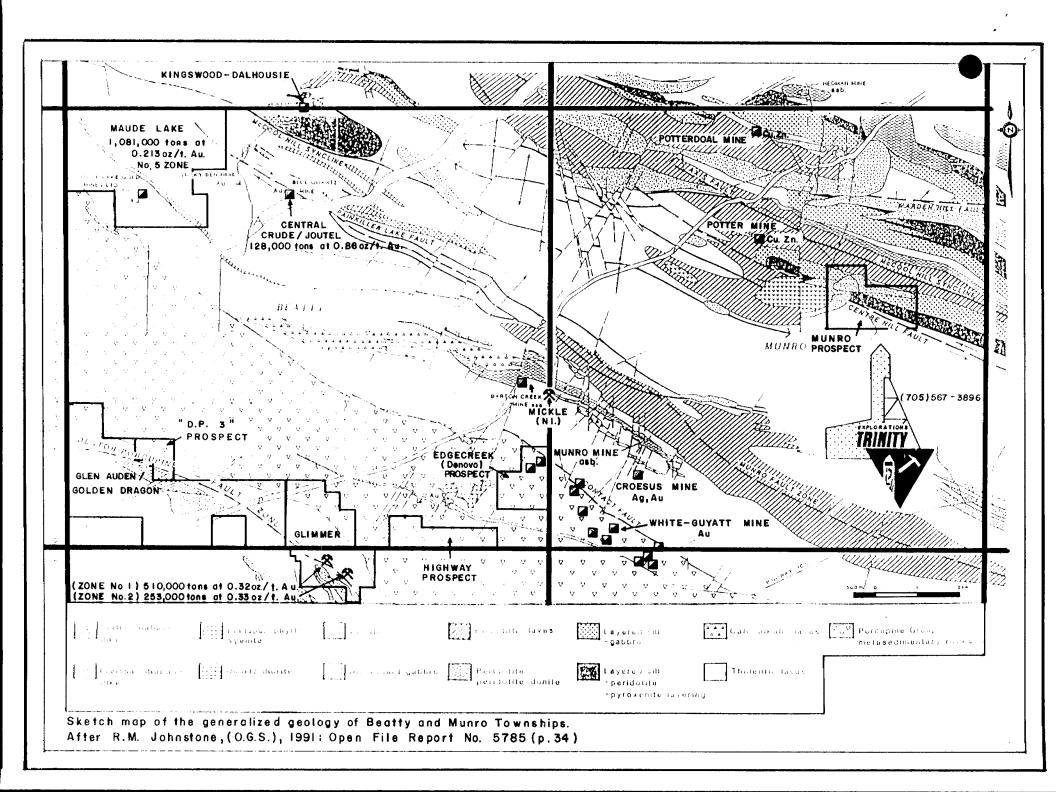
Another objective was to find direct field evidence of the Centre Hill Fault Zone, considered to be an attractive target for gold mineralization similar to the Placer Dome - Belore project in neighbouring McCool Township.

Reference to the geological map (1" = 300'; in pocket) and Figure #7 (Munro Geological sketch) are suggested. The geological legend (Appendix B) used is that employed by the Ministere de l'Energie et Ressources (1984: M.E.R. - Quebec).

#### 5.21) Lithology, Structure

A stratigraphic section across Munro Township (Column V in OFR #5785, pages 57-60) indicates the following sequence within the claims (south to north):

tholeitic mafic to intermediate volcanics (V5) narrow peridotite - pyroxenite sill (4P) komatiitic succession (V13) intrusives (2D & 2T) along western boundary



All outcrop is confined to a small area near the westernmost strip of claims representing approx. 5% of total surface area. The geophysical surveys (mag, VLF, Max-Min, and airborne) and recent work by the O.G.S. help resolve the wide overburden masked areas.

The tholeitic volcanics (V5) are observed in the southwestern portion of the claim group (L 12+00 NW @ 8+00 SW) and indicated by magnetic data (airborne & ground survey) to underlie most of the SW third of the claim group.

In general, outcrops weather to a dark grey and are a light to medium grey on fresh exposures. They are fine grained to aphanitic with ubiquitous (<1%) pyrite. Outcrops are clustered in the area near lines 9+00 NW to 12+00 NW (6+00 SW to 9+00 SW). The volcanics were also seen as thin beds within the gabbroic (3G) areas. The flows are massive in this area, although pillowed tholeites are reported from the adjacent Centre Hill area.

Mapping by R.M. Johnstone & J. Satterly on a more regional scale indicates the tholeites extend over a broad area covering the central third of the township.

Numerous outcrops of gabbro (3G), thought to represent portions of the Munro Lake Sill, were observed in the area immediately north of the tholeites and extend to the northern limit of the area of outcrop (L 18+00 NW @ 11+75 NE). The sill has been determined by Johnstone to be rhythmically layered (peridotite-pyroxenite-gabbro). The sill intrudes the komatiite flows near the core of the McCool Hill Synlcine.

Outcrops weather to a dull darker grey to black. They are equigranular ranging from medium to coarser grained with a general predominance of mafic minerals (pyroxene). Chloritic wisps parallel a weak foliation. Clasts of tholeites (V5) were observed near the baseline @ 9+00 NW.

The ground mag survey (1989: Tundra) indicates that two major northwest striking features underlie the eastern half of the claim group. The southern most is a linear unit (?) extending to the centre of the property most probably representing a portion of the Munro Lake Sill (peridotite-pyroxenite = 4P?).

The northern mag high is a broader, longer unit (?) which extends into the gabbroic area of outcrops near the west boundary. The mag is somewhat distorted near the west end possibly reflecting the diabase dykes in this area. This area is indicated by Johnstone to represent a discordant intrusive gabbro (3G).

The area of felsic intrusives indicated on both of the township scale geological maps (J. Satterly & R.M. Johnstone) is well exposed near the western boundary (L 15+00 NW to L 30+00 NW spanning approx. 600' on either side of the baseline). Outcrops of both diorite (2D) and quartz diorite (2T) are scattered along the area near the baseline.

The diorite (2D) has a medium green hue on fresh surfaces and weathers a light grey to buff. They are equigranular, medium grained and massive.

The quartz diorite (2T) is a light brown on weathered surfaces with a pale green on fresh exposures. They are medium grained and equigranular. Small angular gabbroic inclusions were observed in outcrop. Several of the exposures cross-cut the diorites (2D).

