41H08NE0001 2.15281 CARLING

A GEOLOGICAL SURVEY OF THE DIMENSION STONE RESOURCES ON THE WOODS ROAD PROPERTY THE PARRY SOUND DISTRICT OF ONTARIO

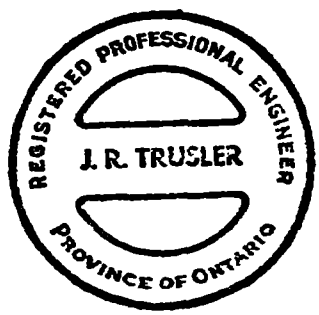
by

JAMES R. TRUSLER ✓

P. 1528
W9490.00012

LONG.: 80°08' 45"W - 80°11' W
LAT.: 45°27' 10"N - 45°28' 10"N
NTS: 41H/8

DATE: December 31, 1993



A GEOLOGICAL SURVEY OF THE DIMENSION STONE RESOURCES ON THE WOODS ROAD PROPERTY THE PARRY SOUND DISTRICT OF ONTARIO

SUMMARY

The Parry Sound area of Ontario is underlain by complex gneisses and migmatites of Middle to Late Proterozoic age which are part of the Ontario segment of the Central Gneiss Belt of the Grenville Structural Province. A working model of thrust plates (called domains and sub-domains) which are separated by ductile thrust faults and moved in a northwesterly direction upon each other has been postulated by Davidson et al (1982). Easton (1992) has improved this model in his synopsis using a hierarchy of terranes and domains wherein the terranes include domains of similar age which are autochthonous with respect to each other. Age dating has indicated that four of these large scale terranes or plates are stacked on each other with the base being near Sudbury at the Grenville Front and the top being near Kingston.

Despite the recent wealth of scholarly publications a comprehensive geological map has not yet been made available for the area. However, the limited information available has enabled the clear identification of potentially favourable conditions for both flagstone and dimension stone. Several flagstone occurrences cluster along Davidson's thrusts and several potential dimension stone prospects have been identified within the interior of particular domains.

Although one may ordinarily not expect to find dimension stone within tectonite terranes, it is evident that the autochthonous nature of some of the domains combined with annealing effect of later superimposed amphibolite facies metamorphism preserved large competent blocks of migmatites and gneisses.

As a result of mapping dimension stone potential, and sawing and polishing specimens from many prospects. Seven sites in the Britt domain, and one in each of the Rosseau and Moon River domains have been staked and mapped by the writer resulting in the definition of a large number of potential quarry sites. The fifteen claim unit Woods Road property is one of these.

The property is underlain by the Bolger megacrystic granite pluton which comprises biotite-amphibole migmatite, tonalite and coronitic metagabbro. Thinly laminated biotite migmatite and felsic biotite migmatites are flat lying with profuse, uniform intrafolial folds having SSE plunging hinge lines on SSE dipping axial planes. Joints are widely spaced and several areas having very large resources could be developed for dimension stone on the property. Four areas on the property warrant site planning, detailed geological mapping and core drilling. Test quarrying will involve removal of 6,000 tonnes from two sites.

41H08NE0001 2.15281 CARLING

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOS

INTRODUCTION

In 1991, the writer commenced a project to evaluate the flagstone and dimension stone resources of the Parry Sound area. At the same time efforts by former Ministry of Northern Development and Mines geologists, principally Chris Marmont and Dave Villard, were being made to outline the substantial potential for these stone resources and make the public aware of the opportunity. In 1992, the regional investigation of flagstone resources by the writer proved discouraging. It was decided late in the field season to focus solely on the dimension stone potential.

By the end of 1992, many prospective dimension stone sites had been identified by either government publications or by the writer's prospecting. Nine of these dimension stone properties have now been staked by the writer, and an initial evaluation of each property involving geological mapping of the outcrops at a scale of 1:5,000 has been completed. The work provides an initial evaluation of potential quarry sites on each property. The project has been supported by the Ontario Prospector's Assistance Program in both 1992 and 1993.

In July. 1992 and July, 1993, the Woods Road property was staked for its dimension stone potential. Geological mapping was carried out in 1993, and the map in the back pocket was prepared and is being submitted with the final report for the OPAP grant in 1993.

The format of the geological report is formulated in compliance with assessment submission requirements.

LOCATION AND ACCESS

The property is located in Carling Township, Parry Sound District, Southern Ontario Mining District, and Sudbury District Regional Geologist's area approximately 150 miles (240 km) north of Toronto (Figure 1). The property is bounded by longitudes 80°11'W on the west and 80°08'45"W on the east and latitudes 45°27'10"N on the south and 45°28'10"N on the north. The corresponding UTM co-ordinates in metres are 563,335 on the west, 566,838 on the east, 5,033,295 on the south and 5,035,210 on the north. The property is within National Topographic System area 41H/8 and is recorded on claim map M2297.

The Woods Road property is traversed by Hwy 69 some 13 km north of Parry Sound and can also be accessed by Station Road two kilometres north of its junction with old Hwy 69. The Canadian Pacific rail bed also traverses the property. Large portions of the property are essentially flat giving virtual access to 80% of the property using four wheel drive vehicles and 20% of the property in two wheel drive vehicles.

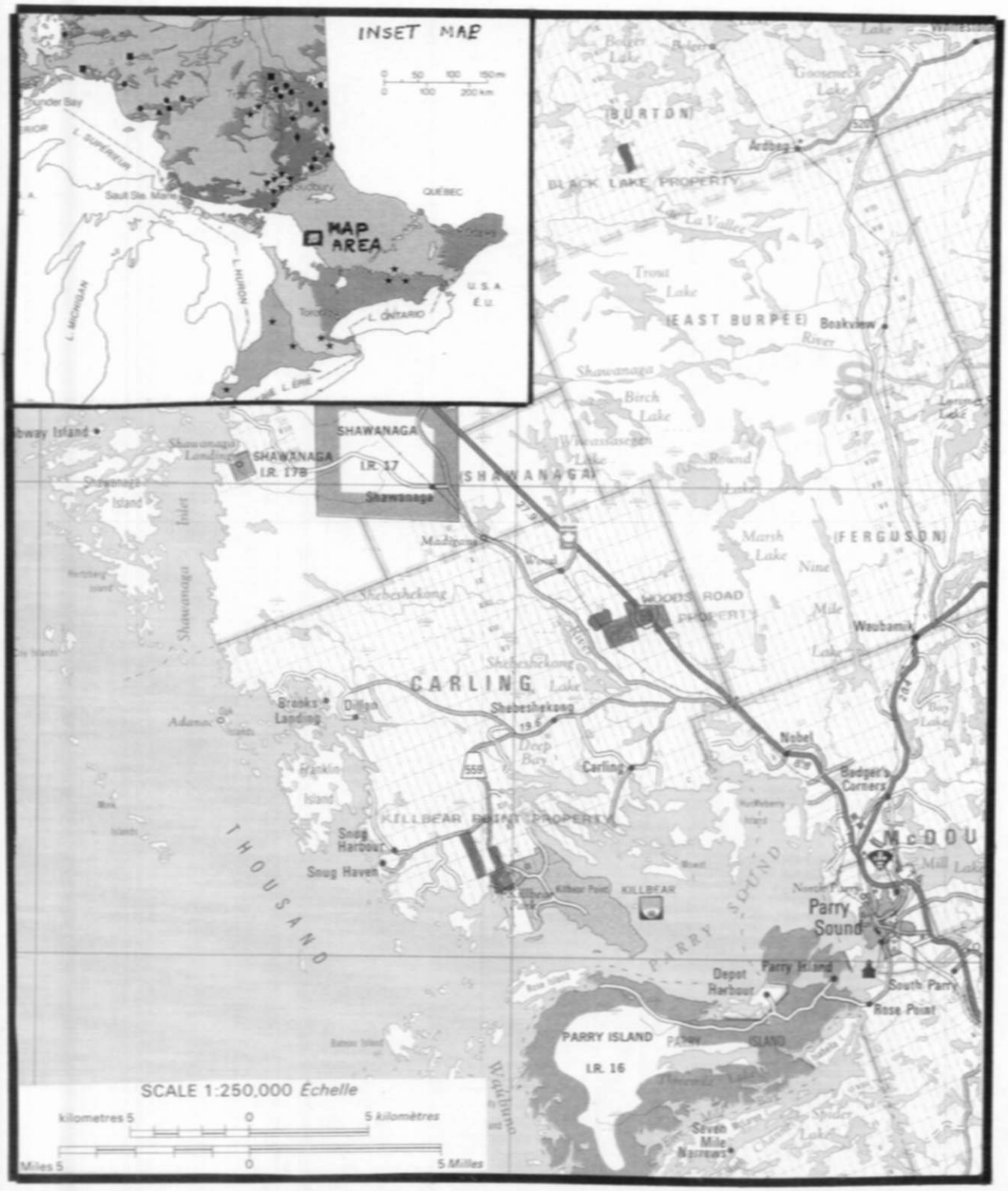


Figure 1: Location Map

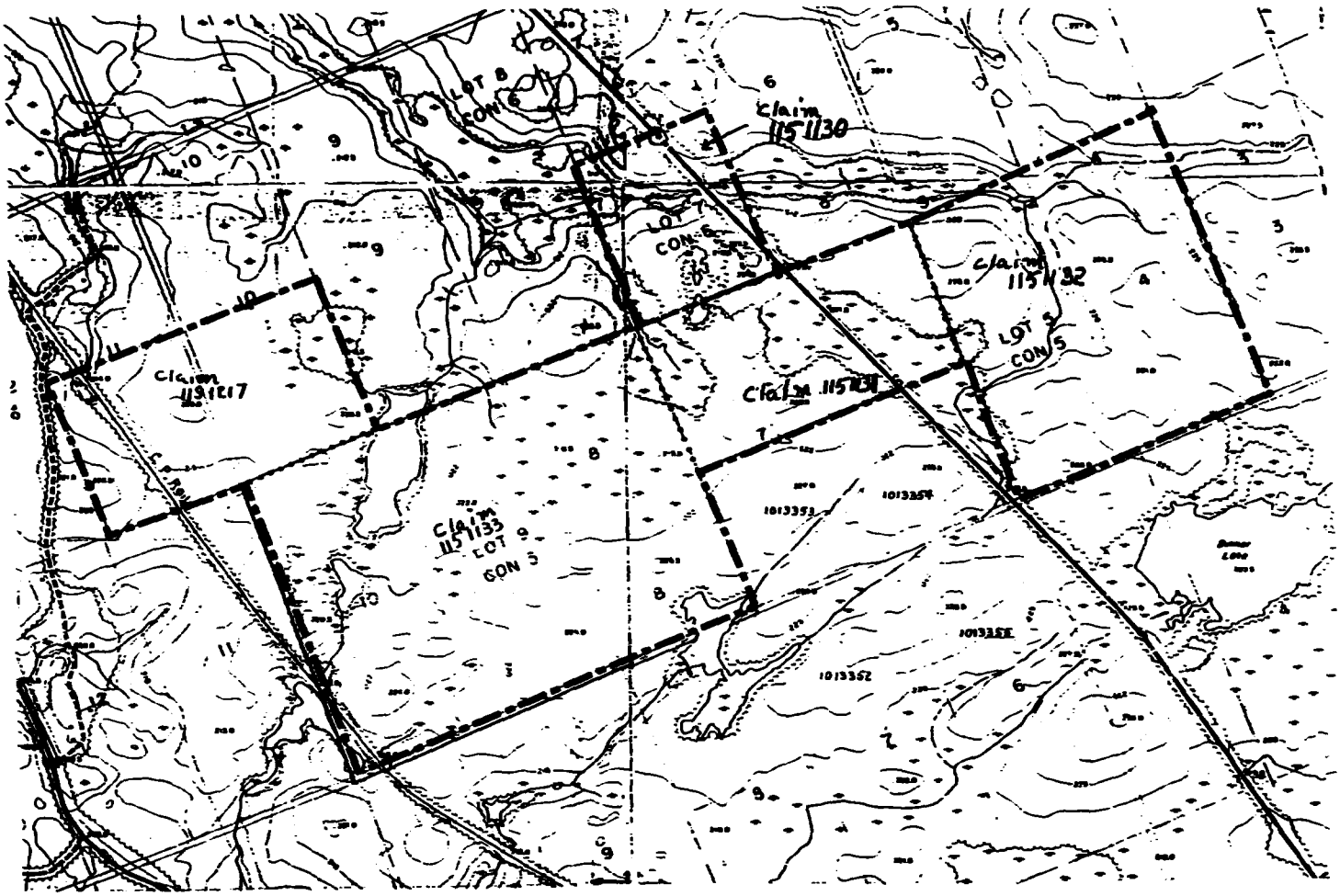
PROPERTY

The Woods Road property comprises approximately 747 acres and is more particularly described in TABLE 1 (Figure 2).

Assessment will be filed for the current work on the claims, and it is anticipated, as a result, that sufficient credits should be available to keep the entire claim group in good standing for some five years from the date of submission.

TABLE 1: WOODS ROAD PROPERTY

Claim No	Township	Lot	Conc.	Area	Recording Date
1151130	Carling	S/2 7	VI	50 ac	Aug. 11, 1992
1151131	Carling	N/2 6,7	V	100 ac	Aug. 11, 1992
1151132	Carling	4,5	V	200 ac	Aug. 11, 1992
1151133	Carling	8,9,10	V	300 ac	Aug. 11, 1992
1191217	Carling	S/2 10,11	VI	97 ac	July 22, 1993



Scale: 1:20,000
Figure 2: Property Map

DATES WORKED METHODS USED ON CURRENT PROJECT

Preparation work on the project commenced in March, 1993, the field work commenced on July 3, 1993 and the map drafting and report writing was completed on December 31, 1993. Actual work days for assessment purposes break down as follows:

Woods Road Property: Claims SO1151130, 1151131, 1151132, 1151133 and 1151217.

Preparation: Apr. 4,6,9, Aug. 3,4,13, 1993 (5½ days)
Field:May 11,12, July 3,4,5,6,13, Aug. 23,24,25,26,27,28, 1993 (12½ days)
Drafting: Aug. 19,20, Sept.29,30, Oct.1,4-8,12,22, Nov. 8-13, Dec. 11,12, 1993 (12days)
Reporting:Sept. 3,10,20-24,27, Nov. 1, Dec. 16-24,26-31, 1993 (6 days)

Preparation for field work involved production of 1:5,000 enlargements of data from Ontario Base Maps and 1:30,000 air photographs. A grid was overlain on the maps, and stations for recording observations at approximately 100 metre centres were plotted and coded. Due to the high percentage of outcrop, visual control was feasible in almost all cases, but traversing by pace and compass from known sites was sometimes supplemented by the use of a rangefinder. The magnetic declination used in the field work is 10°-15′W.

At each station rock types with variations were noted generally with a visual description of colour and textures. Foliations were described and measured where possible. The main emphasis was in measurement of joints and their separations. In this respect at each station joints were observed within a 50 to 100 foot radius of the station. The attitude of each joint was recorded with the minimum and maximum spacing observed and the average spacing estimated.

Observations were directly recorded on a dictaphone in the field. The verbal record was later transcribed to paper notes. Drafting of the data onto maps was later done from the paper notes.

PREVIOUS GEOLOGICAL WORK

A traverse of the shore of Georgian Bay was made by Alexander Murray in 1848, and he gives a brief account of the geology of the shoreline (Murray 1848, p.45,46). The shoreline of Georgian Bay was again examined by Robert Bell in 1876 (Bell 1876, p.198-207). The Huntsville -Bracebridge area was investigated by W.A. Parks (1900, p.121-126), and brief notes on the geology are given. Further field work was done in the area in 1905 by T.L. Walker (1905, p. 84-86). The International Geological Congress had a field excursion in Parry Sound area in 1913. Some local geological features are described by T.L. Walker (1913, p. 98-100).

The first comprehensive reconnaissance mapping in the area was done by Satterly (1942) who visited all the local known mineral deposits. Satterly (1955) also mapped Lount Twp. in detail showing for the first time the existence of mappable units in the Parry Sound area. Hewitt (1967) was able to accurately identify the complexity of petrographic units and correlate some of these in a reconnaissance mapping program.

Greater interest in resolving the geological complexity of the area was kindled by Lumbers who was progressively mapping Grenville terranes in Ontario from the Grenville Front to the south Lumbers (1975) and by Wynne-Edwards (1972). Wynne-Edwards suggested the first interpretive framework for the Central Gneiss Belt of the Grenville Structural Province. The controversy which arose from Wynne-Edwards "Sea of Gneisses" lead a profusion of other researchers into the area who have conducted specific detailed and reconnaissance mapping and synoptic studies. Since 1972 M. W. Schwerdtner and students have concentrated on resolving many of the structural geology problems of the area contributing a great amount to the understanding of the geology of the Central Gneiss Belt.

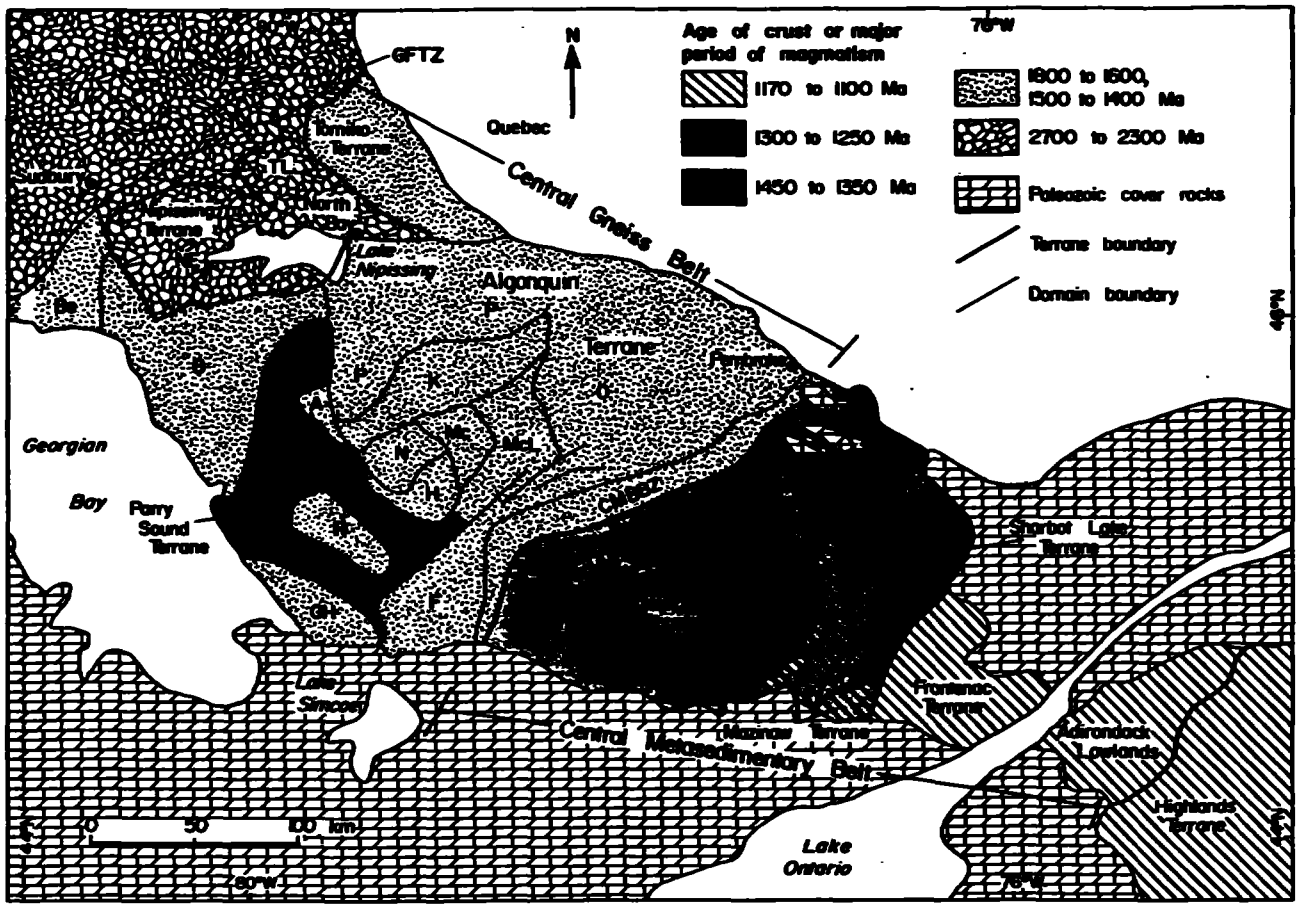
The framework for all current work in the area was provided by Davidson et al. (1982). This has been modified subsequently by Davidson and other workers, and Easton (1992) has synthesized this work eloquently. The tectonic terranes and domains separated by shear zones have become imbedded in the literature.

REGIONAL GEOLOGY

The Muskoka-Parry Sound region is part of the Ontario segment of the Central Gneiss Belt in the Grenville Structural Province (Wynne-Edwards 1972). No detailed geological map of the whole region, which was included in a recent major project on the Ontario Gneiss Segment by the Geological Survey of Canada, has been published to date.

Recent mapping by Davidson et al. (1982) has led to a tectonic model in which the thickening of Proterozoic crust is accomplished by deep-level thrusting and associated reverse ductile

shearing (Davidson 1984a, 1984b). According to this model, major crustal slices (called domains and sub-domains, see Fig.3) have been translated over large distances toward the margin of the Superior Structural Province.



Abbreviations

A	Ahmic Domain	GH	Go Home Domain	NE	Nepewassi Domain
B	Britt Domain	H	Huntsville Domain	O	Opeongo Domain
Be	Beaverstone Domain	K	Kiosk Domain	P	Powassan Domain
CMBBZ	Central Metasedimentary Belt Boundary Zone	Mc	McCraney Domain	PS	Parry Sound Domain
		McL	McClintock Domain	R	Rosseau Domain
F	Fishog Domain	MR	Moon River Domain	S	Seguin Domain
GFTZ	Grenville Front Tectonic Zone	N	Novar Domain	TL	Tilden Lake Domain

Figure 3: Lithotectonic terranes,domains Central Gneiss Belt (Easton, 1992)

This view has been further modified by some more local studies by Hanmer (1988) and Schwerdtner (1987). According to Hanmer the southeast to northwest thrusting was initiated at approximately 1160 Ma and continued for 100 Ma. However he claims that subordinate northeastward thrusting was coeval and that late synmetamorphic extensional shears cut these major thrusts and thrust sheets but are in turn cut by late movement on the thrusts. He further alludes to the comparison to the structural style of the

Central Gneiss Belt and the Himalayas suggesting that the Grenville exposes the architecture and processes presently active in the roots of younger mountain belts. Schwerdtner's observations agree with Hanmer's respecting a northeasterly component to deformation which he invokes to explain north-south buckle folds. However, Schwerdtner observed that not all foliations can be explained by the thrust model and that three sets of folding are superimposed and cross the domain boundaries. He claims that all the structural facts can be explained without large differential translations of crustal slices and most discordances in the regional gneissocity could have been created by décollement and repeated buckling.

Easton (1992) synthesized all previous studies stating that, "Recorded within the Grenville Province is the tectonic evolution of the southeast margin of Laurentia during the Mesoproterozoic. The Grenville Orogeny has overprinted the structural trends and metamorphic effects of the Archean and Paleoproterozoic geological province of Laurentia. It is now generally accepted that this orogenic event or events involved northwest directed thrusting and imbrication of the entire crust, presumably as a result of a terminal collision at about 1100 Ma. with a continental landmass somewhere to the southeast.

The Central Gneiss Belt consists mainly of upper amphibolite and local granulite facies, quartzo-feldspathic gneisses, chiefly of igneous origin with subordinate paragneiss. Distinctive lithotectonic terranes, some further subdivided into domains, have been identified within the Central Gneiss Belt. The terranes and domains are distinguished by differences in rock types, internal structure, metamorphic grade, geological history, and geophysical signature and are bounded by zones of intensely deformed rocks traceable for tens of kilometres."

The Algonquin terrane consists of 1800 to 1600 Ma gneisses intruded by 1500 to 1400 Ma granitic and monzonitic plutons that may represent an extension of the Eastern Granite-Rhyolite Province. Although imbricated by later thrusting the Algonquin terrane is probably parautochthonous. The Britt and Rosseau domains are part of the Algonquin terrane.

The Britt Domain (Figure 4) comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features. Dips of these rocks are generally flat to 10°to the southeast. Some units are entirely composed of isoclinal sheath folds whereas other units are evidently deformed megacrystic granitic plutons.

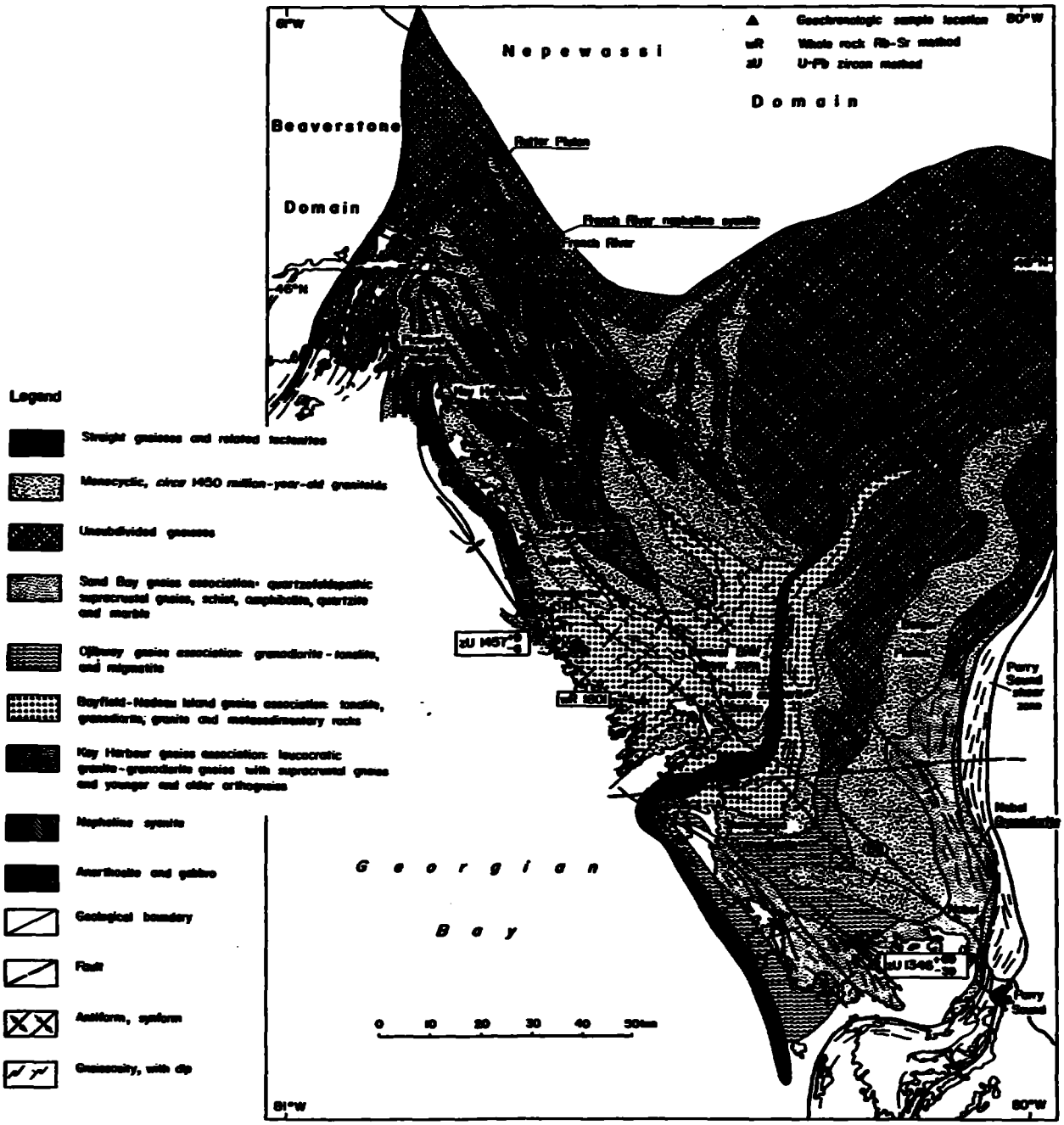


Figure 4: Geology of the Britt Domain (Easton (1992))

The Parry Sound and Moon River domains consist chiefly of juvenile crust 1450 to 1350 Ma in age and are parallochthonous. The Parry Sound domain rocks comprise dense high metamorphic facies rocks (amphibolite and granulite facies) which are emergent on the other domains. The rocks in the Parry Sound domain are dominantly amphibolite and pyroxenite gneisses which strike to the north east and dip 20°-60°to the southeast (at a much steeper angle than the postulated shear couple accompanying thrusting). The bedrock

largely comprises veined, banded and homogeneous pink and grey migmatitic gneisses produced by injection and granitization of metamorphic gneisses of various types. The rocks are mainly of upper amphibolite and granulite metamorphic facies.

Hypersthene-bearing charnokitic gneisses are present in the area. The origin of much of the amphibolite gneiss is obscure. Some which is associated with bands of marble is thought to be paragneiss whereas some is proximal to large bodies of gabbro and anorthosite and thought to be orthogneiss. Trusler and Villard (1980) found evidence that some of the mafic and felsic rocks are of volcanic origin. The high metamorphic grade of the rocks is attributed to a deep seated origin possibly involving underplating at an early stage.

The Bolger pluton in the Britt domain is dated at circa 1450 Ma and underlies the Black Lake, Woods Road and Shebeshekong Lake properties (Figure 4). The Dillon Road property is underlain by both the Bolger pluton and the Ojibway gneiss association. The Killbear Point and Jacknife Harbour properties are underlain by the Sand Bay gneiss association. The Grundy Lake property is underlain by an unnamed V-shaped pluton believed to be circa 1450 Ma.

Comparable regional maps do not cover areas about the Turtle Lake property and the Burnt Lake property which are situated in the Rosseau and the Moon River domains respectively.

DESCRIPTION OF ROCK UNITS

Since no comprehensive, detailed geological maps have been produced for the Parry Sound area, none of the previous workers have made an attempt to construct a table of rock units. None of the rock units have been correlated across domain boundaries. Trusler and Villard made an attempt to derive a Table of Rock units for the Parry Sound -Sans Souci area in 1980 and some of that information is used here to produce Table 2. These Formation names are not used in the mapping since these have been inadequately defined for inclusion in the literature. However, the area mapped by Trusler and Villard covers parts of the Britt, Parry Sound and Moon River domains and the lithologic variety is well represented.

The Sans Souci-Killbear Point Group correlates well with the Sand Bay gneiss association of Figure 4 which underlies the Killbear Point and Jacknife Harbour properties. Similar rocks which are younger underlie the Burnt Lake property. The Ojibway gneiss association which underlies part of the Dillon Road property correlates with the tonalite in Table 2. The remaining sites are megacrystic granites or migmatitic derivatives of megacrystic granites classified under quartz monzonite in Table 2.

The rocks on the property have been subdivided into mappable units as follows: biotite-hornblende migmatite, gabbro, and tonalite.

The biotite-hornblende migmatite is represented by quartzo-feldspathic rock ranging from less than 5% to greater than 40% mafic minerals and containing syntectonic and late tectonic pegmatitic material in varying proportions and thicknesses. The grain size ranges from fine to coarse with the more neosome phases generally being coarser. In any one area and especially in individual layers the mineralogy and textures are uniform. The mafic mineral tends to be biotite dominant. The gneissic fabric is very thinly laminated in some areas but ranges to thickly layered in other areas and is typically variegated pink and various shades of grey. However some areas are underlain by laminated gneisses variegated only in shades of grey. A pervasive feature of this rock is a 5-10% translucent red speckle caused by hematite on grain boundaries. Profuse, fine scale, intrafolial folding with a slight plunge to the southeast and shallow southeast dipping axial planes is a dominant feature of these rocks.

The tonalite is generally a gneissic, medium to coarse grained, thinly to thickly layered rock generally variegated light grey and greyish black and containing 20 to 40% mafic minerals overall with amphibole being the dominant mafic mineral. Usually approximately 10%, but occasionally up to 50% of the rock unit comprises introduced or anatectic, syntectonic quartzo-feldspathic material. Pinch and swell characteristics are common especially in neosome portions of this rock.

The gabbro is represented both by a very coarse grained, greyish black, coronitic metagabbro which has an ophitic and oikocrystic texture and amphibolite gneiss which is a coarse grained amphibole-plagioclase rock which is thinly to thickly layered, variegated medium grey and dark greyish black and very rarely contains a small amount of syntectonic material.

TABLE 2: TABLE OF ROCK UNITS FOR THE PARRY SOUND AREA

PHANEROZOIC

CENOZOIC
Quaternary
Recent
swamp, lake, and stream deposits

Pleistocene
bouldery, cobbly and silty sand till, silt, sand, pebble gravel, and cobble gravel
_____Unconformity (possible regolith)_____

PALAEOZOIC

Cambro - Ordovician
Calcareous fracture fillings
_____Unconformity_____

PRECAMBRIAN

Late Precambrian
Late Breccias- thin mylonites; quartz veined dilatant breccias of unknown origin

Late Pegmatite
massive granite pegmatite dikes
_____Intrusive Contact_____
High Rank Regional Metamorphism

Middle to Late Precambrian

Tectonites
Mylonite: very fine grained massive to thinly to thickly laminated rock frequently exhibiting compositional and graded layering and containing rotated porphyroclasts; generally marginal to schistose and gneissic rocks; matrix minerals generally are siliceous and comprise quartz, microperthite, biotite and/or amphibole and/or pyroxene

Tectonic Breccia: brecciated rock comprising lithic clasts within a fine to coarse grained schistose to gneissic cataclastic matrix with quartz, perthitic microcline, biotite and/or amphibole and/or pyroxene
_____Sheared Contact_____

Syenite and Monzonite Suite Intrusive Rocks
pink to grey and green, massive to porphyritic to lineated and gneissic biotite, hornblende-biotite and hornblende syenite and monzonite, charnokite and mangerite.
_____Intrusive Contact_____

Anorthosite Suite Intrusive Rocks

Anorthosite- massive to gneissic labradorite anorthosite, andesine anorthosite with up to 10% pyroxene, and gabbroic anorthosite

_____Intrusive Contact_____

Gabbro- massive to gneissic fine to coarse grained, black pyroxenite, anorthositic gabbro and gabbro

_____Intrusive Contact_____

Tonalite- massive to strongly lineated and gneissic light to dark grey pyroxene tonalite and diorite with minor gabbro

_____Intrusive Contact_____

Quartz Monzonite - Syenite Suite Intrusive Rocks

massive to gneissic medium to coarse grained biotite quartz monzonite, pyroxene quartz monzonite and foliated granite pegmatite, pyroxene syenite and foliated syenite pegmatite; megacrystic granite and derivatives.

_____Intrusive Contact_____

Parry Sound Group Metavolcanic Rocks[1]

Spider Lake Formation[1]: intermediate to felsic rocks, medium to coarse grained generally porphyritic, massive to gneissic rocks containing quartz, feldspar, almandite, amphibole and pyroxene; some fragmental units present.

Parry Sound Formation[1]: mafic, medium to coarse grained, schistose to gneissic, pyroxene-feldspar and amphibole-feldspar bearing massive and fragmental rock

Sans Souci - Killbear Point Group Metasedimentary Rocks[1]

Unsubdivided: thinly laminated to extremely thickly layered; interlayered medium to coarse grained schists and gneisses; lower amphibolite to granulite facies; intercalated with metavolcanics above

Killbear Point Formation[1]: thinly to extremely thickly layered, schistose and gneissic medium to coarse grained biotite, quartz, feldspar rocks

Bateau Island Formation[1]: very thickly layered, medium to coarse grained felsic gneiss with mafic biotite and amphibole rich parting planes; variously interpreted as an arkose or granite; cataclastic textures.

[1] The formation names have not been accepted and criteria for introduction of these names into the literature have not been fulfilled. Identification as to origin is tentative

PROPERTY GEOLOGY

The property principally is underlain by felsic rocks of unusual character of Middle to Late Precambrian age. The main unit on the property is the biotite-hornblende migmatite. Although, the progenitor of this rock is megacrystic granite, the only macroscopic feature evidencing its origin on the property is the relative uniformity of texture and chemical composition. The rocks have been subjected to intense small scale folding, anatexis or syntexis and polyphase tectonism and metamorphism. The final stage of amphibolite facies metamorphism appears to have succeeded any penetrative tectonic influences.

The individual rock units were described under the heading DESCRIPTION OF ROCK UNITS on Page 9 of this report. The biotite-hornblende migmatite is a granular aggregate of equant to elongated grains of quartz, feldspar and biotite, averaging over 10% mafic minerals and containing syntectonic and rarely, late tectonic pegmatitic material exhibiting cataclastic textures. The pegmatites occur in varying proportions and thicknesses. Evidently, this unit has evolved through polyphase metamorphism and tectonism with a final stage of amphibolite facies metamorphism annealing the rocks. The grain size ranges from fine to coarse with the more neosome phases generally being coarser. In any one area and especially in individual layers the mineralogy and textures are uniform. The mafic mineral tends to be biotite dominant, but some large tracts are hornblende dominant. The gneissic fabric is very thinly laminated in some areas but ranges to thinly layered in other areas and is typically variegated pink and various shades of grey, but in several areas is variegated light grey and greyish black. Minor scattered red hematite specks occur throughout this unit. Some of the pink and grey banded varieties of this rock contain less than 5% biotite and some light grey and greyish black varieties contain less than 10% biotite. Some outstanding potential quarry sites are evident on the property having these features.

