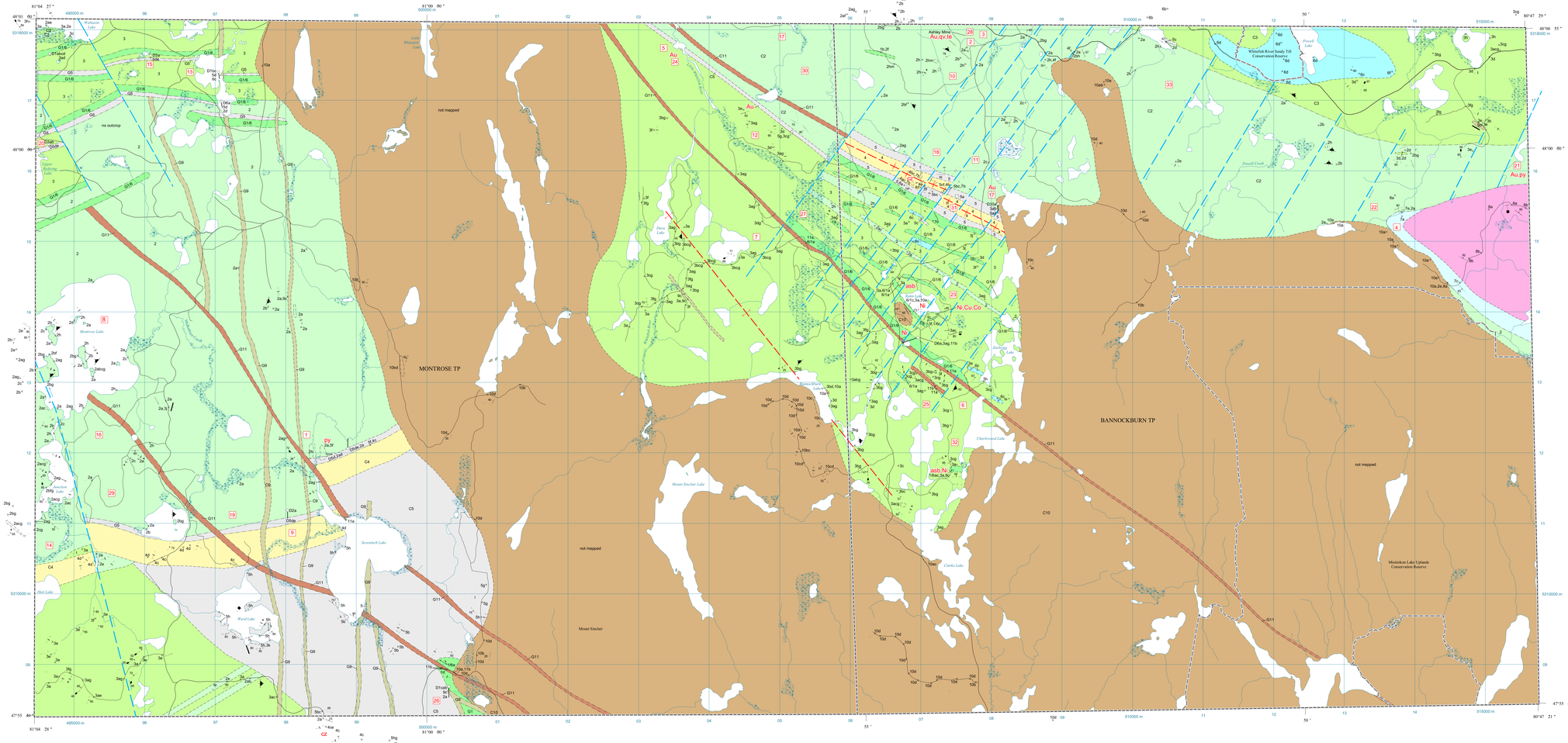

SYMBOLS

- Small bedrock outcrop
- Area of bedrock outcrop
- Geologic contact (interpreted, observed, interpreted from geophysical data)
- Anticline
- Syncline
- Fault; unknown horizontal displacement (trend only, interpreted)
- Fault; dextral horizontal displacement (trend only, interpreted)
- Fault; sinistral horizontal displacement (trend only, interpreted)
- Bedding; unsubdivided, facing not known (inclined, vertical)
- Sedimentary bedding; other than grading or crossbedding, facing known (inclined)
- Volcanic bedding; facing not known (inclined, vertical)
- Pillowed flow; facing known (inclined, vertical)
- Ignious layering; facing not known (inclined, vertical)
- Cleavage (inclined, vertical)
- Schistosity (magnitude of dip uncertain, inclined)
- Mineral foliation, unknown generation (inclined, vertical)
- Mineral foliation, first generation (inclined, vertical)
- Mineral foliation, second generation (vertical)
- Mineral foliation, third generation (vertical)
- Primary igneous foliation (vertical)
- Dike (vertical)
- Sill (inclined)
- Stretching lineation
- Vein (vertical)
- Fracture (vertical)
- Axial plane of folds; M-asymmetry (vertical)
- Axial plane of folds; S-asymmetry (inclined)
- Glacial striae
- Drill hole; projected to surface
- Property; keyed to list
- Road (primary, secondary, tertiary)