Several north trending ("Matachewan"?) diabase dykes (3D) are observed in the same area. They are moderately to strongly magnetic and weather to a dark reddish-brown. Grain size ranges from medium to coarse. The magnetic survey shows excellent correlation with diabase dykes seen in the field.

Although not outcopping, the komatiite unit (V13) is included across the northern map area based on magnetic data and recent work in the Centre Hill - Pyke's Hill area as well as past underground experience at the Potter Mine. These units lie near the axis (core) of the McCool Hill Syncline.

Magnetic data suggest that a second broad band of tholeites (V5) extend across the claim group between the two linear northwest trending units described as peridotite (4P) and a discordant gabbro (3G) sill.

#### 5.22) Structure

Two major structural features fall within the map area: the McCool Hill Syncline and the Centre Hill Fault.

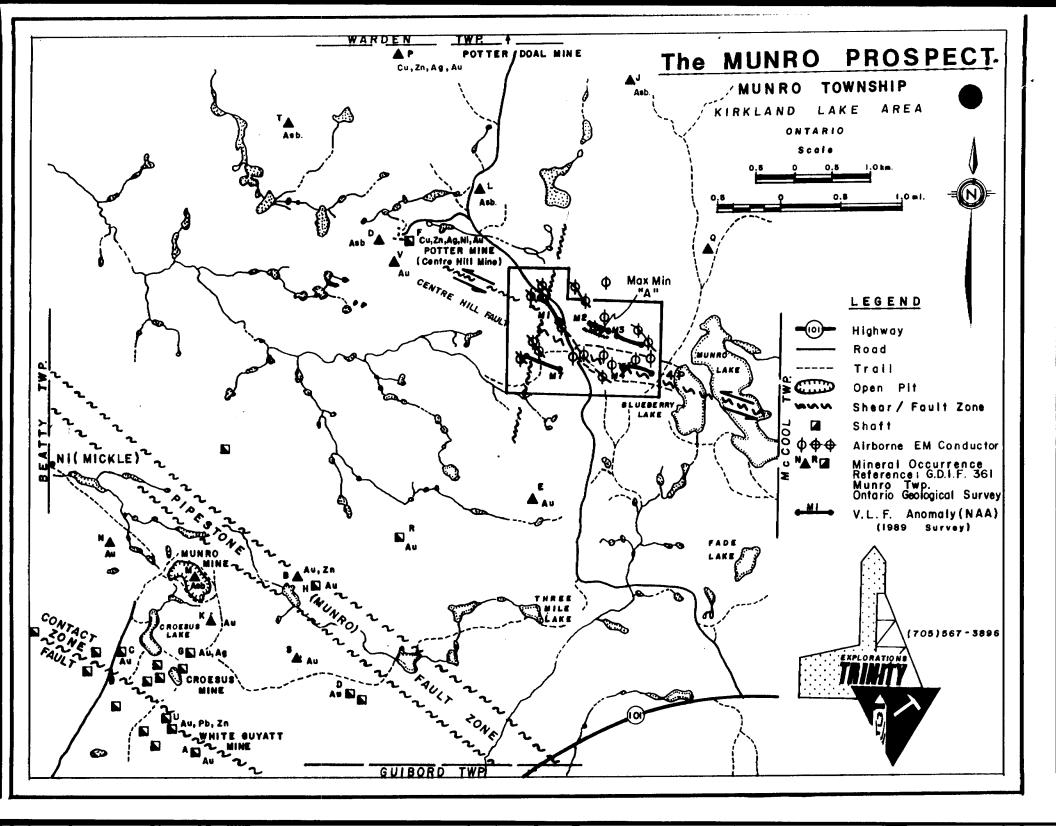
The MUNRO Prospect is situated near the core of the syncline along the southern limb. Due to the low percentage of outcrop within the claim group, little can be added to the detailed descriptions by Johnstone of the general area.

The Centre Hill Fault is described by Johnstone as a major sinistral strike-slip fault cutting across the top of the tholeites just beneath the Munro Lake Sill.

The only direct exposure was first mapped by Satterly behind (south of) Centre Hill where a narrow zone of sheared, steeply dipping mafic lavas is observed. The Placer Dome - Belore occurrence in McCool Township is similarly described as a deformation zone occuring at a contact between ultramafic and tholeitic lavas, near a syenite intrusive.

The Centre Hill Fault parallels other faults in the Destor-Porcupine complex (ie: DPFZ-south branch, Contact Fault, Munro Fault, etc.).

The mag survey appears to have outlined the Centre Hill Fault with a fair degree of precision (narrow mag low extending some 1500' north of the baseline) up to the diorite intrusive near the western boundary.



A reverse cross-fault (approx. 015 Azimuth) may have displaced the Centre Hill Fault some 500' to the north near the diorite contact (L 18+00 NW @ 10+50 NE).

#### 5.23) Power Stripping & Wajax Program

power stripping and outcrop washing were completed over a five day period in late October (Oct. 22 - 26), 1991.

Work was confined to two areas of outcrop - subcrop in the northwestern portion of the claims (claims #L-1049615 & #L-1111551).

Area #1 (see geological map) is thought to be cross-cut by the northwest (NNW) trending fault and portions of the Centre Hill Fault Zone. The felsic intrusive (2T, 2D) lies adjacent to the southwest.

Several northwest trending (20 - 30 Azimuth) fractures and or faults were uncovered in the stripping. Within the gabbroic (3G) units underlying much of the area, these are seen as 3-10 foot wide fracture zones dipping steeply to the southeast (70-85).

Areas of interest uncovered in the stripping include:

- a small area of quartz stringers, hosted by gabbro (3G), uncovered to the east (near 15+60 NW @ 11+25 NE)
- several large fragments (angular boulders?) of fine grained, mafic flow (V5?) mineralized with up to 2% fine pyrite (15+75 NW @ 11+10 NE)
- 3" quartz vein in 3' wide shear (N40E/80SE) near 16+20 NW @ 10+60 NE)
- 5'-wide fracture zone in gabbro uncovered near 17+75 NW extending across outcrop (\$30W/65-75NW)
- cross-cutting fault structure trending N60W, displacing dykes

The Centre Hill Fault zone may be represented by the 5' fracture zone although more probably it lies to the north of the stripped area as indicated on the map. Overburden cover is at least 5 feet in this area and could not be moved with the bull-dozer. Three more small areas were cleared between lines 18+00 NW and 21+00 NW (between 9+00 NE & 11+25 NE). Only diabase & gabbro were observed in these trenches.