The tonalite comprises a gneissic, medium to coarse grained, thinly to thickly layered rock, variegated light grey and greyish black and containing 20 to 40% mafic minerals overall with amphibole being the dominant mafic mineral. It is a medium to coarse grained, thinly to thickly layered rock containing significant variation in texture and composition of the syntectonic and late tectonic pegmatitic material. Some portions of the unit contain rich biotite segregations which weather low although amphibole is the main mafic mineral. It comprises usually approximately 10%, but occasionally up to 50% introduced or anatectic, syntectonic quartzo-feldspathic material. Pinch and swell characteristics are common especially in neosome portions of the gneissic rock. One large outcrop of this material is potentially able to be quarried for dimension stone.

The gabbro is represented by two diverse rocks. The first

is a very coarse grained, greyish black, coronitic metagabbro which has an ophitic and oikocrystic texture. The coronas are produced from partial amphibole replacement of clinopyroxenes. This particular rock usually occurs as small circular intrusions up to several hundred metres in diameter. The second is an amphibolite gneiss which is a coarse grained amphibole-plagioclase rock which is thinly to thickly layered, variegated medium grey and dark greyish black and very rarely contains a small amount of syntectonic material. This rock usually occurs as large elongated sills or dikes generally spatially associated with the tonalite.

Gneissic foliations were measured at each station where possible. Despite some exceptions, the general pattern displayed is of a relatively structurally uniform sequence. The gneissic foliations are very strong on the property, but the attitude is predominantly flat lying to slightly southeast dipping. The biotite-hornblende migmatite, in particular, contains profuse ubiquitous, intrafolial folding which plunges at approximately 10° to the south-southeast and has gently south dipping axial planes.

The average sub-horizontal joint spacing, based on 24 data, is 2.5 metres and the average vertical joint spacing based on 395 data is four metres. The statistical plot of vertical joints was constructed using 456 data and gave a high degree of scatter. The main joint direction is 153° and 27% of the data are clustered about this direction. The remainder of the data are scattered with all five degree segments having at least 2% of the data (Map 1).

POTENTIAL DIMENSION STONE SITES

An outcrop of biotite-hornblende migmatite (Photo 1) with about 40% shallow overburden cover is exposed from the middle of lot 4, conc. 5, Carling Twp. to the south boundary and southeast corner of the lot. The favourable area is 500 metres X 250 metres approximately and has a relief of approximately 20 metres above the surrounding drainage. The joint spacing appears favourable for recovery of 30 tonne dimension stone blocks. The biotite-hornblende migmatite in this location is biotite dominant with over 20% biotite, is thinly laminated with profuse intrafolial folding, and is variegated medium greyish black and pink. A site plan is warranted for this site combined with detailed geological mapping and drilling.

Photo 3 shows the bedrock plane in the north part of lot 8, concession 5, Carling Twp. This outcrop continues to the SSE to the middle of the lot on its east boundary. The rock is a biotite dominant biotite-hornblende migmatite with over 20% biotite, similar to the material described in the preceding paragraph, on 60% of the outcrop, but becomes hornblende dominant and a biotite dominant schlieren on the southeast portion of the outcrop. This latter variation of the rock is lighter grey and more intensely pink. The outcrop covers an area about 500 metres X 150 metres

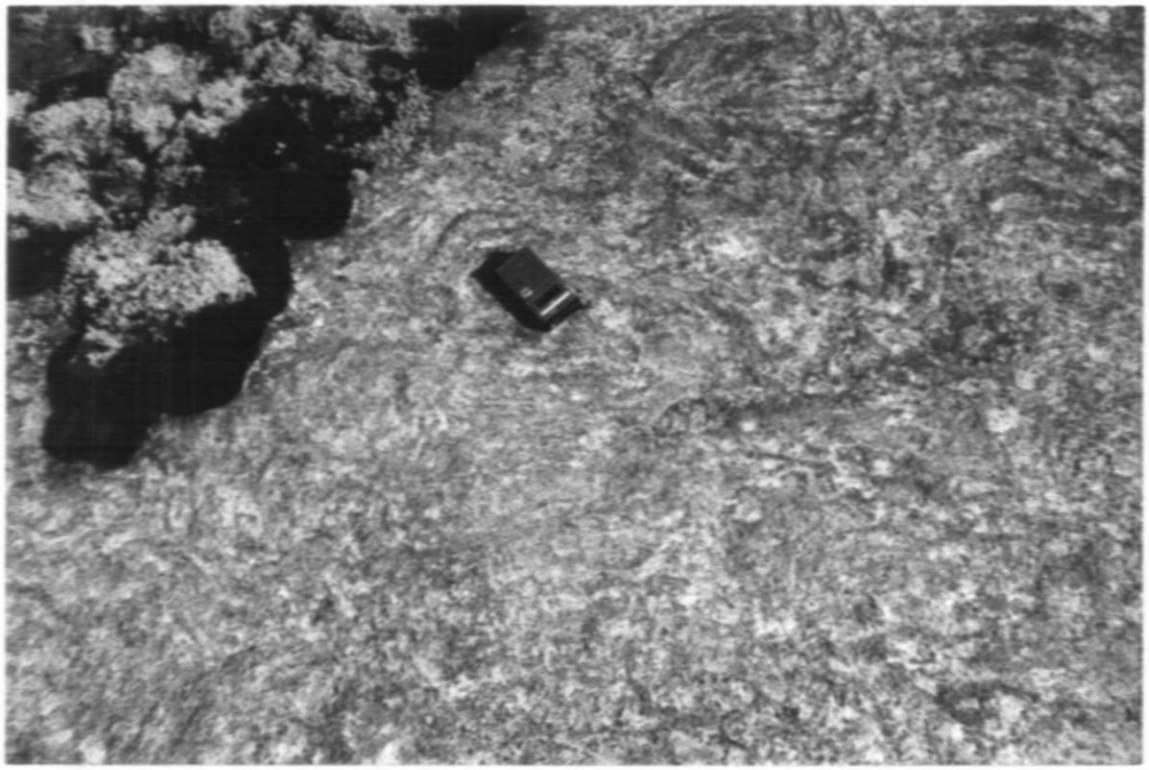


Photo 1 Thinly laminated and folded pink and dark grey biotite-hornblende migmatite on Woods Road property (above) material is similar to straight gneiss featured in Photos 2; the sites are 1500 metres apart; Photo 2 a polished slab from a crushed rock quarry (below); the sample is described in sample 2, Table 3; this material takes a good polish and is very attractive.

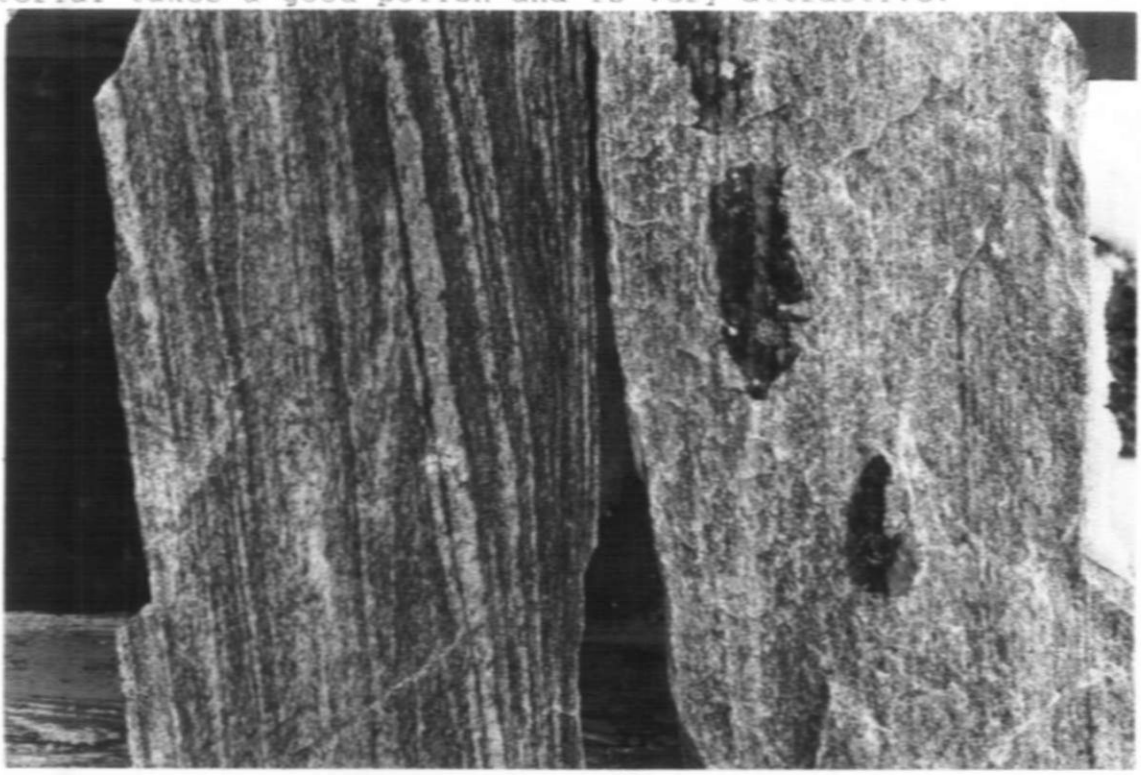


Photo 3 Bedrock plane typical of Woods Road property (above) located on the north part of lot 8 concession 5, Carling Twp. and proposed for site planning; Photo 4 polished folded migmatite Woods Road property; the sample is described as sample 1, Table 3 and is similar to the material depicted in the quarry face but cut on a different angle. This folded horizon with little or no change in character can be followed for over 2 km., is flat lying and underlies the bedrock plane above.

TABLE 3: RESULTS OF SAMPLE POLISHING

Sample No.	Type of Sample	Rock Type	Test Results
Sample 1 Claim 1151130	large block weighing 30 Kg.	Intrafolial folded pink, biotite-hornblende-quartz-feldspar migmatite.	The sample took an excellent polish appearing very durable without weathering fractures or pluck outs; the rock is a very attractive buff stringered, pink-grey migmatite containing approximately 20% biotite with quartz, feldspar with accessory magnetite and hematite speckles on grain boundaries widespread and attractive; rock is cataclastic with most pegmatite crystals recrystallized to a medium grained rock after cataclasis; alignment of biotite crystals appears to be axial planar to the folded gneissic layers giving the rock a "wood grain" appearance.
Sample 2 Claim 1151131	large block weighing 50 kg.	Straight gneissic, grey-pink, biotite-hornblende-quartz-feldspar migmatite	Red flecked pink and grey gneissic rock with ≈25% biotite and ≈20% hematite spots; pegmatitic material granulated and recrystallized; closed folds with axial planar biotite foliation; takes an excellent polish but some healed cross fractures evident which may be deleterious; also a wood grain gneiss.

average and is 10 to 15 metres above the drainage. Site planning and detailed mapping are warranted.

On the south half of lot 10, concession 6, Carling Twp., up to the boundary with lot 11 a large outcrop of felsic biotite-hornblende migmatite occurs. The rock is variegated pink and light grey with a biotite content of less than 10%. Profuse small scale intrafolial folding can be seen in outcrop. At this location the jointing is favourable for the removal of large blocks, but the outcrop covers a much larger area some of which has close spaced joints. The area of

favourable outcrop is 250 metres square and 15 metres above the drainage. More favourable material could be located in the south half of lot 11. Site planning including detailed mapping and drilling are warranted.

The tonalite which outcrops in the middle of lot 9, concession 5, Carling Twp. has wide joint spacing and is a uniform thinly layered rock with light grey and medium greyish black layers. The outcrop, at the south end of the tonalite intrusion, covers an area 250 metres X 125 metres and is 15 metres above the drainage. Site planning, detailed mapping and drilling are warranted.

CONCLUSIONS

The Britt domain comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features.

Nine dimension stone prospects were staked in the Parry Sound area, and all have been mapped geologically. Many of the rocks underlying these properties are migmatitic derivatives of granitic intrusions and present a great variety of textures. In some cases it is evident that the paleosome constituent was megacrystic and subsequent neosome phases have distinct compositions and fabrics. The sites were chosen for their attractiveness and the apparent availability of accessible large blocks. The Woods Road property is the largest of these claim groups.

The property is underlain by the Bolger megacrystic granite pluton which comprises biotite-amphibole migmatite, tonalite and coronitic metagabbro. Thinly laminated biotite migmatite and felsic biotite migmatites are flat lying with profuse, uniform intrafolial folds having SSE plunging hinge lines on SSE dipping axial planes. Joints are widely spaced and several areas could be developed for dimension stone on the property. Four areas on the property warrant detailed geological mapping, site planning and drilling. Two of these sites should be test quarried after the initial exercises. The dimension stone resources in each case exceed 1,000,000 tonnes.

RECOMMENDATIONS

1. Site planning including drilling and detailed geological mapping are recommended on four sites.

2. Two of the above sites are recommended for test quarrying by the removal of 3,000 tonnes in 30 tonne blocks from each.

REFERENCES

Bell. R. 1876. Report on geological researches north of Lake Huron and east of Lake Superior; in Geological Survey of Canada Report on Progress 1876-77.

Bennett, P.J. 1975. The deformation of the northern half of the Brandy Lake Complex, Port Carling, Ontario. M.Sc. thesis, Department of Geology, University of Toronto. Toronto, Ont.

Bright, E.G. 1987. Precambrian geology of the Whitestone Lake area, District of Parry Sound; Ontario Geological Survey, Map P.3095, Geological Series-Preliminary Map, scale 1:15,840, geology 1986.

Culshaw, N.G., Davidson, A., and Nadeau, L. 1983. Structural subdivisions of the Grenville Province in the Parry Sound-Algonquin region, Ontario; in Current research , pt. B, Geological Survey of Canada, Paper 83-1B,p.243-252.

Culshaw, N.G., Corrigan, D., Drage, J., and Wallace, P. 1988. Georgian Bay geological synthesis: Key Harbour to Dillon, Grenville Province of Ontario; in Current research, Part C, Geological Survey of Canada, Paper 88-1C, p.129-133.

Davidson, A. 1984a. Identification of ductile shear zones in the southwestern Grenville Province of the Canadian Shield. In Precambrian tectonics illustrated. Edited by A. Kröner and R. Greiling. E. Schweizrbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart, Germany, pp. 263-279.

_____ 1984b. Tectonic boundaries within the Grenville Province of the Canadian Shield. Journal of Geodynamics, 1: 433-444.

_____ 1986. New interpretations in the southwestern Grenville Province, edited by J.M. Moore, A. Davidson and A. Baer, Geological Association of Canada, Special Paper 31,p.61-74

Davidson, A. and Morgan, W.C. 1981. Preliminary notes on the geology east of Georgian Bay, Grenville Structural Province, Ontario; in Current research, pt. A, Geological Survey of Canada, Paper 81-1A,p.291-298.

Davidson, A., Culshaw, N. and Nadeau, L. 1982. A tectono-metamorphic framework for part of the Grenville Province, Parry Sound region, Ontario; in Current research, pt.A, Geological Survey of Canada, Paper 82-1A, p.175-190.

Fahrig, W.F. and West, T. 1986. Diabase dyke swarms of the Canadian Shield; Geological Survey of Canada, Map 1627A, scale 1:4,873,900.

Fouts, C.R. and Marmont C. 1989. Gneisses of the Parry Sound-Muskoka Area; Flagstone resources, Ontario Geological Survey, Open File Report 5725

Garland, M. 1987. Graphite in the Central gneiss belt of the Grenville Province of Ontario; Ontario Geological Survey, Open File Report 5649.

Hanmer, S. 1984. Strain-insensitive foliations in polymineralic rocks; Canadian Journal of Earth Sciences, v.21, p.1410-1414.

_____ 1988. Ductile thrusting at the mid-crustal level, southwestern Grenville Province; Canadian Journal of Earth Sciences, v.25, p.1049-1059.

Harrison, J.C. 1977. Geology and structure of the Go Home Bay area, District of Muskoka, Ontario. B.Sc. thesis, Department of Geology, University of Toronto, Toronto, Ont.

Hewitt, D.F. 1967. Geology and mineral deposits of the Parry Sound -Huntsville area; Ontario Geological Survey, Geological Report 52, 65p.

Lacy, W.C. 1960. Geology of the Dunchurch area, Ontario; Geological Society of America Bulletin, Volume 71, p.1713-1718

Lindia, F.M., Thomas, M.D. and Davidson, A. 1983. Geological significance of the Bouger gravity anomalies in the region of the Parry Sound domain, Grenville Province, Ontario; in Current research , ptB, Geological Survey of Canada, Paper 83-1B, p.261-266.

Lumbers, S.B. 1975. Geology of the Burwash area; Ontario Division of Mines, Geological Report 116,160 p., with Map 2271 scale 1:126,720.

Macfie, R.I. 1988. Preliminary investigation of the Parry Sound - Seguin domain boundary; in Summary of field work and other activities 1988, by the Ontario Geological survey, Ontario Geological Survey, Miscellaneous Paper 141, p.315-318.

Macfie, R.I. and Dixon, J. M. 1990. Tectonic relations among Parry Sound domain and Seguin an Rosseau sub-domains Grant 370; in Geoscience Research Grant Program Summary of Research 1989-1990, Ontario Geological Survey, Miscellaneous Paper 150, 1990, p.200-212.

Marmont, C., Zuberec, P.M., and Conrod, W.D. 1988. Industrial minerals,rare-earth elements, and building stone in the Districts of Muskoka, Parry Sound, and Nipissing and the County of Haliburton; in Summary of Field Work and Other Activities 1988, by the Ontario Geological Survey, Ontario Geological Survey, Miscellaneous Paper 141, p.319-325.

Marmont, C. 1992. Industrial minerals and building stone in the Districts of Nipissing, Parry Sound and Sudbury;in Summary of Field Work and Other Activities 1992, Ontario Geological Survey Miscellaneous Paper 160, p.261-265.

1992. Building Stone Opportunities in Central Ontario -1991 Supplement. Ontario Geological Survey, Open File Report 5825, 20p.

1993. Exploration Guidelines and Opportunities for Dimensional Stone in Central Ontario. Ontario Geological Survey, Open File Report 5853, 83p.

McRoberts, G., Macfie, R.I. and Hammar, D.J. 1988. Geology of the Manitouwabing Lake area, District of Parry Sound; in Summary of Field Work and Other Activities 1988, by the Ontario Geological Survey, Ontario Geological Survey, Miscellaneous Paper 141, p.309-314.

McRoberts, G., and Tremblay, M.L, 1988. Precambrian geology of the Ferrie River area, District of Parry Sound; Ontario Geological Survey, Map P. 3123, Geological Series-Preliminary Map, scale 1:15,840

Murray, A. 1848. On an examination of the shores, islands and rivers of Lake Huron including parts of the east coast of Hudson Bay and the Spanish River; in Geological Survey of Canada Report of Progress 1848-49.

Nadeau, L. 1984. Deformation of leucogabbro at Parry Sound, Ontario. M.Sc. thesis, Carlton University, Ottawa, Ont.

Parks, W.A. 1900. Work in the Muskoka district, Ontario; in Geological Survey of Canada, Summary report for 1900, part A pp.121-126 (pub 1901).

Satterly, J. 1942. Mineral Occurrences in Parry Sound District, Ontario Department of Mines, v.51,Part 2,41p. with Map 1942-2.

Satterly, J. 1955. Geology of Lount Township; Ontario Department of Mines Annual Report, v.64, Part 6, 43p., with Map 1955-4, scale 1:31,680.

Schwerdtner, W. M., and Bauer, G. 1975. Tectonic significance of mylonite zones. Neues Jahrbuch für Mineralogie, Monatshefte, No.

11: 500-509.

Schwerdtner, W.M., and Mawer, C.K. 1982. Geology of the Gravenhurst region , Grenville Structural Province, Ontario. In Current research, part B. Geological Survey of Canada, Paper 82-1B, pp. 195 - 207.

Schwerdtner, W.M., and Waddington, D.H. 1978. Structure and Lithology of Muskoka - southern Georgian Bay region, Central Ontario. In Toronto '78 Field Trips Guidebook. Edited by A.L. Currie and W.O. Mackasey. Geological Association of Canada, pp. 204-212.

Schwerdtner, W.M., Waddington, D.H., and Stollery, G. 1974. Polycrystalline pseudomorphs as natural gauges of incremental paleostrain. Neues Jahrbuch für Mineralogie, Monatshefte, No. 3/4: 174-182.

Schwerdtner, W.M., Bennett, P.J., and Janes, T.W. 1977. Application of L-S fabric scheme to structural mapping and paleostrain analysis. Canadian Journal of Earth Sciences, 14: 1021-1032.

Schwerdtner, W.M., Mawer, C.K., and Hubbs, A. F. 1981. Geology of the Gravenhurst region, Grenville Structural Province,Ontario: Preliminary mapping results. In Current research, part B, Geological Survey of Canada, Paper 81-1B, pp. 167-169.

Schwerdtner, W.M. 1987. Interplay between folding and ductile shearing in the Proterozoic crust of the Muskoka-Parry Sound region, central Ontario; Canadian Journal of Earth Sciences, v.24, p.1507-1525.

Tremblay, M.L. 1988. Remote sensing study of curvilinear, structural features in the Parry Sound domain, Grenville Province; in Summary of field work and other activities 1988, Ontario Geological Survey Miscellaneous Paper 141 pp.326-329.

Trusler, J.R. and Villard, D.J. 1980. Geology of the Parry Sound-Sans Souci map area; scale 1:31,680, unpublished manuscript and map done for the Ontario Ministry of Natural Resources.

Trusler, J.R. 1992.Prospecting Programme for Flagstone and Decorative Stone in the Parry Sound District of Ontario. OPAP File No.: OP92-174

1993. Geological Reconnaissance for Flagstone and Dimension Stone in the Parry Sound District of Ontario; Regional survey submitted to Assessment Files, Ontario Geological Survey.

van Berkel, J.T., and Schwerdtner, W.M., W.M. 1986. Structural geology of the Moon River area. Ontario Geological Survey, P2954(with marginal notes).

van Breeman, O., Davidson, A., Loveridge, W.D. and Sullivan, R.W. 1986. U-Pb zircon geochronology of the Grenville tectonites, granulites and igneous precursors, Parry Sound, Ontario; in The Grenville Province, edited by J.M. Moore, A. Davidson and A. Baer, Geological Association of Canada, Special Paper 31, p.191-208.

Waddington, D.H. 1973. Foliation and mineral lineation in the Moon River synform, Grenville Structural Province, Ontario. M.Sc. thesis, University of Toronto, Toronto, Ont.

Walker, T.L. 1905. The Muskoka district, Ontario; in Geological Survey of Canada, Summary report for 1905, p.84-86, (published 1906)

_____ 1913. The precambrian of Parry Island and vicinity; in Geological Survey of Canada Guide Book No. 5., p. 98-100.

Wynne-Edwards, H. R. 1972. The Grenville Province; in Variations in tectonic style in Canada, edited by R.A. Price and R.J.W. Douglas, Geological Association of Canada, Special Paper 11, p263-344.

AUTHOR'S CERTIFICATE

a. This report was prepared by:

James R. Trusler P.Eng.

Principal,
J R Trusler and Associates
143 Temperance St.
Aurora, Ontario L4G 2R5
(416) 727-5084

GEOLOGICAL ENGINEER.

b. Qualifications:

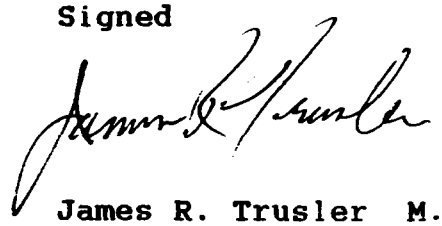
B A Sc - Geological Engineering, University of Toronto, 1967
M S - Geology, Michigan Technological University, 1972
Professional Engineer - Ontario
Fellow - Geological Association of Canada
Member - Canadian Institute of Mining, Metallurgy and Petroleum

c. This report is based on a review of all available relevant data; historical, and geological, on personal involvement as Regional Geologist, Algonquin Region, Ministry of Natural Resources from 1974 to 1980, and on a program of field mapping conducted within the area of this report in 1993. I have personally examined the properties and the surrounding area in the field.

d. I have used my experience gained in geological mapping, the exploration for minerals, visits to most dimension stone quarries in North America, the definition of mineral deposits and the evaluation of properties (over 30 years) in preparation of this report.

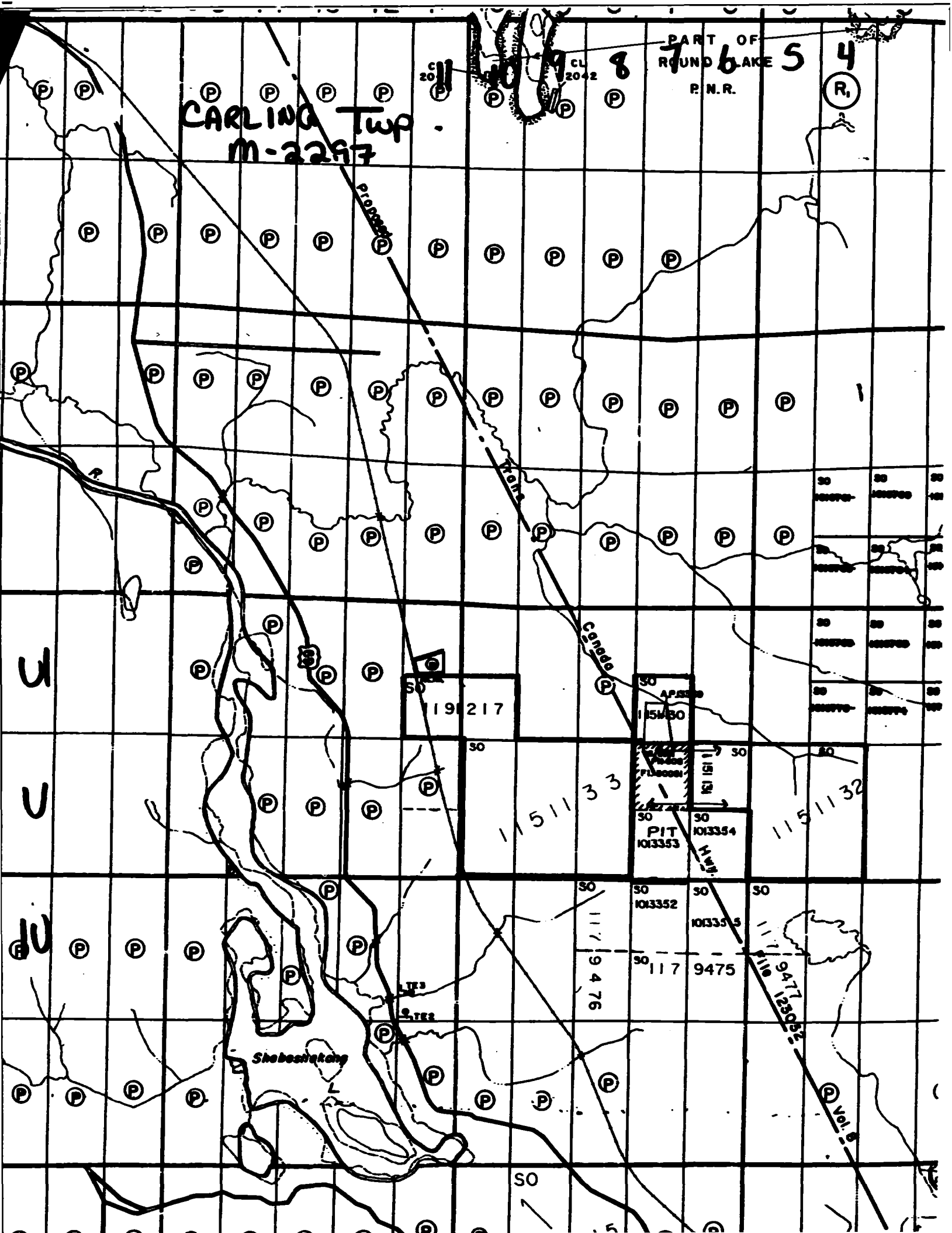
e. I hold an undivided 100% interest in the claims mentioned in this report, but do not expect to receive any remuneration for the report or as a result of statements made in this report.

Signed



James R. Trusler M.S., P.Eng.

Dated: December 31, 1993


CARLING Twp
M-2297
PART OF
ROUND LAKE
P.N.R.
R.1
Proposed
Trans
Canada
SO
191217
115113 3
115113 2
PIT
1013353
1013354
1013352
1013355
117 9475
9476
9477
123952
Shebeshekong
Vol. 6

41H08NE0001 2.15281 CARLING

A GEOLOGICAL SURVEY OF THE DIMENSION STONE RESOURCES ON THE DILLON ROAD PROPERTY THE PARRY SOUND DISTRICT OF ONTARIO

by

JAMES R. TRUSLER

Level # 2.244

2.15281

W 9480.00009

LONG.: 80°13'40"W - 80°14'33"W
LAT.: 45°25'03"N - 45°25'43"N
NTS: 41H/8

DATE: December 30, 1993

A GEOLOGICAL SURVEY OF THE DIMENSION STONE RESOURCES ON THE DILLON ROAD PROPERTY THE PARRY SOUND DISTRICT OF ONTARIO

SUMMARY

The Parry Sound area of Ontario is underlain by complex gneisses and migmatites of Middle to Late Proterozoic age which are part of the Ontario segment of the Central Gneiss Belt of the Grenville Structural Province. A working model of thrust plates (called domains and sub-domains) which are separated by ductile thrust faults and moved in a northwesterly direction upon each other has been postulated by Davidson et al (1982). Easton (1992) has improved this model in his synopsis using a hierarchy of terranes and domains wherein the terranes include domains of similar age which are autochthonous with respect to each other. Age dating has indicated that four of these large scale terranes or plates are stacked on each other with the base being near Sudbury at the Grenville Front and the top being near Kingston.

Despite the recent wealth of scholarly publications a comprehensive geological map has not yet been made available for the area. However, the limited information available has enabled the clear identification of potentially favourable conditions for both flagstone and dimension stone. Several flagstone occurrences cluster along Davidson's thrusts and several potential dimension stone prospects have been identified within the interior of particular domains.

Although one may ordinarily not expect to find dimension stone within tectonite terranes, it is evident that the autochthonous nature of some of the domains combined with annealing effect of later superimposed amphibolite facies metamorphism preserved large competent blocks of migmatites and gneisses.

As a result of mapping dimension stone potential, and sawing and polishing specimens from many prospects. Seven sites in the Britt domain, and one in each of the Rosseau and Moon River domains have been staked and mapped by the writer resulting in the definition of a large number of potential quarry sites. The four claim unit Dillon Road property is one of these.

The property is underlain by the southwest extremity of the Bolger megacrystic granite pluton and the rocks of the Ojibway gneiss association. The contact and gneissic foliations trend southeast and dip shallowly to the west. The derivatives of the pluton, chiefly pink biotite migmatite with lesser felsic biotite migmatite are locally hematite stained but not as attractive as on other properties. Local attractive, porphyritic tonalite intrusions are present in the pluton and warrant sampling. The gneiss association is represented by tonalite gneiss and gabbro.

41H08NE0001 2.15281 CARLING

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

In 1991, the writer commenced a project to evaluate the flagstone and dimension stone resources of the Parry Sound area. At the same time efforts by former Ministry of Northern Development and Mines geologists, principally Chris Marmont and Dave Villard, were being made to outline the substantial potential for these stone resources and make the public aware of the opportunity. In 1992, the regional investigation of flagstone resources by the writer proved discouraging. It was decided late in the field season to focus solely on the dimension stone potential.

By the end of 1992, many prospective dimension stone sites had been identified by either government publications or by the writer's prospecting. Nine of these dimension stone properties have now been staked by the writer, and an initial evaluation of each property involving geological mapping of the outcrops at a scale of 1:5,000 has been completed. The work provides an initial evaluation of potential quarry sites on each property. The project has been supported by the Ontario Prospector's Assistance Program in both 1992 and 1993.

In July, 1993, the Dillon Road property was staked for its dimension stone potential. Geological mapping was carried out in 1993, and the map in the back pocket was prepared and is being submitted with the final report for the OPAP grant in 1993.

The format of the geological report is formulated in compliance with assessment submission requirements.

LOCATION AND ACCESS

The property is located in Carling Township, Parry Sound District, Southern Ontario Mining District, and Sudbury District Regional Geologist's area approximately 150 miles (240 km) north of Toronto (Figure 1). The property is bounded by longitudes 80°14'33"W on the west and 80°13'40"W on the east and latitudes 45°25'03"N on the south and 45°25'43"N on the north. The corresponding UTM co-ordinates in metres are 559,240 on the west, 560,350 on the east, 5,029,420 on the south and 5,030,630 on the north. The property is within National Topographic System area 41H/8 and is recorded on claim map M2297.

The Dillon Road property is at the intersection of Dillon Road where it leaves Highway 559 approximately 10 km west of Highway 69.

