

THESE TERMS GOVERN YOUR USE OF THIS DOCUMENT

Your use of this Ontario Geological Survey document (the “Content”) is governed by the terms set out on this page (“Terms of Use”). By downloading this Content, you (the “User”) have accepted, and have agreed to be bound by, the Terms of Use.

Content: This Content is offered by the Province of Ontario’s *Ministry of Northern Development and Mines* (MNDM) as a public service, on an “as-is” basis. Recommendations and statements of opinion expressed in the Content are those of the author or authors and are not to be construed as statement of government policy. You are solely responsible for your use of the Content. You should not rely on the Content for legal advice nor as authoritative in your particular circumstances. Users should verify the accuracy and applicability of any Content before acting on it. MNDM does not guarantee, or make any warranty express or implied, that the Content is current, accurate, complete or reliable. MNDM is not responsible for any damage however caused, which results, directly or indirectly, from your use of the Content. MNDM assumes no legal liability or responsibility for the Content whatsoever.

Links to Other Web Sites: This Content may contain links, to Web sites that are not operated by MNDM. Linked Web sites may not be available in French. MNDM neither endorses nor assumes any responsibility for the safety, accuracy or availability of linked Web sites or the information contained on them. The linked Web sites, their operation and content are the responsibility of the person or entity for which they were created or maintained (the “Owner”). Both your use of a linked Web site, and your right to use or reproduce information or materials from a linked Web site, are subject to the terms of use governing that particular Web site. Any comments or inquiries regarding a linked Web site must be directed to its Owner.

Copyright: Canadian and international intellectual property laws protect the Content. Unless otherwise indicated, copyright is held by the Queen’s Printer for Ontario.

It is recommended that reference to the Content be made in the following form: <Author’s last name>, <Initials> <year of publication>. <Content title>; Ontario Geological Survey, <Content publication series and number>, <total number of pages>p.

Use and Reproduction of Content: The Content may be used and reproduced only in accordance with applicable intellectual property laws. *Non-commercial* use of unsubstantial excerpts of the Content is permitted provided that appropriate credit is given and Crown copyright is acknowledged. Any substantial reproduction of the Content or any *commercial* use of all or part of the Content is prohibited without the prior written permission of MNDM. Substantial reproduction includes the reproduction of any illustration or figure, such as, but not limited to graphs, charts and maps. Commercial use includes commercial distribution of the Content, the reproduction of multiple copies of the Content for any purpose whether or not commercial, use of the Content in commercial publications, and the creation of value-added products using the Content.

Contact:

FOR FURTHER INFORMATION ON	PLEASE CONTACT:	BY TELEPHONE:	BY E-MAIL:
The Reproduction of Content	MNDM Publication Services	Local: (705) 670-5691 Toll Free: 1-888-415-9845, ext. 5691 (inside Canada, United States)	Pubsales@ndm.gov.on.ca
The Purchase of MNDM Publications	MNDM Publication Sales	Local: (705) 670-5691 Toll Free: 1-888-415-9845, ext. 5691 (inside Canada, United States)	Pubsales@ndm.gov.on.ca
Crown Copyright	Queen’s Printer	Local: (416) 326-2678 Toll Free: 1-800-668-9938 (inside Canada, United States)	Copyright@gov.on.ca

LES CONDITIONS CI-DESSOUS RÉGISSENT L'UTILISATION DU PRÉSENT DOCUMENT.

Votre utilisation de ce document de la Commission géologique de l'Ontario (le « contenu ») est régie par les conditions décrites sur cette page (« conditions d'utilisation »). En téléchargeant ce contenu, vous (l'« utilisateur ») signifiez que vous avez accepté d'être lié par les présentes conditions d'utilisation.