Area #2 is assumed to fall within the felsic intrusive immediately south of the Centre Hill Fault Zone. Three small areas were cleared with diorite (2D) exposed near 21+25 NW @ 4+75 NE, quartz diorite (2T) near 26+00 NW @ 1+00 NE. Bedrock was not reached in a 4 1/2' trench near 23+80 NW @ 4+00 NE.

A backhoe would be more efficient for future work due to the hummocky form of most outcrop, and variable overburden depth. Power stripping remains an effective exploration tool in the area.

#### 6.0) Recommendations

Any evaluation of the MUNRO Prospect must accommodate the twin objectives established at the outset:

- the Centre Hill Fault Zone
- the INPUT Anomaly

Several primary targets have been outlined by the 1991 mapping and Max-Min program as well as the geophysical surveys (VLF & mag.) completed in 1989. These targets merit a significant drill program based on regional (ie: Stoughton-Roquemaure Group volcanics; Destor-Porcupine Fault Zone & splays) and local geological features (ie: stratigraphic horizon hosting the Potter & Potter-Doal Mines; Centre Hill Fault Zone). The Munro Esker and flanking glacial deposits make drilling the only effective advanced exploration tool over most of the area.

Targets located to date warrant follow-up by diamond drilling at the following general locations:

#### 6.1) Centre Hill Fault Zone

This is considered to be the highest priority gold target. At least 5 drill holes would be required to adequately test this structure along strike.

Two ddh's would be established along the mag. low spanning across the group (1500' north of base line). It is thought that the underlying host is a tholeitic volcanic (V5) between two mafic intrusives (Munro Lake Sill & discordant gabbro sill).

As most of the encouraging drill intercepts at the nearby Placer Dome - Belore property resulted from drilling VLF anomalies, at least two ddh's should be reserved for coincident anomalies "M-VA#4" & "M-VS#4". These appear to be hosted within a portion of the linear mag high, possibly representing the peridotite-pyroxenite (4P) sill, or a mineralized portion of the Centre Hill Fault Zone.

A similar priority is attached to coincident VLF anomalies "M-VA#3" and "M-VS#3".

At least one ddh should be drilled in the area of the felsic intrusive near the northwestern corner of the property. This is also the area throught to be displaced by the north trending cross-cutting fault.

Total footage required would be approx. 2500'

#### 6.2) "INPUT Anomaly Area"

This is considered to be the primary target for base metals. First indicated in the 1984 A.E.M. Questor survey, it was also outlined by the VLF survey ("M-VA#2") and the Max-Min survey (1777 Hz = Anomaly "A") completed in the present program.

Proximity to the linear mag high (part of the Munro Lake Sill?), the Centre Hill Fault Zone, and the key contact between the overlying komatiites (V13) & mafic tholeites and underlying gabbroic phases of the Munro Lake Sill (ie: Centre Hill Complex) make this a high priority target in the context of the Potter Mine & Potter-Doal Mine both within similar stratigraphic environments (see Sections 4.11 & 4.14).

A minimum 1500' is required to test the target in this area.

#### 6.3) Alternate Targets

Lower priority targets include the remaining VLF anomalies, the area near the diorite intrusive, and the area mentioned by Jens Hensen (1989: Tundra mag. survey) at the junction of the north trending cross-structure and strong mag. low (SW area).

A stripping and wajax program would be of assistance in resolving the northwestern outcrop area (Centre Hill Fault Zone, north trending cross-faults, diorite and quartz diorite intrusives, Munro Lake Sill, etc.

Lower priority would be additional E.M. surveys (ie: max-min using a wider cable spacing and lower frequenices; UTEM or geoprobe near the "INPUT anomaly") or possibly the "beep mat" (in outcrop areas) as these could enhance the targets already outlined and possibly locate additional areas of interest.

An Induced Polarization survey would be of assistance here and could locate areas of disseminated sulphides not detectable by other techniques.

Little previous work in the area has been directed towards platinum group minerals in the layered Munro Lake Sill although certain elements indicate a general potential in this regard. Zones of magma mixing (leucogabbro-gabbro), pegmatitic patches, and pyrite-rich sediments within the gabbros (ie: see Section 4.7 - File #KL-1611 "Leitch Gold Mines") were all considered by R.M. Johnstone (1991; O.F.R. #5785; page 250) to indicate a favourable potential.

The komatiite suites represented in the Munro Township area are an optimum environment for nickel mineralization ("Kambalda"-type) and have hardly been explored in this context. Eight of the nine known nickel deposits in the Timmins area are hosted by peridotitic komatiites including the Alexo, Redstone, & Langmuir. See "Komatiite-Associated Ni-Cu-PGE Mineralization" in Geology & Ore Deposits of the Timmins District, Ontario (1991: G.S.C.).

## Geophysics Appendix

# Horizontal Loop Survey For Trinity Explorations

Index.	
Introduction	p.2
Survey methodology	p.2
Results	p.2
Conclusions and recommendations	p.3
References	p.4
Statement of qualifications	p.4

#### Introduction.

In September of 1991 Trinity Explorations Ltd. carried out a horizontal loop survey on seventeen unpatented mining claims in Munro Township, Ontario. The claim numbers follow:

L	1049487	L	1049488	L	1049489
L	1049490	L	1049491	L	1049492
L	1049493	L	1049494	L	1049495
L	1049496	L	1049497	L	1049498
L	1049499	L	1049614	L	1049615
T.	1111551	Ţ	1111552		

#### Survey methodology.

The survey instrument was an Apex Parametrics Max-Min II, using a frequency of 1777 Hz and a transmitter-receiver separation of 300 feet. Readings were taken every 100 feet (occasional 50 foot readings were made) along cut lines oriented 025° Az and spaced 300 feet apart.

The data obtained (in-phase and out-of-phase values expressed in percentages of the primary EM field) have been plotted as profiles on the accompanying map (scale: 1 inch to 300 feet; 1 inch to 30%).

#### Results.

One single-line conductive anomaly was detected, and is labeled A on the map. Its parameters are listed below.

