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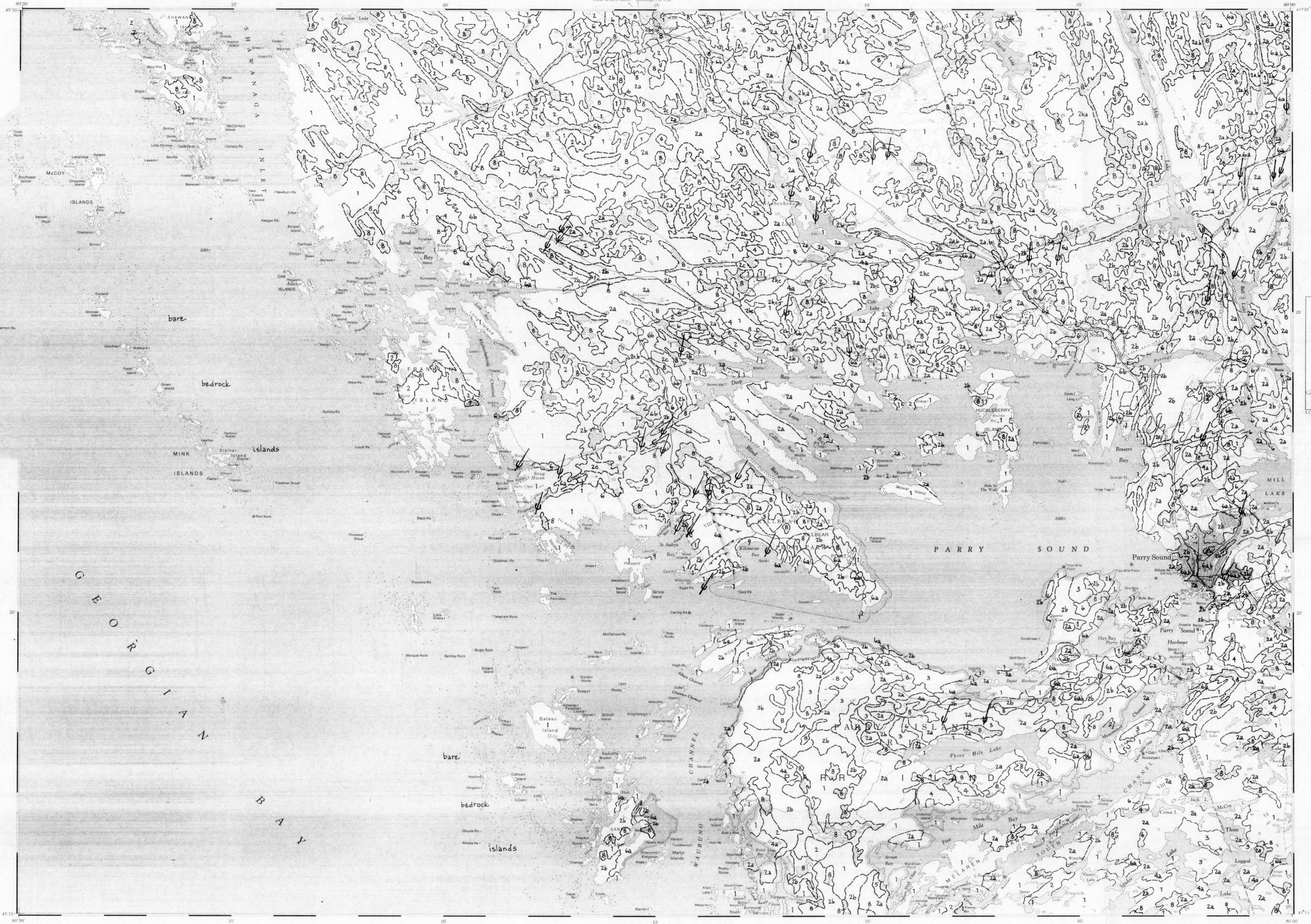
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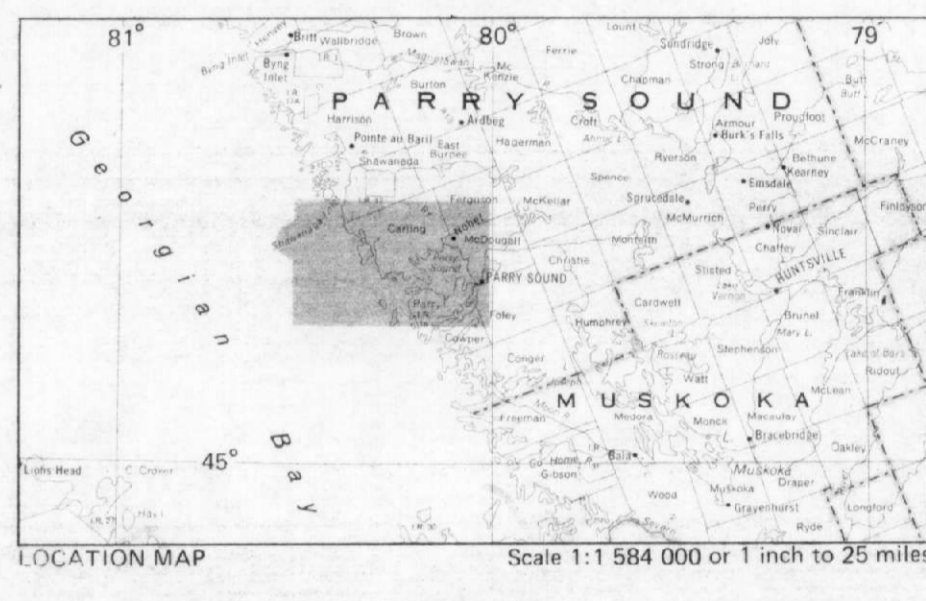