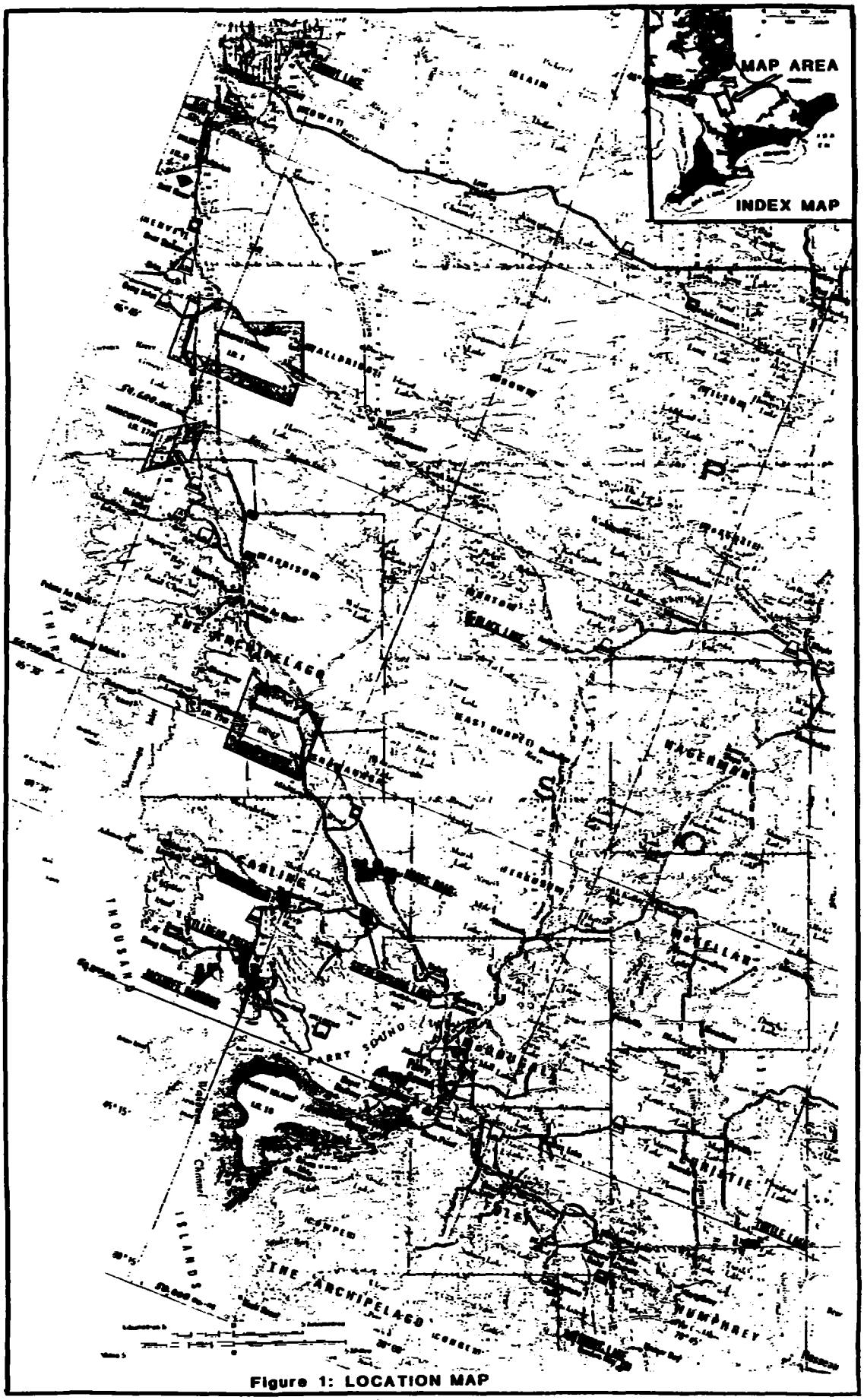


Figure 1: LOCATION MAP

PROPERTY

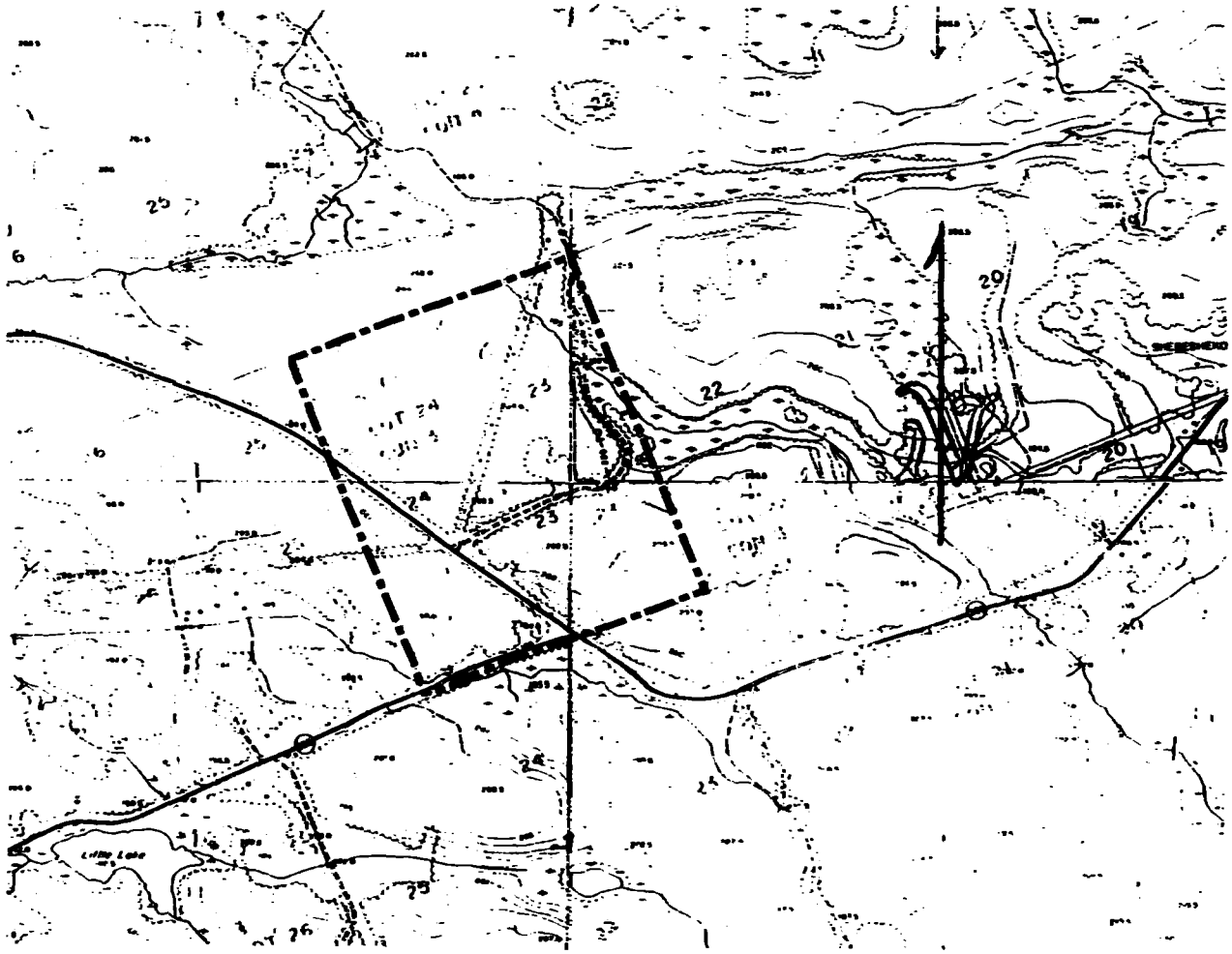
The Dillon Road property comprises approximately 193 acres and is more particularly described in TABLE 1 (Figure 2).

Assessment will be filed for the current work on the claims, and it is anticipated, as a result, that sufficient credits should be available to keep the entire claim group in good standing for some five years from the date of submission.

TABLE 1: DILLON ROAD PROPERTY

Dillon Road Property

Claim No	Township	Lot	Conc.	Area	Recording Date
1191216	Carling	23, 24	III	193 ac.	July 22, 1993



Scale: 1:20,000
Figure 2: Property Map

DATES WORKED METHODS USED ON CURRENT PROJECT

Preparation work on the project commenced in March, 1993, the field work commenced on September 17, 1993 and the map drafting and report writing was completed on December 30, 1993. Actual work days for assessment purposes break down as follows:

Dillon Road Property: Claims SO1191215.

Preparation: July 28, 30, Aug. 1, 5, 1993 (3 days)
Field:Sept. 17,18, 1993 (2 days)
Drafting: Sept. 29,30, Oct. 1,4-7,22, Dec.3,4,9, 1993 (4days)
Reporting:Sept. 20-24,27, Nov. 1, Dec. 16-24,26-30, 1993 (2½ days)

Preparation for field work involved production of 1:5,000 enlargements of data from Ontario Base Maps and 1:30,000 air photographs. A grid was overlain on the maps, and stations for recording observations at approximately 100 metre centres were plotted and coded. Due to the high percentage of outcrop, visual control was feasible in almost all cases, but traversing by pace and compass from known sites was sometimes supplemented by the use of a rangefinder. The magnetic declination used in the field work is 10°-11′W.

At each station rock types with variations were noted generally with a visual description of colour and textures. Foliations were described and measured where possible. The main emphasis was in measurement of joints and their separations. In this respect at each station joints were observed within a 50 to 100 foot radius of the station. The attitude of each joint was recorded with the minimum and maximum spacing observed and the average spacing estimated.

Observations were directly recorded on a dictaphone in the field. The verbal record was later transcribed to paper notes. Drafting of the data onto maps was later done from the paper notes.

PREVIOUS GEOLOGICAL WORK

A traverse of the shore of Georgian Bay was made by Alexander Murray in 1848, and he gives a brief account of the geology of the shoreline (Murray 1848, p.45,46). The shoreline of Georgian Bay was again examined by Robert Bell in 1876 (Bell 1876, p.198-207). The Huntsville -Bracebridge area was investigated by W.A. Parks (1900, p.121-126), and brief notes on the geology are given. Further field work was done in the area in 1905 by T.L. Walker (1905, p. 84-86). The International Geological Congress had a field excursion in Parry Sound area in 1913. Some local geological features are described by T.L. Walker (1913, p. 98-100).

The first comprehensive reconnaissance mapping in the area was done by Satterly (1942) who visited all the local known mineral deposits. Satterly (1955) also mapped Lount Twp. in detail showing for the first time the existence of mappable units in the Parry Sound area. Hewitt (1967) was able to accurately identify the complexity of petrographic units and correlate some of these in a reconnaissance mapping program.

Greater interest in resolving the geological complexity of the area was kindled by Lumbers who was progressively mapping Grenville terranes in Ontario from the Grenville Front to the south Lumbers (1975) and by Wynne-Edwards (1972). Wynne-Edwards suggested the first interpretive framework for the Central Gneiss Belt of the Grenville Structural Province. The controversy which arose from Wynne-Edwards "Sea of Gneisses" lead a profusion of other researchers into the area who have conducted specific detailed and reconnaissance mapping and synoptic studies. Since 1972 M. W. Schwerdtner and students have concentrated on resolving many of the structural geology problems of the area contributing a great amount to the understanding of the geology of the Central Gneiss Belt.

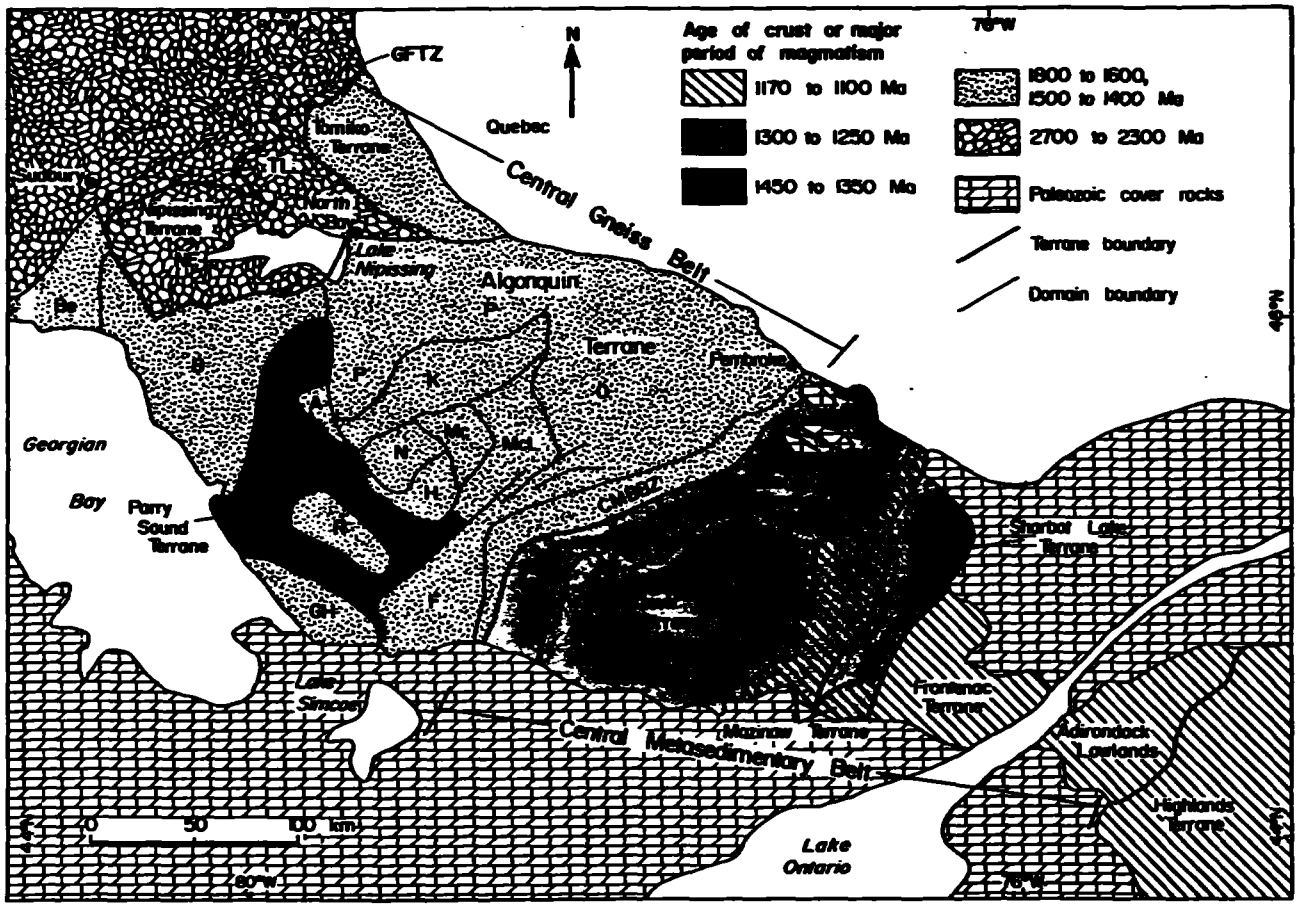
The framework for all current work in the area was provided by Davidson et al. (1982). This has been modified subsequently by Davidson and other workers, and Easton (1992) has synthesized this work eloquently. The tectonic terranes and domains separated by shear zones have become imbedded in the literature.

REGIONAL GEOLOGY

The Muskoka-Parry Sound region is part of the Ontario segment of the Central Gneiss Belt in the Grenville Structural Province (Wynne-Edwards 1972). No detailed geological map of the whole region, which was included in a recent major project on the Ontario Gneiss Segment by the Geological Survey of Canada, has been published to date.

Recent mapping by Davidson et al. (1982) has led to a tectonic model in which the thickening of Proterozoic crust is accomplished by deep-level thrusting and associated reverse ductile

shearing (Davidson 1984a, 1984b). According to this model, major crustal slices (called domains and sub-domains, see Fig.3) have been translated over large distances toward the margin of the Superior Structural Province.



Abbreviations

A	Ahmic Domain	GH	Go Home Domain	NE	Nepewassi Domain
B	Britt Domain	H	Huntsville Domain	O	Opeongo Domain
Be	Beaverstone Domain	K	Kiosk Domain	P	Powassan Domain
CMBBZ	Central Metasedimentary Belt Boundary Zone	Mc	McCraney Domain	PS	Parry Sound Domain
		McL	McClintock Domain	R	Rosseau Domain
F	Fishog Domain	MR	Moon River Domain	S	Seguin Domain
GFTZ	Grenville Front Tectonic Zone	N	Novar Domain	TL	Tilden Lake Domain

Figure 3: Lithotectonic terranes,domains Central Gneiss Belt (Easton, 1992)

This view has been further modified by some more local studies by Hanmer (1988) and Schwerdtner (1987). According to Hanmer the southeast to northwest thrusting was initiated at approximately 1160 Ma and continued for 100 Ma. However he claims that subordinate northeastward thrusting was coeval and that late synmetamorphic extensional shears cut these major thrusts and thrust sheets but are in turn cut by late movement on the thrusts. He further alludes to the comparison to the structural style of the

Central Gneiss Belt and the Himalayas suggesting that the Grenville exposes the architecture and processes presently active in the roots of younger mountain belts. Schwerdtner's observations agree with Hanmer's respecting a northeasterly component to deformation which he invokes to explain north-south buckle folds. However, Schwerdtner observed that not all foliations can be explained by the thrust model and that three sets of folding are superimposed and cross the domain boundaries. He claims that all the structural facts can be explained without large differential translations of crustal slices and most discordances in the regional gneissocity could have been created by décollement and repeated buckling.

Easton (1992) synthesized all previous studies stating that, "Recorded within the Grenville Province is the tectonic evolution of the southeast margin of Laurentia during the Mesoproterozoic. The Grenville Orogeny has overprinted the structural trends and metamorphic effects of the Archean and Paleoproterozoic geological province of Laurentia. It is now generally accepted that this orogenic event or events involved northwest directed thrusting and imbrication of the entire crust, presumably as a result of a terminal collision at about 1100 Ma. with a continental landmass somewhere to the southeast.

The Central Gneiss Belt consists mainly of upper amphibolite and local granulite facies, quartzo-feldspathic gneisses, chiefly of igneous origin with subordinate paragneiss. Distinctive lithotectonic terranes, some further subdivided into domains, have been identified within the Central Gneiss Belt. The terranes and domains are distinguished by differences in rock types, internal structure, metamorphic grade, geological history, and geophysical signature and are bounded by zones of intensely deformed rocks traceable for tens of kilometres."

The Algonquin terrane consists of 1800 to 1600 Ma gneisses intruded by 1500 to 1400 Ma granitic and monzonitic plutons that may represent an extension of the Eastern Granite-Rhyolite Province. Although imbricated by later thrusting the Algonquin terrane is probably parautochthonous. The Britt and Rosseau domains are part of the Algonquin terrane.

The Britt Domain (Figure 4) comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features. Dips of these rocks are generally flat to 10°to the southeast. Some units are entirely composed of isoclinal sheath folds whereas other units are evidently deformed megacrystic granitic plutons.

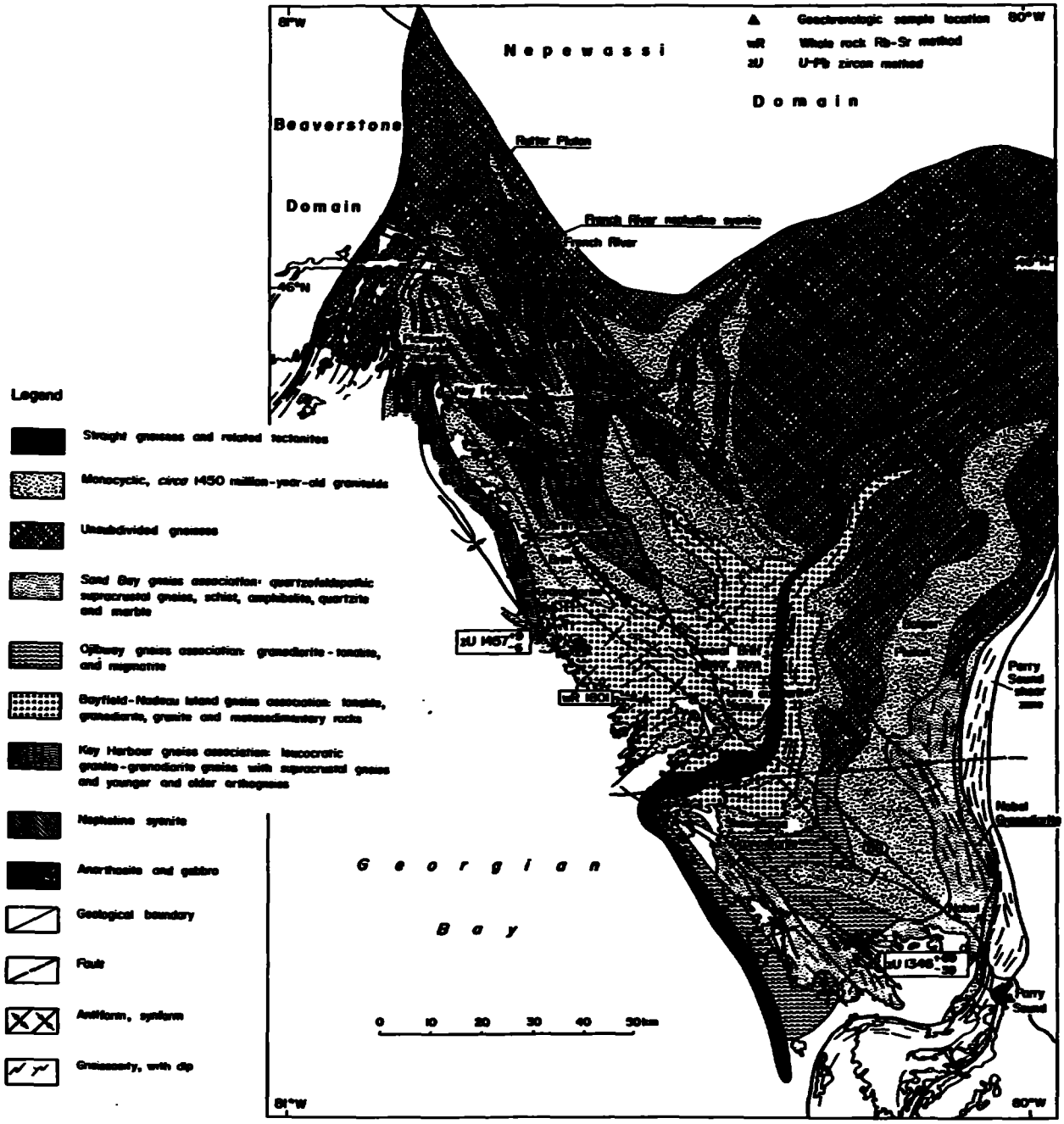


Figure 4: Geology of the Britt Domain (Easton (1992))

The Parry Sound and Moon River domains consist chiefly of juvenile crust 1450 to 1350 Ma in age and are parallochthonous. The Parry Sound domain rocks comprise dense high metamorphic facies rocks (amphibolite and granulite facies) which are emergent on the other domains. The rocks in the Parry Sound domain are dominantly amphibolite and pyroxenite gneisses which strike to the north east and dip 20°-60°to the southeast (at a much steeper angle than the postulated shear couple accompanying thrusting). The bedrock

largely comprises veined, banded and homogeneous pink and grey migmatitic gneisses produced by injection and granitization of metamorphic gneisses of various types. The rocks are mainly of upper amphibolite and granulite metamorphic facies. Hypersthene-bearing charnokitic gneisses are present in the area. The origin of much of the amphibolite gneiss is obscure. Some which is associated with bands of marble is thought to be paragneiss whereas some is proximal to large bodies of gabbro and anorthosite and thought to be orthogneiss. Trusler and Villard (1980) found evidence that some of the mafic and felsic rocks are of volcanic origin. The high metamorphic grade of the rocks is attributed to a deep seated origin possibly involving underplating at an early stage.

The Bolger pluton in the Britt domain is dated at circa 1450 Ma and underlies the Black Lake, Woods Road and Shebeshekong Lake properties (Figure 4). The Dillon Road property is underlain by both the Bolger pluton and the Ojibway gneiss association. The Killbear Point and Jacknife Harbour properties are underlain by the Sand Bay gneiss association. The Grundy Lake property is underlain by an unnamed V-shaped pluton believed to be circa 1450 Ma.

Comparable regional maps do not cover areas about the Turtle Lake property and the Burnt Lake property which are situated in the Rosseau and the Moon River domains respectively.

DESCRIPTION OF ROCK UNITS

Since no comprehensive, detailed geological maps have been produced for the Parry Sound area, none of the previous workers have made an attempt to construct a table of rock units. None of the rock units have been correlated across domain boundaries. Trusler and Villard made an attempt to derive a Table of Rock units for the Parry Sound -Sans Souci area in 1980 and some of that information is used here to produce Table 2. These Formation names are not used in the mapping since these have been inadequately defined for inclusion in the literature. However, the area mapped by Trusler and Villard covers parts of the Britt, Parry Sound and Moon River domains and the lithologic variety is well represented.

The Sans Souci-Killbear Point Group correlates well with the Sand Bay gneiss association of Figure 4 which underlies the Killbear Point and Jacknife Harbour properties. Similar rocks which are younger underlie the Burnt Lake property. The Ojibway gneiss association which underlies part of the Dillon Road property correlates with the tonalite in Table 2. The remaining sites are megacrystic granites or migmatitic derivatives of megacrystic granites classified under quartz monzonite in Table 2.

The rocks on the property have been subdivided into mappable units as follows: biotite-hornblende migmatite, gabbro,

and tonalite.

The biotite-hornblende migmatite is represented by quartzo-feldspathic rock ranging from less than 5% to greater than 40% mafic minerals, averaging over 20% mafic minerals and containing syntectonic and late tectonic pegmatitic material in varying proportions and thicknesses. The grain size ranges from fine to coarse with the more neosome phases generally being coarser. In any one area and especially in individual layers the mineralogy and textures are uniform. The mafic mineral tends to be biotite dominant. The gneissic fabric is very thinly laminated in some areas but ranges to thickly layered in other areas and is typically variegated pink and various shades of grey. Small scale, intrafolial folding with a slight plunge to the southeast and shallow west dipping axial planes is a common feature of these rocks.

The tonalite comprises two varieties: a gneissic to slightly layered rock containing 2-3 cm pink orthoclase phenocrysts and a gneissic, medium to coarse grained, thinly to thickly layered rock. The latter is variegated light grey and greyish black and contains 20 to 40% mafic minerals overall with amphibole being the dominant mafic mineral. In the gneissic variety, usually approximately 10%, but occasionally up to 50% of the rock unit comprises introduced or anatectic, syntectonic quartzo-feldspathic material. Pinch and swell characteristics are common especially in neosome portions of the gneissic rock.

TABLE 2: TABLE OF ROCK UNITS FOR THE PARRY SOUND AREA

PHANEROZOIC

CENOZOIC
Quaternary
Recent
swamp, lake, and stream deposits

Pleistocene
bouldery, cobbly and silty sand till, silt, sand, pebble gravel, and cobble gravel
_____Unconformity (possible regolith)_____

PALAEOZOIC

Cambro - Ordovician
Calcareous fracture fillings
_____Unconformity_____

PRECAMBRIAN

Late Precambrian
Late Breccias- thin mylonites; quartz veined dilatant breccias of unknown origin

Late Pegmatite
massive granite pegmatite dikes
_____Intrusive Contact_____
High Rank Regional Metamorphism

Middle to Late Precambrian

Tectonites
Mylonite: very fine grained massive to thinly to thickly laminated rock frequently exhibiting compositional and graded layering and containing rotated porphyroclasts; generally marginal to schistose and gneissic rocks; matrix minerals generally are siliceous and comprise quartz, microperthite, biotite and/or amphibole and/or pyroxene

Tectonic Breccia: brecciated rock comprising lithic clasts within a fine to coarse grained schistose to gneissic cataclastic matrix with quartz, perthitic microcline, biotite and/or amphibole and/or pyroxene
_____Sheared Contact_____

Syenite and Monzonite Suite Intrusive Rocks
pink to grey and green, massive to porphyritic to lineated and gneissic biotite, hornblende-biotite and hornblende syenite and monzonite, charnokite and mangerite.
_____Intrusive Contact_____

Anorthosite Suite Intrusive Rocks

Anorthosite- massive to gneissic labradorite anorthosite, andesine anorthosite with up to 10% pyroxene, and gabbroic anorthosite

_____Intrusive Contact_____

Gabbro- massive to gneissic fine to coarse grained, black pyroxenite, anorthositic gabbro and gabbro

_____Intrusive Contact_____

Tonalite- massive to strongly lineated and gneissic light to dark grey pyroxene tonalite and diorite with minor gabbro

_____Intrusive Contact_____

Quartz Monzonite - Syenite Suite Intrusive Rocks

massive to gneissic medium to coarse grained biotite quartz monzonite, pyroxene quartz monzonite and foliated granite pegmatite, pyroxene syenite and foliated syenite pegmatite; megacrystic granite and derivatives.

_____Intrusive Contact_____

Parry Sound Group Metavolcanic Rocks[1]

Spider Lake Formation[1]: intermediate to felsic rocks, medium to coarse grained generally porphyritic, massive to gneissic rocks containing quartz, feldspar, almandite, amphibole and pyroxene; some fragmental units present.

Parry Sound Formation[1]: mafic, medium to coarse grained, schistose to gneissic, pyroxene-feldspar and amphibole-feldspar bearing massive and fragmental rock

Sans Souci - Killbear Point Group Metasedimentary Rocks[1]

Unsubdivided: thinly laminated to extremely thickly layered; interlayered medium to coarse grained schists and gneisses; lower amphibolite to granulite facies; intercalated with metavolcanics above

Killbear Point Formation[1]: thinly to extremely thickly layered, schistose and gneissic medium to coarse grained biotite, quartz, feldspar rocks

Bateau Island Formation[1]: very thickly layered, medium to coarse grained felsic gneiss with mafic biotite and amphibole rich parting planes; variously interpreted as an arkose or granite; cataclastic textures.

[1] The formation names have not been accepted and criteria for introduction of these names into the literature have not been fulfilled. Identification as to origin is tentative

PROPERTY GEOLOGY

The property principally is underlain by felsic rocks of unusual character of Middle to Late Precambrian age.
The main unit on the property is the biotite-hornblende migmatite. Although, the progenitor of this rock is megacrystic granite of the Bolger pluton, the only macroscopic feature evidencing its origin on the property is the relative uniformity of texture and chemical composition. The gneissic tonalite underlying the property belongs to the Ojibway gneiss association. The rocks have been subjected to intense small scale folding, anatexis or syntexis and polyphase tectonism and metamorphism. The final stage of amphibolite facies metamorphism appears to have succeeded any penetrative tectonic influences.

The individual rock units were described under the heading DESCRIPTION OF ROCK UNITS on Page 9 of this report. The biotite-hornblende migmatite is a granular aggregate of equant to elongated grains of quartz, feldspar and biotite, averaging over 20% mafic minerals and containing syntectonic and late tectonic pegmatitic material exhibiting cataclastic textures. The pegmatites occur in varying proportions and thicknesses. Evidently, this unit has evolved through polyphase metamorphism and tectonism with a final stage of amphibolite facies metamorphism annealing the rocks. The grain size ranges from fine to coarse with the more neosome phases generally being coarser. In any one area and especially in individual layers the mineralogy and textures are uniform. The mafic mineral tends to be biotite dominant. The gneissic fabric is very thinly laminated in some areas but ranges to thickly layered in other areas and is typically variegated pink and various shades of grey. Small scale, intrafolial folding with a slight plunge to the southeast and shallow west dipping axial planes is a common feature of these rocks. A minor amount of this rock attains a purple tone from addition of hematite spotting

The tonalite comprises two varieties: a gneissic to slightly layered rock containing recrystallized, 2-3 cm pink, relict orthoclase phenocrysts and a gneissic, medium to coarse grained, thinly to thickly layered rock. The latter is variegated light grey and greyish black and contains 20 to 40% mafic minerals overall with amphibole being the dominant mafic mineral. In many cases the layers are gabbroic. In the gneissic variety, usually approximately 10%, but occasionally up to 50% of the rock unit comprises introduced or anatectic, syntectonic quartzo-feldspathic material. Pinch and swell characteristics are common especially in neosome portions of the gneissic rock. The tonalite with pink phenocrysts is potentially quite presentable and the joint spacings are sufficiently large to enable some quarrying. Quantities of this rock may be limited.

Gneissic foliations were measured at each station where possible. Despite some exceptions, the general pattern displayed is

of a relatively structurally uniform sequence. In general the rocks strike southeasterly and dip to the west at angles between 20° and 45°. Lineations where seen are to the southeast at approximately 10°.

The average sub-horizontal joint spacing, based on 20 data, is between 2.5 and 3 metres. The average for vertical joints, based on 91 data, is the same, but forty per cent of the vertical joint separations exceed three metres. (Map 1) The statistical scatter of vertical joints, based on 96 data, is significant especially since there are frequently three recordable joints at many of the stations. The principal joints were at 75° (28%) and 160° (28%). If the tails of both of these statistical clusters are added in the mean direction would shift in each case about 10° clockwise and the data totals would be 28% and 42% respectively. The remainder of the joint data do not appear to cluster at all.

POTENTIAL DIMENSION STONE SITES

The porphyritic tonalite gneisses on this property may be suitable for development as dimension stone. The most favourable tonalite occurrence is a body in the central part of lot 23, concession 3, Carling Twp. which trends SSE and occupies an area approximately 300 metres X 50 metres. The tonalite is uniformly medium to dark grey and banded with approximately 25% lozenge shaped pink orthoclase phenocrysts approximately 3 cm. long. The body is sill-like and dips to the west at 25°-50°. A large sample should be removed from the site for slabbing and polishing to see if this material is suitable for dimension stone.

CONCLUSIONS

The Britt domain comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features.

Nine dimension stone prospects were staked in the Parry Sound area, and all have been mapped geologically. Many of the rocks underlying these properties are migmatitic derivatives of granitic intrusions and present a great variety of textures. In some cases it is evident that the paleosome constituent was megacrystic and subsequent neosome phases have distinct compositions and fabrics. The sites were chosen for their attractiveness and the apparent availability of accessible large blocks.

The Dillon Road property is underlain by the southwestern

extremity of the Bolger granitic pluton and to the southwest the Ojibway gneiss association. The bolger pluton comprises biotite-hornblende migmatite and tonalite gneiss on the property. The Ojibway gneiss association comprises tonalite gneisses with a gabbroic phase.

The biotite-hornblende migmatites underlying the Dillon Road property contain a higher mafic mineral content and would produce more waste on quarrying than similar rocks on other sites. The porphyritic variety of the tonalite gneiss appears to be very attractive and can be removed in large blocks. A large sample of this material should be collected for slabbing and polishing to test the suitability of this rock.

RECOMMENDATIONS

1. A sample of the porphyritic tonalite gneiss should be collected for slabbing and polishing in order to determine the suitability of this rock as a dimension stone.

REFERENCES

Bell, R. 1876. Report on geological researches north of Lake Huron and east of Lake Superior; in Geological Survey of Canada Report on Progress 1876-77.

Bennett, P.J. 1975. The deformation of the northern half of the Brandy Lake Complex, Port Carling, Ontario. M.Sc. thesis, Department of Geology, University of Toronto, Toronto, Ont.

Bright, E.G. 1987. Precambrian geology of the Whitestone Lake area, District of Parry Sound; Ontario Geological Survey, Map P.3095, Geological Series-Preliminary Map, scale 1:15,840, geology 1986.

Culshaw, N.G., Davidson, A., and Nadeau, L. 1983. Structural subdivisions of the Grenville Province in the Parry Sound-Algonquin region, Ontario; in Current research , pt. B, Geological Survey of Canada, Paper 83-1B,p.243-252.

Culshaw, N.G., Corrigan, D., Drage, J., and Wallace, P. 1988. Georgian Bay geological synthesis: Key Harbour to Dillon, Grenville Province of Ontario; in Current research, Part C, Geological Survey of Canada, Paper 88-1C, p.129-133.

Davidson, A. 1984a. Identification of ductile shear zones in the southwestern Grenville Province of the Canadian Shield. In Precambrian tectonics illustrated. Edited by A. Kröner and R. Greiling. E. Schweizrbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart, Germany, pp. 263-279.

_____ 1984b. Tectonic boundaries within the Grenville Province of the Canadian Shield. Journal of Geodynamics, 1: 433-444.

_____ 1986. New interpretations in the southwestern Grenville Province, edited by J.M. Moore, A. Davidson and A. Baer, Geological Association of Canada, Special Paper 31,p.61-74

Davidson, A. and Morgan, W.C. 1981. Preliminary notes on the geology east of Georgian Bay, Grenville Structural Province, Ontario; in Current research, pt. A, Geological Survey of Canada, Paper 81-1A,p.291-298.

Davidson, A., Culshaw, N. and Nadeau, L. 1982. A tectono-metamorphic framework for part of the Grenville Province, Parry Sound region, Ontario; in Current research, pt.A, Geological Survey of Canada, Paper 82-1A, p.175-190.

Fahrig, W.F. and West, T. 1986. Diabase dyke swarms of the Canadian Shield; Geological Survey of Canada, Map 1627A, scale 1:4,873,900.

Fouts, C.R. and Marmont C. 1989. Gneisses of the Parry Sound-Muskoka Area; Flagstone resources, Ontario Geological Survey, Open File Report 5725

Garland, M. 1987. Graphite in the Central gneiss belt of the Grenville Province of Ontario; Ontario Geological Survey, Open File Report 5649.

Hanmer, S. 1984. Strain-insensitive foliations in polymineralic rocks; Canadian Journal of Earth Sciences, v.21, p.1410-1414.

_____ 1988. Ductile thrusting at the mid-crustal level, southwestern Grenville Province; Canadian Journal of Earth Sciences, v.25, p.1049-1059.

Harrison, J.C. 1977. Geology and structure of the Go Home Bay area, District of Muskoka, Ontario. B.Sc. thesis, Department of Geology, University of Toronto, Toronto, Ont.

Hewitt, D.F. 1967. Geology and mineral deposits of the Parry Sound -Huntsville area; Ontario Geological Survey, Geological Report 52, 65p.

Lacy, W.C. 1960. Geology of the Dunchurch area, Ontario; Geological Society of America Bulletin, Volume 71, p.1713-1718

Lindia, F.M., Thomas, M.D. and Davidson, A. 1983. Geological significance of the Bouger gravity anomalies in the region of the Parry Sound domain, Grenville Province, Ontario; in Current research , ptB, Geological Survey of Canada, Paper 83-1B, p.261-266.

Lumbers, S.B. 1975. Geology of the Burwash area; Ontario Division of Mines, Geological Report 116,160 p., with Map 2271 scale 1:126,720.

Macfie, R.I. 1988. Preliminary investigation of the Parry Sound - Seguin domain boundary; in Summary of field work and other activities 1988, by the Ontario Geological survey, Ontario Geological Survey, Miscellaneous Paper 141, p.315-318.

Macfie, R.I. and Dixon, J. M. 1990. Tectonic relations among Parry Sound domain and Seguin and Rosseau sub-domains Grant 370; in Geoscience Research Grant Program Summary of Research 1989-1990, Ontario Geological Survey, Miscellaneous Paper 150, 1990, p.200-212.

Marmont, C., Zuberec, P.M., and Conrod, W.D. 1988. Industrial minerals, rare-earth elements, and building stone in the Districts of Muskoka, Parry Sound, and Nipissing and the County of Haliburton; in Summary of Field Work and Other Activities 1988, by the Ontario Geological Survey, Ontario Geological Survey, Miscellaneous Paper 141, p.319-325.

Marmont, C. 1992. Industrial minerals and building stone in the Districts of Nipissing, Parry Sound and Sudbury;in Summary of Field Work and Other Activities 1992, Ontario Geological Survey Miscellaneous Paper 160, p.261-265.

1992. Building Stone Opportunities in Central Ontario - 1991 Supplement. Ontario Geological Survey, Open File Report 5825, 20p.

1993. Exploration Guidelines and Opportunities for Dimensional Stone in Central Ontario. Ontario Geological Survey, Open File Report 5853, 83p.

McRoberts, G., Macfie, R.I. and Hammar, D.J. 1988. Geology of the Manitouwabing Lake area, District of Parry Sound; in Summary of Field Work and Other Activities 1988, by the Ontario Geological Survey, Ontario Geological Survey, Miscellaneous Paper 141, p.309-314.

McRoberts, G., and Tremblay, M.L, 1988. Precambrian geology of the Ferrie River area, District of Parry Sound; Ontario Geological Survey, Map P. 3123, Geological Series-Preliminary Map, scale 1:15,840

Murray, A. 1848. On an examination of the shores, islands and rivers of Lake Huron including parts of the east coast of Hudson Bay and the Spanish River; in Geological Survey of Canada Report of Progress 1848-49.

