

Location Map 1 cm equals 10 km

SOURCES OF INFORMATION

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

Universal Transverse Mercator (UTM) coordinates are in North American Datum 1983 (NAD83), Zone 17.

Ayer, J.A., Trowell, N.F. and Josey, S. 2004. Geological compilation of the Abitibi Greenstone Belt, Ontario Geological Survey, Miscellaneous Release—Data 143.

Berger, B.R. 2005. Geological synthesis of the Highway 66 area from Swastika to Matachewan, Ontario Geological Survey, Open File Report 6177.

Corfu, F., Kogut, T.E., Kwok, Y.Y. and Jensen, L.S. 1989. U-Pb zircon geochronology in the south-western Abitibi greenstone belt, Superior Province, Canadian Journal of Earth Sciences, v.26, p.1747-1763.

Genie, W. and Thomson, J.E. 1946. Kenogami Lake area, District of Timiskaming, Ontario, Ontario Department of Mines, Map 1946-1, scale 1:12 000.

Jensen, L.S. 1990. Western half of Kirkland Lake sheet, District of Timiskaming, Ontario Geological Survey, Open File Map 139, scale 1:15 840.

Lowell, H.L. 1966. Powell and Cairo townships, Timiskaming District, Ontario Department of Mines, Map 2110, scale 1:31 680.

Lowell, H.L. 1972. Eby-Otto area, Timiskaming District, Ontario Department of Mines and Northern Affairs, Map 2235, scale 1:31 680.

Moore, J.C.G. 1966. Holmes-Burt area, Timiskaming District, Ontario Department of Mines, Map 2078, scale 1:31 680.

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

Files of the Resident Geologist's Office, Kirkland Lake, and ERMES (Earth Resources and Mineral Exploration web Site).

Magnetic declination in the centre of the map area approximately 11°26' in 2006.

Metric conversion factor: 1 foot = 0.3048 m.

Geology not tied to surveyed lines.

LEGEND

- PHANEROZOIC
- CENOZOIC
- QUATERNARY
- RECENT
- PLEISTOCENE
- GLACIAL, glacioluvial and glaciolacustrine deposits: sand, gravel, clay, till
- Lake, stream and wetland deposits

UNCONFORMITY

- 14 Mafic Intrusive Rocks: diabase dikes (Subbury swarm)

INTRUSIVE CONTACT

PALEOPROTEROZOIC

HURONIAN SUPERGROUP

Cobalt Group

- 13 Gowanda Formation
- 13a Conglomerate
- 13b Sandstone and arkose
- 13c Siltstone and argillite
- 13d Wacke

UNCONFORMITY

- 12 Mafic Intrusive Rocks (Diabase Dikes)
- 12a Diabase <1% plagioclase phenocrysts (Matachewan swarm)
- 12b Diabase >1% plagioclase phenocrysts (Matachewan swarm)
- 12c Diabase: medium-grained, equigranular, unknown affinity

INTRUSIVE CONTACT

ARCHAIC

NEOARCHAIC

- 11 Metamorphosed Calc-Alkaline Felsic and Intermediate Intrusive Rocks
- 11a Massive to foliated tonalite
- 11b Massive to foliated monzonite and quartz monzonite
- 11c Massive to foliated granodiorite, granite
- 11d Gneiss: compositional mineral layering
- 11e Gneiss: banded and irregular
- 11f Aplite and/or pegmatite dikes
- 11h Xenolith-bearing: 1 to 10% generally small (<30 cm in size) country rock
- 11i Equigranular to feldspar porphyritic tonalite dikes
- 11j Feldspar porphyritic granodiorite
- 11k Agranitic-textured tonalite gneiss with rounded to angular mafic inclusions up to 40 cm in size
- 11l Tonalite to diorite: melanocrystic in situ, has melanosome rims around leucosome
- 11m Dioritic to tonalitic: dark, medium-grained, homogeneous

- 10 Metamorphosed Alkaline Felsic and Intermediate Intrusive Rocks
- 10a Equigranular, medium- to coarse-grained syenite
- 10b Monzonite, quartz monzonite
- 10c Alkali-feldspar granite, quartz syenite
- 10d Spotted syenite: 1 to 10% ultramafic nodules from <1 cm to 20 cm in diameter
- 10e Aplite dikes
- 10f Intrusion breccia: rounded and angular xenoliths of country rock near the contact of the Cairo stock
- 10g Syenitic feldspar porphyry
- 10h Schist, mylonite
- 10i White to pink, fine-grained albite
- 10j Syenite gneiss
- 10k Fine-grained, sugary-textured, apitic syenite
- 10l Coarse-grained to pegmatitic syenite
- 10m Mesocratic to melanocratic syenite
- 10n Xenolith-bearing: 2 to 10% small (<30 cm in size) mafic country rock
- 10o Biotite-bearing biotite crystals up to 7 mm in size and comprising up to 15% of rock
- 10p Potassium feldspar megacrystic syenite: crystals up to 5 cm in size; 10 to 30% amphibole and biotite in groundmass

- 9 Metamorphosed Alkaline Ultramafic and Mafic Intrusive Rocks
- 9a Hornblende and/or pyroxene
- 9b Melasyenite
- 9c Xenolith-bearing
- 9d Mafic syenitic aegirite
- 9e Phlogopite-amphibole lamprophyre
- 9f Alkali gabbro and/or diorite
- 9g Amphibole ± mica lamprophyre
- 9h Mica-bearing gabbro to melagabbro
- 9i Megacrystic amphibole: crystals up to 3 cm diameter