Ministry of Northern Development and Mines
 Ontario
 Sean Conway, Minister of Mines
 Mines and Minerals Division
 Ontario Geological Survey
 MAP P.3102
 Geological Series-Preliminary Map

**QUATERNARY GEOLOGY
 PARRY SOUND AREA
 DISTRICT OF PARRY SOUND**

Scale 1:50 000
 NTS References: 41 H/7 & 8
 OGS Aeromagnetic Map: 1486G
 OGS Geological Compilation Maps: 2441, 2715

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LEGEND

- PHANEROZOIC
 CENOZOIC
 QUATERNARY**
- RECENT**
- 9 Modern beach deposits: nearshore and beach sands, minor gravel
 - 8 Organic deposits: peat, muck, wetlands
 - 7 Alluvium: sand, silt, organics, muck
- PLEISTOCENE**
- 6a Glaciolacustrine deposits: sand, silt, minor gravel
 - 6a Deltic, valley-fill sands, gravels, stratified
 - 6b Prodeltaic, lake-bottom silt, clay, and sand, laminated to varved
 - 5 Glaciolacustrine deposits: outwash and valley-fill sand and gravel
 - 4 Ice-contact deposits: leeside and valley-fill material (variable)
 - 4a Leeside, glaciolacustrine, ice-contact material: hummocky drift mounds, sand, gravel, till
 - 4b Subaquatic outwash fan deposits: gravel, sand, silt, clay
 - 3 Till, generally >1 m thick
 - 3a Leeside and ablation till: loose, stony, sandy
 - 3b Subglacial meltout and lodgement till: hard, sandy, silty
 - 2 Bedrock-drift complex: thin, discontinuous drift (<20% cover)
 - 2a Till
 - 2b Sand (glaciolacustrine origin)
 - 2c Silt and clay (glaciolacustrine origin)
- UNCONFOURMITY**
- PRECAMBRIAN AND PALEOZOIC**
- 1 Bedrock ridges and knobs (>50% exposure) of unstratified granitic to mafic migmatite and gneiss, thin, discontinuous drift cover, with local pockets of glaciolacustrine ice-contact sediments >1 m thick
 - 1' Middle Ordovician, Lower Bobcaygeon Formation limestone platform rocks exposed on North and South Limestone Islands.