Nadeau, L. 1984. Deformation of leucogabbro at Parry Sound, Ontario. M.Sc. thesis, Carlton University, Ottawa, Ont.

Parks, W.A. 1900. Work in the Muskoka district, Ontario; in Geological Survey of Canada, Summary report for 1900, part A pp.121-126 (pub 1901).

Satterly, J. 1942. Mineral Occurrences in Parry Sound District, Ontario Department of Mines, v.51,Part 2,41p. with Map 1942-2.

Satterly, J. 1955. Geology of Lount Township; Ontario Department of Mines Annual Report, v.64, Part 6, 43p., with Map 1955-4, scale 1:31,680.

Schwerdtner, W. M., and Bauer, G. 1975. Tectonic significance of mylonite zones. Neues Jahrbuch für Mineralogie, Monatshefte, No. 11: 500-509.

Schwerdtner, W.M., and Mawer, C.K. 1982. Geology of the Gravenhurst region , Grenville Structural Province, Ontario. In Current research, part B. Geological Survey of Canada, Paper 82-1B, pp. 195 - 207.

Schwerdtner, W.M., and Waddington, D.H. 1978. Structure and Lithology of Muskoka - southern Georgian Bay region, Central Ontario. In Toronto '78 Field Trips Guidebook. Edited by A.L. Currie and W.O. Mackasey. Geological Association of Canada, pp. 204-212.

Schwerdtner, W.M., Waddington, D.H., and Stollery, G. 1974. Polycrystalline pseudomorphs as natural gauges of incrementa l paleostrain. Neues Jahrbuch für Mineralogie, Monatshefte, No. 3/4: 174-182.

Schwerdtner, W.M., Bennett, P.J., and Janes, T.W. 1977. Application of L-S fabric scheme to structural mapping and paleostrain analysis. Canadian Journal of Earth Sciences, 14: 1021-1032.

Schwerdtner, W.M., Mawer, C.K., and Hubbs, A. F. 1981. Geology of the Gravenhurst region, Grenville Structural Province,Ontario: Preliminary mapping results. In Current research, part B, Geological Survey of Canada, Paper 81-1B, pp. 167-169.

Schwerdtner, W.M. 1987. Interplay between folding and ductile shearing in the Proterozoic crust of the Muskoka-Parry Sound region, central Ontario; Canadian Journal of Earth Sciences, v.24, p.1507-1525.

Tremblay, M.L. 1988. Remote sensing study of curvilinear, structural features in the Parry Sound domain, Grenville Province; in Summary of field work and other activities 1988, Ontario Geological Survey Miscellaneous Paper 141 pp.326-329.

Trusler, J.R. and Villard, D.J. 1980. Geology of the Parry Sound-Sans Souci map area; scale 1:31,680, unpublished manuscript and map done for the Ontario Ministry of Natural Resources.

Trusler, J.R. 1992.Prospecting Programme for Flagstone and Decorative Stone in the Parry Sound District of Ontario. OPAP File No.: OP92-174

1993. Geological Reconnaissance for Flagstone and Dimension Stone in the Parry Sound District of Ontario; Regional survey submitted to Assessment Files, Ontario Geological Survey.

van Berkel, J.T., and Schwerdtner, W.M., W.M. 1986. Structural geology of the Moon River area. Ontario Geological Survey, P2954(with marginal notes).

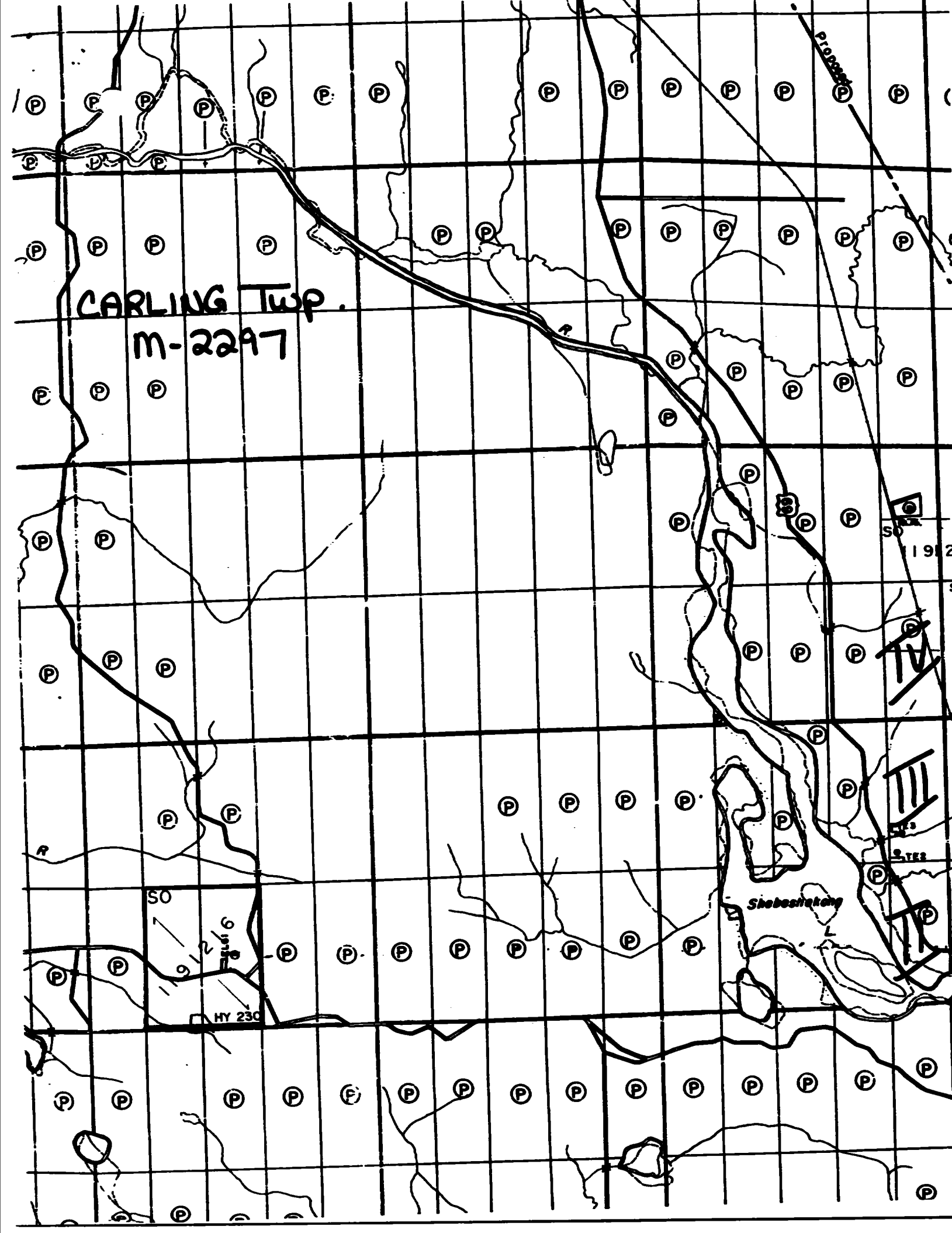
van Breeman, O., Davidson, A., Loveridge, W.D. and Sullivan, R.W. 1986. U-Pb zircon geochronology of the Grenville tectonites, granulites and igneous precursors, Parry Sound, Ontario; in The Grenville Province, edited by J.M. Moore, A. Davidson and A. Baer, Geological Association of Canada, Special Paper 31, p.191-208.

Waddington, D.H. 1973. Foliation and mineral lineation in the Moon River synform, Grenville Structural Province, Ontario. M.Sc. thesis, University of Toronto, Toronto, Ont.

Walker, T.L. 1905. The Muskoka district, Ontario; in Geological Survey of Canada, Summary report for 1905, p.84-86, (published 1906)

_____ 1913. The precambrian of Parry Island and vicinity; in Geological Survey of Canada Guide Book No. 5., p. 98-100.

Wynne-Edwards, H. R. 1972. The Grenville Province; in Variations in tectonic style in Canada, edited by R.A. Price and R.J.W. Douglas, Geological Association of Canada, Special Paper 11, p263-344.


CARLING Twp.
M-2297
HY 230
Shebeshekong

AUTHOR'S CERTIFICATE

a. This report was prepared by:

James R. Trusler P.Eng.

Principal,
J R Trusler and Associates
143 Temperance St.
Aurora, Ontario L4G 2R5
(416) 727-5084

GEOLOGICAL ENGINEER.

b. Qualifications:

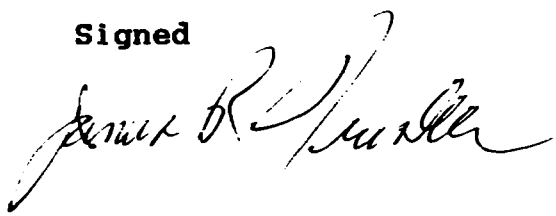
B A Sc - Geological Engineering, University of Toronto, 1967
M S - Geology, Michigan Technological University, 1972
Professional Engineer - Ontario
Fellow - Geological Association of Canada
Member - Canadian Institute of Mining, Metallurgy and Petroleum

c. This report is based on a review of all available relevant data; historical, and geological, on personal involvement as Regional Geologist, Algonquin Region, Ministry of Natural Resources from 1974 to 1980, and on a program of field mapping conducted within the area of this report in 1993. I have personally examined the properties and the surrounding area in the field.

d. I have used my experience gained in geological mapping, the exploration for minerals, visits to most dimension stone quarries in North America, the definition of mineral deposits and the evaluation of properties (over 30 years) in preparation of this report.

e. I hold an undivided 100% interest in the claims mentioned in this report, but do not expect to receive any remuneration for the report or as a result of statements made in this report.

Signed



Dated: December 30, 1993

James R. Trusler M.S., P.Eng.

Seal # 2.244

41H08NE0001 2.15281 CARLING

A GEOLOGICAL SURVEY OF THE DIMENSION STONE RESOURCES ON THE JACKNIFE HARBOUR PROPERTY THE PARRY SOUND DISTRICT OF ONTARIO

by

JAMES R. TRUSLER

2.15281
W9490.00010

LONG.: 80°16'18"W - 80°17'18"W
LAT.: 45°21'24"N - 45°22'10"N
NTS: 41H/8

DATE: December 30, 1993

A GEOLOGICAL SURVEY OF THE DIMENSION STONE RESOURCES ON THE JACKNIFE HARBOUR PROPERTY THE PARRY SOUND DISTRICT OF ONTARIO

SUMMARY

The Parry Sound area of Ontario is underlain by complex gneisses and migmatites of Middle to Late Proterozoic age which are part of the Ontario segment of the Central Gneiss Belt of the Grenville Structural Province. A working model of thrust plates (called domains and sub-domains) which are separated by ductile thrust faults and moved in a northwesterly direction upon each other has been postulated by Davidson et al (1982). Easton (1992) has improved this model in his synopsis using a hierarchy of terranes and domains wherein the terranes include domains of similar age which are autochthonous with respect to each other. Age dating has indicated that four of these large scale terranes or plates are stacked on each other with the base being near Sudbury at the Grenville Front and the top being near Kingston.

Despite the recent wealth of scholarly publications a comprehensive geological map has not yet been made available for the area. However, the limited information available has enabled the clear identification of potentially favourable conditions for both flagstone and dimension stone. Several flagstone occurrences cluster along Davidson's thrusts and several potential dimension stone prospects have been identified within the interior of particular domains.

Although one may ordinarily not expect to find dimension stone within tectonite terranes, it is evident that the autochthonous nature of some of the domains combined with annealing effect of later superimposed amphibolite facies metamorphism preserved large competent blocks of migmatites and gneisses.

As a result of mapping dimension stone potential, and sawing and polishing specimens from many prospects. Seven sites in the Britt domain, and one in each of the Rosseau and Moon River domains have been staked and mapped by the writer resulting in the definition of a large number of potential quarry sites. The three claim unit Jacknife Harbour property is one of these.

The property is segmented into a two claim unit western claim and a one claim unit eastern claim both of which are underlain by the Sand Bay gneiss association. This suite of rocks comprises pink and purple migmatite, amphibolite gneiss, biotite migmatite, and granite pegmatite. Attractive pegmatite and amphibolite-pegmatite breccias occur on both claims in large volumes and warrant development. Site plans should be prepared for the northwest portion of the western claim and the northeastern portion of the eastern claim.

41H08NE0001 2.15281 CARLING

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOS

INTRODUCTION

In 1991, the writer commenced a project to evaluate the flagstone and dimension stone resources of the Parry Sound area. At the same time efforts by former Ministry of Northern Development and Mines geologists, principally Chris Marmont and Dave Villard, were being made to outline the substantial potential for these stone resources and make the public aware of the opportunity. In 1992, the regional investigation of flagstone resources by the writer proved discouraging. It was decided late in the field season to focus solely on the dimension stone potential.

By the end of 1992, many prospective dimension stone sites had been identified by either government publications or by the writer's prospecting. Nine of these dimension stone properties have now been staked by the writer, and an initial evaluation of each property involving geological mapping of the outcrops at a scale of 1:5,000 has been completed. The work provides an initial evaluation of potential quarry sites on each property. The project has been supported by the Ontario Prospector's Assistance Program in both 1992 and 1993.

In April, 1993, the Jacknife Harbour property was staked for its dimension stone potential. Geological mapping was carried out in 1993, and the map in the back pocket was prepared and is being submitted with the final report for the OPAP grant in 1993.

The format of the geological report is formulated in compliance with assessment submission requirements.

LOCATION AND ACCESS

The property is located in Carling Township, Parry Sound District, Southern Ontario Mining District, and Sudbury District Regional Geologist's area approximately 150 miles (240 km) north of Toronto (Figure 1). The property is bounded by longitudes 80°17'18"W on the west and 80°16'18"W on the east and latitudes 45°21'24"N on the south and 45°22'10"N on the north. The corresponding UTM co-ordinates in metres are 555,600 on the west, 556,900 on the east, 5,022,670 on the south and 5,024,020 on the north. The property is within National Topographic System area 41H/8 and is recorded on claim map M2297.

The Jacknife Harbour property can be accessed from the Snug Harbour road by first leaving Hwy 69 some ten km north of Parry Sound and travelling 19 km. west on Hwy 559. The property is south of the Snug Harbour Rd some two to three km. west of Hwy 559. It can be reached at its northwest corner via the south branch of the Snug Harbour Rd. Also the access road to Gower Bay and Jacknife Harbour from the Snug Harbour Rd traverses both property segments.

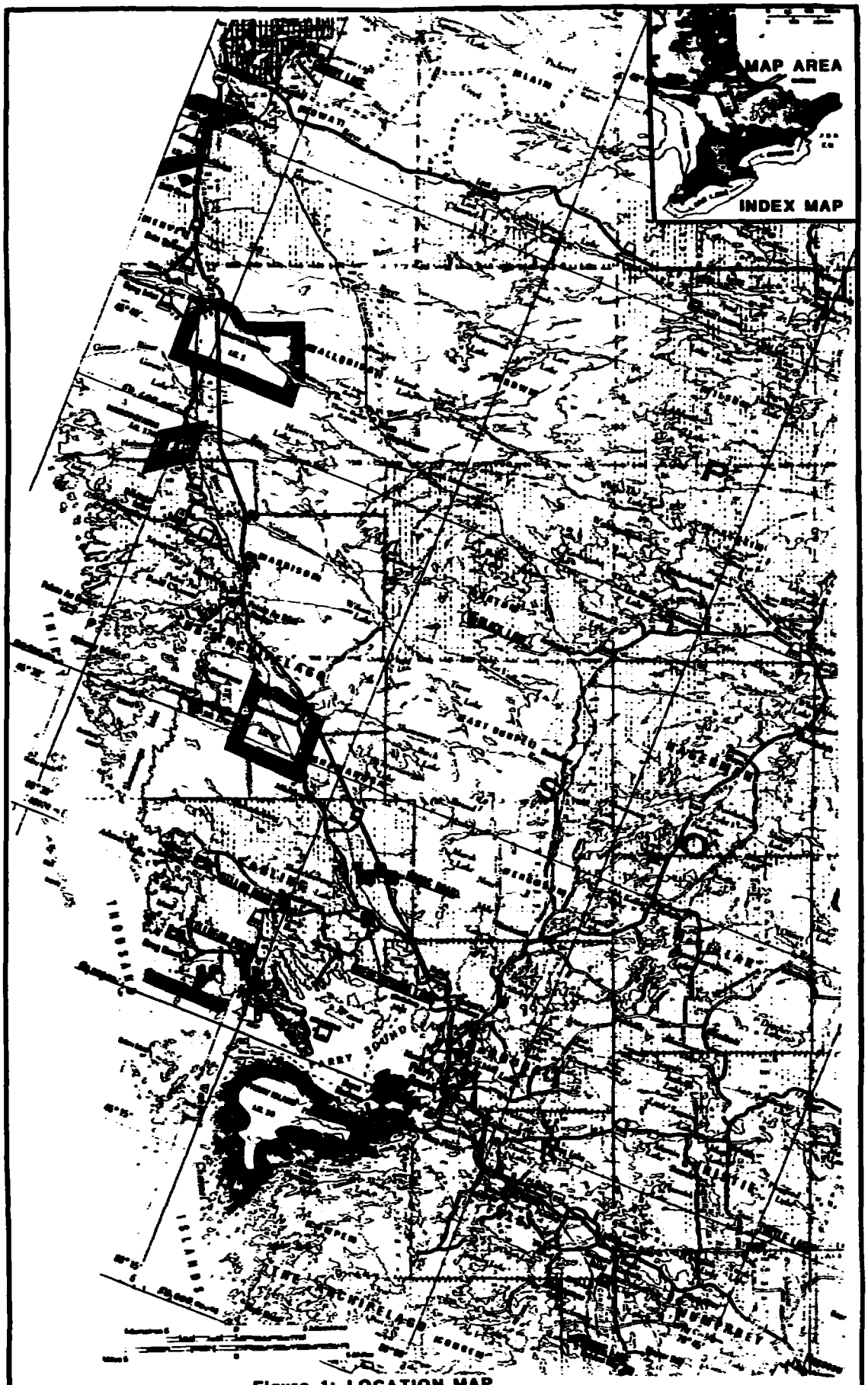


Figure 1: LOCATION MAP

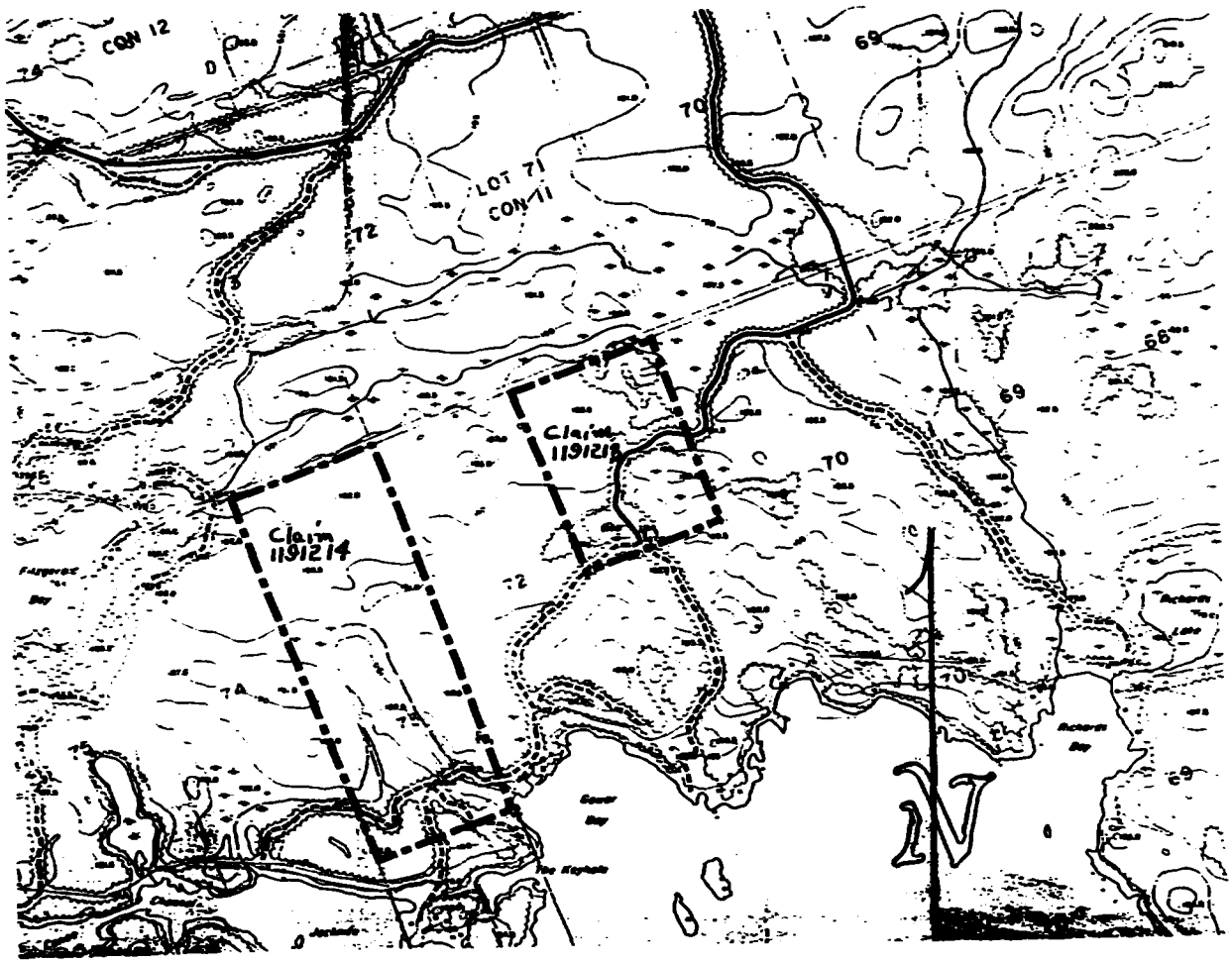
PROPERTY

The Jacknife Harbour property comprises approximately 149 acres and is more particularly described in TABLE 1 (Figure 2).

Assessment will be filed for the current work on the claims, and it is anticipated, as a result, that sufficient credits should be available to keep the entire claim group in good standing for some five years from the date of submission.

TABLE 1: JACKNIFE HARBOUR PROPERTY

Claim No	Township	Lot	Conc.	Area	Recording Date
1191213	Carling	N/2 71	X	49.4 ac	May 4, 1993
1191214	Carling	Pt. 73	X	100 ac.	May 4, 1993



Scale: 1:20,000
Figure 2: Property Map

DATES WORKED METHODS USED ON CURRENT PROJECT

Preparation work on the project commenced in March, 1993, the field work commenced on June 3, 1993 and the map drafting and report writing was completed on December 30, 1993. Actual work days for assessment purposes break down as follows:

Jacknife Harbour Property: Claims SO1191213, 1191214.

Preparation: Apr. 8, July 12, 23, 1993 (2½ days)
Field:June 3, Oct. 28,29, 1993 (3 days)
Drafting: Sept. 29,30, Oct. 1,4-7,22,30, Nov. 2, 1993 (4½days)
Reporting:Sept. 20-24,27, Oct. 30,31, Nov. 1, Dec. 16-24,26-30, 1993 (4 days)

Preparation for field work involved production of 1:5,000 enlargements of data from Ontario Base Maps and 1:30,000 air photographs. A grid was overlain on the maps, and stations for recording observations at approximately 100 metre centres were plotted and coded. Due to the high percentage of outcrop, visual control was feasible in almost all cases, but traversing by pace and compass from known sites was sometimes supplemented by the use of a rangefinder. The magnetic declination used in the field work is 10°-4'W.

At each station rock types with variations were noted generally with a visual description of colour and textures. Foliations were described and measured where possible. The main emphasis was in measurement of joints and their separations. In this respect at each station joints were observed within a 50 to 100 foot radius of the station. The attitude of each joint was recorded with the minimum and maximum spacing observed and the average spacing estimated.

Observations were directly recorded on a dictaphone in the field. The verbal record was later transcribed to paper notes. Drafting of the data onto maps was later done from the paper notes.

PREVIOUS GEOLOGICAL WORK

A traverse of the shore of Georgian Bay was made by Alexander Murray in 1848, and he gives a brief account of the geology of the shoreline (Murray 1848, p.45,46). The shoreline of Georgian Bay was again examined by Robert Bell in 1876 (Bell 1876, p.198-207). The Huntsville -Bracebridge area was investigated by W.A. Parks (1900, p.121-126), and brief notes on the geology are given. Further field work was done in the area in 1905 by T.L. Walker (1905, p. 84-86). The International Geological Congress had a field excursion in Parry Sound area in 1913. Some local geological features are described by T.L. Walker (1913, p. 98-100).

The first comprehensive reconnaissance mapping in the area was done by Satterly (1942) who visited all the local known mineral deposits. Satterly (1955) also mapped Lount Twp. in detail showing for the first time the existence of mappable units in the Parry Sound area. Hewitt (1967) was able to accurately identify the complexity of petrographic units and correlate some of these in a reconnaissance mapping program.

Greater interest in resolving the geological complexity of the area was kindled by Lumbers who was progressively mapping Grenville terranes in Ontario from the Grenville Front to the south Lumbers (1975) and by Wynne-Edwards (1972). Wynne-Edwards suggested the first interpretive framework for the Central Gneiss Belt of the Grenville Structural Province. The controversy which arose from Wynne-Edwards "Sea of Gneisses" lead a profusion of other researchers into the area who have conducted specific detailed and reconnaissance mapping and synoptic studies. Since 1972 M. W. Schwerdtner and students have concentrated on resolving many of the structural geology problems of the area contributing a great amount to the understanding of the geology of the Central Gneiss Belt.

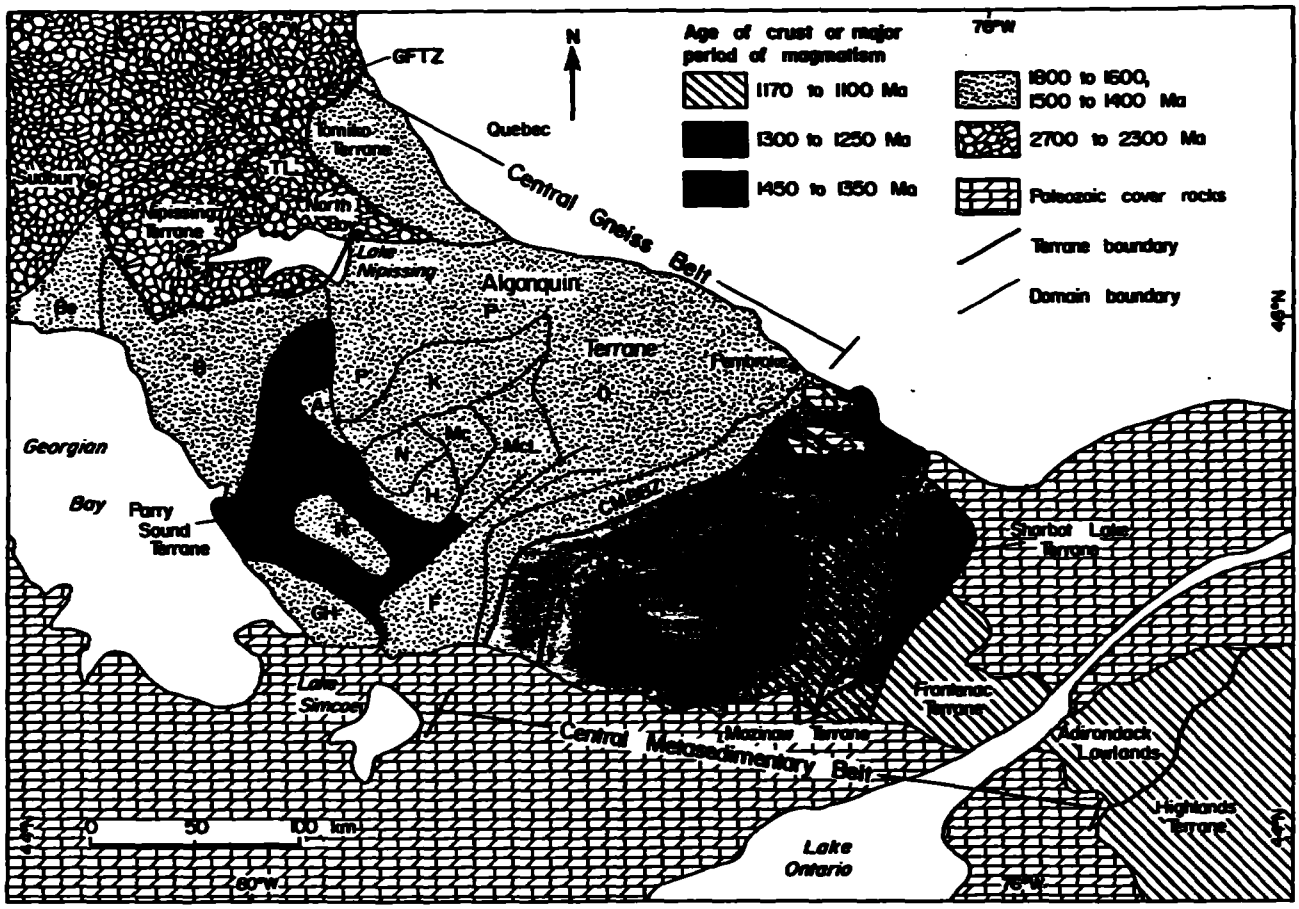
The framework for all current work in the area was provided by Davidson et al. (1982). This has been modified subsequently by Davidson and other workers, and Easton (1992) has synthesized this work eloquently. The tectonic terranes and domains separated by shear zones have become imbedded in the literature.

REGIONAL GEOLOGY

The Muskoka-Parry Sound region is part of the Ontario segment of the Central Gneiss Belt in the Grenville Structural Province (Wynne-Edwards 1972). No detailed geological map of the whole region, which was included in a recent major project on the Ontario Gneiss Segment by the Geological Survey of Canada, has been published to date.

Recent mapping by Davidson et al. (1982) has led to a tectonic model in which the thickening of Proterozoic crust is accomplished by deep-level thrusting and associated reverse ductile

shearing (Davidson 1984a, 1984b). According to this model, major crustal slices (called domains and sub-domains, see Fig.3) have been translated over large distances toward the margin of the Superior Structural Province.



Abbreviations

A	Ahmic Domain	GH	Go Home Domain	NE	Nepewassi Domain
B	Britt Domain	H	Huntsville Domain	O	Opeongo Domain
Be	Beaverstone Domain	K	Kiosk Domain	P	Powassan Domain
CMBBZ	Central Metasedimentary Belt Boundary Zone	Mc	McCraney Domain	PS	Parry Sound Domain
F	Fishog Domain	McL	McClintock Domain	R	Rosseau Domain
GFTZ	Grenville Front Tectonic Zone	MR	Moon River Domain	S	Seguin Domain
		N	Novar Domain	TL	Tilden Lake Domain

Figure 3: Lithotectonic terranes,domains Central Gneiss Belt (Easton, 1992)

This view has been further modified by some more local studies by Hanmer (1988) and Schwerdtner (1987). According to Hanmer the southeast to northwest thrusting was initiated at approximately 1160 Ma and continued for 100 Ma. However he claims that subordinate northeastward thrusting was coeval and that late synmetamorphic extensional shears cut these major thrusts and thrust sheets but are in turn cut by late movement on the thrusts. He further alludes to the comparison to the structural style of the

Central Gneiss Belt and the Himalayas suggesting that the Grenville exposes the architecture and processes presently active in the roots of younger mountain belts. Schwerdtner's observations agree with Hanmer's respecting a northeasterly component to deformation which he invokes to explain north-south buckle folds. However, Schwerdtner observed that not all foliations can be explained by the thrust model and that three sets of folding are superimposed and cross the domain boundaries. He claims that all the structural facts can be explained without large differential translations of crustal slices and most discordances in the regional gneissocity could have been created by décollement and repeated buckling.

Easton (1992) synthesized all previous studies stating that, "Recorded within the Grenville Province is the tectonic evolution of the southeast margin of Laurentia during the Mesoproterozoic. The Grenville Orogeny has overprinted the structural trends and metamorphic effects of the Archean and Paleoproterozoic geological province of Laurentia. It is now generally accepted that this orogenic event or events involved northwest directed thrusting and imbrication of the entire crust, presumably as a result of a terminal collision at about 1100 Ma. with a continental landmass somewhere to the southeast.

The Central Gneiss Belt consists mainly of upper amphibolite and local granulite facies, quartzo-feldspathic gneisses, chiefly of igneous origin with subordinate paragneiss. Distinctive lithotectonic terranes, some further subdivided into domains, have been identified within the Central Gneiss Belt. The terranes and domains are distinguished by differences in rock types, internal structure, metamorphic grade, geological history, and geophysical signature and are bounded by zones of intensely deformed rocks traceable for tens of kilometres."

The Algonquin terrane consists of 1800 to 1600 Ma gneisses intruded by 1500 to 1400 Ma granitic and monzonitic plutons that may represent an extension of the Eastern Granite-Rhyolite Province. Although imbricated by later thrusting the Algonquin terrane is probably parautochthonous. The Britt and Rosseau domains are part of the Algonquin terrane.

The Britt Domain (Figure 4) comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features. Dips of these rocks are generally flat to 10°to the southeast. Some units are entirely composed of isoclinal sheath folds whereas other units are evidently deformed megacrystic granitic plutons.

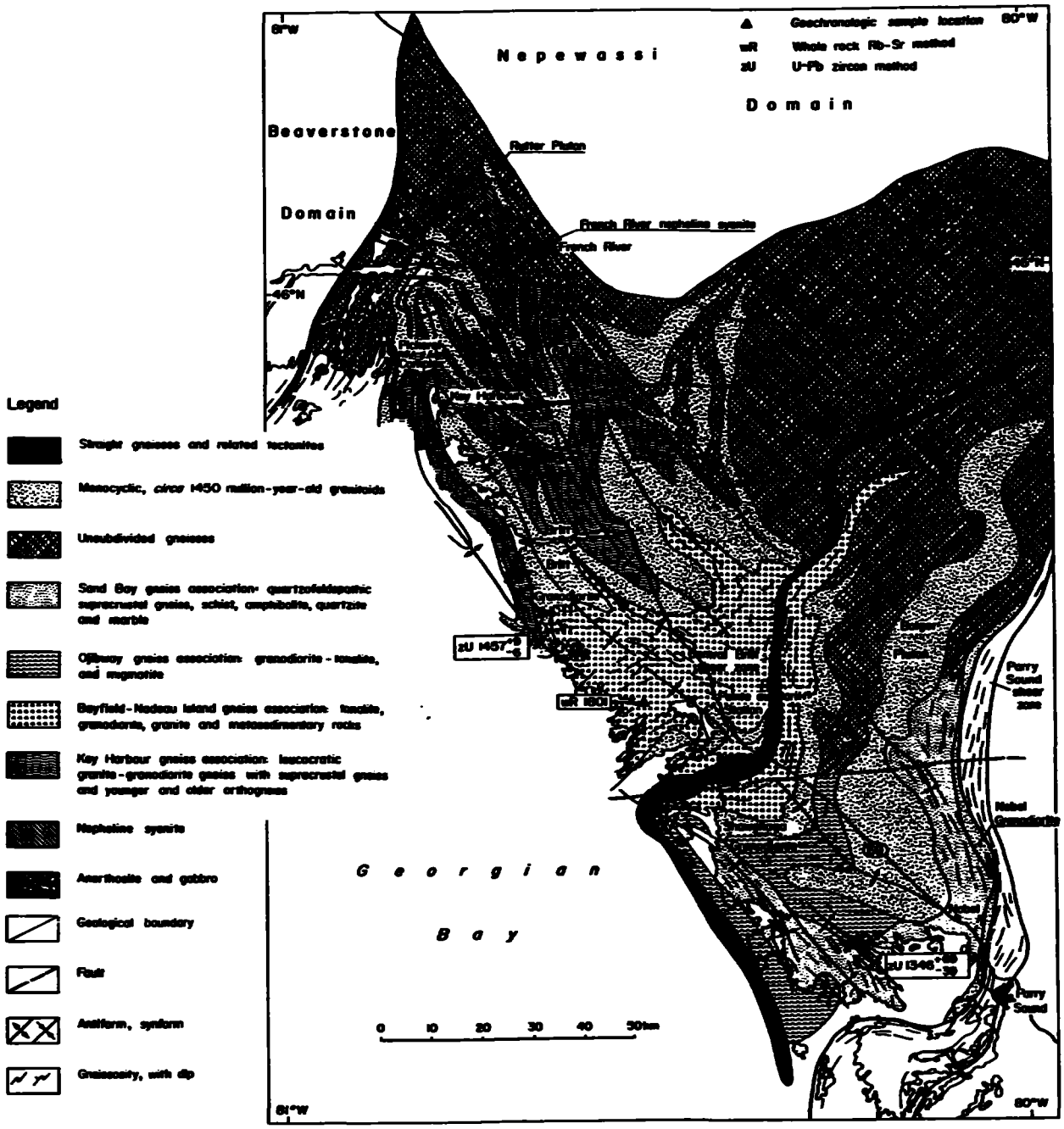


Figure 4: Geology of the Britt Domain (Easton (1992))

The Parry Sound and Moon River domains consist chiefly of juvenile crust 1450 to 1350 Ma in age and are parallochthonous. The Parry Sound domain rocks comprise dense high metamorphic facies rocks (amphibolite and granulite facies) which are emergent on the other domains. The rocks in the Parry Sound domain are dominantly amphibolite and pyroxenite gneisses which strike to the north east and dip 20°-60°to the southeast (at a much steeper angle than the postulated shear couple accompanying thrusting). The bedrock

largely comprises veined, banded and homogeneous pink and grey migmatitic gneisses produced by injection and granitization of metamorphic gneisses of various types. The rocks are mainly of upper amphibolite and granulite metamorphic facies. Hypersthene-bearing charnokitic gneisses are present in the area. The origin of much of the amphibolite gneiss is obscure. Some which is associated with bands of marble is thought to be paragneiss whereas some is proximal to large bodies of gabbro and anorthosite and thought to be orthogneiss. Trusler and Villard (1980) found evidence that some of the mafic and felsic rocks are of volcanic origin. The high metamorphic grade of the rocks is attributed to a deep seated origin possibly involving underplating at an early stage.

