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LEGEND[a]

PHANEROZOIC

CENOZOIC

QUATERNARY

PLEISTOCENE AND RECENT
Glacial, glacial-fluvial, bog, lake and stream deposits

UNCONFORMITY

PRECAMBRIAN

PROTEROZOIC

11 Mafic Intrusive Rocks
11a Diabase
11b Diorite

INTRUSIVE CONTACT

ARCHEAN

POST-TECTONIC FELSIC INTRUSIVE ROCKS (Massive-Textured)

10
10a Potassium feldspar porphyritic biotite granite
10b Potassium feldspar porphyritic biotite granodiorite
10c Biotite granite
10d Biotite granodiorite
10e Feldspar +/- quartz porphyry
10f Felsite, aplite
10g Pegmatite

INTRUSIVE CONTACT

LATE TECTONIC INTRUSIVE ROCKS (Foliated to Massive)

9 Quartz-Saturated Intermediate to Ultramafic Intrusive Rocks
9a Hornblende +/- biotite syenite, monzonite
9b Hornblende +/- biotite monzodiorite, diorite
9c Hornblende +/- clinopyroxene +/- biotite monzogabbro, gabbro
9d Hornblendite, pyroxenite
9e Amphibole +/- clinopyroxene +/- biotite lamprophyre

INTRUSIVE CONTACT

8 Quartz-Oversaturated Felsic to Intermediate Intrusive Rocks
8a Potassium feldspar porphyritic biotite +/- hornblende granodiorite, quartz monzodiorite
8b Biotite +/- hornblende granodiorite, quartz monzodiorite
8c Hornblende +/- biotite tonalite, quartz diorite
8d Hornblende +/- biotite diorite
8e Quartz +/- plagioclase porphyritic tonalite, trondhjemite
8f Felsite, aplite
8g Pegmatite

INTRUSIVE CONTACT

PRE-TECTONIC FELSIC TO INTERMEDIATE INTRUSIVE ROCKS (Gneissic to Foliated)

7
7a Biotite +/- hornblende tonalite, quartz diorite
7b Biotite +/- hornblende granodiorite, quartz monzodiorite

INTRUSIVE CONTACT

METAMORPHOSED FELSIC TO INTERMEDIATE HYPABYSSAL INTRUSIVE ROCKS[b]

6
6a Quartz +/- feldspar porphyry
6b Feldspar porphyry
6c Felsite, aplite
6d Quartz and feldspar porphyritic granodiorite

INTRUSIVE CONTACT

METAMORPHOSED MAFIC AND ULTRAMAFIC INTRUSIVE ROCKS[b]

5
5a Gabbro
5b Melagabbro
5c Leucogabbro, anorthositic gabbro, quartz diorite
5d Quartz gabbro
5e Pyroxenite, hornblendite
5f Peridotite, dunite

INTRUSIVE CONTACT

CLASTIC AND CHEMICAL METASEDIMENTARY ROCKS[c]

4
4a Wacke
4b Arenite
4c Siltstone, mudstone
4d Heterolithic conglomerate
4e Monolithic conglomerate
4f Siliceous siltstone, chert
4g Oxide ironstone
4h Sulphide +/- graphite ironstone

CALC-ALKALIC SERIES METAVOLCANIC ROCKS[c]

3 Felsic to Intermediate Metavolcanic Rocks
3a Massive flows
3b Laminated flows
3c Pillowed flows
3d Amygdaloidal flows
3e Brecciated flows
3f Tuff, bedded tuff
3g Lapilli tuff, tuff breccia
3h Pyroclastic breccia

2 Intermediate to Mafic Metavolcanic Rocks
2a Massive flows
2b Pillowed flows
2c Pillow breccia, flow breccia
2d Amygdaloidal flows
2e Tuff, bedded tuff
2f Lapilli tuff, tuff breccia
2g Pyroclastic breccia

THOLEIITIC TO KOMATIITIC SERIES METAVOLCANIC ROCKS[c]

1 Mafic to Ultramafic Metavolcanic Rocks
1a Fine-grained massive flows
1b Medium- to coarse-grained massive flows[d]
1c Pillowed flows
1d Plagioclase megaphyric flows
1e Amygdaloidal flows
1f Variolitic flows
1g Pillow breccia, flow breccia
1h Tuff, lapilli tuff, tuff breccia

[a] Rock codes preceded by the letter "G" indicate interpretation from geophysical data.
[b] May be in part extrusive.
[c] Numerical order does not imply age relationships among metasedimentary and metavolcanic rocks.
[d] May be in part intrusive.