- SYMBOLS**
- Geological boundary, approximate
 - Abandoned shoreline feature
 - Glacial striae
 - Sand dunes

SOURCES OF INFORMATION

Basemap derived from National Topographic System Map 41 H/7 & 8.
 Aerial photographs: Ontario Ministry of Natural Resources, Toronto.
 Geology is not tied to surveyed lines.
 Metric Conversion Factor: 1 foot = 0.3048 m.
 Contour interval: 50 feet.
 Magnetic declination for the centre of the map sheet during mid-1986: 9°44'W and increasing 9.8'W per year.

CREDITS

Geology by P.S.G. Kor, Michael J. Miller, and assistants, 1986.
 Every possible effort has been made to ensure the accuracy of the information presented on this map; however, the Ontario Ministry of Northern Development and Mines doesn't assume any liability for errors that may occur. Users may wish to verify critical information; sources include both the references listed here, and information on file at the Resident Geologist's Office and the Mining Recorder's Office nearest the map area.
 This project is part of the Canada-Ontario Mineral Development Agreement (COMDA), which is a subsidiary agreement to the Economic and Regional Development Agreement (ERDA) signed by the governments of Canada and Ontario.
 Issued 1987
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 Kor, P.S.G. and Miller, Michael J.
 1987. Quaternary Geology of the Parry Sound Area, District of Parry Sound, Ontario Geological Survey, Map P.3102, Geological Series-Preliminary Map, scale 1:50 000. Geology 1986.

MARGINAL NOTES

INTRODUCTION

The surficial geology of the Georgian Bay-Parry Sound area (NTS 41 H/7 & 8) was investigated during the 1986 field season. The Sable Sound (NTS 41 H/1) sheet to the south and the Lake Joseph (NTS 31E/4) sheet to the southeast were also mapped. D.R. Sharpe (in preparation) has mapped the Gravenhurst (NTS 31 D/14), Bracebridge (NTS 31 E/3) and Huntsville (NTS 31 E/6) sheets to the east.
 Previous Quaternary mapping of the area is primarily of a physiographic nature (Chapman 1975; Chapman and Putnam 1984), with the engineering and terrain study of Mollard (1980) providing a greater level of detail. Many general and detailed studies of the Lake Huron basin also apply indirectly to the present study area (e.g. Kaszycki 1986). An assessment of the aggregate resources of the Muskoka area (Staff of the Algonquin Region 1983) also includes a portion of the study area.
 Field mapping involved the interpretation of 1:58 840 (1 inch to 1/4 mile) and 1:60 000 (approximately) scale air photographs, supplemented by the examination of natural sections (lake shores and creek bank exposures), man-made sections (roadcuts, sand and gravel pits), and test pits and augured cores produced by hand. Road access throughout the map area is generally good.
 The authors wish to acknowledge the field assistance of Fred Bosman and Chris Vasek (Junior Geological Assistants), and the administrative assistance of the Ontario Ministry of Natural Resources district staff in Parry Sound and Northern Affairs Officer, Bob Clark, and his staff (Ministry of Northern Development and Mines, Parry Sound).

BEDROCK GEOLOGY

The Parry Sound map area is underlain by strongly foliated, gneissic and migmatitic rocks of the Grenville Province, a structural subdivision of the Precambrian Shield (Wynne-Edwards 1972). The bedrock in the region east of Georgian Bay forms part of the Central Gneiss Belt of the Grenville Province. This belt is composed of a number of distinctive tectonic domains and sub-domains that were emplaced at depth during northwesterly directed thrust faulting (Davidson et al. 1982). Limestones of Paleozoic age outcrop on North and South Limestone Islands; these represent the northern edge of the present Paleozoic cover which underlies southern Ontario and the Huron and Michigan basins (Sanford and Baer 1981) to the south.
 Portions of the Britt Domain and the Parry Sound Domain underlie the Parry Sound map area. Davidson et al. (1982, p.178) characterize the Britt Domain as "a complex of highly deformed gneiss and migmatite of both supracrustal (predominantly sedimentary) and plutonic origins that has been subsequently intruded by a suite of younger plutons, followed by further migmatization and deformation". The rocks generally exhibit mineral assemblages typical of upper amphibolite facies. The Parry Sound Domain, separated from the Britt Domain by a distinct mylonitized tectonic boundary, is divided into "a western zone of well-sorted and continuously north to northwesterly trending gneiss in amphibolite facies, enclosing sharply defined bodies of gabbroic anorthositic, and an eastern zone of less regularly trending gneiss, including marble, at granulite facies" (Davidson and Morgan 1981, p.292-293). Tectonic activity and deformation of all Precambrian rocks in the region culminated in the Grenville Orogeny between 1200 to 950 Ma (Wynne-Edwards 1972).
 Georgian Bay's Limestone Islands group, 40 km (25 miles) west of the Town of Parry Sound, expose fossiliferous limestone of the Lower Bobcaygeon Formation of Middle Ordovician age (Spek 1981). These islands are noted for their diverse fossil assemblages and mark the northeastern edge of the present Paleozoic cover occurring in the Michigan structural basin (Sanford and Baer 1981).