The Bolger pluton in the Britt domain is dated at circa 1450 Ma and underlies the Black Lake, Woods Road and Shebeshekong Lake properties (Figure 4). The Dillon Road property is underlain by both the Bolger pluton and the Ojibway gneiss association. The Killbear Point and Jacknife Harbour properties are underlain by the Sand Bay gneiss association. The Grundy Lake property is underlain by an unnamed V-shaped pluton believed to be circa 1450 Ma.

Comparable regional maps do not cover areas about the Turtle Lake property and the Burnt Lake property which are situated in the Rosseau and the Moon River domains respectively.

DESCRIPTION OF ROCK UNITS

Since no comprehensive, detailed geological maps have been produced for the Parry Sound area, none of the previous workers have made an attempt to construct a table of rock units. None of the rock units have been correlated across domain boundaries. Trusler and Villard made an attempt to derive a Table of Rock units for the Parry Sound -Sans Souci area in 1980 and some of that information is used here to produce Table 2. These Formation names are not used in the mapping since these have been inadequately defined for inclusion in the literature. However, the area mapped by Trusler and Villard covers parts of the Britt, Parry Sound and Moon River domains and the lithologic variety is well represented.

The Sans Souci-Killbear Point Group correlates well with the Sand Bay gneiss association of Figure 4 which underlies the Killbear Point and Jacknife Harbour properties. Similar rocks which are younger underlie the Burnt Lake property. The Ojibway gneiss association which underlies part of the Dillon Road property correlates with the tonalite in Table 2. The remaining sites are megacrystic granites or migmatitic derivatives of megacrystic granites classified under quartz monzonite in Table 2.

The rocks on the property have been subdivided into mappable units as follows: biotite-hornblende migmatite,

amphibolite gneiss, purple and pink migmatite, and granite pegmatite.

The biotite-hornblende migmatite is represented by quartzo-feldspathic rock ranging from less than 5% to greater than 40% but averaging over 25% mafic minerals and containing syntectonic and late tectonic pegmatitic material in varying proportions and thicknesses. The grain size ranges from fine to coarse with the more neosome phases generally being coarser. In any one area and especially in individual layers the mineralogy and textures are uniform. The mafic mineral tends to be biotite dominant. The gneissic fabric is thinly to thickly layered and exhibits substantial differential weathering. Profuse, small scale, intrafolial folding with a slight plunge to the southeast is a dominant feature of these rocks.

The purple and pink migmatite is a composite layered rock generally containing medium to coarse grained layers of the felsic gneiss and a regular fine to medium grained purple or mauve layer comprising quartz, feldspar, biotite, almandine and hematite. Frequently a milky to buff rock of medium to coarse grained granulated late tectonic pegmatite forms layers within the purple and pink migmatite. Biotite content seldom exceeds 10%. Chevron folds on a small scale are profuse and widespread in occurrence.

The amphibolite gneiss is a medium greyish black, medium to coarse grained, thinly to thickly layered rock. The amphibolite flanks a thick continuous granite pegmatite dike and the various textures in evidence reflect the gradational and tectonic boundary relationships between the two units. From the massive homogeneous amphibolite gneiss, towards the pegmatite the following distinctive textures occur consistently as zones along the length of the pegmatite: gabbro gneiss with 20% pink to rose, coarse grained 2-3 cm lozenge-shaped porphyroclasts; lit par lit gabbro gneiss with between 20% and 80% 2-6 cm continuous layers of granite pegmatite; and granite pegmatite breccia.

The granite pegmatite breccia occurs as matrix supported mono-mineralic and poly-mineralic clasts from 2- 10 cm in diameter in both clast-supported and matrix-supported configurations. The clasts comprise unstrained crystals of quartz and microcline which are apparently very well cemented by a medium to coarse grained cataclastic matrix. In one identifiable dike with offsets the breccia which is clast-supported averages a width of 15 metres for some 300 metre length. Vertical joint separation averages in excess of 15 metres. In another occurrence the dike of matrix-supported breccia is 130 metres wide.

TABLE 2: TABLE OF ROCK UNITS FOR THE PARRY SOUND AREA

PHANEROZOIC

CENOZOIC
Quaternary
Recent
swamp, lake, and stream deposits

Pleistocene
bouldery, cobbly and silty sand till, silt, sand, pebble gravel, and cobble gravel
_____Unconformity (possible regolith)_____

PALAEOZOIC

Cambro - Ordovician
Calcareous fracture fillings
_____Unconformity_____

PRECAMBRIAN

Late Precambrian
Late Breccias- thin mylonites; quartz veined dilatant breccias of unknown origin

Late Pegmatite
massive granite pegmatite dikes
_____Intrusive Contact_____
High Rank Regional Metamorphism

Middle to Late Precambrian

Tectonites
Mylonite: very fine grained massive to thinly to thickly laminated rock frequently exhibiting compositional and graded layering and containing rotated porphyroclasts; generally marginal to schistose and gneissic rocks; matrix minerals generally are siliceous and comprise quartz, microperthite, biotite and/or amphibole and/or pyroxene

Tectonic Breccia: brecciated rock comprising lithic clasts within a fine to coarse grained schistose to gneissic cataclastic matrix with quartz, perthitic microcline, biotite and/or amphibole and/or pyroxene
_____Sheared Contact_____

Syenite and Monzonite Suite Intrusive Rocks
pink to grey and green, massive to porphyritic to lineated and gneissic biotite, hornblende-biotite and hornblende syenite and monzonite, charnokite and mangerite.
_____Intrusive Contact_____

Anorthosite Suite Intrusive Rocks

Anorthosite- massive to gneissic labradorite anorthosite, andesine anorthosite with up to 10% pyroxene, and gabbroic anorthosite

_____Intrusive Contact_____

Gabbro- massive to gneissic fine to coarse grained, black pyroxenite, anorthositic gabbro and gabbro

_____Intrusive Contact_____

Tonalite- massive to strongly lineated and gneissic light to dark grey pyroxene tonalite and diorite with minor gabbro

_____Intrusive Contact_____

Quartz Monzonite - Syenite Suite Intrusive Rocks

massive to gneissic medium to coarse grained biotite quartz monzonite, pyroxene quartz monzonite and foliated granite pegmatite, pyroxene syenite and foliated syenite pegmatite; megacrystic granite and derivatives.

_____Intrusive Contact_____

Parry Sound Group Metavolcanic Rocks[1]

Spider Lake Formation[1]: intermediate to felsic rocks, medium to coarse grained generally porphyritic, massive to gneissic rocks containing quartz, feldspar, almandite, amphibole and pyroxene; some fragmental units present.

Parry Sound Formation[1]: mafic, medium to coarse grained, schistose to gneissic, pyroxene-feldspar and amphibole-feldspar bearing massive and fragmental rock

Sans Souci - Killbear Point Group Metasedimentary Rocks[1]

Unsubdivided: thinly laminated to extremely thickly layered; interlayered medium to coarse grained schists and gneisses; lower amphibolite to granulite facies; intercalated with metavolcanics above

Killbear Point Formation[1]: thinly to extremely thickly layered, schistose and gneissic medium to coarse grained biotite, quartz, feldspar rocks

Bateau Island Formation[1]: very thickly layered, medium to coarse grained felsic gneiss with mafic biotite and amphibole rich parting planes; variously interpreted as an arkose or granite; cataclastic textures.

[1] The formation names have not been accepted and criteria for introduction of these names into the literature have not been fulfilled. Identification as to origin is tentative

PROPERTY GEOLOGY

The property principally is underlain by felsic rocks of unusual character of Middle to Late Precambrian age. The property is underlain by biotite-hornblende migmatite, amphibolite gneiss, purple and pink migmatite and granite pegmatite breccia. All of these rocks are included in the Sand Bay gneiss association of Culshaw (1991). The pre-metamorphic origin of these rocks is somewhat obscure. In fact the evolution of these rocks was largely shaped through metamorphic replacement and brecciation.

The individual rock units were described under the heading DESCRIPTION OF ROCK UNITS on Page 9 of this report. In the purple and pink migmatite, the felsic gneiss appears to be the introduced neosome constituent which appears to have been reduced in grain size by cataclasis (many examples of syntectonic pegmatites reduced to fine grained neosome constituents are evident in the region within both the Britt domain and the Moon River domain). The paleosome layer in a few places still contains over 10% biotite and exhibits a relict foliation; however, this material appears to be a schlieren produced by the process of granitization. The hematite which macroscopically appears to follow the biotite foliation or occur in streaks parallel to the gneissic foliation, microscopically coats the grain boundaries of all the other minerals and is translucent in character. The hematite spotting which is very strong in this unit is a regional feature of the area and is frequently erroneously attributed to almandite.

In a variety of the purple and pink migmatite a pale to buff medium to coarse grained pegmatite forms lit par lit stringers parallel to the gneissic foliation. This material is of late tectonic origin and forms some very attractive textures. Frequently the late tectonic pegmatite exhibits pinch and swell textures over very large areas. This might provide a target material for quarrying. A very attractive, voluminous, and somewhat unique variety of the pink and purple migmatite is a chevron folded polyphase unit of the purple and pink migmatite with the buff pegmatite (Photo 1).

The various rock units trend SSE and are situated in parallel bands up to 200 metres wide on the two sections of the property. The biotite-hornblende migmatite underlies the eastern half of the western claim and a separate unit underlies the mid central portion of the eastern claim. Separate units of the purple and pink migmatite underlie the western boundary of each claim in contact with the biotite-hornblende migmatite and the pegmatite breccia in the eastern claim and the amphibolite gneiss in the western claim. Amphibolite gneiss underlies the central portion of the western claim and the eastern portion of the eastern claim. Granite pegmatite breccia occurs generally in contact with the amphibolite gneiss. On the eastern claim the pegmatite breccia is generally the matrix supported variety (Photo 2) and occurs in 200

Photo 3 Profuse chevron folding in pink and purple migmatite (above) typical of this rock unit. Photo 4 Matrix-supported granite pegmatite breccia.(below) typical of large exposed areas of outcrop..

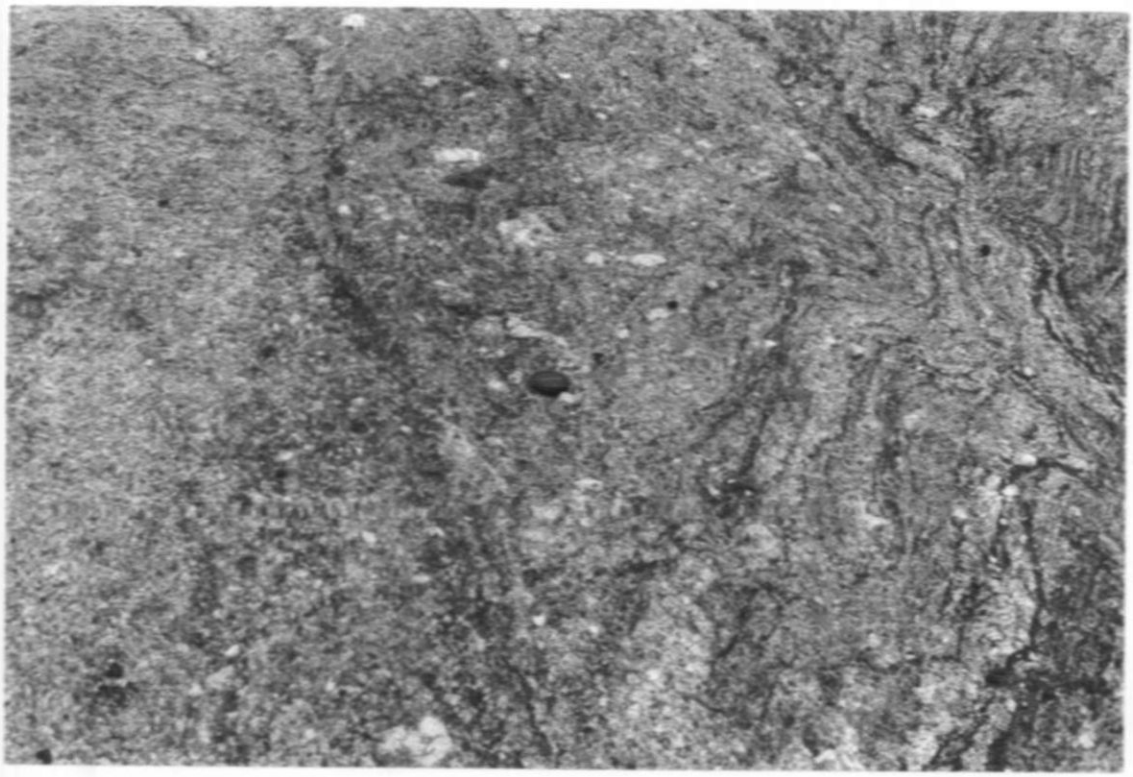


Photo 3: Clast-supported granite pegmatite breccia outcrop. Note the continuous mineral proportions along strike and the regular 30 metre joint separation on this outcrop. The large pink microcline clasts are evident in the foreground left of the picture. The outcrop ridge is 300 metres long.

metre X 150 metre pods flanked by amphibolite gneiss and believed to plunge at a shallow rake to the SSE. This is generally a very attractive material. On the western claim the pegmatite breccia forms dikes 300 metres long and 25 metres wide (Photo 3) which are contained within the amphibolite gneiss and exhibit tectonic gradational relationships laterally on the contacts, but are quite continuous along strike.

Gneissic foliations were measured at each station where possible. Despite some exceptions, the general pattern displayed is of a relatively structurally uniform sequence. The foliation on the property is strongly gneissic trending south to south-southeast and steeply dipping either east or west or vertical. Many of the units are folded along hinge lines which rake at 10°-20° to the south.

The sub-horizontal joint spacing, based on 24 data, averages 2.5 metres and the vertical joint spacing, based on 108 data, averages in excess of 5 metres. The statistical plot of vertical joint data, based on 137 data, exhibits considerable scatter, but the significant joints are well defined. Twenty-six per cent of the data cluster about 155°. Twenty-five per cent of the data cluster about 83°. Seventeen per cent of the data cluster about 53°.

POTENTIAL DIMENSION STONE SITES

Each of the pegmatite breccia outcrop areas is a potential quarry site. The clast supported examples on lot 71, concession 10, Carling Twp. both require detailed mapping and site planning prior to permitting one of these for a quarry test. Since the chevron style purple and pink migmatite and amphibolite gneiss are on the same outcrop as the southern pegmatite breccia, this site plan should include these rocks. At the same time a sample or samples of amphibolite gneiss and the purple and pink migmatite should be collected for slabbing and polishing. Between the two sites the resource of this pegmatite breccia approximates 200,000 tonnes to a depth of 6 metres.

Site planning should also be conducted on all of the matrix supported pegmatite breccias which underlies the north half of lot 71, concession 10. All of these sites could be quarried for dimension stone. In total to a depth of 6 metres, there exists a resource of 500,000 tonnes of matrix supported pegmatite breccia in areas up to 100 metres X 400 metres.

CONCLUSIONS

The Britt domain comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features.

Nine dimension stone prospects were staked in the Parry Sound area, and all have been mapped geologically. Many of the rocks underlying these properties are migmatitic derivatives of granitic intrusions and present a great variety of textures. In some cases it is evident that the paleosome constituent was megacrystic and subsequent neosome phases have distinct compositions and fabrics. The sites were chosen for their attractiveness and the apparent availability of accessible large blocks.

The property is segmented into a two claim unit western claim and a one claim unit eastern claim both of which are underlain by the Sand Bay gneiss association. This suite of rocks comprises pink and purple migmatite, amphibolite gneiss, biotite migmatite, and granite pegmatite. Attractive pegmatite and amphibolite-pegmatite breccias occur on both claims in large volumes and warrant development. Site plans should be prepared for all of the areas of pegmatite breccia stating with the northwest portion of the western claim and the northeastern portion of the eastern claim. Samples of the amphibolite gneiss and the pink and purple breccia should also be collected for slabbing and polishing.

Due to the proximity of the property to cottages and the fact that the access roads would be shared, the project should be carefully run to ensure that the local community knows what is happening, becomes informed as to the real environment to be created by a proposed development, and has an opportunity to have real concerns implemented. Deer yards are partly coincident with the property and efforts will have to be made to ensure that any openings planned are compatible with the deer habitat.

RECOMMENDATIONS

1. Site plans of all areas underlain by pegmatite breccia on the two claims should be conducted and the area of site planning should be extended to cover amphibolite gneiss and purple and pink migmatite on the same outcrop as the pegmatite breccia in the south half of lot 73, concession 10, Carling Twp. Priority should be given to initial evaluation of the northeastern part of the eastern claim and the northwestern part of the western claim.

2. Large samples of the amphibolite gneiss and the purple and pink migmatite with the profuse chevron folding should be collected for slabbing and polishing.

3. Meetings should be held with the municipal council and the Ministry of Natural Resources to explain the purpose of the site planning and the possible developments that may ensue and to obtain some feedback.

REFERENCES

Bell, R. 1876. Report on geological researches north of Lake Huron and east of Lake Superior; in Geological Survey of Canada Report on Progress 1876-77.

Bennett, P.J. 1975. The deformation of the northern half of the Brandy Lake Complex, Port Carling, Ontario. M.Sc. thesis, Department of Geology, University of Toronto, Toronto, Ont.

Bright, E.G. 1987. Precambrian geology of the Whitestone Lake area, District of Parry Sound; Ontario Geological Survey, Map P.3095, Geological Series-Preliminary Map, scale 1:15,840, geology 1986.

Culshaw, N.G., Davidson, A., and Nadeau, L. 1983. Structural subdivisions of the Grenville Province in the Parry Sound-Algonquin region, Ontario; in Current research , pt. B, Geological Survey of Canada, Paper 83-1B,p.243-252.

Culshaw, N.G., Corrigan, D., Drage, J., and Wallace, P. 1988. Georgian Bay geological synthesis: Key Harbour to Dillon, Grenville Province of Ontario; in Current research, Part C, Geological Survey of Canada, Paper 88-1C, p.129-133.

Davidson, A. 1984a. Identification of ductile shear zones in the southwestern Grenville Province of the Canadian Shield. In Precambrian tectonics illustrated. Edited by A. Kröner and R. Greiling. E. Schweizrbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart, Germany, pp. 263-279.

_____ 1984b. Tectonic boundaries within the Grenville Province of the Canadian Shield. Journal of Geodynamics, 1: 433-444.

_____ 1986. New interpretations in the southwestern Grenville Province, edited by J.M. Moore, A. Davidson and A. Baer, Geological Association of Canada, Special Paper 31,p.61-74

Davidson, A. and Morgan, W.C. 1981. Preliminary notes on the geology east of Georgian Bay, Grenville Structural Province, Ontario; in Current research, pt. A, Geological Survey of Canada, Paper 81-1A,p.291-298.

Davidson, A., Culshaw, N. and Nadeau, L. 1982. A tectono-metamorphic framework for part of the Grenville Province, Parry Sound region, Ontario; in Current research, pt.A, Geological Survey of Canada, Paper 82-1A, p.175-190.

Fahrig, W.F. and West, T. 1986. Diabase dyke swarms of the Canadian Shield; Geological Survey of Canada, Map 1627A, scale 1:4,873,900.

Fouts, C.R. and Marmont C. 1989. Gneisses of the Parry Sound-Muskoka Area; Flagstone resources, Ontario Geological Survey, Open File Report 5725

Garland, M. 1987. Graphite in the Central gneiss belt of the Grenville Province of Ontario; Ontario Geological Survey, Open File Report 5649.

Hanmer, S. 1984. Strain-insensitive foliations in polymineralic rocks; Canadian Journal of Earth Sciences, v.21, p.1410-1414.

_____ 1988. Ductile thrusting at the mid-crustal level, southwestern Grenville Province; Canadian Journal of Earth Sciences, v.25, p.1049-1059.

Harrison, J.C. 1977. Geology and structure of the Go Home Bay area, District of Muskoka, Ontario. B.Sc. thesis, Department of Geology, University of Toronto, Toronto, Ont.

Hewitt, D.F. 1967. Geology and mineral deposits of the Parry Sound -Huntsville area; Ontario Geological Survey, Geological Report 52, 65p.

Lacy, W.C. 1960. Geology of the Dunchurch area, Ontario; Geological Society of America Bulletin, Volume 71, p.1713-1718

Lindia, F.M., Thomas, M.D. and Davidson, A. 1983. Geological significance of the Bouger gravity anomalies in the region of the Parry Sound domain, Grenville Province, Ontario; in Current research , ptB, Geological Survey of Canada, Paper 83-1B, p.261-266.

Lumbers, S.B. 1975. Geology of the Burwash area; Ontario Division of Mines, Geological Report 116,160 p., with Map 2271 scale 1:126,720.

Macfie, R.I. 1988. Preliminary investigation of the Parry Sound - Seguin domain boundary; in Summary of field work and other activities 1988, by the Ontario Geological survey, Ontario Geological Survey, Miscellaneous Paper 141, p.315-318.

Macfie, R.I. and Dixon, J. M. 1990. Tectonic relations among Parry Sound domain and Seguin and Rosseau sub-domains Grant 370; in Geoscience Research Grant Program Summary of Research 1989-1990, Ontario Geological Survey, Miscellaneous Paper 150, 1990, p.200-212.

Marmont, C., Zuberec, P.M., and Conrod, W.D. 1988. Industrial minerals, rare-earth elements, and building stone in the Districts of Muskoka, Parry Sound, and Nipissing and the County of Haliburton; in Summary of Field Work and Other Activities 1988, by the Ontario Geological Survey, Ontario Geological Survey, Miscellaneous Paper 141, p.319-325.

Marmont, C. 1992. Industrial minerals and building stone in the Districts of Nipissing, Parry Sound and Sudbury;in Summary of Field Work and Other Activities 1992, Ontario Geological Survey Miscellaneous Paper 160, p.261-265.

1992. Building Stone Opportunities in Central Ontario - 1991 Supplement. Ontario Geological Survey, Open File Report 5825, 20p.

1993. Exploration Guidelines and Opportunities for Dimensional Stone in Central Ontario. Ontario Geological Survey, Open File Report 5853, 83p.

McRoberts, G., Macfie, R.I. and Hammar, D.J. 1988. Geology of the Manitouwabing Lake area, District of Parry Sound; in Summary of Field Work and Other Activities 1988, by the Ontario Geological Survey, Ontario Geological Survey, Miscellaneous Paper 141, p.309-314.

McRoberts, G., and Tremblay, M.L, 1988. Precambrian geology of the Ferrie River area, District of Parry Sound; Ontario Geological Survey, Map P. 3123, Geological Series-Preliminary Map, scale 1:15,840

Murray, A. 1848. On an examination of the shores, islands and rivers of Lake Huron including parts of the east coast of Hudson Bay and the Spanish River; in Geological Survey of Canada Report of Progress 1848-49.

Nadeau, L. 1984. Deformation of leucogabbro at Parry Sound, Ontario. M.Sc. thesis, Carlton University, Ottawa, Ont.

Parks, W.A. 1900. Work in the Muskoka district, Ontario; in Geological Survey of Canada, Summary report for 1900, part A pp.121-126 (pub 1901).

Satterly, J. 1942. Mineral Occurrences in Parry Sound District, Ontario Department of Mines, v.51,Part 2,41p. with Map 1942-2.

Satterly, J. 1955. Geology of Lount Township; Ontario Department of Mines Annual Report, v.64, Part 6, 43p., with Map 1955-4, scale 1:31,680.

Schwerdtner, W. M., and Bauer, G. 1975. Tectonic significance of mylonite zones. Neues Jahrbuch für Mineralogie, Monatshefte, No. 11: 500-509.

Schwerdtner, W.M., and Mawer, C.K. 1982. Geology of the Gravenhurst region , Grenville Structural Province, Ontario. In Current research, part B. Geological Survey of Canada, Paper 82-1B, pp. 195 - 207.

Schwerdtner, W.M., and Waddington, D.H. 1978. Structure and Lithology of Muskoka - southern Georgian Bay region, Central Ontario. In Toronto '78 Field Trips Guidebook. Edited by A.L. Currie and W.O. Mackasey. Geological Association of Canada, pp. 204-212.

Schwerdtner, W.M., Waddington, D.H., and Stollery, G. 1974. Polycrystalline pseudomorphs as natural gauges of incremental paleostrain. Neues Jahrbuch für Mineralogie, Monatshefte, No. 3/4: 174-182.

Schwerdtner, W.M., Bennett, P.J., and Janes, T.W. 1977. Application of L-S fabric scheme to structural mapping and paleostrain analysis. Canadian Journal of Earth Sciences, 14: 1021-1032.

Schwerdtner, W.M., Mawer, C.K., and Hubbs, A. F. 1981. Geology of the Gravenhurst region, Grenville Structural Province,Ontario: Preliminary mapping results. In Current research, part B, Geological Survey of Canada, Paper 81-1B, pp. 167-169.

Schwerdtner, W.M. 1987. Interplay between folding and ductile shearing in the Proterozoic crust of the Muskoka-Parry Sound region, central Ontario; Canadian Journal of Earth Sciences, v.24, p.1507-1525.

Tremblay, M.L. 1988. Remote sensing study of curvilinear, structural features in the Parry Sound domain, Grenville Province; in Summary of field work and other activities 1988, Ontario Geological Survey Miscellaneous Paper 141 pp.326-329.

Trusler, J.R. and Villard, D.J. 1980. Geology of the Parry Sound-Sans Souci map area; scale 1:31,680, unpublished manuscript and map done for the Ontario Ministry of Natural Resources.

Trusler, J.R. 1992.Prospecting Programme for Flagstone and Decorative Stone in the Parry Sound District of Ontario. OPAP File No.: OP92-174

1993. Geological Reconnaissance for Flagstone and Dimension Stone in the Parry Sound District of Ontario; Regional survey submitted to Assessment Files, Ontario Geological Survey.

van Berkel, J.T., and Schwerdtner, W.M., W.M. 1986. Structural geology of the Moon River area. Ontario Geological Survey, P2954(with marginal notes).

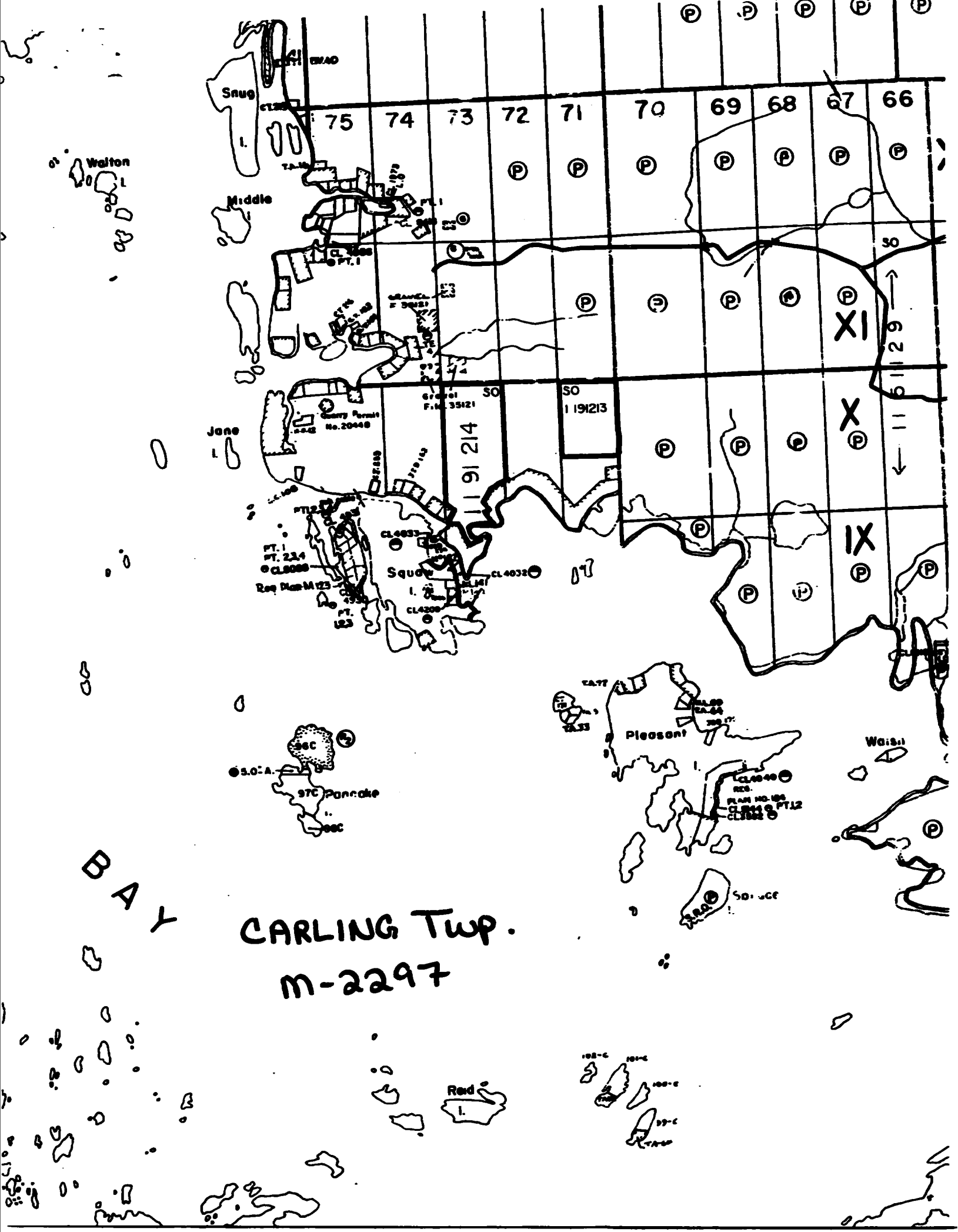
van Breeman, O., Davidson, A., Loveridge, W.D. and Sullivan, R.W. 1986. U-Pb zircon geochronology of the Grenville tectonites, granulites and igneous precursors, Parry Sound, Ontario; in The Grenville Province, edited by J.M. Moore, A. Davidson and A. Baer, Geological Association of Canada, Special Paper 31, p.191-208.

Waddington, D.H. 1973. Foliation and mineral lineation in the Moon River synform, Grenville Structural Province, Ontario. M.Sc. thesis, University of Toronto, Toronto, Ont.

Walker, T.L. 1905. The Muskoka district, Ontario; in Geological Survey of Canada, Summary report for 1905, p.84-86, (published 1906)

_____ 1913. The precambrian of Parry Island and vicinity; in Geological Survey of Canada Guide Book No. 5., p. 98-100.

Wynne-Edwards, H. R. 1972. The Grenville Province; in Variations in tectonic style in Canada, edited by R.A. Price and R.J.W. Douglas, Geological Association of Canada, Special Paper 11, p263-344.


Snug
Walton
Middle
Jane
Squaw
Pleasant
Waisi
Reid
75
74
73
72
71
70
69
68
67
66
XI
X
IX
SO
1 191213
1 191214
CARLING Twp.
M-2297
BAY

AUTHOR'S CERTIFICATE

a. This report was prepared by:

James R. Trusler P.Eng.

Principal,
J R Trusler and Associates
143 Temperance St.
Aurora, Ontario L4G 2R5
(416) 727-5084

GEOLOGICAL ENGINEER.

b. Qualifications:

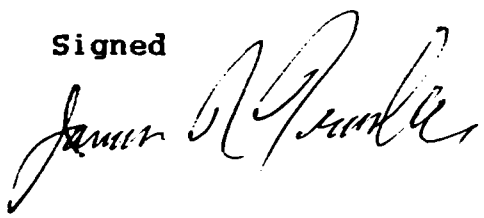
B A Sc - Geological Engineering, University of Toronto, 1967
M S - Geology, Michigan Technological University, 1972
Professional Engineer - Ontario
Fellow - Geological Association of Canada
Member - Canadian Institute of Mining, Metallurgy and Petroleum

c. This report is based on a review of all available relevant data; historical, and geological, on personal involvement as Regional Geologist, Algonquin Region, Ministry of Natural Resources from 1974 to 1980, and on a program of field mapping conducted within the area of this report in 1993. I have personally examined the properties and the surrounding area in the field.

d. I have used my experience gained in geological mapping, the exploration for minerals, visits to most dimension stone quarries in North America, the definition of mineral deposits and the evaluation of properties (over 30 years) in preparation of this report.

e. I hold an undivided 100% interest in the claims mentioned in this report, but do not expect to receive any remuneration for the report or as a result of statements made in this report.

Signed



Dated: December 30, 1993

James R. Trusler M.S., P.Eng.

41H08NE0001 2.15281 CARLING

A GEOLOGICAL SURVEY OF THE DIMENSION STONE RESOURCES ON THE SHEBESHEKONG LAKE PROPERTY THE PARRY SOUND DISTRICT OF ONTARIO

by

JAMES R. TRUSLER

2.15281

W9490.00011

LONG.: 80°09'02"W - 80°09'54"W
LAT.: 45°25'41"N - 45°26'23"N
NTS: 41H/8

DATE: December 30, 1993

A GEOLOGICAL SURVEY OF THE DIMENSION STONE RESOURCES ON THE SHEBESHEKONG LAKE PROPERTY THE PARRY SOUND DISTRICT OF ONTARIO

SUMMARY

The Parry Sound area of Ontario is underlain by complex gneisses and migmatites of Middle to Late Proterozoic age which are part of the Ontario segment of the Central Gneiss Belt of the Grenville Structural Province. A working model of thrust plates (called domains and sub-domains) which are separated by ductile thrust faults and moved in a northwesterly direction upon each other has been postulated by Davidson et al (1982). Easton (1992) has improved this model in his synopsis using a hierarchy of terranes and domains wherein the terranes include domains of similar age which are autochthonous with respect to each other. Age dating has indicated that four of these large scale terranes or plates are stacked on each other with the base being near Sudbury at the Grenville Front and the top being near Kingston.

Despite the recent wealth of scholarly publications a comprehensive geological map has not yet been made available for the area. However, the limited information available has enabled the clear identification of potentially favourable conditions for both flagstone and dimension stone. Several flagstone occurrences cluster along Davidson's thrusts and several potential dimension stone prospects have been identified within the interior of particular domains.

Although one may ordinarily not expect to find dimension stone within tectonite terranes, it is evident that the autochthonous nature of some of the domains combined with annealing effect of later superimposed amphibolite facies metamorphism preserved large competent blocks of migmatites and gneisses.

As a result of mapping dimension stone potential, and sawing and polishing specimens from many prospects. Seven sites in the Britt domain, and one in each of the Rosseau and Moon River domains have been staked and mapped by the writer resulting in the definition of a large number of potential quarry sites. The four claim unit Shebeshekong Lake property is one of these.

The property is underlain by the Bolger megacrystic granite pluton which is manifested by uniform biotite-amphibole migmatite and the minor tonalite gneiss. Original textures have been obliterated. Biotite migmatite and felsic biotite migmatite dominate. These rocks trend easterly and dip shallowly to the south. Two very attractive areas of felsic biotite migmatite which might be exploited for dimension stone are situated in the northwest corner and midway along the western boundary of the property. Site planning and detailed geological mapping are warranted.

41H08NE0001 2.15281 CARLING

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOS

INTRODUCTION

In 1991, the writer commenced a project to evaluate the flagstone and dimension stone resources of the Parry Sound area. At the same time efforts by former Ministry of Northern Development and Mines geologists, principally Chris Marmont and Dave Villard, were being made to outline the substantial potential for these stone resources and make the public aware of the opportunity. In 1992, the regional investigation of flagstone resources by the writer proved discouraging. It was decided late in the field season to focus solely on the dimension stone potential.

By the end of 1992, many prospective dimension stone sites had been identified by either government publications or by the writer's prospecting. Nine of these dimension stone properties have now been staked by the writer, and an initial evaluation of each property involving geological mapping of the outcrops at a scale of 1:5,000 has been completed. The work provides an initial evaluation of potential quarry sites on each property. The project has been supported by the Ontario Prospector's Assistance Program in both 1992 and 1993.