Mineral Deposit Status

- Ocurrence
- Prospect
- Past producer

Mineral Deposit Commodity

- Ag
- As
- Au
- Co
- Cu
- Fe
- Mo
- Pb
- Zn
- Other

MINERAL RESOURCES AND PRODUCTION

The map area has a long history of gold exploration with numerous occurrences discovered dating back to the 1880s. Occurrences indicated on the map face are those with anomalous assay results and a record of past exploration work or with surface indications of unrecorded past work. Table 1 lists nine of the past-producing gold mines with a recorded production of greater than 100 ounces (Davies and Smith 1988). Two of the past producers, the Duport Deposit (2) and the Cedar Island Extension Deposit (1), have significant reserves. The Duport Deposit has undergone extensive underground development with a decline extending to a depth of 660 feet and total reserves estimated at 2.0 million tons averaging 0.36 ounce gold per ton. The Cedar Island Extension Deposit has estimated reserves, based on diamond drilling, of 1.5 million tons averaging 0.25 ounce gold per ton (Canadian Mines Handbook 1989–90).

Gold mineralization is restricted to vein systems hosted by permeable ductile and brittle fault zones. They appear to have formed in response to the regional deformation events. Many are in close proximity to syn- to late-tectonic felsic intrusions near the greenschist–amphibolite facies transition boundary of their contact metamorphic aureoles. Detailed studies around the Canoe Lake and High Lake stocks have shown that gold mineralization appears to have formed at the same time as, but peripheral to, porphyry-style copper and molybdenum mineralization and associated potassic alteration (Smith et al. 1988).

In addition to the strong association with felsic intrusions, a significant number of gold occurrences are hosted by deformation zones that transect the map area. Many of these occurrences are far removed from the contact aureoles of late-tectonic intrusions. Three factors appear to determine the locus of the more significant deformation zone occurrences. These are: 1) at abrupt dilational jogs in the trends of deformation zones; 2) in smaller subsidiary splays off the main part of a deformation zone (Ayer and Buck 1989); and 3) where a deformation zone is intersected at a high angle by the greenschist–amphibolite facies transition boundary (Morrice 1989).

Copper and zinc mineralization is reported with iron sulphides as disseminations and veins in mafic metavolcanic rocks and as disseminations in interbedded cherty and graphitic metasedimentary rocks on the Eastern Peninsula. Molybdenum, copper and gold mineralization in widely spaced fractures associated with complex zonal alteration patterns is associated with the High Lake stock and Canoe Lake stock (porphyry copper-style mineralization). The Evenlode prospect on the east side of High Lake has diamond-drill estimated reserves of 126 000 tons grading 0.68% MoS_2 and 0.015 ounce gold per ton (Davies and Smith 1988).

Minor iron occurs in magnetite ironstone interbedded with epiclastic metasedimentary and pyroclastic metavolcanic rocks on a small island in Andrew Bay and several small islands south of East Allie Island, and in sulphidic ironstone and gossan zones scattered throughout the map area.

Industrial mineral exploration consists of the evaluation of the talc content quarried from ultramafic intrusive rocks in Moore Bay and from ultramafic volcanic rocks east of Coste Island. Minor feldspar and mica production are reported from a pegmatite dike on the southwestern tip of Falcon Island.

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ABBREVIATIONS

Ag ....silver
As ....arsenic
Asbe ....asbestos
Au ....gold
Co ....cobalt
Cu ....copper
Fe ....iron
Feld ....feldspar
Grap ....graphite
Mo ....molybdenum
Ni ....nickel
Pb ....lead
Sb ....antimony
Serp ....serpentinite
Soap ....soapstone
U ....uranium
Zn ....zinc

Table 1. Past producing mines (recorded past production figures).

Map No.	Mine Name	Past Production
1	Cedar Island	4941 oz Au, 3884 oz Ag
2	Duport	4672 oz Au, 1143 oz Ag
3	Gold Hill	1090 oz Au
4	Kenricia	2533 oz Au, 521 oz Ag
5	Mikado	28 335 oz Au, 41 oz Ag
6	Olympia	332 oz Au, 58 oz Ag
7	Ophir	6089 oz Au
8	Sultana	15 977 oz Au
9	Wendigo	67 423 oz Au, 14 762 oz Ag, 1 886 246 lbs Cu

Table 2. Geochronology results for samples from the Lake of the Woods area.