Location:	L 6+00 SE,	18+50 NE
	· · · · · · · · · · · · · · · · · ·	

Depth to top: 80 feet

Length: 200 to 300 feet

Width: ≤15 feet

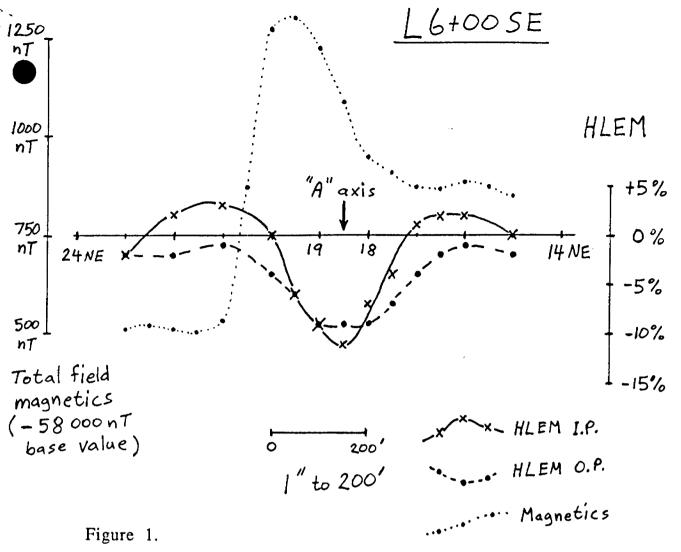
Strike: Roughly perpendicular to line

Dip:  $\geq 75^{\circ}$  to N

Conductivity-thickness: 7 mhos

A profile of the Max-Min response of conductor A, together with magnetic total field is shown in Figure 1. Other anomalous readings, mostly erratic positive in-phase values, are instrument noise.





Conductor A corresponds to anomaly M2 from an earlier VLF survey of the property (J. Hansen, 1989), although M2 was plotted as being 800 feet long and 50 feet south of A.

A also corresponds closely in location and conductivity to a single-line (actually two superimposed flight lines) Input anomaly on the airborne geophysics map of Munro Township (O.G.S., 1984). The apparent conductivity-thickness of the Input conductor was 10 siemens (=10 mhos), while that of Max-Min conductor A is 7 mhos.

#### Conclusions and recommendations.

Because of the lack of outcrop over much of this claim group geophysical anomalies rank relatively high as potential drill targets. Conductor A is about 150 feet south of a faulted (?) E-W contact between two rock units of differing magnetic susceptibility (partial re-interpretation by this author of magnetic survey map, J. Hansen, 1989).

It is not possible to tell from geophysical results alone what conductive mineral(s) make up conductor A. If the operating budget permits, A should be drilled. Suggested DDH set-up is:

Collar location:

L 6+00 SE, 20+00 NE

Orientation:

-45° to 205° Az (grid South)

DDH length:

300 feet

Approximate overburden: Conductor intersection at:  $110 \pm 20$  feet  $215 \pm 25$  feet

A second recommendation is to replot the magnetic data from 1989, either as a color map or in monochrome with appropriate sun illumination angle. There appear to be several faults in the NW and SW corners of the claim block that may be revealed more clearly by replotting.

#### References.

J. E. Hansen, Geotest Corporation, VLF and magnetic survey report for Tundra Gold Mines and Trinity Explorations, 1989. In assessment files, Kirkland Lake.

Ontario Geological Survey, Geophysical/Geochemical Series Map 80586, Munro Township Airborne Electromagnetic Survey, 1984.

#### Statement of qualifications,

I, Mark Shore, residing at #9-184 Laval Street, Vanier, Ontario:

Graduated in May 1987 from Concordia University with a B.Sc. in Geology-Physics Specialization;

Have worked since that time in the field of exploration geology and geophysics and am currently a graduate student at the Department of Geology, University of Ottawa;

Hold no financial interest in the property treated in this report.

October 1, 1991

Mark Shore



Appendir "B" Sedograf Legend

### LÉGENDE DE LA COMPILATION GÉOSCIENTIFIQUE

(2e édition, 1984)

#### SYMBOLES D'ANOMALIES GÉOCHIMIQUES ET SYMBOLES D'ANOMALIES MINERALOGIQUES **DES ALLUVIONS**

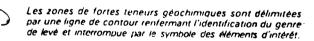
#### SR SEDIMENTS DE RUISSEAU SL SEDIMENTS DE FOND DE LAC

- SO SOLS
- ΕZ **EAUX SOUTERRAINES**
- ES **EAUX DE SURFACE**
- VG VEGETAUX
- R ROCHES

·>~ 🖎

-dn

- ML MINERAUX LOURDS (BATTEE)
- FORAGE ALLUVIONNAIRE



- **ECHANTILLONNAGE ISOLE**
- ECHANTILLONNAGE DE BLOC ERRATIQUE
  - SONDAGE ALLUVIONNAIRE lavec profondeur en mètres a gaucher. On remargaer's spanish sondages alluvionment sond reporter survivous courses

#### SYMBOLES DES ANOMALIES GEOPHYSIQUES

LEVE DE RESISTIVITE: (a) axe de hautes valeurs (b) axe de basses valeurs

LEVE DE POLARISATION PROVOQUEE axe de hautes valeurs

LEVES DE POTENTIEL SPONTANE

LEVES ELECTROMAGNETIQUES AERIENS (a) TURAIR (b) radiophase, E-phase (c) systèmes conventionnels (d) AFMAG (e) systemes multifrequences texcluant l'INPUT; (f) largeur d'anomalie rapportée le pointille indique la direction du leve (g) systemes en mode pulsatoire (h) autres systèmes semi-aeroportes

LEVE ELECTROMAGNETIQUE AERIEN SYSTEME INPUT: (a) 2 canaux (avec produit conductivité - épaisseur, mhos) (b) 3 canaux (c) 4 canaux (d) 5 canaux (e) 6 canaux (f) anomalie magnétique coincidente (g) anomalie magnétique juxlaposée

LEVES ELECTROMAGNETIQUES AU SOL. (a) systèmes à cadres horizontaux lavec produit conductivité enais. seur, mhosi(b) systèmes à cadres verticaux (c) systèmes TURAM (d) systèmes à tres basse fréquence (e) systèmes en mode pulsatoire