LEGEND[note a]

PHANEROZOIC

CENOZOIC

QUATERNARY

RECENT

Lake, stream and wetland deposits

PLEISTOCENE

Glacial, glaciofluvial and glaciolacustrine deposits; sand, gravel, clay; till

UNCONFORMITY

PRECAMBRIAN

PROTEROZOIC

MESOPROTEROZOIC

11 — Mafic Intrusions (Sudbury Swarm)

- 11a Diabase; medium grained, equigranular
- 11b Diabase; porphyritic, plagioclase phenocrysts

INTRUSIVE CONTACT

PALEOPROTEROZOIC

HURONIAN SUPERGROUP

Cobalt Group

10 — Gowganda Formation

- 10a Conglomerate; matrix to clast supported, polymictic
- 10b Sandstone and arkose
- 10c Siltstone and argillite
- 10d Wacke

UNCONFORMITY

9 — Mafic Intrusions (Diabase Dikes)

- 9a[*] Diabase; <1% plagioclase phenocrysts (Matachewan swarm)
- 9b[*] Diabase; >1% plagioclase phenocrysts (Matachewan swarm)
- 9c Diabase; medium grained, equigranular, unknown affinity

INTRUSIVE CONTACT

ARCHEAN

NEOARCHEAN

8 — Metamorphosed Alkalic Intermediate and Felsic Intrusive Rocks

- 8a Syenite; equigranular
- 8b Quartz syenite, alkaline granite
- 8c[*] Feldspar-porphyritic syenite; equant to lath feldspar phenocrysts from 0.5 to 1 cm in size
- 8d[*] Quartz monzonite, quartz diorite
- 8e[*] Schist
- 8f[*] Feldspathic aplitic dikes

INTRUSIVE CONTACT

7 — Metamorphosed Alkalic Ultramafic and Mafic Intrusive Rocks

- 7a[*] Hornblendite
- 7c[*] Micaceamphibole-bearing lamprophyre
- 7d[*] Alkali gabbro; hornblende, white weathering, amphibole bearing
- 7e[*] Alkali gabbro
- 7e Mafic syenite, mesocratic syenite

INTRUSIVE CONTACT

6 — Metamorphosed Tholeiitic Ultramafic and Mafic Intrusive Rocks

- 6a Peridotite, dunite; massive, cumulate textured[b]
- 6b Pyroxenite
- 6c Gabbro, leucogabbro
- 6d Diorite, quartz diorite
- 6f Anorthosite, anorthositic gabbro

5 — Clastic and Chemical Metasedimentary Rocks

- 5a Conglomerate; clast supported, polymictic, clasts less than 1 cm to 25 cm
- 5b Wacke, lithic sandstone
- 5c Siltstone, argillite
- 5d Graphitic argillite; commonly with pyrite
- 5e Schist
- 5f Chert
- 5g[*] Quartzose; fine to medium grained, feldspathic, light grey to brown weathering
- 5h Volcaniclastic conglomerate; sub-rounded to angular metavolcanic and metasedimentary clasts from 1 to 40 cm in a tuffaceous matrix
- 5i[*] Pyrite-magnetite ironstone; massive to banded, minor chert

4 — Felsic Metavolcanic Rocks

- 4a Flows; massive
- 4b Flow breccia; hyaloclastite
- 4c Tuff, lapilli tuff, crystal tuff
- 4d Tuff breccia, breccia; epiclastic, pyroclastic
- 4e Schist
- 4f Quartz-feldspar porphyry intrusions

3 — Intermediate Metavolcanic Rocks

- 3a Flows; massive
- 3b Flows; pillowed
- 3c Flow-top breccia and/or pillow breccia
- 3d Tuff, lapilli tuff and crystal tuff
- 3e Schist
- 3f Tuff breccia and breccia; pyroclastic and epiclastic
- 3g Amygdaloidal
- 3h Medium- to coarse-grained flows
- 3i Feldspar porphyry; euhedral feldspar to 2 cm in size
- 3k* Dacitic dikes

2 — Mafic Metavolcanic Rocks

- 2a Flows; massive
- 2b Flows; pillowed
- 2c Pillow and/or flow-top breccia
- 2d Tuff, lapilli tuff
- 2e Schist
- 2f Chert
- 2g Amygdaloidal
- 2h Medium- to coarse-grained flows
- 2j* Amphibolite, recrystallized rocks; hornfelsic textured
- 2k* Leucocrene bearing
- 2l* Basaltic dikes
- 2m Magnetite porphyry

1 — Ultramafic and Mafic Metavolcanic Rocks (Komatiites)

- 1a Flows; massive, cumulate textured, peridotite[c]
- 1b Flows; spinifex textured
- 1c Flow breccia, polysutured-textured flows
- 1d Spinifex flows; rocks with light green to green, actinolite/tremolite bearing
- 1e* Schist; commonly with iron carbonate, less commonly with green mica

