GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 53 A

LEGEND

PRECAMBRIAN

- 6 — Undivided granitic rocks; includes 4 and 5
- 5 — Massive granitic rocks; 5a, pegmatite; 5b, syenite; 5c, porphyritic
- 4 — Foliated granitic rocks, chiefly granodiorite; 4a, foliated hybrid granitic rocks with abundant inclusions of dark amphibolite and gneiss; 4b, foliated felsite; 4c, porphyritic
- 3 — Basic intrusive rocks; 3a, ultrabasic; 3b, quartz diorite and diorite
- 2 — Clastic metasedimentary rocks; 2a, conglomerate
- 1 — Basaltic and andesitic metavolcanic rocks; derived schists and gneiss

Note: Units not necessarily in chronological order

Drift-covered area
Outcrop
Sand and gravel
Geological boundary (approximate)
Geological boundary extrapolated under drift-covered areas from aeromagnetic data
Bedding (inclined, vertical)
Foliation (inclined, vertical, deformed)
Lineament (from air photographs)
Glacial striae
Drumlin, drift ridge
Esker

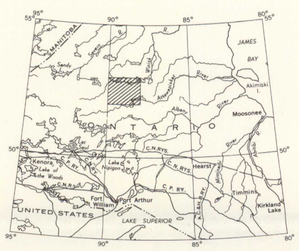
Geology by R. F. Emslie, 1961

Building
Trading Post
Wireless station
Rapids
Marsh
Height in feet above mean sea-level 700

Cartography by the Geological Survey of Canada, 1962

Mean magnetic declination 1° 51' West decreasing 3.0' annually. Readings vary from 07°E in the SW corner to 3°23'W in the NE corner of the map-area.

Air photographs covering this area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa



INDEX MAP

PUBLISHED, 1962
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MAP 1-1962
GEOLOGY
WUNNUMMIN LAKE
ONTARIO

Scale: One Inch to Four Miles = 1/253,440
Miles
4 2 0 4 8 12

DESCRIPTIVE NOTES

The area is accessible by aircraft from Pickle Lake, 40 miles to the south, or from Armstrong and Nakina on the Canadian National Railways, approximately 130 miles to the south. Supplies are available at Big Beaver House in the northwest corner of the area and at Lansdowne House on Attawapiskat Lake, a few miles east of the area. The Winisk River system crosses the northern part of the area and the Dumond-Pineimuta system crosses the southern part; these are the only two good canoe routes. Large areas in the central and western parts are inaccessible by canoe.

Relief in most places is a few tens of feet. The highest elevations are associated with esker systems, locally being more than 100 feet. Movement of the last glacial ice, as evidenced by striae and drumlinoid ridges, was south-southwest in the northern part of the area and southwest-to-west in the southern part. Rock outcrops are, for the most part, small and and scattered; but they are abundant around the western part of Wunnummin Lake, in an east-west belt north of Wigwascence Lake, and in the extreme southeastern part of the area.

Metavolcanic rocks (1) are mainly dark, fine- to very-fine-grained, basaltic varieties. Only locally are lighter-coloured greenish grey andesitic types present. Pillow zones occur in scattered localities but were found in abundance only around Wunnummin Lake where several north-facing tops were noted. Pyroclastic zones are associated with some of the volcanic rocks at Wunnummin Lake.

The best exposures of metasedimentary rocks (2) including conglomerate (2a) occur near Wunnummin Lake. The metasediments are mainly fine-grained feldspathic sandstones with small amounts of mica. The conglomerates have a similar matrix and carry pebbles and cobbles of felsite, basalt, gneiss, and granite. In most occurrences the fragments are to some degree flattened. Granite pebbles and cobbles commonly retain their equidimensional shape where the other rock fragments are strongly flattened. Iron-formation was not found in outcrops, but Prest[1] reports iron-formation encountered in drill-holes on Sandborn Lake. Extremely high aeromagnetic anomalies strongly suggest the presence of iron-formation north and west of Neawagank Lake and northwest of the junction of the Dumond and Pineimuta Rivers. The grade of regional metamorphism of the metasedimentary and metavolcanic rocks probably does not greatly exceed the upper greenschist facies.