LEVES MAGNETIQUES (AXES DE HAUTES VALEURS): la laériens (b) au sol

LEVE GRAVIMETRIQUE. (a) haut gravimétrique (b) bas gravimétrique

LEVE RADIOMETRIQUE OU DE SPECTOMETRIE DES RAY-ONS GAMMA: (a) uranium (b) thorium (c) rapport uranium/ thorium (d) total (e) potassium

#### SYMBOLES DES INTERSECTIONS ET ZONES MINERALISEES

, so '0 '0

#### INTERSECTION MINERALISEE

laboration de la colora de la color de la qualità de la malera Tomatem estamace d'acceleration

ZONE MINERALISEE

Violin de la zone (s'il y en a une adentification de la substance Let resure recomment de la completit de la substance of reserves connues et loa production

#### SYMBOLES DE SONDAGES

SONDAGE VERTICAL 31.21

La première couche attentog que inni antrée y est indiquée a dione et le namero et l'ierrification du sondage au dessus du symbole seun journal de sondage existe dans les dossiers consultes

SONDAGE POUR ALIMENTATION EN EAU

La première couchir intrologique rencontrée y est indiquée à drone et le numera d'identification du sondage au dessus du symbole și un journal de sondage existe dans les dossiers consultés

SONDAGE INCLINE AVEC PROJECTION HORIZONTALE (a) profondeur connue (b) profondeur inconnue

Sondage incliné avec projection horizontale de la lithologie ricounée. La profondeur verticale du mort terrain y est indiquée. en metres à gauche et le numéro d'identification du sondage au dessús ou à droite. Ce numero d'identification correspond exactement à celui dunné duris les divisiers de trazaux statutaires consultés et ne figure sur la carte de compilation que lorsque les journaux de sondage sont disponibles



#### SYMBOLES LITHOLOGIQUES

	ROCHES VOLCANIQUES ARCHEENNES		ROCHES METAMORPHIQUES
V	Roches volcaniques indeterminées	M	Roches metamorphiques indeterminees
V1	Roches volcaniques felsiques ou intermediaires	M1	Schiste
V2	Rhyolite		
V3	Trachyte	М3	Roches hybrides
V4	Dacne		
V5	Roches volcaniques intermediaires ou maliques	M5	Migmatite
٧6	Andesite		
<u>v</u> 7	Basaite	M7	Gneiss
V8	Roches pyroclastiques indeterminees	M8	Amphibolite
<b>6</b> A	Tut	M9	Granulite
V10	Agglomerat	M10	Mylanite
		M11	Quartzite
		M12	Marbre
V13	Roches voicaniques ultramatiques		
			ROCHES INTRUSIVES
	ROCHES SEDIMENTAIRES ARCHEENNES	1	Roches intrusives felsiques indéterminées
	NOCHES SEDIMENTAINES ANCHEENIVES	15	Syenite
S	Roches sedimentaires indéterminées	10	Syénite quartzique
S1	Conglomerat	1F	Syenite à feldspath alcalin
S2	Arkose	1 E	Syénite quartzique à feldspath alcalin
S3	Grauwacke	1G	Granite
S4	Argilite, shale, ardoise, phyllade	1C	Granite à feldspath alcalin
S5	Quartzite	1A	,
			Monzonite quartzique
		1M	Monzonite
	FORMATIONS DE FER ARCHEENNES	1N	Monzodiorite quartzique
	TOTAL PROPERTY AND THE PROPERTY OF THE PROPERT	17	Tonalite
F1	Formation de fer indéterminée	10	Granodiorite
F2	Formation de ler sulluree	1P	Pegmatite -
F3	Formation de ler oxydee	1B	Albitite
F4	Formation de fer carbonatee	1 <b>X</b>	Aplite
		12	Granophyre
		18	Rhyolite et leisite intrusive
	ROCHES SEDIMENTAIRES PROTEROZOIQUES		·
		2	Roches intrusives antermediaires indeterminée
Р	Roches sedimentaires indéterminées	21	Diorite quartzique
Pi	Conglomerat	2M	Monzodiorite
P2	Arkose	2D	Diorite
Р3	Grauwacre	2L	Lamproph, re intermediaire
P4	Quartzite et gres		
P5	Argilite, stiale, ardoise et phyllade	3	Roches intrusives matiques indeterminees
P6	Formation de les	3G	Gabbro
P7	Dolomie et autres roches à carbonates	3N	Norde
P8	Tillite	3R	Anorthosite
		3L	Lamprophyre malique ou indetermine
	•	3D	Diabase
	ROCHES SEDIMENTAIRES PALEOZOIQUES		
		4	Roches intrusives ultramatiques
P1	Calcaire	4P	Peridotite
		4н	Hornblendite

45

Serpentinite

#### SUFFIXES POUR LES MINERAUX DES ROCHES

	<b>6</b>				
	biotite	J	carbonate	5	staurotide
c	chlorite	k	sericite paragomte	1	trémolite actinote
d	disthene	m	muscovite	U	amphibole (indetermine)
е	epidote	n	nepheline	v	"veine de
1	feldspath (indetermine)	o	feldspath potassique	w	tourmaline
g	grenat	р	płagioclase	×	silimanite
ts	hornblende	q	quartz	v	Dyroxene
1	talc	1	chloritoide	,	zeolite

MA utiliser avec un autre suffixe de mineral (vg. veine de quartz).