Contenu : Ce contenu est offert en l'état comme service public par le *ministère du Développement du Nord et des Mines* (MDNM) de la province de l'Ontario. Les recommandations et les opinions exprimées dans le contenu sont celles de l'auteur ou des auteurs et ne doivent pas être interprétées comme des énoncés officiels de politique gouvernementale. Vous êtes entièrement responsable de l'utilisation que vous en faites. Le contenu ne constitue pas une source fiable de conseils juridiques et ne peut en aucun cas faire autorité dans votre situation particulière. Les utilisateurs sont tenus de vérifier l'exactitude et l'applicabilité de tout contenu avant de l'utiliser. Le MDNM n'offre aucune garantie expresse ou implicite relativement à la mise à jour, à l'exactitude, à l'intégralité ou à la fiabilité du contenu. Le MDNM ne peut être tenu responsable de tout dommage, quelle qu'en soit la cause, résultant directement ou indirectement de l'utilisation du contenu. Le MDNM n'assume aucune responsabilité légale de quelque nature que ce soit en ce qui a trait au contenu.

Liens vers d'autres sites Web : Ce contenu peut comporter des liens vers des sites Web qui ne sont pas exploités par le MDNM. Certains de ces sites pourraient ne pas être offerts en français. Le MDNM se dégage de toute responsabilité quant à la sûreté, à l'exactitude ou à la disponibilité des sites Web ainsi reliés ou à l'information qu'ils contiennent. La responsabilité des sites Web ainsi reliés, de leur exploitation et de leur contenu incombe à la personne ou à l'entité pour lesquelles ils ont été créés ou sont entretenus (le « propriétaire »). Votre utilisation de ces sites Web ainsi que votre droit d'utiliser ou de reproduire leur contenu sont assujettis aux conditions d'utilisation propres à chacun de ces sites. Tout commentaire ou toute question concernant l'un de ces sites doivent être adressés au propriétaire du site.

Droits d'auteur : Le contenu est protégé par les lois canadiennes et internationales sur la propriété intellectuelle. Sauf indication contraire, les droits d'auteurs appartiennent à l'Imprimeur de la Reine pour l'Ontario.

Nous recommandons de faire paraître ainsi toute référence au contenu : nom de famille de l'auteur, initiales, année de publication, titre du document, Commission géologique de l'Ontario, série et numéro de publication, nombre de pages.

Utilisation et reproduction du contenu : Le contenu ne peut être utilisé et reproduit qu'en conformité avec les lois sur la propriété intellectuelle applicables. L'utilisation de courts extraits du contenu à des fins *non commerciales* est autorisée, à condition de faire une mention de source appropriée reconnaissant les droits d'auteurs de la Couronne. Toute reproduction importante du contenu ou toute utilisation, en tout ou en partie, du contenu à des fins *commerciales* est interdite sans l'autorisation écrite préalable du MDNM. Une reproduction jugée importante comprend la reproduction de toute illustration ou figure comme les graphiques, les diagrammes, les cartes, etc. L'utilisation commerciale comprend la distribution du contenu à des fins commerciales, la reproduction de copies multiples du contenu à des fins commerciales ou non, l'utilisation du contenu dans des publications commerciales et la création de produits à valeur ajoutée à l'aide du contenu.

Renseignements :

POUR PLUS DE RENSEIGNEMENTS SUR	VEUILLEZ VOUS ADRESSER À :	PAR TÉLÉPHONE :	PAR COURRIEL :
la reproduction du contenu	Services de publication du MDNM	Local : (705) 670-5691 Numéro sans frais : 1 888 415-9845, poste 5691 (au Canada et aux États-Unis)	Pubsales@ndm.gov.on.ca
l'achat des publications du MDNM	Vente de publications du MDNM	Local : (705) 670-5691 Numéro sans frais : 1 888 415-9845, poste 5691 (au Canada et aux États-Unis)	Pubsales@ndm.gov.on.ca
les droits d'auteurs de la Couronne	Imprimeur de la Reine	Local : 416 326-2678 Numéro sans frais : 1 800 668-9938 (au Canada et aux États-Unis)	Copyright@gov.on.ca



ONTARIO
DEPARTMENT OF MINES

P.R. 1952-2

THE GEOLOGY OF THE
LAC AUX SABLES - SHAKWA LAKE AREA
DISTRICTS OF ALGOMA AND SUDBURY, ONTARIO

by

H. W. Sheeran

INTRODUCTION

A geological reconnaissance of a block of about thirty townships lying 50 to 80 miles northwest of Sudbury was undertaken by the writer in the summer of 1951. The survey was made in the vicinity of motor roads and main canoe routes through the area. The accompanying geological map shows the rock outcrop actually observed and thus gives an indication of the routes followed.