In July, 1993, the Shebeshekong Lake property was staked for its dimension stone potential. Geological mapping was carried out in 1993, and the map in the back pocket was prepared and is being submitted with the final report for the OPAP grant in 1993.

The format of the geological report is formulated in compliance with assessment submission requirements.

LOCATION AND ACCESS

The property is located in Carling Township, Parry Sound District, Southern Ontario Mining District, and Sudbury District Regional Geologist's area approximately 150 miles (240 km) north of Toronto (Figure 1). The property is bounded by longitudes 80°09'54"W on the west and 80°09'02"W on the east and latitudes 45°25'41"N on the south and 45°26'23"N on the north. The corresponding UTM co-ordinates in metres are 565,310 on the west, 566,420 on the east, 5,030,665 on the south and 5,031,900 on the north. The property is within National Topographic System area 41H/8 and is recorded on claim map M2297.

The Shebeshekong Lake property is northwest of the junction of Highway 559 and old Highway 69 being traversed by both roads plus a cottage access road on the north property boundary. The property is 3 km west of Highway 69.

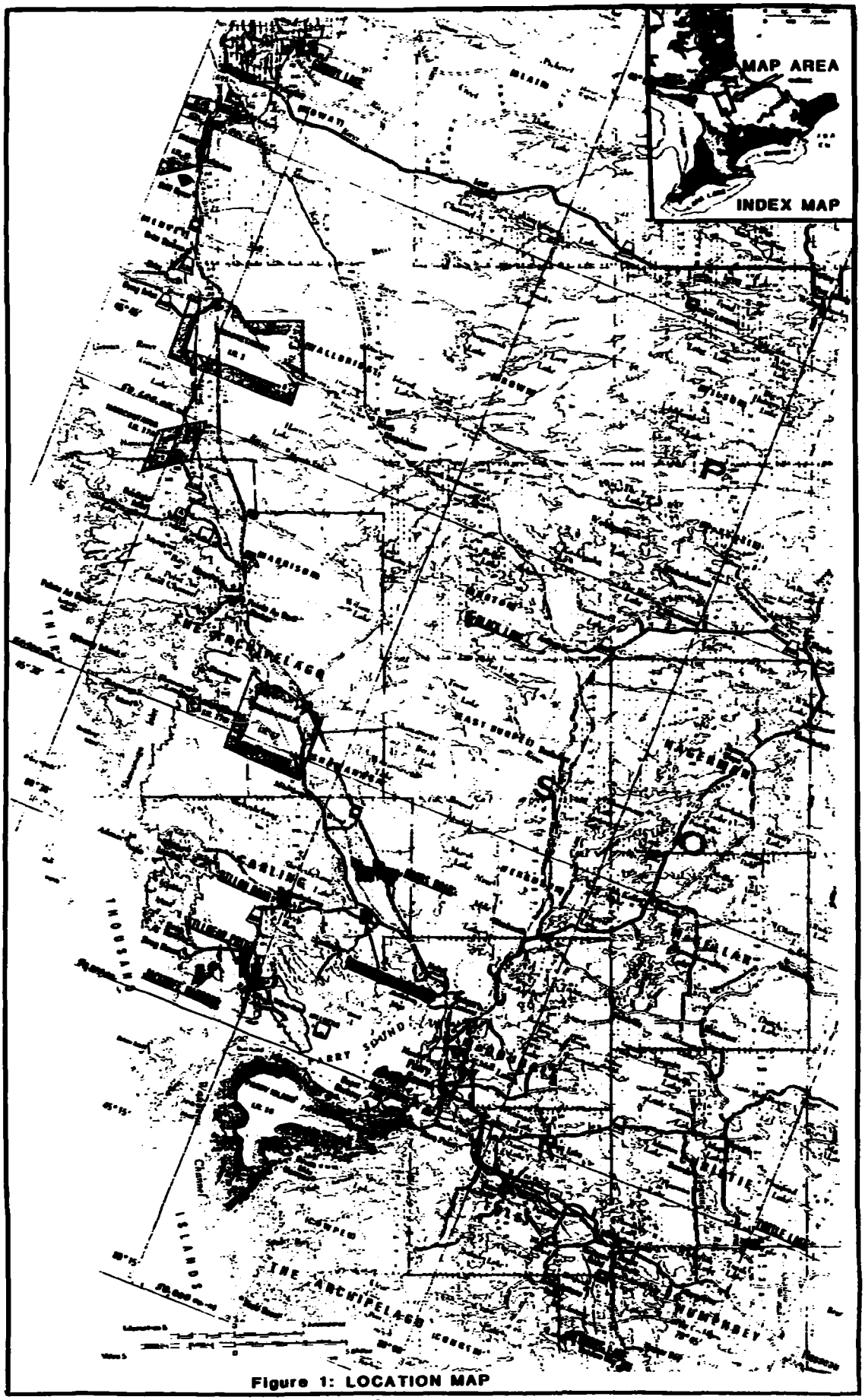


Figure 1: LOCATION MAP

PROPERTY

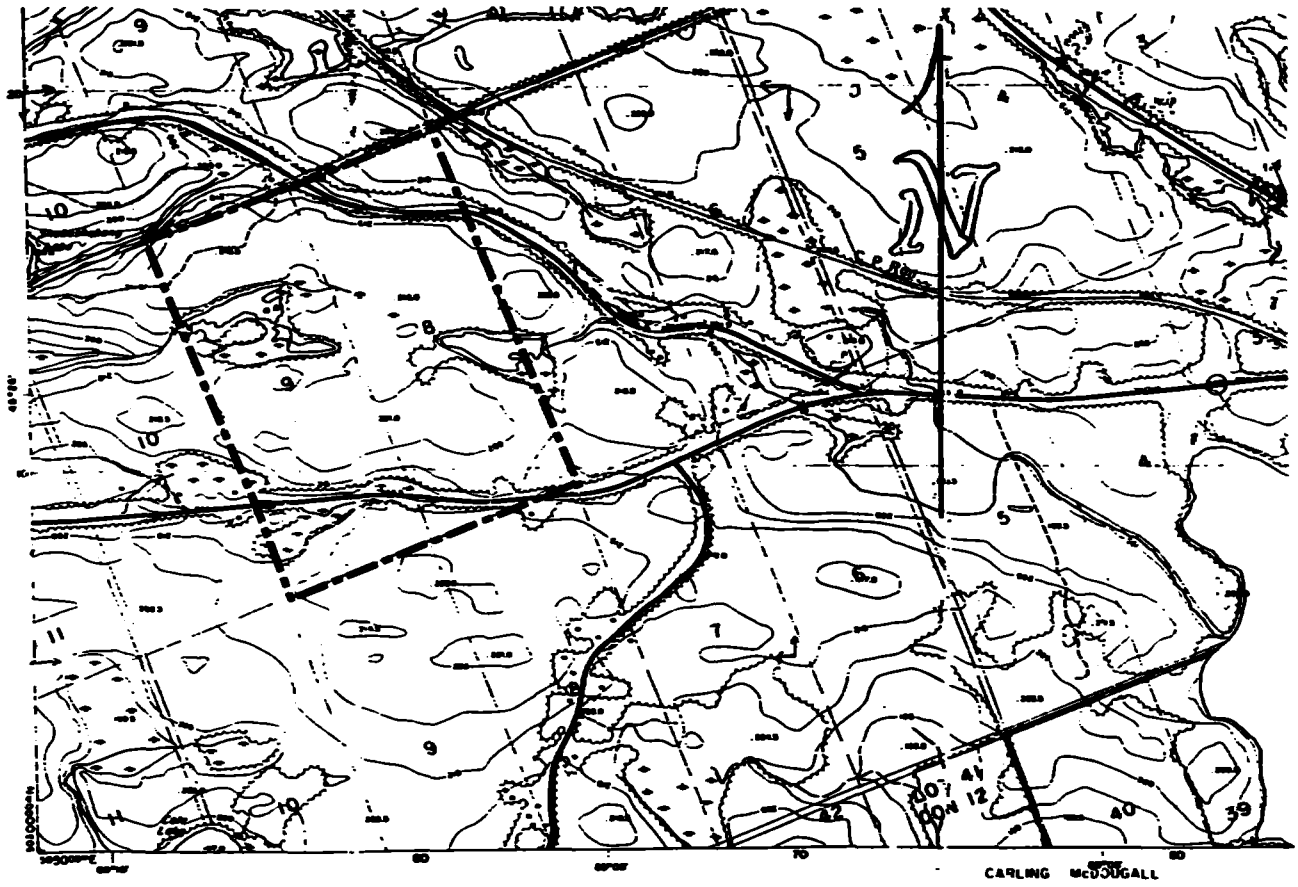
The Shebeshekong Lake property comprises approximately 199 acres and is more particularly described in TABLE 1 (Figure 2).

Assessment will be filed for the current work on the claims, and it is anticipated, as a result, that sufficient credits should be available to keep the entire claim group in good standing for some five years from the date of submission.

TABLE 1: SHEBESHEKONG LAKE PROPERTY

Shebeshekong Lake Property

Claim No	Township	Lot	Conc.	Area	Recording Date
1191215	Carling	8,9	II	199 ac.	July 22, 1993



Scale: 1:20,000
Figure 2: Property Map

DATES WORKED METHODS USED ON CURRENT PROJECT

Preparation work on the project commenced in March, 1993, the field work commenced on August 29, 1993 and the map drafting and report writing was completed on December 30, 1993. Actual work days for assessment purposes break down as follows:

Shebeshekong Lake Property: Claims SO1191215.

Preparation: July 27, Aug. 2,5, 1993 (2½ days)
Field:Aug. 29, Sept. 2, 1993 (2 days)
Drafting: Sept. 29,30, Oct. 1,4-7,22, Dec. 5,6,10, 1993 (4days)
Reporting:Sept. 20-24,27, Nov. 1, Dec. 16-24,26-30, 1993 (2½ days)

Preparation for field work involved production of 1:5,000 blow ups of data from Ontario Base Maps and 1:30,000 air photographs. A grid was overlain on the maps, and stations for recording observations at approximately 100 metre centres were plotted and coded. Due to the high percentage of outcrop, visual control was feasible in almost all cases, but traversing by pace and compass from known sites was sometimes supplemented by the use of a rangefinder. The magnetic declination used in the field work is 10°-15'W.

At each station rock types with variations were noted generally with a visual description of colour and textures. Foliations were described and measured where possible. The main emphasis was in measurement of joints and their separations. In this respect at each station joints were observed within a 50 to 100 foot radius of the station. The attitude of each joint was recorded with the minimum and maximum spacing observed and the average spacing estimated.

Observations were directly recorded on a dictaphone in the field. The verbal record was later transcribed to paper notes. Drafting of the data onto maps was later done from the paper notes.

PREVIOUS GEOLOGICAL WORK

A traverse of the shore of Georgian Bay was made by Alexander Murray in 1848, and he gives a brief account of the geology of the shoreline (Murray 1848, p.45,46). The shoreline of Georgian Bay was again examined by Robert Bell in 1876 (Bell 1876, p.198-207). The Huntsville -Bracebridge area was investigated by W.A. Parks (1900, p.121-126), and brief notes on the geology are given. Further field work was done in the area in 1905 by T.L. Walker (1905, p. 84-86). The International Geological Congress had a field excursion in Parry Sound area in 1913. Some local geological features are described by T.L. Walker (1913, p. 98-100).

The first comprehensive reconnaissance mapping in the area was done by Satterly (1942) who visited all the local known mineral deposits. Satterly (1955) also mapped Lount Twp. in detail showing for the first time the existence of mappable units in the Parry Sound area. Hewitt (1967) was able to accurately identify the complexity of petrographic units and correlate some of these in a reconnaissance mapping program.

Greater interest in resolving the geological complexity of the area was kindled by Lumbers who was progressively mapping Grenville terranes in Ontario from the Grenville Front to the south Lumbers (1975) and by Wynne-Edwards (1972). Wynne-Edwards suggested the first interpretive framework for the Central Gneiss Belt of the Grenville Structural Province. The controversy which arose from Wynne-Edwards "Sea of Gneisses" lead a profusion of other researchers into the area who have conducted specific detailed and reconnaissance mapping and synoptic studies. Since 1972 M. W. Schwerdtner and students have concentrated on resolving many of the structural geology problems of the area contributing a great amount to the understanding of the geology of the Central Gneiss Belt.

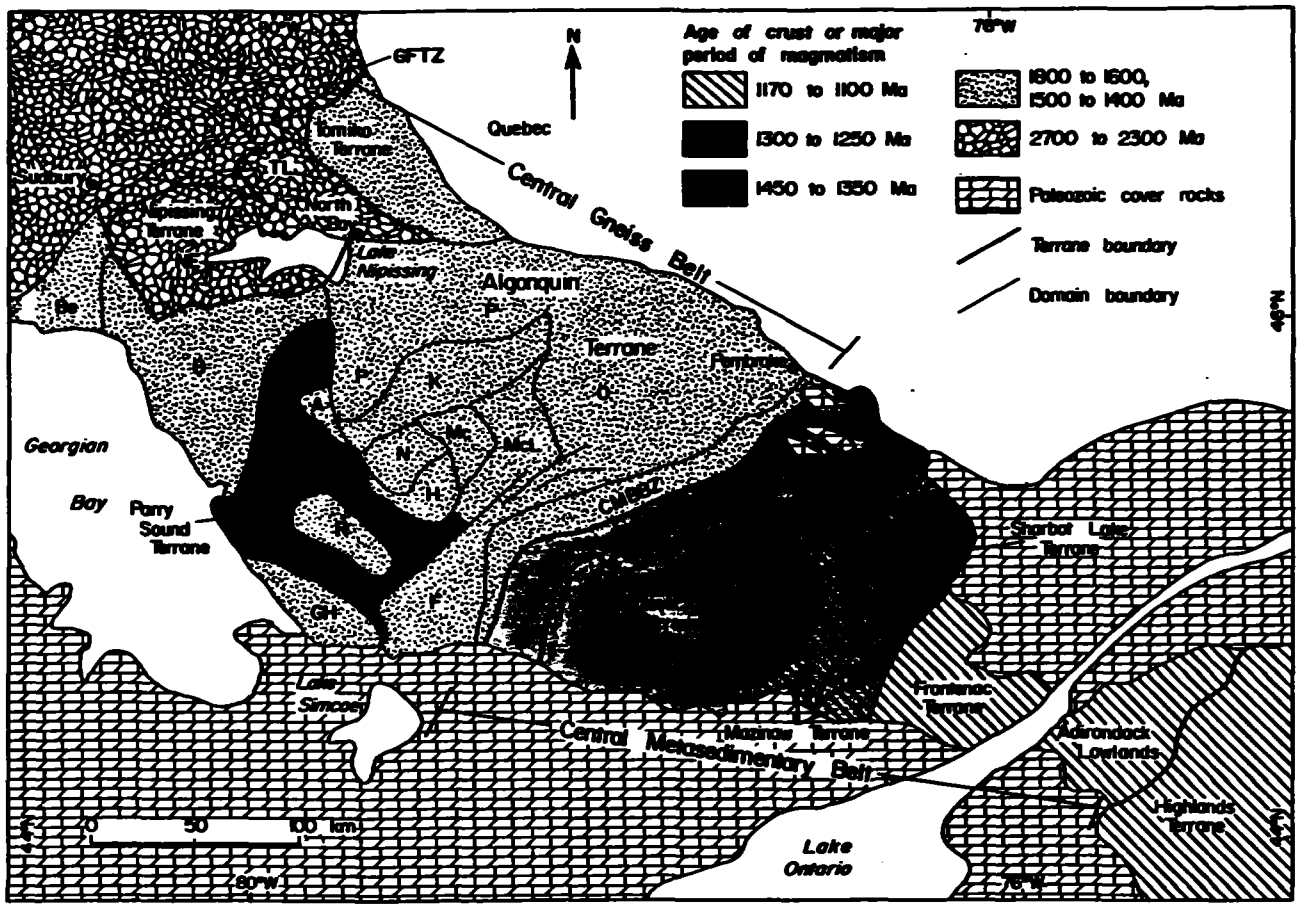
The framework for all current work in the area was provided by Davidson et al. (1982). This has been modified subsequently by Davidson and other workers, and Easton (1992) has synthesized this work eloquently. The tectonic terranes and domains separated by shear zones have become imbedded in the literature.

REGIONAL GEOLOGY

The Muskoka-Parry Sound region is part of the Ontario segment of the Central Gneiss Belt in the Grenville Structural Province (Wynne-Edwards 1972). No detailed geological map of the whole region, which was included in a recent major project on the Ontario Gneiss Segment by the Geological Survey of Canada, has been published to date.

Recent mapping by Davidson et al. (1982) has led to a tectonic model in which the thickening of Proterozoic crust is accomplished by deep-level thrusting and associated reverse ductile

shearing (Davidson 1984a, 1984b). According to this model, major crustal slices (called domains and sub-domains, see Fig.3) have been translated over large distances toward the margin of the Superior Structural Province.



Abbreviations

A	Ahmic Domain	GH	Go Home Domain	NE	Nepewassi Domain
B	Britt Domain	H	Huntsville Domain	O	Opeongo Domain
Be	Beaverstone Domain	K	Kiosk Domain	P	Peawason Domain
CMBBZ	Central Metasedimentary Belt Boundary Zone	Mc	McCraney Domain	PS	Parry Sound Domain
		McL	McClintock Domain	R	Rosseau Domain
F	Fishog Domain	MR	Moon River Domain	S	Seguin Domain
GFTZ	Grenville Front Tectonic Zone	N	Novar Domain	TL	Tilden Lake Domain

Figure 3: Lithotectonic terranes,domains Central Gneiss Belt (Easton, 1992)

This view has been further modified by some more local studies by Hanmer (1988) and Schwerdtner (1987). According to Hanmer the southeast to northwest thrusting was initiated at approximately 1160 Ma and continued for 100 Ma. However he claims that subordinate northeastward thrusting was coeval and that late synmetamorphic extensional shears cut these major thrusts and thrust sheets but are in turn cut by late movement on the thrusts. He further alludes to the comparison to the structural style of the

Central Gneiss Belt and the Himalayas suggesting that the Grenville exposes the architecture and processes presently active in the roots of younger mountain belts. Schwerdtner's observations agree with Hanmer's respecting a northeasterly component to deformation which he invokes to explain north-south buckle folds. However, Schwerdtner observed that not all foliations can be explained by the thrust model and that three sets of folding are superimposed and cross the domain boundaries. He claims that all the structural facts can be explained without large differential translations of crustal slices and most discordances in the regional gneissocity could have been created by décollement and repeated buckling.

Easton (1992) synthesized all previous studies stating that, "Recorded within the Grenville Province is the tectonic evolution of the southeast margin of Laurentia during the Mesoproterozoic. The Grenville Orogeny has overprinted the structural trends and metamorphic effects of the Archean and Paleoproterozoic geological province of Laurentia. It is now generally accepted that this orogenic event or events involved northwest directed thrusting and imbrication of the entire crust, presumably as a result of a terminal collision at about 1100 Ma. with a continental landmass somewhere to the southeast.

The Central Gneiss Belt consists mainly of upper amphibolite and local granulite facies, quartzo-feldspathic gneisses, chiefly of igneous origin with subordinate paragneiss. Distinctive lithotectonic terranes, some further subdivided into domains, have been identified within the Central Gneiss Belt. The terranes and domains are distinguished by differences in rock types, internal structure, metamorphic grade, geological history, and geophysical signature and are bounded by zones of intensely deformed rocks traceable for tens of kilometres."

The Algonquin terrane consists of 1800 to 1600 Ma gneisses intruded by 1500 to 1400 Ma granitic and monzonitic plutons that may represent an extension of the Eastern Granite-Rhyolite Province. Although imbricated by later thrusting the Algonquin terrane is probably parautochthonous. The Britt and Rosseau domains are part of the Algonquin terrane.

The Britt Domain (Figure 4) comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features. Dips of these rocks are generally flat to 10°to the southeast. Some units are entirely composed of isoclinal sheath folds whereas other units are evidently deformed megacrystic granitic plutons.

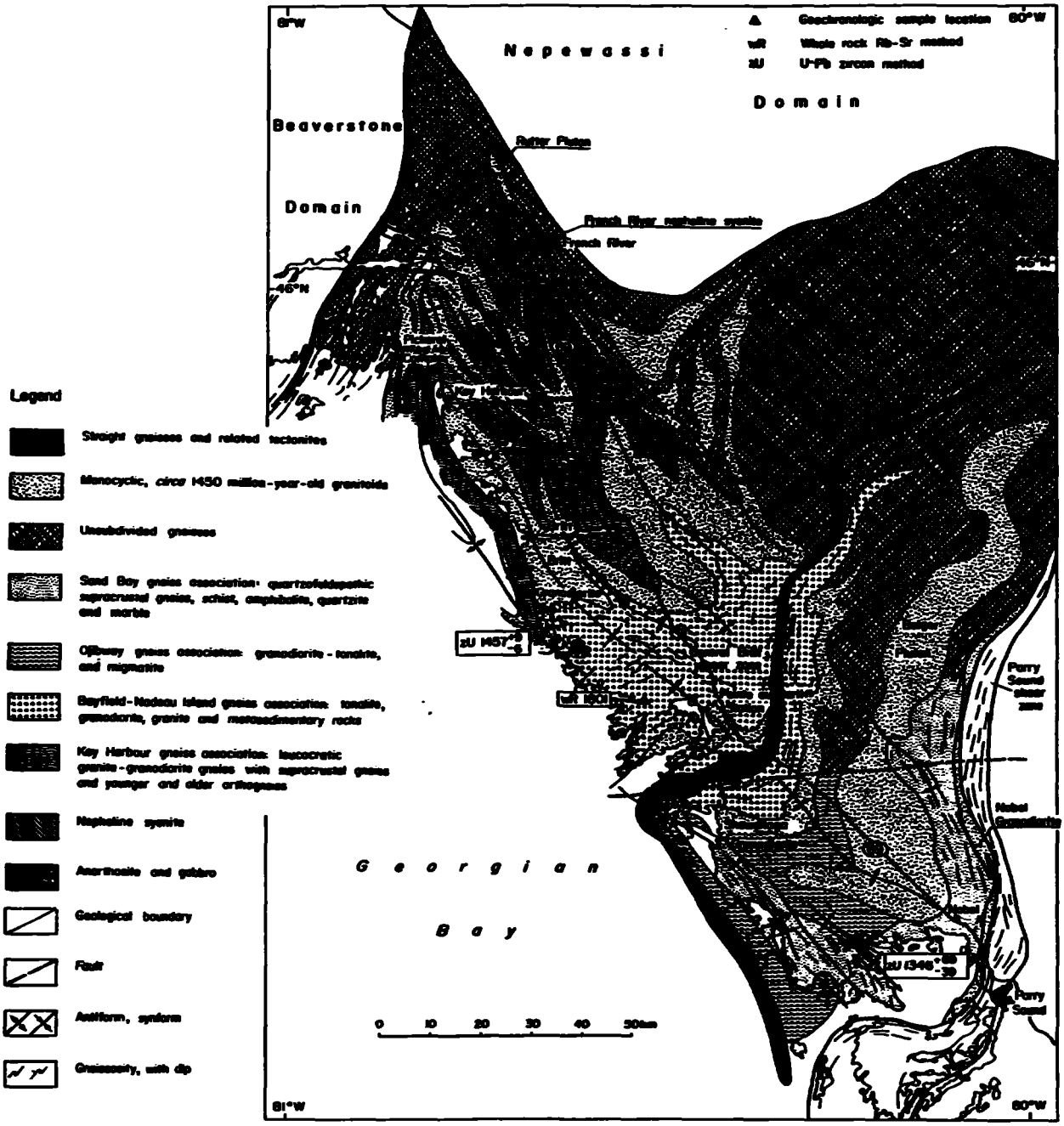


Figure 4: Geology of the Britt Domain (Easton (1992))

The Parry Sound and Moon River domains consist chiefly of juvenile crust 1450 to 1350 Ma in age and are parallochthonous. The Parry Sound domain rocks comprise dense high metamorphic facies rocks (amphibolite and granulite facies) which are emergent on the other domains. The rocks in the Parry Sound domain are dominantly amphibolite and pyroxenite gneisses which strike to the north east and dip 20°-60°to the southeast (at a much steeper angle than the postulated shear couple accompanying thrusting). The bedrock

largely comprises veined, banded and homogeneous pink and grey migmatitic gneisses produced by injection and granitization of metamorphic gneisses of various types. The rocks are mainly of upper amphibolite and granulite metamorphic facies. Hypersthene-bearing charnokitic gneisses are present in the area. The origin of much of the amphibolite gneiss is obscure. Some which is associated with bands of marble is thought to be paragneiss whereas some is proximal to large bodies of gabbro and anorthosite and thought to be orthogneiss. Trusler and Villard (1980) found evidence that some of the mafic and felsic rocks are of volcanic origin. The high metamorphic grade of the rocks is attributed to a deep seated origin possibly involving underplating at an early stage.

The Bolger pluton in the Britt domain is dated at circa 1450 Ma and underlies the Black Lake, Woods Road and Shebeshekong Lake properties (Figure 4). The Dillon Road property is underlain by both the Bolger pluton and the Ojibway gneiss association. The Killbear Point and Jacknife Harbour properties are underlain by the Sand Bay gneiss association. The Grundy Lake property is underlain by an unnamed V-shaped pluton believed to be circa 1450 Ma.

Comparable regional maps do not cover areas about the Turtle Lake property and the Burnt Lake property which are situated in the Rosseau and the Moon River domains respectively.

DESCRIPTION OF ROCK UNITS

Since no comprehensive, detailed geological maps have been produced for the Parry Sound area, none of the previous workers have made an attempt to construct a table of rock units. None of the rock units have been correlated across domain boundaries. Trusler and Villard made an attempt to derive a Table of Rock units for the Parry Sound -Sans Souci area in 1980 and some of that information is used here to produce Table 2. These Formation names are not used in the mapping since these have been inadequately defined for inclusion in the literature. However, the area mapped by Trusler and Villard covers parts of the Britt, Parry Sound and Moon River domains and the lithologic variety is well represented.

The Sans Souci-Killbear Point Group correlates well with the Sand Bay gneiss association of Figure 4 which underlies the Killbear Point and Jacknife Harbour properties. Similar rocks which are younger underlie the Burnt Lake property. The Ojibway gneiss association which underlies part of the Dillon Road property correlates with the tonalite in Table 2. The remaining sites are megacrystic granites or migmatitic derivatives of megacrystic granites classified under quartz monzonite in Table 2.

The rocks on the property have been subdivided into mappable units as follows: biotite-hornblende migmatite and

tonalite.

The biotite-hornblende migmatite is represented by quartzo-feldspathic rock ranging from less than 5% to greater than 40% mafic minerals and averaging less than 20% mafics and containing syntectonic and late tectonic pegmatitic material in varying proportions and thicknesses. The grain size ranges from fine to coarse with the more neosome phases generally being coarser. In any one area and especially in individual layers the mineralogy and textures are uniform. The mafic mineral tends to be biotite dominant. The gneissic fabric is very thinly laminated in some areas but ranges to thickly layered in other areas and is typically variegated pink and various shades of grey. However some areas are underlain by laminated gneisses variegated only in shades of grey. Small scale, parasitic folds with a slight plunge to the southeast occur within shallow south dipping rocks.

The tonalite is a gneissic, medium to coarse grained, thinly to thickly layered rock generally variegated light grey and greyish black and containing 20 to 40% mafic minerals overall with amphibole being the dominant mafic mineral. Usually approximately 10%, but occasionally up to 50% of the rock unit comprises introduced or anatectic, syntectonic quartzo-feldspathic material. All of the tonalite seen on the property occurs in fold nose segments which are presumably tectonically separated from the rest of the intrusion.

TABLE 2: TABLE OF ROCK UNITS FOR THE PARRY SOUND AREA

PHANEROZOIC

CENOZOIC
Quaternary
Recent
swamp, lake, and stream deposits

Pleistocene
bouldery, cobbly and silty sand till, silt, sand, pebble gravel, and cobble gravel
_____Unconformity (possible regolith)_____

PALAEOZOIC

Cambro - Ordovician
Calcareous fracture fillings
_____Unconformity_____

PRECAMBRIAN

Late Precambrian
Late Breccias- thin mylonites; quartz veined dilatant breccias of unknown origin

Late Pegmatite
massive granite pegmatite dikes
_____Intrusive Contact_____
High Rank Regional Metamorphism

Middle to Late Precambrian

Tectonites
Mylonite: very fine grained massive to thinly to thickly laminated rock frequently exhibiting compositional and graded layering and containing rotated porphyroclasts; generally marginal to schistose and gneissic rocks; matrix minerals generally are siliceous and comprise quartz, microperthite, biotite and/or amphibole and/or pyroxene

Tectonic Breccia: brecciated rock comprising lithic clasts within a fine to coarse grained schistose to gneissic cataclastic matrix with quartz, perthitic microcline, biotite and/or amphibole and/or pyroxene
_____Sheared Contact_____

Syenite and Monzonite Suite Intrusive Rocks
pink to grey and green, massive to porphyritic to lineated and gneissic biotite, hornblende-biotite and hornblende syenite and monzonite, charnokite and mangerite.
_____Intrusive Contact_____

Anorthosite Suite Intrusive Rocks

Anorthosite- massive to gneissic labradorite anorthosite, andesine anorthosite with up to 10% pyroxene, and gabbroic anorthosite

_____Intrusive Contact_____

Gabbro- massive to gneissic fine to coarse grained, black pyroxenite, anorthositic gabbro and gabbro

_____Intrusive Contact_____

Tonalite- massive to strongly lineated and gneissic light to dark grey pyroxene tonalite and diorite with minor gabbro

_____Intrusive Contact_____

Quartz Monzonite - Syenite Suite Intrusive Rocks

massive to gneissic medium to coarse grained biotite quartz monzonite, pyroxene quartz monzonite and foliated granite pegmatite, pyroxene syenite and foliated syenite pegmatite; megacrystic granite and derivatives.

_____Intrusive Contact_____

Parry Sound Group Metavolcanic Rocks[1]

Spider Lake Formation[1]: intermediate to felsic rocks, medium to coarse grained generally porphyritic, massive to gneissic rocks containing quartz, feldspar, almandite, amphibole and pyroxene; some fragmental units present.

Parry Sound Formation[1]: mafic, medium to coarse grained, schistose to gneissic, pyroxene-feldspar and amphibole-feldspar bearing massive and fragmental rock

Sans Souci - Killbear Point Group Metasedimentary Rocks[1]

Unsubdivided: thinly laminated to extremely thickly layered; interlayered medium to coarse grained schists and gneisses; lower amphibolite to granulite facies; intercalated with metavolcanics above

Killbear Point Formation[1]: thinly to extremely thickly layered, schistose and gneissic medium to coarse grained biotite, quartz, feldspar rocks

Bateau Island Formation[1]: very thickly layered, medium to coarse grained felsic gneiss with mafic biotite and amphibole rich parting planes; variously interpreted as an arkose or granite; cataclastic textures.

[1] The formation names have not been accepted and criteria for introduction of these names into the literature have not been fulfilled. Identification as to origin is tentative

PROPERTY GEOLOGY

The property principally is underlain by felsic rocks of unusual character of Middle to Late Precambrian age. The main unit on the property is the biotite-hornblende migmatite. Although, the progenitor of this rock is megacrystic granite of the Bolger pluton, the only macroscopic feature evidencing its origin on the property is the relative uniformity of texture and chemical composition. The rocks have been subjected to intense small scale folding, anatexis or syntexis and polyphase tectonism and metamorphism. The final stage of amphibolite facies metamorphism appears to have succeeded any penetrative tectonic influences.

The individual rock units were described under the heading DESCRIPTION OF ROCK UNITS on Page 9 of this report. The biotite-hornblende migmatite is a granular aggregate of equant to elongated grains of quartz, feldspar and biotite, averaging over 10% mafic minerals and containing syntectonic and rarely, late tectonic pegmatitic material exhibiting cataclastic textures. The pegmatites occur in varying proportions and thicknesses. Evidently, this unit has evolved through polyphase metamorphism and tectonism with a final stage of amphibolite facies metamorphism annealing the rocks. The grain size ranges from fine to coarse with the more neosome phases generally being coarser. In any one area and especially in individual layers the mineralogy and textures are uniform. The mafic mineral tends to be biotite dominant. The gneissic fabric is very thinly laminated in some areas but ranges to thinly layered in other areas and is typically variegated pink and various shades of grey, but in rare cases is variegated light grey and greyish black. Some of the pink and grey banded varieties of this rock contain less than 5% biotite and could be quarried. Minor scattered red hematite specks occur throughout this unit.

Outcrop scale, folding with a slight plunge to the southeast and shallow west dipping axial planes is a common feature of these rocks.

The tonalite comprises a gneissic, medium to coarse grained, thinly to thickly layered rock, variegated light grey and greyish black and containing 20 to 40% mafic minerals overall with amphibole being the dominant mafic mineral. The tonalite is not well represented in outcrop as it tends to weather low.

Gneissic foliations were measured at each station where possible. Despite some exceptions, the general pattern displayed is of a relatively structurally uniform sequence. The rocks are strongly gneissic. The gneissic foliation trends east to southeast in general with dips of 0°-30° to the south. The frequent parasitic folds appear to plunge to the southeast at 10°-15°..

The average sub-horizontal joint spacing, based on 19 data, is slightly less than 2 metres for the whole property. The

average vertical joint spacing, based on 116 data, is 3 metres. The statistical plot of vertical joints, based on 138 data, exhibit significant dispersion. The following azimuths are broadly defined: twenty-seven per cent of the data cluster about 90°; thirty per cent of the data cluster about 158°, and; twenty-three per cent of the data cluster about 18°.

POTENTIAL DIMENSION STONE SITES

Two areas on the property are judged to be potentially suitable for quarry development. These sights are the large outcrop areas in the north portion of lot 9, concession 2 north of a small beaver slough, and in the middle of the same lot towards the western boundary. The two areas are underlain by felsic biotite migmatite which is thinly laminated, variegated pink and light to medium grey, frequently contains profuse intrafolial folding, and exhibit excellent joint separations. The southern site (Photo 2) has a relief of 15 metres above the highway and covers an area of at least 250 metres X 350 metres for a resource of 3,400,000 tonnes. The northern site has a relief of 25 metres, and covers an area of at least 200 metres X 350 metres for a resource of 4,700,000 tonnes. Site planning, including detailed geological mapping are warranted.

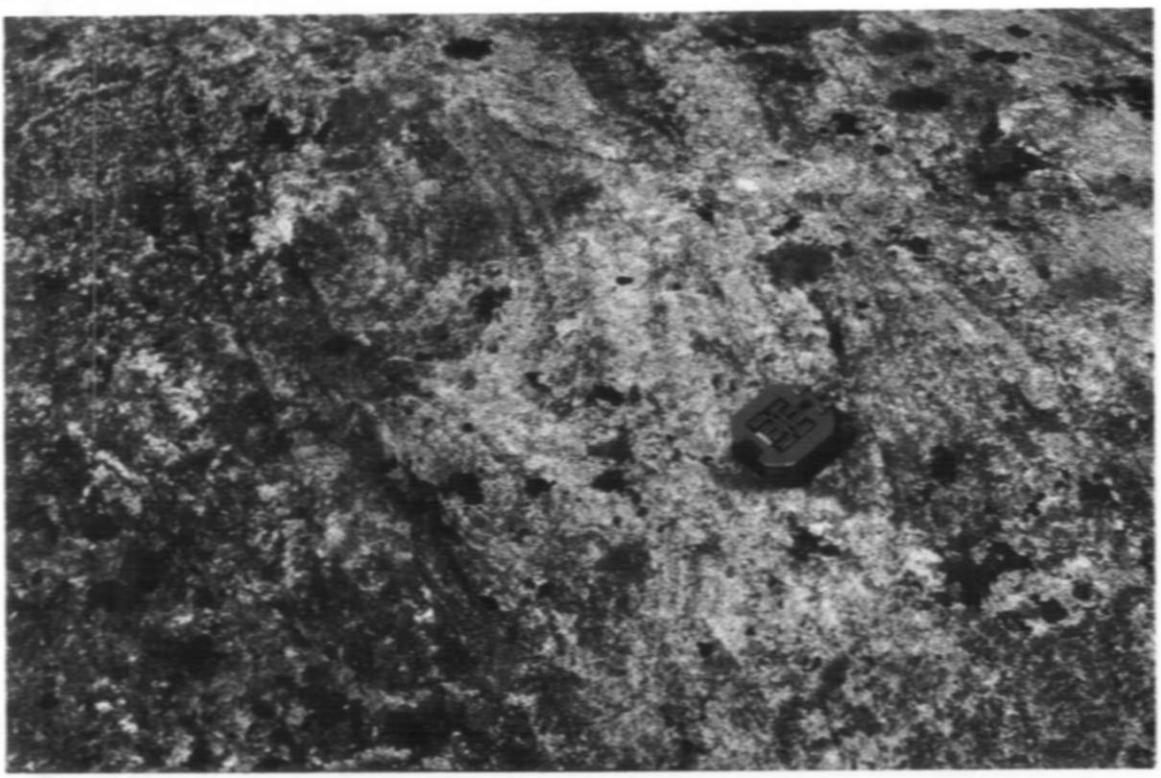


Photo 1: Felsic biotite migmatite with small scale folding; feldspathic alteration of the paleosome constituent has produced a schlieren.