#### SUFFIXES POUR COMPOSITION. ORIGINE ET ALTERATION

	COMPOSITION		ALTERATION		
n	lelsique	00	amphibolitisee	λ	sericitisee
β	mafique	a	silicitiee	η	carbonatisee
7	ultramafique	μ	albitisée	X.	serpentinisee
	ORIGINE	π	pyritisee	<b>A</b>	alteration potassique
δ	sedimentaire	•	epidotisee	7	alteration indeterminee
P	volcanique	$\theta$	porphyritisee	Ĺ	skarn
$\psi$	intrusive	₫5	chloritisee	£	corneenne

## SUFFIXES POUR LES SUBSTANCES D'INTERET ECONOMIQUE MINERAUX ET ROCHES

Am	amiante	Fp	feldspath	Pn	pentlandite
Ay	anthophyllite	FI	fluorine	Pc	pierre de construction
Αp	apatite			Pm	pierre ornementale
Asp	arsenopyrite	Gn	galène	Pγ	pyrite
		Gр	graphite	Pı	pyrophyllite
Ba	barytine			Po	pyrrhotine
Ве	beryl	Hem	hématite		
Bs	bismuth		<i>y</i>	Ra	mineraux radioactifs
Во	bornite	lim	ilmenite		
			•	Sh	scheelite
Ср	chalcopyrite	Mt	magnetite	Şd	siderose
Cn	chalcosine	Mc	malachite	Şı	silice
Ch	chert, jaspe	Ma	marcasite	Sp	sphalerne
Cr	chromite	Mi	mica	Sm	spodumene
Ct	Cordierite	Md	mineraux décoratifs	Su	·
Cor	corindon	Mo	molybdenite	Su	sulfures (indetermines)
Cv	covelline	1410	moryodenite		
		OI .		Ta	tantalite
Fυ	Fuchsite	O1	olivine .		

## SUFFIXES POUR STRUCTURES PETROGRAPHIQUES ET TEXTURES CARACTERISTIQUES

w	porphyre (plus de 50° de phenocristaux)		turbidites
	porphyrique (10% à 50% de phenocristaux)	Δ	brechdorme
•	variolitique, spherulitique	<b>A</b>	breche tectonique
Φ	coussinee /, wed	<b>^</b>	breche intrusive
ο.	amygdalaire	▲	breche pyroclastique
Ж	a spinifex	. &	breche explosive
#	rubance (parket) commention )	` <u> </u>	breche de coulee
<b>‡</b>	cisaillee side	<b>∆</b> •	hyacloclastique
	•		

linea

#### SYMBOLES STRUCTURAUX

	AFFLEUREMENTS (a) isole (b) aire d'affleurements  CONTOURS GEOLOGIQUES (a) connu (b) probable ou presume, (c) d'après leves geophysiques (AIR SOL)	<i></i>	ISOGRADE DE METAMORPHISME Le sommet des pointes indique le sens croissant du grade de metamorphisme. Le nom duldes) minerallaux) indicateuris estisonti inscritis) en toute lettre sur le cole de l'isograde ou illits) estisonti presentis)
• 6 6 6 6 • 9 1 9 •	STRATIFICATION SOMMET DETERMINE (a) horizontale (b) inclinee (c) verticale (d) pendage non determine (e) renversee	.*	LINEAMENT (obtenu par photo interpretation)
	•		PLIS
+///	STRATIFICATION SOMMET NON DETERMINE (a) horizontale (b) inclinee (c) verticale (d) pendage non determine	1/1/	ANTIFORMES (a) plan aval determine (b) presume
+ , , ,	SCHISTOSITE OU CLIVAGE OU FOLIATION (Plan ST) (a) horizontal (b) incline (c) vertical (d) pendage non determine	* #	ANTIFORMES DEVERSES (a) plan axial determiné, (b) presume
+///	SCHISTOSITE OU CLIVAGE OU FOLIATION (Plan 52) (a) horizontal (b) incline (c) vertical (d) pendage non determine	* * * *	SYNFORMES (a) plan axial determine (b) presume  SYNFORMES DEVERSES (a) plan axial determine, (b) presume
*	GNEISSOSITE (a) horizontale (b) inclinee. (c) verticale	N'4	PLIS D'ENTRAINEMENT (a) dextre (b) senestre tutilise avec ou sans plongee et pendage)
• • • •	DIACLASES (a) horizontales, (b) inclinees, (c) verticales (d) systemes multiples	1	AXE DE PLISSEMENT AVEC PLONGEE
1:01	LINEATION (a) horizontale (b) inclinee. (c) verticale (d) plongee non determinee	plotti i il ilipiti	FAILLES, ZONES DE CISAILLEMENT (a) connue. (b) presumee (c) d'apres levés geophysiques, (d) inclinee, (e) avec sens de deplacement, (l) avec all'aisement (le cercle plein indique le côte affaisse), (g) faille de
/	CONTACT DE COULEES	ور و المام المام	charriage (les pointes sont sur le côte releve), (h) faille de charriage présumée
	SYMBOLES GÉOMORPHOLOGIQUES		SYMBOLES DES INSTALLATIONS MINIÈRES
12	SYMBOLES GÉOMORPHOLOGIQUES  STRIES GLACIAIRES (a) sens du mouvement connu. (b) inconnu	a b	SYMBOLES DES INSTALLATIONS MINIÈRES  PUITS DE MINE (AVEC CHEVALEMENT) (a) vertical, (b) incline
12	STRIES GLACIAIRES (a) sens du mouvement connu.	6 h 6 u- 6 u-	PUITS DE MINE (AVEC CHEVALEMENT) (a) vertical.
	STRIES GLACIAIRES (a) sens du mouvement connu. (b) inconnu  MORAINE FRONTALE  ESKERS (a) sens d'ecoulement connu. (b) inconnu		PUITS DE MINE IAVEC CHEVALEMENT) (a) vertical, ib) incline  PUITS D'EXPLORATION (SANS CHEVALEMENT) (a)
Land Care	STRIES GLACIAIRES (a) sens du mouvement connu. (b) inconnu  MORAINE FRONTALE		PUITS DE MINE (AVEC CHEVALEMENT) (a) vertical, ib) incline  PUITS D'EXPLORATION (SANS CHEVALEMENT) (a) vertical (b) incline
de d	STRIES GLACIAIRES (a) sens du mouvement connu. (b) inconnu  MORAINE FRONTALE  ESKERS (a) sens d'ecoulement connu. (b) inconnu  LIMITES DE TRANSGRESSION MARINE OU DE	a 2 2 x x	PUITS DE MINE IAVEC CHEVALEMENT) (a) vertical, ib) incline  PUITS D'EXPLORATION ISANS CHEVALEMENT) (a) vertical (b) incline  PUITS ABANDONNES
Level Land	STRIES GLACIAIRES (a) sens du mouvement connu. (b) inconnu  MORAINE FRONTALE  ESKERS (a) sens d'ecoulement connu. (b) inconnu  LIMITES DE TRANSGRESSION MARINE OU DE SUBMERGENCE LACUSTRE (a) connue. (b) presumee		PUITS DE MINE (AVEC CHEVALEMENT) (a) vertical. (b) incline  PUITS D'EXPLORATION (SANS CHEVALEMENT) (a) vertical (b) incline  PUITS ABANDONNES  TRANCHEE  GRAVIERES OU SABLIERES (a) en exploitation. (b)
Le Z	STRIES GLACIAIRES (a) sens du mouvement connu. (b) inconnu  MORAINE FRONTALE  ESKERS (a) sens d'ecoulement connu. (b) inconnu  LIMITES DE TRANSGRESSION MARINE OU DE SUBMERGENCE LACUSTRE (a) connue. (b) presumee  SYMBOLES DES GÎTES MINERAUX		PUITS DE MINE (AVEC CHEVALEMENT) (a) vertical, ib) incline  PUITS D'EXPLORATION (SANS CHEVALEMENT) (a) vertical (b) incline  PUITS ABANDONNES  TRANCHEE  GRAVIERES OU SABLIERES (a) en exploitation, (b) abandonnee
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Led Land	STRIES GLACIAIRES (a) sens du mouvement connu. (b) inconnu  MORAINE FRONTALE  ESKERS (a) sens d'ecoulement connu. (b) inconnu  LIMITES DE TRANSGRESSION MARINE OU DE SUBMERGENCE LACUSTRE (a) connue. (b) presumee  SYMBOLES DES GÎTES MINERAUX  STOCKWORK  FILON (en vraies forme et dimension )  FILON (ne pouvant être présenté en vraie dimension à l'échelle		PUITS DE MINE (AVEC CHEVALEMENT) (a) vertical, ib) incline  PUITS D'EXPLORATION (SANS CHEVALEMENT) (a) vertical (b) incline  PUITS ABANDONNES  TRANCHEE  GRAVIERES OU SABLIERES (a) en exploitation, (b) abandonnee  MINE A CIEL OUVERT  GALERIES D'EXPLORATION A FLANC DE COTEAU (ADIT) (a) en usage, (b) abandonnee  GALERIES DE PRODUCTION A FLANC DE COTEAU (a)
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Ministry of Northern Development and Mines