[a] This legend is common to map P.3577 (Precambrian Geology, Powell Township). Legend codes that are marked with an asterisk (*) do not appear, or are different, on this map.
[b] These rocks may, in part, be extrusive.
[c] These rocks may, in part, be intrusive.
[d] Rock codes followed by a G refer to data compiled from existing maps and from maps filed for assessment work credits; the letter "G" preceding a rock code refers to data interpreted from geophysical data; the letter "D" preceding a rock code refers to data compiled from diamond drill hole logs.
[e] Rocks codes designated with a "f" (e.g., 6f) indicate the lithology may contain both rock types, but the first number code is inferred to predominate.

Ontario

Ontario Geological Survey

MAP P.3576

PRECAMBRIAN GEOLOGY

BANNOCKBURN AND MONTROSE TOWNSHIPS

Scale 1:20 000

500m 0 0.5 1 km

NTS Reference: 41 P/14,15; 42 A/2,3

©Queen's Printer for Ontario, 2006.

This map is published with the permission of the Director, Ontario Geological Survey.

ABBREVIATIONS

- ast: ..... asbestos
- Au: ..... gold
- Co: ..... cobalt
- Cu: ..... copper
- cc: ..... carbonate alteration
- Ni: ..... nickel
- py: ..... pyrite
- Qv: ..... quartz vein
- te: ..... tellurides

PROPERTIES[a]

1. Amax Exploration Incorporated (1973)
2. Camart Mines Limited (2005)
3. Camart Mines Limited, Patromet Resources Limited (1982)
4. Cameco Corp. (1998)
5. Canex Placer Developments Inc. (1985)
6. Canex Aerial Exploration Ltd. (1973)
7. Cascade Pacific Explorations Ltd. (1991)
8. D. Mullen (1993)
9. Essex Minerals Ltd. (1981)
10. F. Kiernicki (1991)
11. F. Kiernicki, Rand Resources Inc. (1999)
12. Gowest Amalgamated Mining Company Limited (1974)
13. Gowest Amalgamated Resources Ltd. and Jonpol Explorations Limited (1990)
14. G.J. Mullen, J. Kobbin, L.M. Dyment (1992)
15. Granges Exploration Ab (1974)
16. Hanna Mining (1974)
17. Hanna Mining Company (1974)
18. Homestake Mineral Development Co. (1991)
19. Inco Ltd. (1995)
20. International Nickel Company Ltd. (1978)
21. Jonpol Explorations Ltd. (1990)
22. Manville Canada Inc. (1984)
23. Mustang Minerals Corp. (2005)
24. Noranda Exploration Company Limited (1992)
25. Outokumpu Mines Limited (1968)
26. Pacific Manner Resources (1995)
27. Pabco Mines Quebec Ltd. (1981)
28. Phelps Dodge Corporation (1974)
29. Phelps Dodge Corporation of Canada (1965)
30. Phoenix Matachewan Mines Inc. (2003)
31. RJK Explorations Inc. (1997)
32. W. Bodwell (1968)
33. Wistel Resources Ltd. (1993)

[a] Dates in brackets indicate last year of exploration.

SOURCES OF INFORMATION

Digital base map derived from Ontario Land Information Warehouse, Land Information Ontario, scale 1:20 000, with modifications by staff of the Ministry of Northern Development and Mines.

Map co-ordinates are in UTM zone 17, NAD 83.

Ontario Geological Survey 2003. Ontario airborne geophysical surveys, magnetic and electromagnetic data, Kirkland Lake area; Ontario Geological Survey, Geophysical Data Set 1102—Revised.

Jensen, L.S. 1996. Precambrian geology, Bannockburn Township; Ontario Geological Survey, Preliminary Map P.3355, scale 1:20 000.

Jensen, L.S. 1996. Precambrian geology, Montrose Township; Ontario Geological Survey, Preliminary Map P.3354, scale 1:20 000.

Rickaby, H.C. 1932. Bannockburn gold area, District of Timiskaming, Ontario; Ontario Department of Mines, Map 41a, scale 3/4 inches=1 inch.

Files of the Resident Geologist's Office, Kirkland Lake.

The Earth Resources and Mineral Exploration web Site (ERMES).

Geology not tied to surveyed lines.

Magnetic declination was approximately 11° 7' W at the centre of the map area in 2005.

CREDITS

Geology by S. Prefontaine, B.R. Berger and assistants, 2005.

To enable the rapid dissemination of information, this map has not received a technical edit. Discrepancies may occur for which the Ontario Ministry of Northern Development and Mines does not assume liability. Users should verify critical information.

Issued 2006.

Information from this publication may be quoted if credit is given. It is recommended that reference to this map be made in the following form:

Prefontaine, S. and Berger, B.R. 2006. Precambrian geology; Bannockburn and Montrose townships; Ontario Geological Survey, Preliminary Map P.3576, scale 1:20 000.