QUATERNARY GEOLOGY

The direction of the last (Late Wisconsinan) glacial advance across the study area was south-southwest with ice-flow indicators, primarily striae, oriented predominantly between 180° and 210° azimuth. Localized deflections of ice movement ranged from 175° to 220° azimuth. A slight farming effect southwesterly towards Georgian Bay is present.
 The Parry Sound area was deglaciated about 11 500 B.P. at which time it was submerged in an expanding glacial Lake Algonquin. The stagnating ice front melted back rapidly toward the north forming the north and east shores of the lake. The Main Algonquin lake phase, the highest to form in the basin (approximately 335 m a.s.l.), was achieved prior to 10 000 B.P. (Eschman and Karrow 1985). Changing outlets subsequently allowed the lake to rapidly drain to the Hough phase exposing the map area for the first time since deglaciation. A long period of transgression to the Nipissing phase once again inundated much of the map area by about 5000 B.P. Present lake levels were achieved sometime after 3000 B.P. (Eschman and Karrow 1985).
 The distribution and thickness of glacial drift in the study area varies greatly. Large tracts of essentially bare bedrock with only minor pockets of sediment (map unit 1) dominate the northern half of the map sheet. Substantial areas south of Parry Sound and on Parry Island exhibit bare bedrock knolls and ridges. This lack of drift reflects not only a lack of significant deposition by the ice, but also the wave-washing of bedrock upland surfaces by the waters of lakes Algonquin and Nipissing.

TLL
 Till is sparsely dispersed over the map area, generally as a thin, discontinuous veneer of loose, stony sand over bedrock (unit 2a). A very stiff, fissile, sandy lodgement till was also observed. Locally, thicker deposits of stony sand till occur in leeside positions associated with stratified sand and gravel (unit 3a). These deposits are particularly abundant on the north half of Parry Island. Clasts are abundant (up to 30%), usually subangular to subrounded and of Precambrian composition, and often exhibit multiple striated facets. A compact, clay-poor, silty sand facies of till was also noted locally (unit 3c). It is associated with numerous, sandy lenses and stringers and is often underlain by a thin unit of stratified sand. At some sites, multiple units of till are separated by continuous, thin, sandy laminae, probably the result of subglacial deposition in standing water. Both till facies are common in areas to the east (Sharpe, in preparation; Kaszycki, in preparation) and north (Ford and Bajc 1984; Geddes and McClenaghan 1984) of the present study area.
 As glacial lake waters in the Huron basin dropped below the Main Algonquin level to lower stages, fine materials were washed from the till on bedrock uplands, leaving legs of subrounded to angular erratic boulders. Notable examples can be observed adjacent to Highway 559 just north of Killbear Provincial Park. Elsewhere hills have a few-kilometre wide, reworked zone has a silt-free sandy character, laminated sand horizons, and stony lag deposits.