Ministère du et des Mines

Mining Lands Branch Développement du Nord Geoscience Approvals Section 159 Cedar Street 4th Floor SUDBURY, Ontario P3E 6A5

Mining Recorder Ministry of Northern Development and Mines 4 Government Road East KIRKLAND LAKE, Ontario P2N 1A2

Toll Free: 1-800-465-3880 Telephone: (705) 670-7264 Fax: (705) 670-7262

Our File: 2.14467 Your File: W9280.00009

April 10, 1992

Dear Sir

SUBJECT: APPROVAL OF ASSESSMENT WORK SUBMITTED ON MINING CLAIMS L 1049487 ET AL., MUNRO TWP...

The assessment work credit for Report of Work W9280.00009, submitted February 6, 1992, has been approved as of March 25, 1992. The work has been credited under Sections 12 and 14, Mining Act Regulations.

Please indicate this on your records.

Please find enclosed the geology plan from Report of Work W9280.00010. Please have Frances take the appropriate steps to return this plan to its rightful place, and ensure that Report of Work W9280.00009 remains complete. This may require making an additional copy of the map.

Yours sincerely,

Ron C. Gashinski

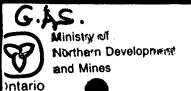
Senior Manager, Mining Lands Branch

Mines and Minerals Division

LJ/jl Enclosures:

> cc: Assessment Files Office Toronto, Ontario

Resident Geologist Cobalt, Ontario



## Report of Work Conducted After Recording Claim

Mining Act

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ersonal information collected on this form is obtained under t	the authority of the Mining Act. This information will be used for correspondence. Questions I and a Ministry of Northern Development and Mines, Fourth Floor, 159	Cedar Street,
is collection should be directed to the Provincial Manager	r, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 159	
IS COMBOTION SHOULD BE CHOOSE TO THE COMPANY OF THE		
udbury Ontario, P3E 6A5, telephone (705) 670-7264.		

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: - Please type or print and submit in duplicate.

- Refer to the Mining Act and Regulations for requirements of filing assessment work or consult the Mining Recorder.
- A separate copy of this form must be completed for each Work Group.
- Technical reports and maps must accompany this form in duplicate.
  A sketch, showing the claims the work is assigned to, must accompany this form.

	Client No.	
orded Holder(s)	173 700	
stem J Millan	Telephone No.	
76-First Street	Kir Wand Jake, Ord. P2N 1N/3 (705) 567-3896	
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	FEB 1 & 1992	
Rehabilitation	A CANADA A SOCIAL AND A CONTROL AND A CONTRO	
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otal Assessment Work Claim	IBU OII (IIO / Midolita alianamana a	ed
ote: The Minister may reje	ct for assessment work credit all or part of the assessment work submitted if the record xpenditures claimed in the statement of costs within 30 days of a request for verification	n.
ersons and Survey Compa	ny Who Performed the Work (Give Name and Address of Author of Report)	
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Name	Address	
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attach a schedule if necessary Certification of Beneficial in I certify that at the time the work we report were recorded in the current by the current recorded holder.  Certification of Work Report its completion and annexed report its completion and annexed report Name and Address of Person Certify  Telepone No.  Cor Office Use Only Total Value Cr. Recorded Date	miterest * See Note No. 1 on reverse side  as performed, the claims covered in this work holder's name or held under a beneficial interest  **Revised Feb. 5, FRD  **Revised Feb. 5, FRD  **The covered of the facts set forth in this Work report, having performed the work or witnessed same during and/or is true.  **Control of the facts set forth in this Work report, having performed the work or witnessed same during and/or is true.  **Recorded Mining Recorder Received Stamp  **Turning One of the facts of the f	or after
attach a schedule if necessary Certification of Beneficial in I certify that at the time the work we report were recorded in the current by the current recorded holder.  Certification of Work Report its completion and annexed report its completion and annexed report Name and Address of Person Certify  Telepone No.  Cor Office Use Only Total Value Cr. Recorded Date	A Winner Paramett, Val att, Australia and Au	or after

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units	Value of Assessment Work Done on this Claim Round \$53.	Value Applied to this Claim	Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date
	r - TOHOH83	1	\$853.43	#850.4		
	MANEE			1		
	1048484					
	1049490					
	1048481					
	1046419					
	10-141-163					
·	1046464					
	1049462					
	10494916					
	7949401					
·	POHOTAR					
	10404464					
	1049614					
	211/140/					
	1111551		\$9.53.	85.3		
	1111229	7	- 000		10	
,	Total Number of Claims		Total Value Work	# 1449 14501. Total Value Work Applied	Total Assigned	Total Reserve

Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to priorize the deletion of credits. Please mark ( $\sim$ ) one of the following:

Credits are to be cut back starting with the claim listed last, working backwards.