CONCLUSIONS

The Britt domain comprises a complexly deformed and metamorphosed series of rocks. Although some of the rocks are metasedimentary in origin the preponderance of the rocks were originally plutonic, but have been changed by dynamic and thermal metamorphism. The final stages of this metamorphism appear to have annealed the rock into a compact and durable material having some relict textures and many overlapping and lively features.

Nine dimension stone prospects were staked in the Parry Sound area, and all have been mapped geologically. Many of the rocks underlying these properties are migmatitic derivatives of granitic intrusions and present a great variety of textures. In some cases it is evident that the paleosome constituent was megacrystic and subsequent neosome phases have distinct compositions and fabrics. The sites were chosen for their attractiveness and the apparent availability of accessible large blocks.

The property is underlain by the Bolger megacrystic granite pluton which is manifested by uniform biotite-amphibole migmatite and the minor tonalite gneiss. Original textures have been obliterated. Biotite migmatite and felsic biotite migmatite dominate. These rocks trend easterly and dip shallowly to the south. Two very attractive areas of felsic biotite migmatite which might be exploited for dimension stone are situated in the northwest corner and midway along the western boundary of the property. The combined resource just in the elevated area is 8,100,000 tonnes. Site planning and detailed geological mapping are warranted.

The northern site is crossed by a cottage access road, and care will be required to ensure that the cottagers are informed of the activities well in advance of any development. At this stage the municipal council should be informed of the intended activity.

RECOMMENDATIONS

1. Site planning and geological mapping should be conducted on the two sites underlain by felsic biotite migmatite.

2. The municipal council should be informed of the current activities and future possibilities.

REFERENCES

Bell, R. 1876. Report on geological researches north of Lake Huron and east of Lake Superior; in Geological Survey of Canada Report on Progress 1876-77.

Bennett, P.J. 1975. The deformation of the northern half of the Brandy Lake Complex, Port Carling, Ontario. M.Sc. thesis, Department of Geology, University of Toronto, Toronto, Ont.

Bright, E.G. 1987. Precambrian geology of the Whitestone Lake area, District of Parry Sound; Ontario Geological Survey, Map P.3095, Geological Series-Preliminary Map, scale 1:15,840, geology 1986.

Culshaw, N.G., Davidson, A., and Nadeau, L. 1983. Structural subdivisions of the Grenville Province in the Parry Sound-Algonquin region, Ontario; in Current research , pt. B, Geological Survey of Canada, Paper 83-1B,p.243-252.

Culshaw, N.G., Corrigan, D., Drage, J., and Wallace, P. 1988. Georgian Bay geological synthesis: Key Harbour to Dillon, Grenville Province of Ontario; in Current research, Part C, Geological Survey of Canada, Paper 88-1C, p.129-133.

Davidson, A. 1984a. Identification of ductile shear zones in the southwestern Grenville Province of the Canadian Shield. In Precambrian tectonics illustrated. Edited by A. Kröner and R. Greiling. E. Schweizrbart'sche Verlagsbuchhandlung (Nägele u. Obermiller), Stuttgart, Germany, pp. 263-279.

_____ 1984b. Tectonic boundaries within the Grenville Province of the Canadian Shield. Journal of Geodynamics, 1: 433-444.

_____ 1986. New interpretations in the southwestern Grenville Province, edited by J.M. Moore, A. Davidson and A. Baer, Geological Association of Canada, Special Paper 31,p.61-74

Davidson, A. and Morgan, W.C. 1981. Preliminary notes on the geology east of Georgian Bay, Grenville Structural Province, Ontario; in Current research, pt. A, Geological Survey of Canada, Paper 81-1A,p.291-298.

Davidson, A., Culshaw, N. and Nadeau, L. 1982. A tectono-metamorphic framework for part of the Grenville Province, Parry Sound region, Ontario; in Current research, pt.A, Geological Survey of Canada, Paper 82-1A, p.175-190.

Fahrig, W.F. and West, T. 1986. Diabase dyke swarms of the Canadian Shield; Geological Survey of Canada, Map 1627A, scale 1:4,873,900.

Fouts, C.R. and Marmont C. 1989. Gneisses of the Parry Sound-Muskoka Area; Flagstone resources, Ontario Geological Survey, Open File Report 5725

Garland, M. 1987. Graphite in the Central gneiss belt of the Grenville Province of Ontario; Ontario Geological Survey, Open File Report 5649.

Hanmer, S. 1984. Strain-insensitive foliations in polymineralic rocks; Canadian Journal of Earth Sciences, v.21, p.1410-1414.

_____ 1988. Ductile thrusting at the mid-crustal level, southwestern Grenville Province; Canadian Journal of Earth Sciences, v.25, p.1049-1059.

Harrison, J.C. 1977. Geology and structure of the Go Home Bay area, District of Muskoka, Ontario. B.Sc. thesis, Department of Geology, University of Toronto, Toronto, Ont.

Hewitt, D.F. 1967. Geology and mineral deposits of the Parry Sound -Huntsville area; Ontario Geological Survey, Geological Report 52, 65p.

Lacy, W.C. 1960. Geology of the Dunchurch area, Ontario; Geological Society of America Bulletin, Volume 71, p.1713-1718

Lindia, F.M., Thomas, M.D. and Davidson, A. 1983. Geological significance of the Bouger gravity anomalies in the region of the Parry Sound domain, Grenville Province, Ontario; in Current research , ptB, Geological Survey of Canada, Paper 83-1B, p.261-266.

Lumbers, S.B. 1975. Geology of the Burwash area; Ontario Division of Mines, Geological Report 116,160 p., with Map 2271 scale 1:126,720.

Macfie, R.I. 1988. Preliminary investigation of the Parry Sound - Seguin domain boundary; in Summary of field work and other activities 1988, by the Ontario Geological survey, Ontario Geological Survey, Miscellaneous Paper 141, p.315-318.

Macfie, R.I. and Dixon, J. M. 1990. Tectonic relations among Parry Sound domain and Seguin and Rosseau sub-domains Grant 370; in Geoscience Research Grant Program Summary of Research 1989-1990, Ontario Geological Survey, Miscellaneous Paper 150, 1990, p.200-212.

Marmont, C., Zuberec, P.M., and Conrod, W.D. 1988. Industrial minerals, rare-earth elements, and building stone in the Districts of Muskoka, Parry Sound, and Nipissing and the County of Haliburton; in Summary of Field Work and Other Activities 1988, by the Ontario Geological Survey, Ontario Geological Survey, Miscellaneous Paper 141, p.319-325.

Marmont, C. 1992. Industrial minerals and building stone in the Districts of Nipissing, Parry Sound and Sudbury;in Summary of Field Work and Other Activities 1992, Ontario Geological Survey Miscellaneous Paper 160, p.261-265.

1992. Building Stone Opportunities in Central Ontario - 1991 Supplement. Ontario Geological Survey, Open File Report 5825, 20p.

1993. Exploration Guidelines and Opportunities for Dimensional Stone in Central Ontario. Ontario Geological Survey, Open File Report 5853, 83p.

McRoberts, G., Macfie, R.I. and Hammar, D.J. 1988. Geology of the Manitouwabing Lake area, District of Parry Sound; in Summary of Field Work and Other Activities 1988, by the Ontario Geological Survey, Ontario Geological Survey, Miscellaneous Paper 141, p.309-314.

McRoberts, G., and Tremblay, M.L, 1988. Precambrian geology of the Ferrie River area, District of Parry Sound; Ontario Geological Survey, Map P. 3123, Geological Series-Preliminary Map, scale 1:15,840

Murray, A. 1848. On an examination of the shores, islands and rivers of Lake Huron including parts of the east coast of Hudson Bay and the Spanish River; in Geological Survey of Canada Report of Progress 1848-49.

Nadeau, L. 1984. Deformation of leucogabbro at Parry Sound, Ontario. M.Sc. thesis, Carlton University, Ottawa, Ont.

Parks, W.A. 1900. Work in the Muskoka district, Ontario; in Geological Survey of Canada, Summary report for 1900, part A pp.121-126 (pub 1901).

Satterly, J. 1942. Mineral Occurrences in Parry Sound District, Ontario Department of Mines, v.51,Part 2,41p. with Map 1942-2.

Satterly, J. 1955. Geology of Lount Township; Ontario Department of Mines Annual Report, v.64, Part 6, 43p., with Map 1955-4, scale 1:31,680.

Schwerdtner, W. M., and Bauer, G. 1975. Tectonic significance of mylonite zones. Neues Jahrbuch für Mineralogie, Monatshefte, No. 11: 500-509.

Schwerdtner, W.M., and Mawer, C.K. 1982. Geology of the Gravenhurst region , Grenville Structural Province, Ontario. In Current research, part B. Geological Survey of Canada, Paper 82-1B, pp. 195 - 207.

Schwerdtner, W.M., and Waddington, D.H. 1978. Structure and Lithology of Muskoka - southern Georgian Bay region, Central Ontario. In Toronto '78 Field Trips Guidebook. Edited by A.L. Currie and W.O. Mackasey. Geological Association of Canada, pp. 204-212.

Schwerdtner, W.M., Waddington, D.H., and Stollery, G. 1974. Polycrystalline pseudomorphs as natural gauges of incrementa l paleostrain. Neues Jahrbuch für Mineralogie, Monatshefte, No. 3/4: 174-182.

Schwerdtner, W.M., Bennett, P.J., and Janes, T.W. 1977. Application of L-S fabric scheme to structural mapping and paleostrain analysis. Canadian Journal of Earth Sciences, 14: 1021-1032.

Schwerdtner, W.M., Mawer, C.K., and Hubbs, A. F. 1981. Geology of the Gravenhurst region, Grenville Structural Province,Ontario: Preliminary mapping results. In Current research, part B, Geological Survey of Canada, Paper 81-1B, pp. 167-169.

Schwerdtner, W.M. 1987. Interplay between folding and ductile shearing in the Proterozoic crust of the Muskoka-Parry Sound region, central Ontario; Canadian Journal of Earth Sciences, v.24, p.1507-1525.

Tremblay, M.L. 1988. Remote sensing study of curvilinear, structural features in the Parry Sound domain, Grenville Province; in Summary of field work and other activities 1988, Ontario Geological Survey Miscellaneous Paper 141 pp.326-329.

Trusler, J.R. and Villard, D.J. 1980. Geology of the Parry Sound-Sans Souci map area; scale 1:31,680, unpublished manuscript and map done for the Ontario Ministry of Natural Resources.

Trusler, J.R. 1992.Prospecting Programme for Flagstone and Decorative Stone in the Parry Sound District of Ontario. OPAP File No.: OP92-174

1993. Geological Reconnaissance for Flagstone and Dimension Stone in the Parry Sound District of Ontario; Regional survey submitted to Assessment Files, Ontario Geological Survey.

van Berkel, J.T., and Schwerdtner, W.M., W.M. 1986. Structural geology of the Moon River area. Ontario Geological Survey, P2954(with marginal notes).

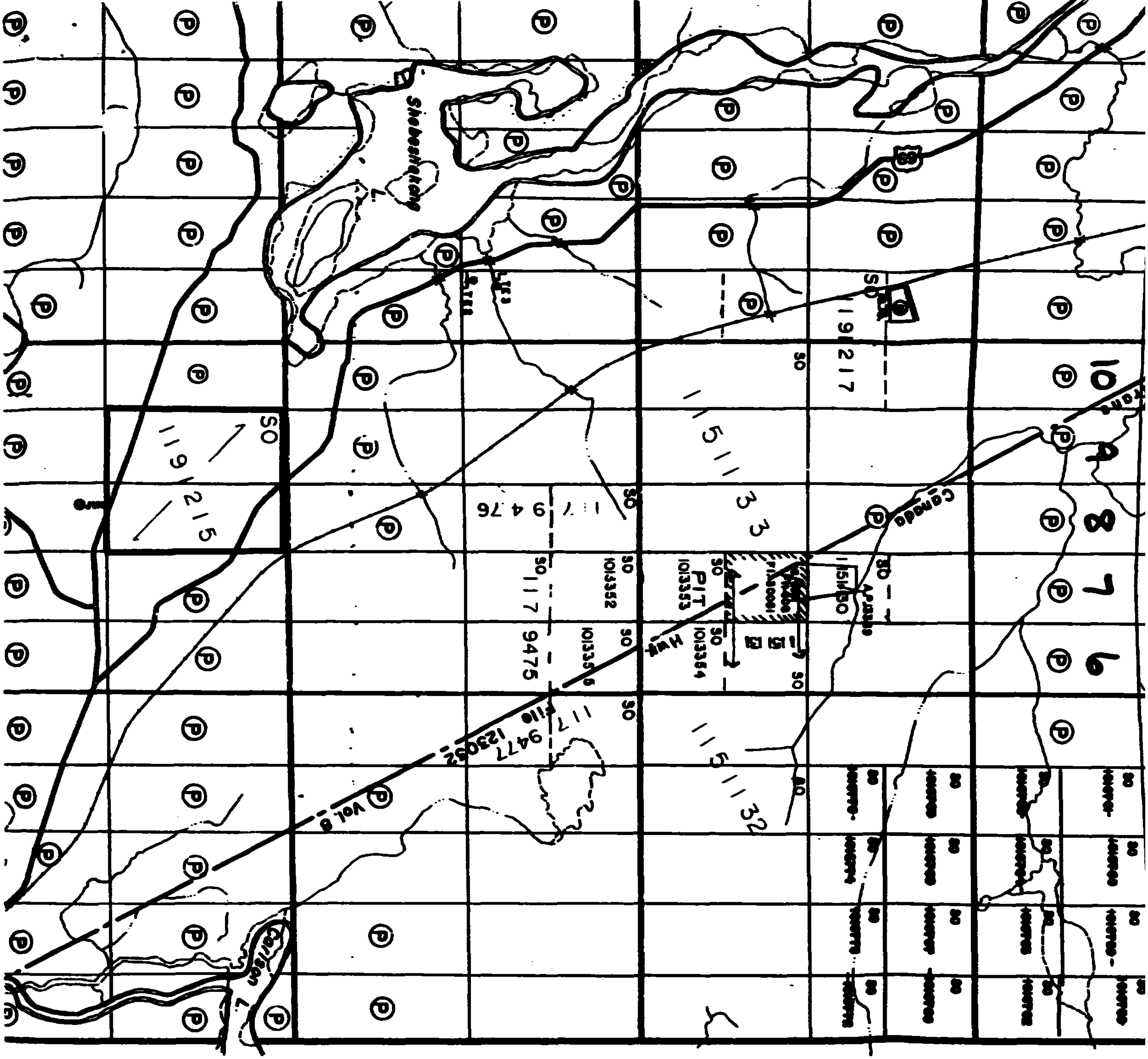
van Breeman, O., Davidson, A., Loveridge, W.D. and Sullivan, R.W. 1986. U-Pb zircon geochronology of the Grenville tectonites, granulites and igneous precursors, Parry Sound, Ontario; in The Grenville Province, edited by J.M. Moore, A. Davidson and A. Baer, Geological Association of Canada, Special Paper 31, p.191-208.

Waddington, D.H. 1973. Foliation and mineral lineation in the Moon River synform, Grenville Structural Province, Ontario. M.Sc. thesis, University of Toronto, Toronto, Ont.

Walker, T.L. 1905. The Muskoka district, Ontario; in Geological Survey of Canada, Summary report for 1905, p.84-86, (published 1906)

_____ 1913. The precambrian of Parry Island and vicinity; in Geological Survey of Canada Guide Book No. 5., p. 98-100.

Wynne-Edwards, H. R. 1972. The Grenville Province; in Variations in tectonic style in Canada, edited by R.A. Price and R.J.W. Douglas, Geological Association of Canada, Special Paper 11, p263-344.



I II III IV V VI VII

Ferguson Twp.

CARLING Twp
M-2297

AUTHOR'S CERTIFICATE

a. This report was prepared by:

James R. Trusler P.Eng.

Principal,
J R Trusler and Associates
143 Temperance St.
Aurora, Ontario L4G 2R5
(416) 727-5084

GEOLOGICAL ENGINEER.

b. Qualifications:

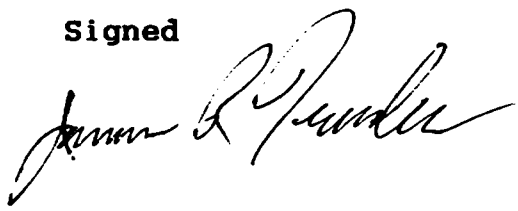
B A Sc - Geological Engineering, University of Toronto, 1967
M S - Geology, Michigan Technological University, 1972
Professional Engineer - Ontario
Fellow - Geological Association of Canada
Member - Canadian Institute of Mining, Metallurgy and Petroleum

c. This report is based on a review of all available relevant data; historical, and geological, on personal involvement as Regional Geologist, Algonquin Region, Ministry of Natural Resources from 1974 to 1980, and on a program of field mapping conducted within the area of this report in 1993. I have personally examined the properties and the surrounding area in the field.

d. I have used my experience gained in geological mapping, the exploration for minerals, visits to most dimension stone quarries in North America, the definition of mineral deposits and the evaluation of properties (over 30 years) in preparation of this report.

e. I hold an undivided 100% interest in the claims mentioned in this report, but do not expect to receive any remuneration for the report or as a result of statements made in this report.

Signed



James R. Trusler M.S., P.Eng.

Dated: December 30, 1993

Ministry of Northern Development and Mines
Ontario

Report of Work Conducted After Recording Claim

Mining Act

Transaction Number: W9490.00009
Res. Geo. Sudbury

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 159 Cedar Street, Sudbury, Ontario, P3E 6A5, telephone (705) 670-7264.

Instructions:
- Please type or print and submit in duplicate.
- Refer to the Mining Act and Regulations for requ... Recorder.
- A separate copy of this form must be completed.
- Technical reports and maps must accompany this form in duplicate.
- A sketch, showing the claims the work is assigned to, must accompany this form.

41H08NE0001 2.15281 CARLING

900

Recorded Holder(s): JAMES R. TRUSLER		Client No.: 203403
Address: 143 TEMPERANCE ST., AURORA, ONT. L4G 2R5		Telephone No.: (905) 727-5084
Mining Division: SOUTHERN ONTARIO	Township/Area: CARLING	M or G Plan No.: M2297
Dates Work Performed: From: JULY 28, 1993	To: SEPT 18, 1993	

Work Performed (Check One Work Group Only)

	Work Group	Type
X	Geotechnical Survey	GEOLOGICAL SURVEY
	Physical Work, Including Drilling	
	Rehabilitation	
	Other Authorized Work	
	Assays	
	Assignment from Reserve	

L1712

RECEIVED
JAN 27 1994
MINING LANDS BRANCH

Total Assessment Work Claimed on the Attached Statement of Costs $ 4,254

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name	Address
JAMES R. TRUSLER	143 TEMPERANCE ST. AURORA, ONT L4G 2R5

(attach a schedule if necessary)

Certification of Beneficial Interest * See Note No. 1 on reverse side

I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.

Date: Jan. 11, 1994

Recorded Holder or Agent (Signature): James R. Trusler

Certification of Work Report

I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying: JAMES R. TRUSLER 143 TEMPERANCE ST. AURORA, ONT L4G 2R5

Telepone No.	Date	Certified By (Signature)
(905) 727-5084	Jan 11, 1994	James R. Trusler

For Office Use Only

Total Value Cr. Recorded	Date Recorded	Mining Recorder	Received Stamp
4,254	Jan 11/94		SOUTHERN ONTARIO MINING DIVISION RECEIVED JAN 11 1994 AM PM 7,8,9,10,11,12,1,2,3,4,5,6
	Deemed Approval Date: April 11/94	Date Approved	
	Date Notice for Amendments Sent		

0241 (03/91)

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units	Value of Assessment Work Done on this Claim	Value Applied to this Claim	Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date
	1191216	4	4,254	4,254 43		11
	1		4,254	4,254 43		11
	Total Number of Claims		Total Value Work Done	Total Value Work Applied	Total Assigned From	Total Reserve

1 (03/91)

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 (✓) one of the following:

1. ☑ Credits are to be cut back starting with the claim listed last, working backwards.
2. ☐ Credits are to be cut back equally over all claims contained in this report of work.
3. ☐ Credits are to be cut back as priorized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

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

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

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.

Signature: Jason R Ploeger

Date: Jan 11, 1994

Ministry of Northern Development and Mines

Ontario

Ministère du Développement du Nord et des mines

Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

Transaction No./N° de transaction: W9490.00009

Dillon Rd

2.15281

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre		
	Field Supervision Supervision sur le terrain		
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type Geological Mapping & Preparation 5 days @ $400/day	2,000.00	
	Drafting 4 days @ $150/day	600.00	
	Report Writing 2.5 days @ $400/day	1,000.00	3,600.00
Supplies Used Fournitures utilisées	Type field consum	7.31	
	maps & photos	327.96	
	film & batteries	40.97	
	stationery & misc.	67.58	443.82
Equipment Rental Location de matériel	Type		
	Total Direct Costs Total des coûts directs		4,043.82

2. Indirect Costs/Coûts indirects

** Note: When claiming Rehabilitation work indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type personal car		
	654 km @ .30	196.20	
	parking	1.80	
			198.00
Food and Lodging Nourriture et hébergement	motel & meals		12.53
Mobilization and Demobilization Mobilisation et démobilisation			
	Sub Total of Indirect Costs Total partiel des coûts indirects		210.61
Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)			210.61
Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) / **Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles)**			4,254.43

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit	Total Assessment Claimed
× 0.50 =	

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation	Évaluation totale demandée
× 0,50 =	

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Recorded Holder (Recorded Holder, Agent, Position in Company) I am authorized

to make this certification

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de _____ (titulaire enregistré, représentant, poste occupé dans la compagnie) je suis autorisé

à faire cette attestation.

Signature	Date
James R Rowles	Jan 11, 1994

0212 (04/91)

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

Ministry of Northern Development and Mines
Ontario

Report of Work Conducted After Recording Claim

Mining Act

Transaction Number: W9490.00010

Rec. Geo. Sudbury

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 159 Cedar Street, Sudbury, Ontario, P3E 6A5, telephone (705) 670-7264.

2.15281

Instructions:
- 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.

Recorded Holder(s): JAMES R. TRUSLER		Client No.: 203703
Address: 143 TEMPERANCE ST. AURORA, ONT L4G 2R5		Telephone No.: (905) 727 5084
Mining Division: SOUTHERN ONTARIO	Township/Area: CARLING	M or G Plan No.: M 2297
Dates Work Performed — From: June 3, 1993	To: Oct. 29, 1993	

Work Performed (Check One Work Group Only)

	Work Group	Type
X	Geotechnical Survey	GEOLOGICAL SURVEY
	Physical Work, Including Drilling	
	Rehabilitation	
	Other Authorized Work	
	Assays	
	Assignment from Reserve	

Total Assessment Work Claimed on the Attached Statement of Costs $ 5,341

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name	Address
JAMES R. TRUSLER	143 TEMPERANCE ST AURORA, ONT L4G 2R5

(attach a schedule if necessary)

Certification of Beneficial Interest * See Note No. 1 on reverse side

	Date	Recorded Holder or Agent (Signature)
I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.	JAN. 11, 1994	James R Trusler

Certification of Work Report

I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying: JAMES R. TRUSLER 143 TEMPERANCE ST AURORA ONT L4G 2R5

Telephone No.	Date	Certified By (Signature)
(905) 727 5084	JAN 11, 1994	James R Trusler

For Office Use Only

Total Value Cr. Recorded	Date Recorded	Mining Recorder
5,341	Jan 11/94	
	Received Approval Date: David 11/94	Date Approved
	Date Notice for Amendments Sent	

SOUTHERN ONTARIO MINING DIVISION
RECORDED
RECEIVED
JAN 11 1994
AM 7,8,9,10,11,12,1,2,3,4,5,6 PM

0241 (03/91)

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units	Value of Assessment Work Done on this Claim	Value Applied to this Claim	Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date
	1191213	1	1541	~~1200~~ 800		~~341~~ 741
	1191214	2	3800	~~3200~~ 2300		~~600~~ 1500
	Total Number of Claims: 2		Total Value Work Done: 5341	Total Value Work Applied: ~~4400~~ 3200	Total Assigned From:	Total Reserve: ~~941~~ 2141

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 (✓) one of the following:

1. ☐ Credits are to be cut back starting with the claim listed last, working backwards.
2. ☑ Credits are to be cut back equally over all claims contained in this report of work.
3. ☐ Credits are to be cut back as priorized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

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

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

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.	Signature	Date
		Jan 11, 1997

Ontario

Ministry of Northern Development and Mines

Mi[illegible].e du D[illegible]ppement du Nord et des mines

Jacknife H

Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

Transaction No./N° de transaction: W9490.00010

2.15281

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre		
	Field Supervision Supervision sur le terrain		
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type Geological Mapping + Prospecting 5½ days @ $400/day	2,200.	
	Drafting 4½ days @ $375/day	$ 675.	
	Report writing 4 days @ $400/day	1600.	4,475.
Supplies Used Fournitures utilisées	Type field consumables	7.31	
	maps + photos	338.27	
	film + batteries	48.97	
	stationery + misc.	61.58	442.13
Equipment Rental Location de matériel	Type		
	Total Direct Costs Total des coûts directs		4,917.13

2. Indirect Costs/Coûts indirects

** **Note:** When claiming Rehabilitation work indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type personal car		
	1134 km @ .30	340.20	
	parking	1.68	
			342.08
Food and Lodging Nourriture et hébergement	Meals		81.69
Mobilization and Demobilization Mobilisation et démobilisation			
	Sub Total of Indirect Costs Total partiel des coûts indirects		423.77
Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)			423.77
Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) / **Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles)**			5,340.90

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit	Total Assessment Claimed
x 0.50 =	

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation	Évaluation totale demandée
x 0,50 =	

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Recorded Holder (Recorded Holder, Agent, Position in Company) I am authorized to make this certification

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de _____ (titulaire enregistré, représentant, poste occupé dans la compagnie) je suis autorisé à faire cette attestation.

Signature	Date
[signature]	April 11, 1991

0212 (04/91)

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

Ministry of Northern Development and Mines
Ontario

Report of Work Conducted After Recording Claim

Mining Act

Transaction Number: W9490.00011

Rec. Geo. Sudbury

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 159 Cedar Street, Sudbury, Ontario, P3E 6A5, telephone (705) 670-7264.

2.15281

Instructions:
- 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.

Recorded Holder(s)		Client No.
JAMES R. TRUSLER		203403
Address		Telephone No.
143 TEMPERANCE ST. AURORA, ONT. L4G 2R5		(905) 727 5084
Mining Division	Township/Area	M or G Plan No.
SOUTHERN ONTARIO	CARLING	M2297
Dates Work Performed From: JULY 27, 1993	To: SEPT 2, 1993	

Work Performed (Check One Work Group Only)

	Work Group	Type
X	Geotechnical Survey	GEOLOGICAL SURVEY
	Physical Work, Including Drilling	
	Rehabilitation	
	Other Authorized Work	
	Assays	
	Assignment from Reserve	

Total Assessment Work Claimed on the Attached Statement of Costs $ 4,082

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name	Address
James R. Trusler	143 Temperance St. Aurora Ont L4G 2R5

(attach a schedule if necessary)

Certification of Beneficial Interest * See Note No. 1 on reverse side

I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.	Date: Jan 11, 1994	Recorded Holder or Agent (Signature): James R. Trusler

Certification of Work Report

I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying		
James R. Trusler 143 Temperance St Aurora Ont L4G 2R5		
Telephone No.	Date	Certified By (Signature)
905 727 5084	Jan 11, 1994	James R. Trusler

For Office Use Only

Total Value Cr. Recorded	Date Recorded	Mining Recorder	Received Stamp
4,082	Jan 11/94		SOUTHERN ONTARIO MINING DIVISION RECEIVED JAN 11 1994 AM 7,8,9,10,11,12,1,2,3,4,5,6 PM
	Deemed Approval Date: April 11/94	Date Approved	
	Date Notice for Amendments Sent		

0241 (03/91)

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units	Value of Assessment Work Done on this Claim	Value Applied to this Claim	Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date
	1191215	4	4,082	4,082		
	Total Number of Claims: 1		Total Value Work Done: 4,082	Total Value Work Applied: 4,082	Total Assigned From:	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 (✓) one of the following:

1. ☑ Credits are to be cut back starting with the claim listed last, working backwards.
2. ☐ Credits are to be cut back equally over all claims contained in this report of work.
3. ☐ Credits are to be cut back as priorized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

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

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

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.	Signature	Date Jan 11, 1994

Ministry of Northern Development and Mines

Ontario

Ministère du Développement du Nord et des mines

Shebeshekong

Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

Transaction No./N° de transaction: W9490.00011

2.15281

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre		
	Field Supervision Supervision sur le terrain		
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type Geological Mapping & Preparation 4½ days @ $150/day	$ 1,800.00	
	Drafting 4 days @ $150/day	$ 600.00	
	Report writing 2½ days @ $400/day	1,000.00	3,400.00
Supplies Used Fournitures utilisées	Type Field consumables	7.31	
	maps & photos	327.96	
	film & batteries	40.97	
	stationery & misc	61.58	437.82
Equipment Rental Location de matériel	Type		
	Total Direct Costs Total des coûts directs		3,837.82

2. Indirect Costs/Coûts indirects

** **Note:** When claiming Rehabilitation work indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type personal car		
	634 km @ 0.3¢	190.20	
	parking	1.88	
			192.08
Food and Lodging Nourriture et hébergement	Meal for men		52.56
Mobilization and Demobilization Mobilisation et démobilisation			
	Sub Total of Indirect Costs Total partiel des coûts indirects		244.64
	Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)		244.64
	Total Value of Assessment Credit (Total of Direct and Allowable indirect costs) / Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles)		4,082.46

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit	Total Assessment Claimed
× 0.50 =	

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation	Évaluation totale demandée
× 0,50 =	

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Recorded Holder (Recorded Holder, Agent, Position in Company) I am authorized

to make this certification

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de _____ (titulaire enregistré, représentant, poste occupé dans la compagnie) je suis autorisé

à faire cette attestation.

Signature	Date
James L Saunders	Jan 11, 1994

0212 (04/91)

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

Ministry of Northern Development and Mines

Ontario

Report of Work Conducted After Recording Claim

Mining Act

Transaction Number: W9490.00012

Rec. Gte. Sudbury

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 159 Cedar Street, Sudbury, Ontario, P3E 6A5, telephone (705) 670-7264.

2.15281

Instructions:
- 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.

Recorded Holder(s)		Client No.
JAMES R. TRUSLER		203403
Address		**Telephone No.**
143 TEMPERANCE ST AURORA ONT L4G 2R5		905 727-5084
Mining Division	**Township/Area**	**M or G Plan No.**
SOUTHERN ONTARIO	CARLING	M 2297
Dates Work Performed	From: May 11, 1993	To: Aug 28, 1993

Work Performed (Check One Work Group Only)

	Work Group	Type
X	Geotechnical Survey	GEOLOGICAL SURVEY
	Physical Work, Including Drilling	
	Rehabilitation	
	Other Authorized Work	
	Assays	
	Assignment from Reserve	

Total Assessment Work Claimed on the Attached Statement of Costs $ 12,992

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name	Address
JAMES R TRUSLER	143 Temperance St Aurora Ont L4G 2R5

(attach a schedule if necessary)

Certification of Beneficial Interest * See Note No. 1 on reverse side

	Date	Recorded Holder or Agent (Signature)
I certify that at the time the work was performed, the claims covered in this work report were recorded in the current holder's name or held under a beneficial interest by the current recorded holder.	Jan 11, 1994	James R Trusler

Certification of Work Report

I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying		
James R. Trusler 143 Temperance St Aurora Ont L4G 2R5		
Telephone No.	**Date**	**Certified By (Signature)**
905 727 5084	Jan 11, 1994	James R Trusler

For Office Use Only

Total Value Cr. Recorded	Date Recorded	Mining Recorder	SOUTHERN ONTARIO MINING DIVISION
12,992	Jan 11/94		RECEIVED
	Deemed Approval Date: April 11/94	Date Approved	JAN 11 1994
	Date Notice for Amendments Sent		AM PM 7,8,9,10,11,12,1,2,3,4,5,6

0241 (03/91)

6779

Work Report Number for Applying Reserve	Claim Number (see Note 2)	Number of Claim Units	Value of Assessment Work Done on this Claim	Value Applied to this Claim	Value Assigned from this Claim	Reserve: Work to be Claimed at a Future Date
	115 11 30	1	800	400		400
	115 11 31	2	1600	800		800
	115 11 32	4	3989 ARM	1600		2389 ARM
	115 11 33	6	5023 ARM	2623		2400
	119 12 17	2	1600	800		800
	5		12,992	6,823 ARM		6,789 ARM
	Total Number of Claims		Total Value Work Done	Total Value Work Applied	Total Assigned From	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 prioritize the deletion of credits. Please mark (✓) one of the following:

1. ☑ Credits are to be cut back starting with the claim listed last, working backwards.
2. ☐ Credits are to be cut back equally over all claims contained in this report of work.
3. ☐ Credits are to be cut back as priorized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

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

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

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.

Signature

Date Jan 11, 1994

Ministry of Northern Development and Mines

Ontario

Ministère du Développement du Nord et des Mines

Woods Rd

Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Mining Act/Loi sur les mines

Transaction No./N° de transaction: W9490.00012

£.15281

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Minings Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adresser toute question sur la collecte de ces renseignements au chef provincial des terrains miniers, ministère du Développement du Nord et des Mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

Type	Description	Amount Montant	Totals Total global
Wages Salaires	Labour Main-d'oeuvre		
	Field Supervision Supervision sur le terrain		
Contractor's and Consultant's Fees Droits de l'entrepreneur et de l'expert-conseil	Type Geological Mapping & Prospection 1E days @ $200/day	7,200.00	
	Drafting 12 days @ $150/day	1,800.00	
	Report writing 6 days @ $400/day	2,400.00	11,400.00
Supplies Used Fournitures utilisées	Type field consumables	7.31	
	maps & photos	337.58	
	film & batteries	34.99	
	stationery & misc	62.33	504.21
Equipment Rental Location de matériel	Type		
	Total Direct Costs Total des coûts directs		11,904.21

2. Indirect Costs/Coûts indirects

** **Note:** When claiming Rehabilitation work indirect costs are not allowable as assessment work.
Pour le remboursement des travaux de réhabilitation, les coûts indirects ne sont pas admissibles en tant que travaux d'évaluation.

Type	Description	Amount Montant	Totals Total global
Transportation Transport	Type personal car		
	2282km @ $0.30	684.60	
	parking	1.88	
			686.48
Food and Lodging Nourriture et hébergement	camping food	141.25	
	Motel 9 meals	260.09	401.18
Mobilization and Demobilization Mobilisation et démobilisation			
	Sub Total of Indirect Costs Total partiel des coûts indirects		1087.66
	Amount Allowable (not greater than 20% of Direct Costs) Montant admissible (n'excédant pas 20 % des coûts directs)		1087.66
	Total Value of Assessment Credit (Total of Direct and Allowable Indirect costs) / Valeur totale du crédit d'évaluation (Total des coûts directs et indirects admissibles)		12,991.87

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Note : Le titulaire enregistré sera tenu de vérifier les dépenses demandées dans le présent état des coûts dans les 30 jours suivant une demande à cet effet. Si la vérification n'est pas effectuée, le ministre peut rejeter tout ou une partie des travaux d'évaluation présentés.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.
2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

Total Value of Assessment Credit	Total Assessment Claimed
× 0.50 =	

Remises pour dépôt

1. Les travaux déposés dans les deux ans suivant leur achèvement sont remboursés à 100 % de la valeur totale susmentionnée du crédit d'évaluation.
2. Les travaux déposés trois, quatre ou cinq ans après leur achèvement sont remboursés à 50 % de la valeur totale du crédit d'évaluation susmentionné. Voir les calculs ci-dessous.

Valeur totale du crédit d'évaluation	Évaluation totale demandée
× 0,50 =	

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.

that as Recorded Holder I am authorized
(Recorded Holder, Agent, Position in Company)

to make this certification

Attestation de l'état des coûts

J'atteste par la présente :
que les montants indiqués sont le plus exact possible et que ces dépenses ont été engagées pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu'à titre de _____ je suis autorisé
(titulaire enregistré, représentant, poste occupé dans la compagnie)

à faire cette attestation.

Signature	Date
	Jan 11, 1994

0212 (04/91)

Nota : Dans cette formule, lorsqu'il désigne des personnes, le masculin est utilisé au sens neutre.

Ontario

Ministry of Northern Development and Mines

Ministère du Développement du Nord et des Mines

Geoscience Approvals Office
933 Ramsey Lake Rd., 6th Flr
Sudbury, Ontario
P3E 6B5

Telephone: (705) 670-5853
Fax: (705) 670-5863

Our File: 2.15281
Transaction #: W9490.00009
W9490.00010
W9490.00011
W9490.00012

June 20, 1994

Mining Recorder
Ministry of Northern Development
and Mines
Sudbury

Dear Mr. Denomme:

RE: Approval of Notice of Reduction issued for assessment work reported on mining claims 1191216 et al. in Carling Township.