No previous geological survey had been made of any part of the area. The country under examination, being predominantly granite, has received little attention from prospectors.

ACCESS

Easiest access to the Shakwa Lake portion of the area is by the private roads of the KVP Company, Limited, of Espanola. These extend north from Webbwood on Highway No.17, and permission to use them must be obtained from the KVP Woods Department at Espanola. They are kept in good repair and are suitable for motor traffic. The Shakwa Lake area is also accessible from just south of Fluorite on the Canadian Pacific railway, by means of the Pogamasing Lake - Sinaminda Lake canoe route; and from Biscotasing, also on the C.P.R., by means of the Biskotasi Lake - Mozhabong Lake route. The former canoe route entails five portages and would take about a day. The latter route has only two short portages and open water most of the way. However, it is about 35 miles from Biscotasing to Moose Head narrows on Mozhabong lake and, without a motor, would take about two days.

Easiest access to the Lac aux Sables area is by way of the Massey tote road which runs north from Massey on Highway No.17. This road is suitable for motor traffic and terminates at Ritchie Falls, 52 miles north of Massey. Smith's tourist lodge is located at Ritchie Falls. The side-roads from the Massey tote road in the map area are not generally suited to passenger cars; an exception is the road to Carmichael's tourist camp on Madawanson lake. The Lac aux Sables area can also be reached from Biscotasing; the best route is to Upper Green lake via Ramsay lake; it involves about 50 miles of water travel and one long portage.

Portage routes through the main chains of lakes are good throughout the map area. However, west of Upper Green lake and White Owl lake the portages have been obliterated by the Mississagi forest fire, and canoe travel here is often difficult.

HISTORY

Early logging operations in the Spanish River watershed were by the Spanish River Lumber Company of Cutler and the Spanish River Pulp and Paper Company of Espanola. Similar operations in the vicinity of the Massey tote road were started

by the Spanish River Lumber Company about the turn of the century and continued until 1923, when there were extensive forest fires through the area. Many of the old logging camps built during this period of development still remain.

In recent years the KVP Company, Limited, of Espanola has carried out extensive developments in the Spanish River watershed. Over 80 miles of good roads have been completed in the Wakonassin (west branch of Spanish) River area to date, and further extensions are planned. These roads are used to service the company's logging operations on the Agnes River and Wakonassin River watersheds and also serve as a trunk road into the concession area in general. The KVP Company purchased the Espanola property from Abitibi Power and Paper Company in 1943 and, at the same time, received cutting rights on the Spanish concession and some adjacent areas.

ACKNOWLEDGMENTS

Much of the field work was carried out in the KVP Wakonassin River area, and the writer wishes to express his gratitude to D.W.Gray, F.Dunn, L.Louder, and W.Goodchild of the KVP Woods Department for their valuable assistance and many courtesies. Thanks are also due Don and Bruce Hughson of the Shakwa Lake fire tower of the Ontario Department of Lands and Forests, and to Mr. and Mrs. E. Smith of Ritchie Falls Lodge for services rendered. The writer also expresses his sincere thanks to Jack Hill who assisted him throughout the summer, and to R.H.Cook, R.N.Smith and R.M.Ginn who assisted him in the latter part of the season.

GEOLOGY

All of the rocks of the map area are Precambrian in age. These consist of Early Precambrian paragneisses, sediments, and volcanics; granitic intrusives; and basic dikes.