ICE-CONTACT DEPOSITS
 Ice-contact deposits in the map area are scattered but may be locally abundant. They consist of leeside accumulations of highly variable, crudely bedded, clast-rich sand and gravel (unit 4a), and as linear, bedrock-controlled accumulations of glaciolacustrine sand and gravel with associated lacustrine deposits (unit 4b). Small, hummocky deposits of ice-contact material were commonly identified in the lee of bedrock knolls and ridges. These were previously identified as same moraines by Chapman (1975). An abundance of variably-bedded sandy and silty units, interlayered with diamict units and coarse gravels, suggests a subglacial meltout origin for these deposits.
 The glaciolacustrine ice-contact material identified as subaquatic outwash fan deposits (unit 4b) formed at or near the ice front as subglacial conduits emptied into glacial Lake Algonquin. These deposits typically consist of a core of clast-rich, crudely bedded gravels with rapid upward and distal facies changes to planar and cross-bedded gravels, sands, and silts. The sediments of these units are characteristically faulted and deformed by subsequent dewatering processes, and usually contain interbeds of massive, equigranular sands of variable thickness. Valley-fill materials north of Parry Sound probably represent this type of deposit, although evidence for this was not conclusive.

GLACIOFLUVIAL OUTWASH
 Glaciolacustrine outwash deposits (unit 5) occur sporadically in minor bedrock lineaments and pockets throughout the study area. Consisting of crosscut channel-fill sands and gravels with associated ripple-laminated sands and cobble beds, these deposits represent meltwater conduits active after glacial lake levels dropped below their high phases. They are commonly cut into ice-contact deposits and are generally of insignificant extent.

GLACIO-LACUSTRINE DEPOSITS

Glaciolacustrine deposits consist of valley-fill sands and gravels (units 6a and 2b) and fine-grained sediment rhythmites (units 6b and 2c), and are scattered throughout the study area. The former represent small deltaic deposits consisting of horizontally stratified sand and fine gravel, often cross-bedded, rhythmic, and rippled in nature. These deposits occupy broad, shallow, bedrock depressions, located predominantly in the low-relief terrain near the shore of Georgian Bay, and probably represent sediment from higher ground to the east redeposited by streams into tide, lower-level lake phases (as yet unidentified) in the Huron basin. Substantial deposits of lacustrine sand are located in Killbear Provincial Park and on Hay Bay, Parry Island. The upper levels of the highest of these deposits occur at about 213 m (700 feet) a.s.l. near the community of Nobo.
 Rhythmic sequences of sand, silt, and clay occur in scattered pockets throughout the map area. They are commonly associated with the distal reaches of subaquatic outwash fan deposits in enclosed bedrock valley systems, but also occur as thin blankets over till and bedrock. Local deposits are no more than a few metres thick and are usually capped by a thin, laminated lacustrine sand unit. Rhythmites of grey-green, silt-rich units, and red-brown clay-rich units may represent annual varved deposition, as suggested for similar deposits in the Muskoka region (Sharpe, in preparation). The thickness and extent of these deposits generally decrease towards Georgian Bay, reflecting increasing distance from the sediment source during deposition in the Main Algonquin lake phase. The upper levels of these deposits occur at about 258 m (850 feet) a.s.l. north of Harris Lake.

EOLIAN SANDS

Dune sands are situated on the lacustrine deposits in Killbear Provincial Park. A thin, discontinuous layer of eolian sand locally forms distinct mounds on the flat upper surface of the deposit. Dunes were formed during early post-Algonquin time by winds blowing from the ice to the north.
 Significant alluvial deposits were not recognized in the map area, but may occur along small creeks and rivers in minor amounts (unit 7). Recent deposits include swamps and organic remains (unit 8) which occur in abundance in bedrock hollows and in depressions on fine-grained lacustrine sediments, and modern lacustrine deposits (unit 9), which consist essentially of beach deposits reworked by modern lake action from older sediments.