Map No.	Location	Rock Type	Classification	Easting	Northing	Age (Ma)	Inheritance Age(s) (Ma)	Source Reference
1	High Lake stock (old)	granodiorite	intrusive	346700	5508650	2727.0 +1.9/-1.6		Davis and Smith 1991
2	High Lake stock (young)	granodiorite	intrusive	346520	5507025	2710.7 ± 1.9	2733	Davis and Smith 1991
3	Crowduck group	felsic tuff	volcanic	352345	5504650	<2699 ± 2	2794, 2797	Ayer and Davis 1997
4	Zig Zag Island formation	felsic flow	volcanic	362490	5505040	2719.6 +3.2/-2.7		Ayer and Davis 1997
5	Canoe Lake stock	porphyritic tonalite	intrusive	358335	5496160	2708.9 ± 1.1		Davis and Smith 1991
6	Shoal Lake volcanic	dacite tuff breccia	volcanic	352685	5493875	2723.3 ± 2.0		Davis and Smith 1991
7	Snowshoe Bay batholith	granodiorite	intrusive	350235	5493640	<2708 ± 7	2802	Davis and Smith 1991
8	Duport Mine	mineralized felsic dike	intrusive	352340	5492593	2716.2 ± 2.3		Davis and Smith 1991
9	Duport Mine	dioritic dike cutting ore	intrusive	352340	5492593	2708.5 ± 1.9		Davis and Smith 1991
10	Stevens Island complex	quartz diorite	intrusive	352185	5491160	2723 +1.9/-1.6		Davis and Smith 1991
11	White Partridge Bay group	felsic tuff breccia	volcanic	382975	5506440	<2709.1 ± 1.6	2715, 2786	Ayer and Davis 1997
12	Bigstone Bay group	quartz gabbro/massive flow	volcanic	397000	5502130	2737.9 ± 2.0		Ayer and Davis 1997
13	Shore Island formation	felsic tuff	volcanic	400475	5489425	<2778	2778, 2790, 2825	Ayer and Davis 1997
14	Sunset Channel formation	felsic tuff	volcanic	385145	5480475	2719 ± 1		Ayer and Davis 1997
15	Falcon Island stock	monzonite	intrusive	376250	5474460	2694 ± 3		Ayer and Davis 1997
16	Aulneau batholith	granodiorite	intrusive	405330	5470730	2709.6 +3.9/-1.5		Davis and Edwards 1986
17	Aulneau batholith	tonalite	intrusive	396800	5456800	2716.8 +4.9/-2.8		Davis and Edwards 1986

Ontario

Ontario Geological Survey

MAP P.2675

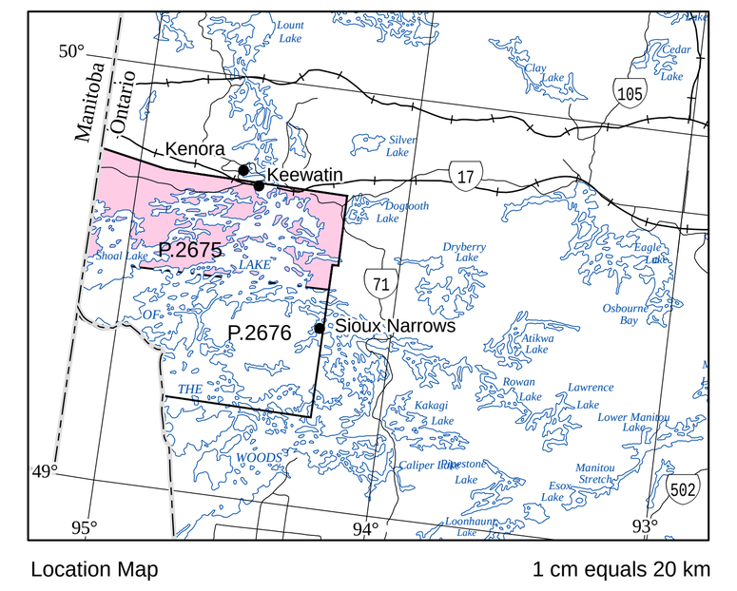
PRECAMBRIAN GEOLOGY

LAKE OF THE WOODS AREA NORTH SHEET

Scale 1:50 000

1000 m 0 1 2 km

NTS References: 52 E/9,10,11,14,15



Location Map 1 cm equals 20 km

SYMBOLS

- Geologic contact, interpreted
- Anticline
- Syncline
- Fault
- Bedding; facing unknown (inclined, vertical, magnitude of dip uncertain)
- Bedding; facing known (inclined, vertical, magnitude of dip uncertain)
- Pillowed flow; facing known (magnitude of dip uncertain)
- Volcanic bedding; facing unknown (vertical, inclined)
- Volcanic bedding; facing known (vertical, inclined, overturned)
- Foliation (inclined, vertical, magnitude of dip uncertain)
- Lineation
- Compositional layering and tectonic foliation (trend only, inclined, vertical)
- Roads (primary, secondary, trail)
- Boundary (township, Provincial Park/First Nation)
- Location of geochronology sample (age in Ma), with source rock type (intrusive, volcanic), keyed to table 2

SOURCES OF INFORMATION

Geology is from published maps of the Ontario Geological Survey, Ministry of Northern Development, Mines and Forestry; the Geological Survey of Canada; unpublished assessment file maps and theses maps; and supplementary mapping by J.A. Ayer in 1989 and 1990.

Assessment files, Resident Geologist's Office, Ministry of Northern Development, Mines and Forestry, Kenora.

The digital base map is derived from the Ontario Land Information Warehouse, Land Information Ontario, Ministry of Natural Resources, and 1:50 000 scale topographic maps from the National Topographic Data Base, produced by Earth Science Sector, Natural Resources Canada.

The map co-ordinates are in UTM zone 15, North American Datum (NAD) 83.

Magnetic declination approximately 1°26' E at the centre of the map area in 2009.

CREDITS

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Cartographic production by R. Corcoran.

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