Early Precambrian Paragneisses, Sediments, and Volcanics

The Early Precambrian rock types of the Lake Geneva belt extend westward into the Shakwa lake area. These rocks were first described in the Geneva map area by T.T.Quirk.¹ They were subsequently described in more detail in the Cartier-Stralak area by F.F.Osborne² in 1929. The southern part of this belt is exposed along the north shore of upper Shakwa lake. Here, the rock is a hornblende paragneiss that is finely banded and intricately injected with intrusives. The foliation has a general east-west strike, and dips steeply to the south. However, locally, the rocks are highly contorted and intricately faulted, and deviations from the general east-west strike and reversals of dip are commonly observed. The granite contact is parallel to the foliation of the paragneiss, and exhibits cross-cutting relationships, particularly in pegmatitic phases within the paragneiss.

The paragneisses are well defined in this area, and extend about a mile north of upper Shakwa lake. They were traced eastward to the Agnes river in Gilbert township, where they appear to have been faulted south, approximately 3 miles. The Agnes river follows two well-defined parallel lineaments that probably represent fault zones. The belt of paragneisses may have been offset by both faults. Outcrops south along the Agnes river are scarce, and predominantly granite. Wherever bands of green schist and paragneiss are found along the river, they are small and lenticular in shape. This would suggest that there was vertical as well as horizontal movement along the faults and that the Agnes river area was upthrust and more deeply eroded than adjacent blocks.

1

T.T.Quirke, "Geneva Map-Area, Sudbury District, Ontario," Geol. Surv. Summary Rept., Dept. Mines, Ottawa, 1920, pt.D, pp.7D-18D.

2

F.F.Osborne, "The Cartier-Stralak Area, District of Sudbury," Ont. Dept. Mines Vol. XXXVIII, 1929, pt.7.

On the western shore of the upper part of Shakwa lake, the belt has again been faulted to the south along a prominent lineament. The Early Precambrian rocks are well exposed in the area west of the fault, around the Shakwa fire tower. The belt was traced westward from upper Shakwa lake for several miles. At its western extremity it appears to have been eroded so deeply that only small remnants are now found. However, a strong northwest trending lineament crosses the belt in this area, and it is possible that the belt is terminated by upthrust faulting on the west side.

It is probable that this belt of paragneisses was composed originally of tuffs with minor amounts of basic volcanics and greywackes. In the contact zones these paragneisses are now highly injected with pegmatites that have been intruded parallel to the bedding. Farther away from the contact zones there is a complex of dark-green massive rocks of possible volcanic origin and finely banded schists that may have been derived from sediments. Some exposures show definite bedding, and it would appear that the greater part of this complex is of sedimentary origin. Under the microscope all of the above types are amphibolites, composed largely of hornblende with lesser amounts of quartz and plagioclase.

The Early Precambrian rocks found in the area north of the Massey tote road are mostly small lenticular remnants in granite and granite gneiss, though the belt at the south end of Shanguish lake, in Fulton township, appears to be more extensive. These small belts are largely dark-green massive rocks of possible volcanic origin, though two small bands of greywacke were also seen.

Granitic Intrusives

Granite gneisses cover a considerable area in the country north of Lac aux Sables. These gneisses are mostly granitic rocks with a more or less pronounced orientation of biotite flakes. Basic inclusions and streaks are commonly found in this type. A well-banded gneiss with a general east-west strike was seen on the northeast arm of Marty lake, in the west-central part of the area. On Marty and Bark lakes, contacts of the gneiss with granite were observed. The granite was definitely intrusive into the gneiss and truncated the foliation of the older rock. Field relationships and microscopic studies indicate that the granite and gneiss are closely related genetically and in time of intrusion.

Granite

Throughout the entire Shakwa Lake - Lac aux Sables area, the most commonly observed rock is a massive pink granite. It is especially well exposed on the shores of Mozhabong lake, north of Shakwa lake, which might be considered the type locality for this rock. The granite is very uniform in colour and texture, but local variations to a lighter colour or porphyritic texture were observed. Flow structures were occasionally seen around the borders of inclusions of basic rock.