ECONOMIC GEOLOGY

Quality aggregate deposits are scarce in the map area. Most existing pits exploit the ice-contact deposits north of Parry Sound along Highway 124, and small, localized deposits of ice-contact

and lacustrine material and till. These deposits are generally too fine grained, contain too much oversize material, or are locally too variable in texture to be of major economic significance. Such deposits are locally exploited, however, due to the general paucity of aggregate in the area east of Georgian Bay. A large ice-contact fan deposit north of Parry Sound is essentially worked out.
 Diatomite is associated with peat deposits in the area. Several sites have been identified in Madara Township by G.R. Gullett (in Hewitt 1967); there is no current extraction.
 Chapman, L.J.
 1975: The Physiography of the Georgian Bay-Ottawa Valley Area of Southern Ontario, Ontario Division of Mines, Geoscience Report 126, 33p. Accompanied by Color Map 2226, scale 1:253 440 or 1 inch to 4 miles.
 Chapman, L.J., and Putnam, D.F.
 1984: The Physiography of Southern Ontario, Third Edition, Ontario Geological Survey, Special Volume 2, 270p. Accompanied by Map P.2715 (coloured), scale 1:600 000.
 Davidson, A., Culshaw, N.G., and Nadreau, L.
 1980: A tectono-metamorphic framework for part of the Grenville Province, Parry Sound region, Ontario, p.175-190 in Current Research, Part A, Geological Survey of Canada, Paper 82-8A.
 Davidson, A., and Morgan, W.C.
 1981: Preliminary notes on the geology east of Georgian Bay, Ontario, Structural Province, Ontario, p.291-298 in Current Research, Part A, Geological Survey of Canada, Paper 81-1A.

Eschman, D.F., and Karrow, P.F.
 1985: Huron Basin Glacial Lakes: A Review, p.79-93 in Quaternary Evolution of the Great Lakes, edited by P.F. Karrow and P.E. Calkin, Geological Association of Canada, Special Paper 30.
 Ford, M.J., and Bajc, A.F.
 1984: Quaternary Geology of the Whitney Area, Nipissing District and Haliburton and Hastings Counties, Ontario Geological Survey, Map P.2706, Geological Series-Preliminary Map, scale 1:50 000.
 Geddes, R.S., and McClenaghan, M.B.
 1984: Quaternary Geology of the Kawagawa Lake Area, Nipissing and Muskoka Districts and Haliburton County, Ontario Geological Survey, Map P.2705, Geological Series-Preliminary Map, scale 1:50 000.
 Hewitt, D.F.
 1967: Geology and mineral deposits of the Parry Sound-Huntsville area, Ontario Department of Mines, Geological Report 65c. Accompanied by Color Map 2118, scale 1:126 720 or 1 inch to 2.5 miles.
 Kaszycki, C.A.
 1986: History of Glacial Lake Algonquin in the Haliburton Region, South Central Ontario, p.109-123 in Quaternary Evolution of the Great Lakes, edited by P.F. Karrow and P.E. Calkin, Geological Association of Canada, Special Paper 30.
 In Prep: A model for glacial and proglacial sedimentation in the Shield terrane of southern Ontario, Symposium of Glaciogenic Depositional Models, Dekalb, Illinois, April 1985.

Mollard, D.G.
 1980: Southern Ontario Engineering Geology Terrain Study, Data Base Map, Muskoka Area, 31 E/3E, Ontario Geological Survey, Open File Report 5325, 2p.
 Sanford, B.V., and Baer, A.J.
 1981: Southern Ontario, Ontario Map 1335A, Sheet 305; Geological Survey of Canada, Geological Atlas, scale 1:1 000 000.
 Sharpe, D.R.
 In Prep: Quaternary Geology, Bracebridge, Gravenhurst and Huntsville Areas, Southern Ontario, Ontario Geological Survey, Geological Series-Preliminary Map.
 Spek, C.M.
 1981: Limestone Islands Nature Reserve, Earth Science Check-sheet, Ontario Ministry of Natural Resources, Division of Parks, Parks Planning Branch, Toronto, 5p. Unpublished report.
 Staff of the Algonquin Region
 1983: Aggregate Resources Assessment, District Municipality of Muskoka, Ontario Geological Survey, Open File Report 5457, 14p.
 Wynne-Edwards, H.R.
 1972: The Grenville Province, p.264-334 in Variations in Tectonic Styles in Canada, edited by R.A. Price and R.L.W. Douglas, Geological Association of Canada, Special Paper No. 11.

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