A synclinal structure plunging to the northwest in the metasedimentary-metavolcanic belt on Wunnummin Lake is indicated by the outcrop pattern and some top determinations. Southeast of Wunnummin Lake the belt narrows and may be more discontinuous than indicated on the map—only scattered outcrops were found along the belt. The relationship between this belt and the broad belt extending northeast to join it, is not clear. A discontinuity in the aeromagnetic trends suggests a fault, but the few available outcrops indicate a gradual change in foliation attitudes at the junction. Because of poor exposure the limits of the greenstone belts are plotted mainly from aeromagnetic data. In no case however, is an area of greenstone inferred without some supporting field evidence.

Most of the intrusive basic (3) and ultrabasic (3a) rocks mapped are in the northern half of the area. Small basic intrusions are associated with most of the metasedimentary-metavolcanic areas mapped. On an island of gabbroic rock at the east end of Wunnummin Lake the rock is well-layered. The largest basic intrusion mapped is east of Nibinamik Lake. It is composed of massive gabbro and anorthositic gabbro. Two circular areas in the northwest quadrant of the map-area are interpreted as ultrabasic plugs on the basis of aeromagnetic anomalies and abundant erratics found on the lake south of the southernmost anomaly. Neither of the masses were found to outcrop. Several fresh grabbroic dykes were observed that are probably younger than the other basic rocks. One is on the southeast shore of Wunnummin Lake and two smaller ones are east of Wunnummin Lake. The large mass of diorite and quartz diorite (3b) enclosed by metavolcanic rocks at the eastern edge of the map-area may be a mafic phase of one of the large nearby granitic masses.

Foliated granites and granodiorites (4) are fine- to medium-grained rocks consisting of white to grey feldspar with little or no pink feldspar, 10 to 30% quartz, and 5 to 25% biotite. Hornblende comprises part of the mafic content locally but biotite is the common mafic mineral. Foliation is caused by parallelism of the mafic minerals and/or local compositional banding. Persistent foliation attitudes over wide areas are characteristic, but there are many highly disturbed areas which are unexplained. Related hybrid granitic rocks (4a) consist of foliated granite and granodiorite much contaminated by inclusions of amphibolite, mafic gneiss, and streaky schlieren varying in size and shape. The inclusions are in different stages of digestion and commonly are highly deformed. They comprise between 30 and 70% of the rock. Some areas of well-developed migmatite occur in this unit. Unit 4b is a foliated to strongly schistose felsite and quartz-feldspar porphyry.

Areas of massive granite and granodiorite (5) are of relatively minor extent. The rocks are light grey to pale pink or flesh-coloured, and consist of quartz, variable proportions of pink and white feldspar, and up to 15% biotite. Pegmatite (5a) occurs locally in dykes and irregular masses. Quartz, pink feldspar, and biotite are the principal constituents. A mass of coarse-grained pink syenite to syenodiorite (5b) occurs in the northeast corner of the area. The rock is characterized by large pink to purplish feldspar laths, up to 1 inch by 1/4 inch, commonly oriented to give the rock a laminated texture.

In areas mapped as undivided granitic rocks (6), information was insufficient to subdivide the rocks satisfactorily into units 4, 4a, or 5.

Prospecting in the past has been centred mainly around Wunnummin Lake and some work has been done on the eastern extremity of this belt. Diamond-drilling has been done on sulphide-bearing zones about 2 miles southeast of Nibinamik Lake and approximately 5 miles northwest of Nibinamik Lake. Sizeable areas of greenstone are indicated on the map but are too poorly exposed to be adequately prospected by conventional methods. Recourse to thorough geophysical investigations will be necessary.

[1] Prest, V. K. 1940: Geology of the Rowlandson Lake area; Geology of the Wunnummin Lake area; Ont. Dept. Mines, Ann. Rept. vol. 49, pt. 8, pp. 1-9 and 10-19.

Roads to Resources Aeromagnetic Maps (1960) 936G-939G, 946G-949G, 956G-959G, 966G-969G; Ont. Dept. Mines and Geol. Surv., Canada.