In hand specimens the granite is composed of about 20 percent quartz, 45 percent pink feldspar, 30 percent white feldspar, and 5 percent dark minerals. Microscopic examination revealed that the pink feldspar is microcline; it occurs in large fresh crystals. The white feldspar is of two types, a highly sericitized albite-oligoclase to soda oligoclase, and a lesser amount of fresh unaltered albite. The dark mineral is chloritized biotite, and only rarely constitutes more than 5 percent of the thin sections. Accessory minerals are magnetite, zircon, and fluorite.

A greyish-white granite occurs in Township No.120, but its relationship to the Mozhabong Lake granite is not known; it is probably a phase of the latter. In thin section, it is composed of 50 percent microcline, 10 percent oligoclase, 25 percent albite and albite-oligoclase, 10 percent quartz, and about 5 percent zircon and chlorite. It differs petrographically from the Mozhabong Lake granite, in that the plagioclase is completely fresh and it contains a much higher content of zircon.

At the Labitiche (Gull) Lake dam in Township L, quartz-diorite occurs and is considered to be a phase of the Mozhabong Lake granite. The most prevalent feldspar is oligoclase and oligoclase-andesine; this makes up 70 percent of the rock.

Quartz constitutes about 20 percent of the rock-forming minerals; microcline and dark-coloured minerals make up the balance.

Pegmatites occur in the granite as dikes and as irregular masses intimately associated with it. Areas of the latter type may cover several square miles and are extensive in two localities; the larger extends from the extreme southeast corner of Mozhabong lake to the southern end of Dusty lake, in Township C, and the other, to the east, includes all of Gilden lake and part of Sinaminda lake. The latter occurrence is commonly associated with hybrid amphibolites. These areas were mapped as "granite-pegmatite complexes" and contain graphic granite as well. The pegmatite dikes are largely pink feldspar and quartz with only minor amounts of albite and biotite.

Basic Dikes

Basic dikes occur in great numbers throughout the area; more than 50 dikes, ranging in width from 6 inches to 150 feet, were mapped on Mozhabong lake alone. Many small "trap" dikes were seen, but larger dikes with good diabasic texture are by far the most commonly found. In thin section, both olivine and quartz diabase are recognized. The largest dikes are olivine diabase in composition, and several are over 300 feet wide; one along the KVP company's Labitiche Lake road is over 500 feet in width. These dikes generally strike between N.25° E. and N.20° W.

Only on rare occasions were the dikes traced more than one or two miles along the strike. The most continuous dikes trend northwest, parallel to the strike of the topographic features of the country. The granite adjacent to the larger dikes is often altered to a bright red colour owing to the introduction of hematite into the feldspar.

ECONOMIC GEOLOGY

The area examined is predominately granitic rocks and for this reason has attracted little attention from prospectors. No claims have been recorded in the area. Some years ago Consolidated Mining and Smelting Company of Canada, Limited, had prospectors in the Lac aux Sables area and to the west, but no claims were recorded by this company in the map area.

The profusion of diabase dikes cutting the granite makes the area a possible source of radioactive minerals and base metals. Many contacts were checked for radioactivity by the writer with a Geiger counter, but largely with negative results. However, abnormally high counts were recorded in two locations, on Madawanson and Russian lakes in the south-central part of the area. In both cases about three times the normal background count was obtained. A grab sample from the Madawanson location was taken by the writer. It was tested for radioactivity at the Provincial assay Office, Toronto, and a uranium oxide equivalent of 0.05 percent was obtained. It was noted that the area around Madawanson and Russian lakes gave a noticeably higher background count in the granite than that obtained in the other areas covered during the summer. Pegmatite dikes were frequently checked, but again with no indication of radioactivity.

Several large barren quartz veins were seen; the largest was about 20 feet wide and was located on the Lac aux Sables - Bark lake portage route. However, none of these showed any mineralization, and all were in the granite.

Disseminated pyrite mineralization was noted at several places in the Early Precambrian rocks of the Shakwa Lake area. This and the other smaller belts of Early Precambrian rocks are of general prospecting interest.