The assessment work credits as outlined in the Notice of Reduction dated April 11, 1994 have been approved as of May 26, 1994. Please see the attached assessment work credit forms.

If you require additional information please contact Dale Messenger at 670-5858.

Yours sincerely,

Ron C. Gashinski
Senior Manager, Mining Lands Section
Mining and Land Management Branch
Mines and Minerals Division

DEM/vni

cc Assessment Files Office
Sudbury

cc Res Geo
Sudbury

ASSESSMENT WORK CREDIT FORM

FILE NUMBER: 2.15281
DATE: May 26, 1994
TRANSACTION NUMBER: W9490.00009

RECORDED HOLDER: James Trusler
TOWNSHIP: Carling
CLIENT NUMBER: 203403

Level of Assessment Credit to be approved $3,444.43

CLAIM NUMBER	VALUE OF ASSESSMENT WORK DONE ON THIS CLAIM	VALUE APPLIED TO THIS CLAIM	RESERVE
1191216	$3444.43	$3444.43	

ASSESSMENT WORK CREDIT FORM

FILE NUMBER: 2.15281
DATE: May 26, 1994
TRANSACTION NUMBER: W9490.00010

RECORDED HOLDER: James R. Trusler
TOWNSHIP: Carling
CLIENT NUMBER: 203403

Level of assessment credit to be approved 4445.90

CLAIM NUMBER	VALUE OF ASSESSMENT WORK DONE ON THIS CLAIM	VALUE APPLIED TO THIS CLAIM	RESERVE
1191213	$1093.00	$ 800.00	$293.00
1191214	3353.00	2400.00	953.00

ASSESSMENT WORK CREDIT FORM

FILE NUMBER: 2.15281
DATE: May 26, 1994
TRANSACTION NUMBER: W9490.00011

RECORDED HOLDER: James Trusler
TOWNSHIP: Carling
CLIENT NUMBER: 203403

Level of Assessment Credit to be approved $3332.00

CLAIM NUMBER	VALUE OF ASSESSMENT WORK DONE ON THIS CLAIM	VALUE APPLIED TO THIS CLAIM	RESERVE
1191215	$3332.00	$3332.00	

ASSESSMENT WORK CREDIT FORM

FILE NUMBER: 2.15281
DATE: MAY 29, 1994
TRANSACTION NUMBER: W9490.00012

RECORDED HOLDER: JAMES TRUSLER
TOWNSHIP: Carling
CLIENT NUMBER: 203403

Level of assessment credit to be approved $11,087.00.

CLAIM NUMBER	VALUE OF ASSESSMENT WORK DONE ON THIS CLAIM	VALUE APPLIED TO THIS CLAIM	RESERVE
1151130	$ 419.00	$ 400.00	$ 19.00
1151131	1219.00	800.00	419.00
1151132	3588.00	1600.00	1988.00
1151133	4642.00	2623.00	2019.00
1191217	1219.00	800.00	419.00

2.15281

THE TOWNSHIP OF CARLING

DISTRICT OF PARRY SOUND

SOUTHERN ONTARIO MINING DIVISION

SCALE: 1-INCH = 40 CHAINS

LEGEND

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

NOTES

400' Reserve to the Dept of Lands & Forests shown thus

For status of summer resort locations shown thus — & islands in Georgian Bay Please contact Dept of Lands & Forests

This Map Is Not To Be Used
–FOR SURVEY PURPOSES–

Land under Georgian Bay withdrawn from staking by Order in Council dated April 30, 1912

Area indicated thus withdrawn from staking and reserved for proposed Provincial Park — no permit for gravel to be issued in this area.

Withdrawn from Staking under Section 43 of the Mining Act (R.S.O. 1970).

	File	Date	Disposition
(W)	27126	19-Aug-70	SR&MR
(S)	W 64/83 188633	15/9/83	SR&MR
(P)		21/3/86	S R O

SAND AND GRAVEL

(Q) Quarry Permit

RES. GEO. SUDBURY
M.N.R. DIST. PARRY SOUND

DATE OF ISSUE
JAN 1 1990
SOUTHERN ONTARIO MINING DIVISION

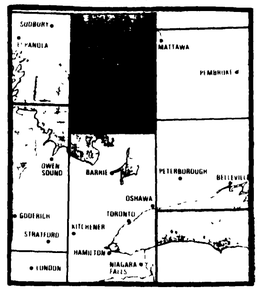
THE INFORMATION THAT APPEARS ON THIS MAP HAS BEEN COMPILED FROM VARIOUS SOURCES, AND ACCURACY IS NOT GUARANTEED. THOSE WISHING TO STAKE MINING CLAIMS SHOULD CONSULT WITH THE MINING RECORDER, MINISTRY OF NORTHERN DEVELOPMENT AND MINES, FOR ADDITIONAL INFORMATION ON THE STATUS OF THE LANDS SHOWN HEREON

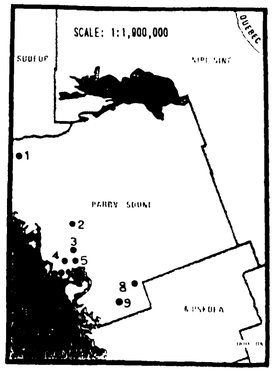
PLAN NO. M-2297

ONTARIO
MINISTRY OF NATURAL RESOURCES
SURVEYS AND MAPPING BRANCH

41H09NE0001 2.15281 CARLING
200

INDEX MAP

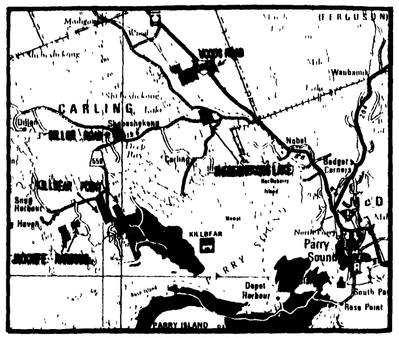




PROJECT AREA

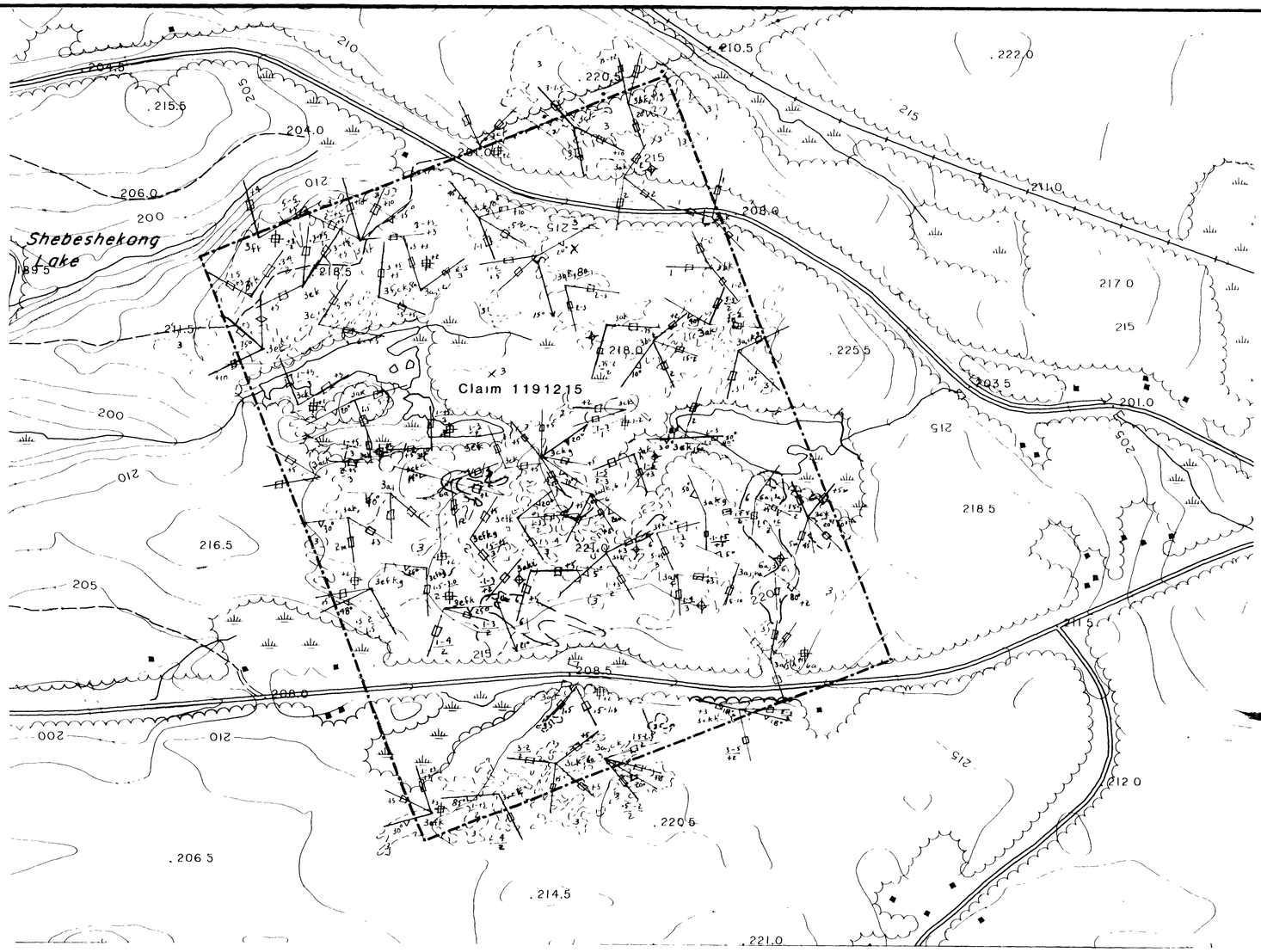
PROPERTIES

1 GRUNDY LAKE
2 BLACK LAKE
3 WOODS ROAD
4 DILLON ROAD
5 SHEBESHEKONG LAKE
6 JACKKNIFE HARBOUR
7 KILLBEAR POINT
8 TURTLE LAKE
9 BURNT LAKE



LOCATION MAP

SCALE: 1:250,000

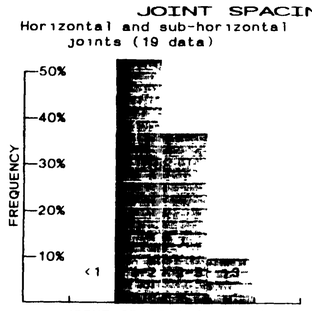


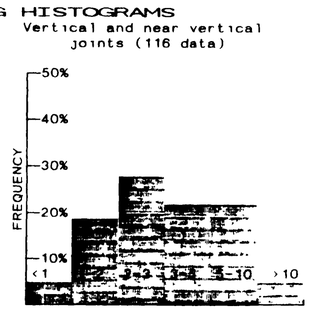
SCALE 1:5,000

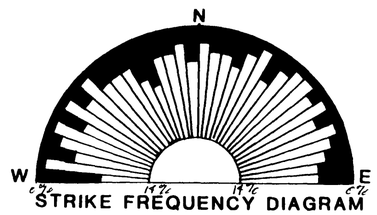
feet

metres

JOINT SPACING HISTOGRAMS







N

SYMBOL LIST

- Gneissic foliation: with dip, vertical ; horizontal
- Joints: horizontal, vertical with average spacing, with dip, minimum and maximum spacing and average separation
- Schistocity or foliation
- Lineation: with plunge
- Property boundary
- Highway, road
- Secondary road
- Abandoned road or trail
- Road allowance
- Railroad
- Concession line
- Lot line
- Electric power line
- Topographic contour (5 metre interval ASL)
- Swamp
- Clearing
- Outcrop
- Quarry
- Buildings
- Geological contact inferred

REGISTERED PROFESSIONAL ENGINEER J. R. TRUSLER PROVINCE OF ONTARIO

LEGEND

1 FELSIC GNEISS[1] – layered to massive rock mainly composed of quartz, plagioclase and microcline with minor matrix biotite and variable accessory magnetite, hematite and almandine
- a) coarse grained equigranular rock, very weakly layered
- b) unit 1a with coarse reddish-mauve speckles of hematite,
- c) strongly layered fine to coarse grained cataclastic rock
- d) unit 1a containing very large breccia fragments of pegmatite which show no internal strain,
- e) fine to medium grained massive pink to rose coloured rock with thin biotite rich partings
- f) unit 1e more thinly layered and containing mauve hematite-bearing laminae

2 AMPHIBOLITE GNEISS – layered to massive fine to coarse grained greenish black to black rock generally comprising 40 to 70% amphiboles with plagioclase in its unaltered state
- a) fine to coarse grained thinly to thickly layered uniform gneiss occasionally with some biotite rich partings,
- b) lit par lit migmatite comprising unit 2a the paleosome constituent and parallel bands of late tectonic pegmatite
- c) migmatite breccia comprising clasts of late tectonic pegmatite within unit 2a

3 BIOTITE HORNBLENDE MIGMATITE – a fine to coarse grained, highly variable rock of multicomponent origin generally lit par lit layered and frequently comprising similar intrafolial folds, the paleosome constituent comprises biotite, hornblende feldspar and quartz and frequently has a relict foliated or thinly laminated texture the neosome constituent is generally coarser and comprises a syntectonic cataclastic originally pegmatitic aggregate of quartz, feldspar and minor hornblende and/or biotite
- a) variegated pale and dark grey with mafic content >20%
- b) variegated pale and medium grey with mafic content >10% <20%,
- c) variegated pink and medium grey with mafic content >10% <20%,
- d) variegated pale and light grey with biotite content <10%,
- e) variegated pink and light grey with biotite content <10%,
- f) intense pink schlieren with biotite content <5%
- g) minor purple hematite spotting,
- h) late tectonic pegmatite ≥10%,
- i) late tectonic pegmatite ≤10%,
- j) hornblende dominant mafic mineral,
- k) biotite dominant mafic mineral

4 PURPLE AND PINK MIGMATITE – variegated rock with laminations of medium to coarse grained unit 1a or 3f and a fine to medium grained reddish mauve layer comprising quartz, feldspar biotite, almandine and hematite often a milky to buff late tectonic granulated quartz feldspathic pegmatitic material forms conformable layers which generally exhibit pinch and swell structures
- a) thinly laminated or layered pink and mauve or pink, mauve and buff rock,
- b) 4a with brecciated mauve fragments in pink or buff layers or cenulations of mauve layers in the pink or buff layers;
- c) 4a or 4b with >5% biotite or hornblende-rich mafic layers

5 GABBRO – coarse grained mafic to ultramafic rock,
- a) Coronitic metagabbro having relict outlines of original pyroxene phenocrysts or orthocrysts and a massive to slightly foliated texture,
- b) amphibolite gneiss foliated and generally layered rock with ≥40% amphiboles

6 TONALITE – coarse grained intermediate rock with ≥20% ≤50% mafic minerals generally with some relict plagioclase phenocrysts and a strained to uniform gneissic fabric
- a) variegated medium to dark grey and pale grey, regularly layered rock generally medium to coarse grained usually having patches of relict phenocrysts,
- b) porphyritic rock with elongated pink feldspar phenocrysts within a foliated to gneissic medium to coarse grained matrix of amphibole, feldspar and quartz

7 MEGACRYSTIC GRANITE – Porphyritic rock with relict, strained, orthoclase phenocrysts within a medium to coarse grained matrix of quartz, plagioclase orthoclase and biotite and/or hornblende
- a) pink phenocrysts with prestrained diameters of ≥ 2cm
- b) pink phenocrysts with prestrained diameters of ≥ 5cm,
- c) ≥ 5% ≤ 20% pink, fine to medium grained, syntectonic pegmatite,
- d) folding, stretching, rolling and rodding of preexisting phenocrysts and pegmatite stringers

8 GRANITE PEGMATITE – fine to coarse grained quartz, microcline, plagioclase and biotite-bearing rock varying in texture in response to its tectonic history
- a) very coarsely crystalline, unstrained post-tectonic rock,
- b) very coarse crystalline tectonic breccia,
- c) medium to coarse grained cataclastic rock with occasional large clasts, identical to unit 1d in appearance

[1] No origin is inferred by this name
[2] No relative ages are inferred by this order of the legend

2.15281

JR TRUSLER & ASSOCIATES
MINERAL CONSULTANTS

SHEBESHEKONG LAKE PROPERTY

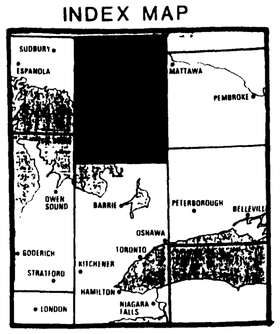
GEOLOGICAL MAP

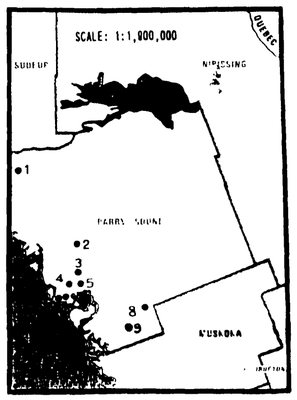
DATE OCT 18 1991 | SCALE 1:5,000 | DRAWN BY JR TRUSLER

41HON9600 2.15281 CARLING

210

INDEX MAP





PROJECT AREA

PROPERTIES

1 GRUNDY LAKE
2 BLACK LAKE
3 WOODS ROAD
4 DILLON ROAD
5 SHEBESHEKONG LAKE
6 JACKNIFE HARBOUR
7 KILLBEAR POINT
8 TURTLE LAKE
9 BURNT LAKE

Horizontal and sub-horizontal joints (20 data)

Vertical and near vertical joints (91 data)

LEGEND

1 **FELSIC GNEISS[1]** – layered to massive rock mainly composed of quartz, plagioclase and microcline with minor matrix biotite and variable accessory magnetite, hematite and a mandine
a) coarse grained equigranular rock, very weakly layered
b) unit **1a** with coarse reddish-mauve speckles of hematite,
c) strongly layered fine to coarse grained cataclastic rock,
d) unit **1a** containing very large breccia fragments of pegmatite which show no internal strain;
e) fine to medium grained massive pink to rose coloured rock with thin biotite-rich partings;
f) unit **1e** more thinly layered and containing mauve hematite-bearing laminae

2 **AMPHIBOLITE GNEISS** – layered to massive, fine to coarse grained, greyish black to black rock generally comprising 40 to 70% amphiboles with plagioclase in its unaltered state
a) fine to coarse grained, thinly to thickly layered uniform gneiss occasionally with some biotite rich partings,
b) lit par lit migmatite comprising unit **2a** the paleosome constituent and parallel bands of late tectonic pegmatite,
c) migmatite breccia comprising clasts of late tectonic pegmatite within unit **2a**

3 **BIOTITE HORNBLENDE MIGMATITE** – a fine to coarse grained, highly variable rock of multicomponent origin generally lit par lit layered and frequently comprising similar intrafolial folds, the paleosome constituent comprises biotite, hornblende, feldspar and quartz and frequently has a relict foliated or thinly laminated texture, the neosome constituent is generally coarser and comprises a syntectonic, cataclastic, originally pegmatitic aggregate of quartz, feldspar and minor hornblende and/or biotite
a) variegated pale and dark grey with mafic content ≥20%
b) variegated pale and medium grey with mafic content ≥10% ≤20%,
c) variegated pink and medium grey with mafic content ≥10% <20%
d) variegated pale and light grey with biotite content <10%,
e) variegated pink and light grey with biotite content ≤10%,
f) intense pink schlieren with biotite content ≤5%;
g) minor purple hematite spotting;
h) late tectonic pegmatite ≥10%,
i) late tectonic pegmatite ≤10%,
j) hornblende dominant mafic mineral;
k) biotite dominant mafic mineral

4 **PURPLE AND PINK MIGMATITE** – variegated rock with laminations of medium to coarse grained unit **1a or 3f** and a fine to medium grained reddish mauve layer comprising quartz, feldspar, biotite, almandine and hematite, often a white to buff late tectonic granulated quartzo-feldspathic pegmatitic material forms conformable layers which generally exhibit pinch and swell textures
a) thinly laminated or layered pink and mauve or pink mauve and buff rock,
b) **4a** with brecciated mauve fragments in pink or buff layers or crenulations of mauve layers in the pink or buff layers,
c) **4a** or **4b** with >5% biotite or hornblende-rich mafic layers

5 **GABBRO** – coarse grained mafic to ultramafic rock
a) Coronitic metagabbro having relict outlines of original pyroxene phenocrysts or oikocrysts and a massive to slightly foliated texture,
b) amphibolite gneiss – foliated and generally layered rock with >40% amphiboles

6 **TONALITE** – coarse grained intermediate rock with >20% <60% mafic minerals generally with some relict plagioclase phenocrysts and a strained to uniform gneissic fabric
a) variegated medium to dark grey and pale grey, regularly layered rock generally medium to coarse grained usually having patches of relict phenocrysts,
b) porphyritic rock with elongated pink feldspar phenocrysts within a foliated to gneissic medium to coarse grained matrix of amphibole, feldspar and quartz

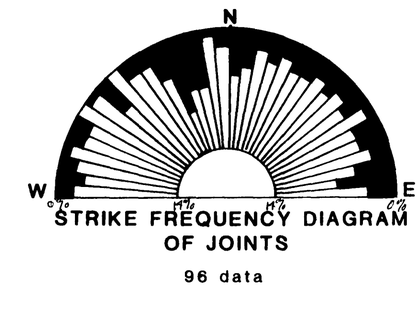
7 **MEGACRYSTIC GRANITE** – Porphyritic rock with relict, strained orthoclase phenocrysts within a medium to coarse grained matrix of quartz plagioclase orthoclase and biotite and/or hornblende
a) pink phenocrysts with prestrained diameters of ≥ 2cm;
b) pink phenocrysts with prestrained diameters of ≥ 5cm;
c) > 5% < 20% pink, fine to medium grained syntectonic pegmatite,
d) folding, stretching, rolling and rodding of preexisting phenocrysts and pegmatite stringers

8 **GRANITE PEGMATITE** – fine to coarse grained quartz microcline plagioclase and biotite-bearing rock varying in texture in response to its tectonic history
a) very coarse crystalline unstrained post-tectonic rock,
b) very coarse crystalline tectonic breccia,
c) medium to coarse grained cataclastic rock with occasional large clasts identical to unit 1d in appearance

[1]No relative ages are inferred by this order of the legend

SYMBOL LIST

- Gneissic foliation: with dip, vertical, horizontal
- Joints: horizontal, vertical with average spacing, with dip, minimum and maximum spacing and average separation
- Schistocity or foliation
- Lineation: with plunge
- Property boundary
- 559 Highway, road
- Secondary road
- Abandoned road or trail
- Road allowance
- Railroad
- Concession line
- Lot line
- Electric power line
- Topographic contour (5 metre interval ASL)
- Swamp
- Clearing
- Outcrop
- Quarry
- Buildings
- Geological contact inferred

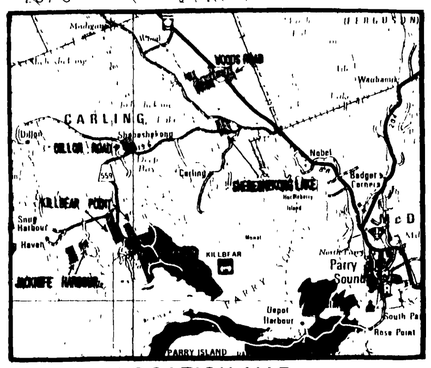


STRIKE FREQUENCY DIAGRAM OF JOINTS

96 data

SCALE
1:5,000
feet
metres

N



LOCATION MAP
SCALE: 1:250,000

2.15281

JR TRUSLER & ASSOCIATES
MINERAL CONSULTANTS

DILLON ROAD PROPERTY

GEOLOGICAL MAP

DATE Oct 17 1993 | SCALE 1:5,000 | DRAWN BY JR TRUSLER

41H08NE0001 2 15281 CARLING

LEGEND

1 FELSIC GNEISS[1] – layered to massive rock mainly composed of quartz, plagioclase and microcline with minor matrix biotite and variable accessory magnetite, hematite and almandine
a) coarse grained equigranular rock, very weakly layered
b) unit **1a** with coarse reddish-mauve speckles of hematite,
c) strongly layered fine to coarse grained cataclastic rock;
d) unit **1a** containing very large breccia fragments of pegmatite which show no internal strain;
e) fine to medium grained massive pink to rose coloured rock with thin biotite-rich partings;
f) unit **1a** more thinly layered and containing mauve hematite-bearing laminae

2 AMPHIBOLITE GNEISS – layered to massive, fine to coarse grained, greyish black to black rock generally comprising 40 to 70% amphiboles with plagioclase in its unaltered state
a) fine to coarse grained, thinly to thickly layered uniform gneiss occasionally with some biotite rich partings;
b) 1st par 1st migmatite comprising unit **2a** the paleosome constituent and parallel bands of late tectonic pegmatite;
c) migmatite breccia comprising clasts of late tectonic pegmatite within unit **2a**

3 BIOTITE HORNBLENDE MIGMATITE – a fine to coarse grained, highly variable rock of multicomponent origin generally 1st par 1st layered and frequently comprising similar intrafolial folds; the paleosome constituent comprises biotite, hornblende, feldspar and quartz and frequently has a relict foliated or thinly laminated texture, the neosome constituent is generally coarser and comprises a syntectonic, cataclastic, originally pegmatitic aggregate of quartz, feldspar and minor hornblende and/or biotite
a) variegated pale and dark grey with mafic content >20%,
b) variegated pale and medium grey with mafic content >10% ≤20%,
c) variegated pink and medium grey with mafic content >10% ≤20%,
d) variegated pale and light grey with biotite content <10%,
e) variegated pink and light grey with biotite content <10%,
f) intense pink schlieren with biotite content <5%;
g) minor purple hematite spotting;
h) late tectonic pegmatite ≥10%;
i) late tectonic pegmatite ≤10%;
j) **hornblende** dominant mafic mineral;
k) biotite dominant mafic mineral

4 PURPLE AND PINK MIGMATITE – variegated rock with laminations of medium to coarse grained unit **1a** or **3F** and a fine to medium grained reddish mauve layer comprising quartz, feldspar, biotite, almandine and hematite, often a milky to buff late tectonic granulated quartzo-feldspathic pegmatitic material forms conformable layers which generally exhibit pinch and swell textures:
a) thinly laminated or layered pink and mauve or pink, mauve and buff rock;
b) **4a** with brecciated mauve fragments in pink or buff layers or crenulations of mauve layers in the pink or buff layers;
c) **4a** or **4b** with >5% biotite or hornblende-rich mafic layers

5 GABBRO – coarse grained mafic to ultramafic rock
a) Coronitic metagabbro having relict outlines of original pyroxene phenocrysts or oikocrysts and a massive to slightly foliated texture;
b) amphibolite gneiss – foliated and generally layered rock with >40% amphiboles

6 TONALITE – coarse grained intermediate rock with >20% <50% mafic minerals generally with some relict plagioclase phenocrysts and a strained to unifom gneissic fabric.
a) variegated medium to dark grey and pale grey, regularly layered rock generally medium to coarse grained usually having patches of relict phenocrysts,
b) porphyritic rock with elongated pink feldspar phenocrysts within a foliated to gneissic medium to coarse grained matrix of amphibole, feldspar and quartz

7 MEGACRYSTIC GRANITE – Porphyritic rock with relict, strained, orthoclase phenocrysts within a medium to coarse grained matrix of quartz, plagioclase, orthoclase and biotite and/or hornblende
a) pink phenocrysts with prestrained diameters of ≥ 2cm;
b) pink phenocrysts with prestrained diameters of ≤ 5cm;
c) > 5% ≤ 20% pink, fine to medium grained, syntectonic pegmatite,
d) folding, stretching, rolling and rodding of preexisting phenocrysts and pegmatite stringers

8 GRANITE PEGMATITE – fine to coarse grained quartz, microcline, plagioclase, and biotite-bearing rock varying in texture in response to its tectonic history
a) very coarsely crystalline, unstrained, post-tectonic rock;
b) very coarse crystalline tectonic breccia,
c) medium to coarse grained cataclastic rock with occasional large clasts; identical to unit **1d** in appearance

[1]No origin is inferred by this name
[2]No relative ages are inferred by this order of the legend

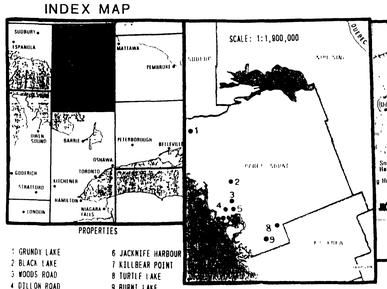
SYMBOL LIST

- Gneissic foliation: with dip; vertical, horizontal
- Joints: horizontal, vertical with average spacing, with dip, direction and average spacing and average separation
- Schistocity or foliation
- Lineation: with plunge
- Property boundary
- Highway, road
- Secondary road
- Abandoned road or trail
- Road allowance
- Railroad
- Concession line
- Lot line
- Electric power line
- Topographic contour (5 metre interval ASL)
- Swamp
- Clearing
- Outcrop
- Quarry
- Buildings
- Geological contact inferred

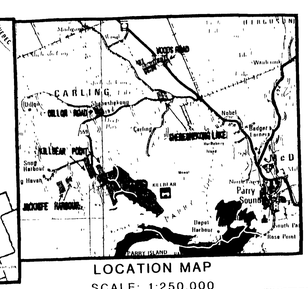
N

Claim 1151130
Claim 1151132
Claim 1151131
Claim 1151133
Claim 1191217
Dinner Lake
Carling Twp
CON 6

INDEX MAP

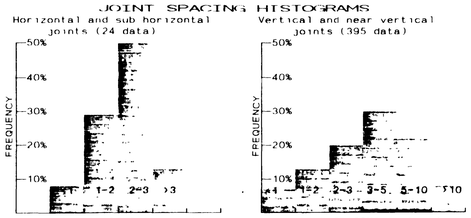


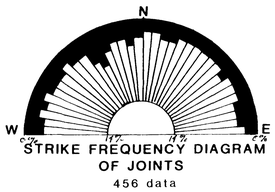
PROJECT AREA



LOCATION MAP
SCALE: 1:250,000

JOINT SPACING HISTOGRAMS





SCALE
1:5,000
feet
metres

J. R. TRUSLER
REGISTERED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

2.15281

JR TRUSLER & ASSOCIATES
MINERAL CONSULTANTS

WOODS ROAD PROPERTY

GEOLOGICAL MAP

DATE Oct 12 1983 | SCALE 1:5,000 | DRAWN BY JR TRUSLER

41H08NE0001 2.15281 CARLING

LEGEND

1 **FELSIC GNEISS**[1] – layered to massive rock mainly composed of quartz, plagioclase and microcline with minor matrix biotite and variable accessory magnetite, hematite and almandine **a)** coarse grained equigranular rock, very weakly layered, **b)** unit **1a** with coarse reddish-mauve speckles of hematite; **c)** strongly layered fine to coarse grained cataclastic rock; **d)** unit **1a** containing very large breccia fragments of pegmatite which show no internal strain, **e)** fine to medium grained massive pink to rose coloured rock with thin biotite-rich partings; **f)** unit **1e** more thinly layered and containing mauve hematite-bearing laminae

2 **AMPHIBOLITE GNEISS** – layered to massive, fine to coarse grained, greyish black to black rock generally comprising 40 to 70% amphiboles with plagioclase in its unaltered state: **a)** fine to coarse grained, thinly to thickly layered uniform gneiss occasionally with some biotite rich partings; **b)** lit par lit migmatite comprising unit **2a** the paleosome constituent and parallel bands of late tectonic pegmatite; **c)** migmatite breccia comprising clasts of late tectonic pegmatite within unit **2a**.

3 **BIOTITE HORNBLENDE MIGMATITE** – a fine to coarse grained, highly variable rock of multicomponent origin generally lit par lit layered and frequently comprising similar intrafolial folds; the paleosome constituent comprises biotite, hornblende, feldspar and quartz and frequently has a relict foliated or thinly laminated texture; the neosome constituent is generally coarser and comprises a syntectonic, cataclastic, originally pegmatitic aggregate of quartz, feldspar and minor hornblende and/or biotite: **a)** variegated pale and dark grey with mafic content ≥20%; **b)** variegated pale and medium grey with mafic content ≥10% ≤20%; **c)** variegated pink and medium grey with mafic content ≥10% ≤20%; **d)** variegated pale and light grey with biotite content ≤10%; **e)** variegated pink and light grey with biotite content ≤10%; **f)** intense pink schlieren with biotite content ≤5%; **g)** minor purple hematite spotting; **h)** late tectonic pegmatite ≥10%; **i)** late tectonic pegmatite ≤10%; **j)** hornblende dominant mafic mineral; **k)** biotite dominant mafic mineral

4 **PURPLE AND PINK MIGMATITE** – variegated rock with laminations of medium to coarse grained unit **1a** or **3f** and a fine to medium grained reddish mauve layer comprising quartz, feldspar, biotite, almandine and hematite; often a milky to buff late tectonic granulated quartzo-feldspathic pegmatitic material forms conformable layers which generally exhibit pinch and swell textures: **a)** thinly laminated or layered pink and mauve or pink, mauve and buff rock; **b)** **4a** with brecciated mauve fragments in pink or buff layers or crenulations of mauve layers in the pink or buff layers; **c)** **4a** or **4b** with >5% biotite or hornblende-rich mafic layers

5 **GABBRO** – coarse grained mafic to ultramafic rock: **a)** Coronitic metagabbro having relict outlines of original pyroxene phenocrysts or oikocrysts and a massive to slightly foliated texture; **b)** amphibolite gneiss - foliated and generally layered rock with ≥40% amphiboles

6 **TONALITE** – coarse grained intermediate rock with ≥20% ≤50% mafic minerals generally with some relict plagioclase phenocrysts and a strained to uniform gneissic fabric: **a)** variegated medium to dark grey and pale grey, regularly layered rock generally medium to coarse grained usually having patches of relict phenocrysts; **b)** porphyritic rock with elongated pink feldspar phenocrysts within a foliated to gneissic medium to coarse grained matrix of amphibole, feldspar and quartz

7 **MEGACRYSTIC GRANITE** – Porphyritic rock with relict, strained, orthoclase phenocrysts within a medium to coarse grained matrix of quartz, plagioclase, orthoclase and biotite and/or hornblende: **a)** pink phenocrysts with prestrained diameters of ≤ 2cm; **b)** pink phenocrysts with prestrained diameters of ≤ 5cm; **c)** ≥ 5% ≤ 20% pink, fine to medium grained, syntectonic pegmatite; **d)** folding, stretching, rolling and rodding of preexisting phenocrysts and pegmatite stringers

8 **GRANITE PEGMATITE** – fine to coarse grained quartz, microcline, plagioclase, and biotite-bearing rock varying in texture in response to its tectonic history: **a)** very coarsely crystalline, unstrained, post-tectonic rock; **b)** very coarse crystalline tectonic breccia; **c)** medium to coarse grained cataclastic rock with occasional large clasts; identical to unit **1d** in appearance

[1] No origin is inferred by this name
[2] No relative ages are inferred by this order of the legend

SYMBOL LIST

- Gneissic foliation: with dip; vertical ; horizontal
- Joints: horizontal; vertical with average spacing; with dip, minimum and maximum spacing and average separation
- Schistocity or foliation
- Lineation: with plunge
- Property boundary
- 559 Highway, road
- Secondary road
- Abandoned road or trail
- Road allowance
- Railroad
- Concession line
- Lot line
- Electric power line
- 195 Topographic contour (5 metre interval ASL)
- Swamp
- Clearing
- Outcrop
- Quarry
- Buildings
- Geological contact inferred

Claim 1191213

Claim 1191214

Filzgerold Bay

Gowar Bay

The Keyhole

Channel

Canoe

Jacknife Harbour

N

STRIKE FREQUENCY DIAGRAM OF JOINTS

137 data

JOINT SPACING HISTOGRAMS

Horizontal and sub-horizontal joints (24 data)

Vertical and near vertical joints (108 data)

FREQUENCY

JOINT SPACING (metres)

INDEX MAP

PROPERTIES

1 GRUNDY LAKE
2 BLACK LAKE
3 WOODS ROAD
4 DILLON ROAD
5 SHEBESHEKONG LAKE
6 JACKNIFE HARBOUR
7 KILLBEAR POINT
8 TURTLE LAKE
9 BURNT LAKE

PROJECT AREA

LOCATION MAP
SCALE: 1:250,000

SCALE
1:5,000
feet
metres

2.152S1

REGISTERED PROFESSIONAL ENGINEER
J.R. TRUSLER
PROVINCE OF ONTARIO

JR TRUSLER & ASSOCIATES
MINERAL CONSULTANTS

JACKNIFE HARBOUR PROPERTY

GEOLOGICAL MAP

DATE Oct 19, 1993 | SCALE 1:5,000 | DRAWN BY JR TRUSLER

41H06NE0001 2.15281 CARLING

240