Credits are to be cut back equally over all claims contained in this report of work.

Credits are to be cut back as priorized on the attached appendix. લં છં In the event that you have not specified your choice of priority, option one will be implemented.

Examples of beneficial interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the caining claims. Note 1:

sand, please complete the following: If work has been performed on patented or least Note 2:

_	I certify that the excerded holder had a benefities interest in the patented or leased land at the time the work was performed.	
		_

THE TOWNSHIP OF

# MUNRO

DISTRICT OF COCHRANE

LARDER LAKE MINING DIVISION

SCALE: 1-INCH 40 CHAINS

#### **LEGEND** or (P) PATENTED LAND C.S. CROWN LAND SALE **(D**) LEASES Loc. LOCATED LAND LICENSE OF OCCUPATION M.R.0 MINING RIGHTS ONLY S.R.O. SURFACE RIGHTS ONLY 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.

Areas withdrawn from staking

- SURFACE RIGHTS WITHDRAWN FROM STAKING, SECTION 164386, 9/1/69
- R.) SURFACE RIGHTS WITHDRAWN FROM STAKING, SECTION 188522,
- R<sub>3</sub>) SURFACE RIGHTS WITHDRAWN FROM STAKING, SECTION 188522
- 0-08/88L OPENS PART OF NRW87/86

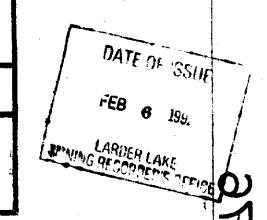
NOTICE OF FORESTRY ACTIVITY ,

THIS TOWNSHIP / AREA FALS WITHIN THE WATABEAG 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.

POK ITO 705-642-3222

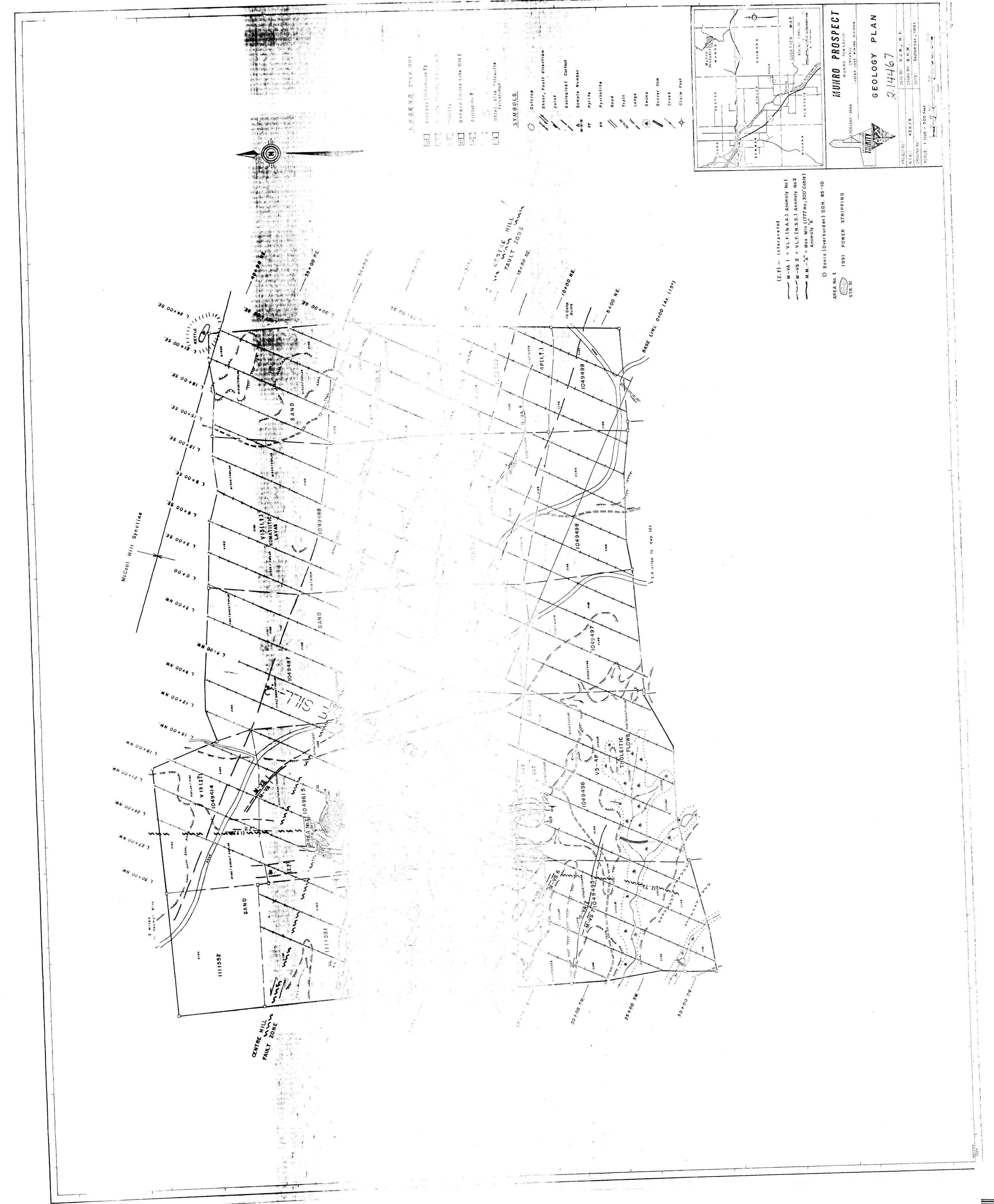
MINISTRY OF NORTHERN DEVELOPMENT AND MINES

THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES. AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MIN-ING CLAIMS SHOULD CON-SULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOP-MENT AND MINES, FOR AD-DITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON.



Received Jan 27/89

TRIM LINE



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