INTRUSIVE CONTACT

- 8 Metamorphosed Tholeiitic Ultramafic and Mafic Intrusive Rocks
- 8a Peridotite: massive, talc- and serpentine-bearing
- 8b Gabbro, leucogabbro
- 8c Schist
- 8d Diorite to quartz diorite
- 8e Pegmatitic gabbro
- 8f Feldspathic apitic dikes
- 8g Intrusion breccia
- 8h Leucogabbro
- 8i Xenolith-bearing
- 8j Olivine-bearing
- 8k Olivine-bearing
- 8l Olivine-bearing
- 8m Olivine-bearing
- 8n Olivine-bearing
- 8o Olivine-bearing
- 8p Olivine-bearing
- 8q Olivine-bearing
- 8r Olivine-bearing
- 8s Olivine-bearing
- 8t Olivine-bearing
- 8u Olivine-bearing
- 8v Olivine-bearing
- 8w Olivine-bearing
- 8x Olivine-bearing
- 8y Olivine-bearing
- 8z Olivine-bearing

INTRUSIVE CONTACT

- 7 Alkaline Metavolcanic and Related Intrusive Rocks—Timiskaming Assemblage
- 7a Massive mafic and intermediate flows with biotite ± amphibole phenocrysts
- 7b Intermediate to felsic tuff and lapilli tuff: heterolithic, schistose
- 7c Intermediate to felsic tuff breccia: heterolithic, epiclastic
- 7d Trachyte flows: feldspar porphyritic to porphyritic
- 7e Intermediate to felsic alkalic dikes and sills
- 7f Schist
- 7g Calc-silicate altered alkalic rocks; chlorite-amphibole swirfs, knots and veins
- 7h Amphibolite: grey-green, brittle rock, extensively recrystallized
- 7i Feldspar porphyry dikes: megacrystic, euhedral feldspar crystals up to 8 cm in size; trachytic textured

- 6 Clastic and Chemical Metasedimentary Rocks—Timiskaming Assemblage
- 6a Wacke, sandstone, arkose
- 6b Siltstone
- 6c Argillite
- 6d Conglomerate: polymictic, clast and matrix supported
- 6e Schist
- 6f Chert
- 6g Rubby conglomerate and grit

INTRUSIVE CONTACT

- 5 Clastic and Chemical Metasedimentary Rocks—Turbidite Related
- 5a Wacke
- 5b Siltstone
- 5c Argillite
- 5d Graphitic and pyritic ironstone ± chert
- 5e Chert
- 5f Schist
- 5g Gneiss
- 5h Tuffaceous: fine- to medium-grained, feldspathic
- 5i Conglomerate: metavolcanic and metasedimentary clasts from 1 to 40 cm in size
- 5j Amphibolite: metasedimentary rocks, recrystallized iron formation: magnetite-chert, laminated to thin bedded

INTRUSIVE CONTACT

- 4 Felsic Metavolcanic Rocks
- 4a Massive flows
- 4b Flow breccia: hydroclastic
- 4c Tuff and lapilli tuff: equigranular to irregularly porphyritic, white weathering
- 4d Rarely porphyritic, white weathering

INTRUSIVE CONTACT

- 3 Intermediate Metavolcanic Rocks
- 3a Flow: masses to flow laminated
- 3b Filled flows
- 3c Flow top breccia and/or pillow breccia
- 3d Tuff and lapilli tuff
- 3e Schist
- 3f Tuff breccia and breccia: pyroclastic and epiclastic
- 3g Anyptoloidal
- 3h Feldspar porphyritic: euhedral to subhedral, white plagioclase porphyroblasts and phenocrysts to 7 mm in size
- 3i Amphibolite with calc-silicate alteration ± feldspar porphyroblasts
- 3j Gneiss: banded with mineral segregation and extensive recrystallization
- 3k Basaltic dikes

INTRUSIVE CONTACT

- 2 Mafic Metavolcanic Rocks
- 2a Massive flows
- 2b Filled flows
- 2c Flow and/or flow top breccia
- 2d Tuff and lapilli tuff
- 2e Schist
- 2f Variscite
- 2g Amygdaloidal
- 2h Plagioclase-bearing: may be porphyritic
- 2i Leucocryst-bearing
- 2j Amphibolite
- 2k Calc-silicate alteration, epidote-chlorite bands, veins, patches ± calcite veins
- 2l Gneiss: banded and recrystallized
- 2m Basaltic dikes

INTRUSIVE CONTACT

- 1 Ultramafic and Mafic Metavolcanic Rocks (Komatiites)
- 1a Massive flow
- 1b Spinifex-textured flows
- 1c Schist
- 1d Very soft, dark green komatiitic basalt
- 1e Flow breccia
- 1f Polytextured flows

*The letter "C" preceding a code refers to data compiled from existing maps and from maps filed for assessment work credits, and are available for viewing at the Kirkland Lake Resident Geologist's Office and from the Earth Resources and Mineral Exploration website (ERMES). The letter "G" preceding a code refers to data interpreted from geophysical data. The letter "D" preceding a code refers to data compiled from diamond-drill hole logs, which are available for viewing at the Kirkland Lake Resident Geologist's Office and from ERMES.

Rocks codes designated with a 7 (e.g., 3C2) indicate the lithology may contain both rock types but the first number code is inferred to be predominant.

These rocks may, in part, be extrusive.

These rocks may, in part, be intrusive.

CREDITS

Geology by B.R. Berger, L. Pigeon, G. LeBlanc and assistants, 2002 to 2004.

Digital drafting by S. Josey.

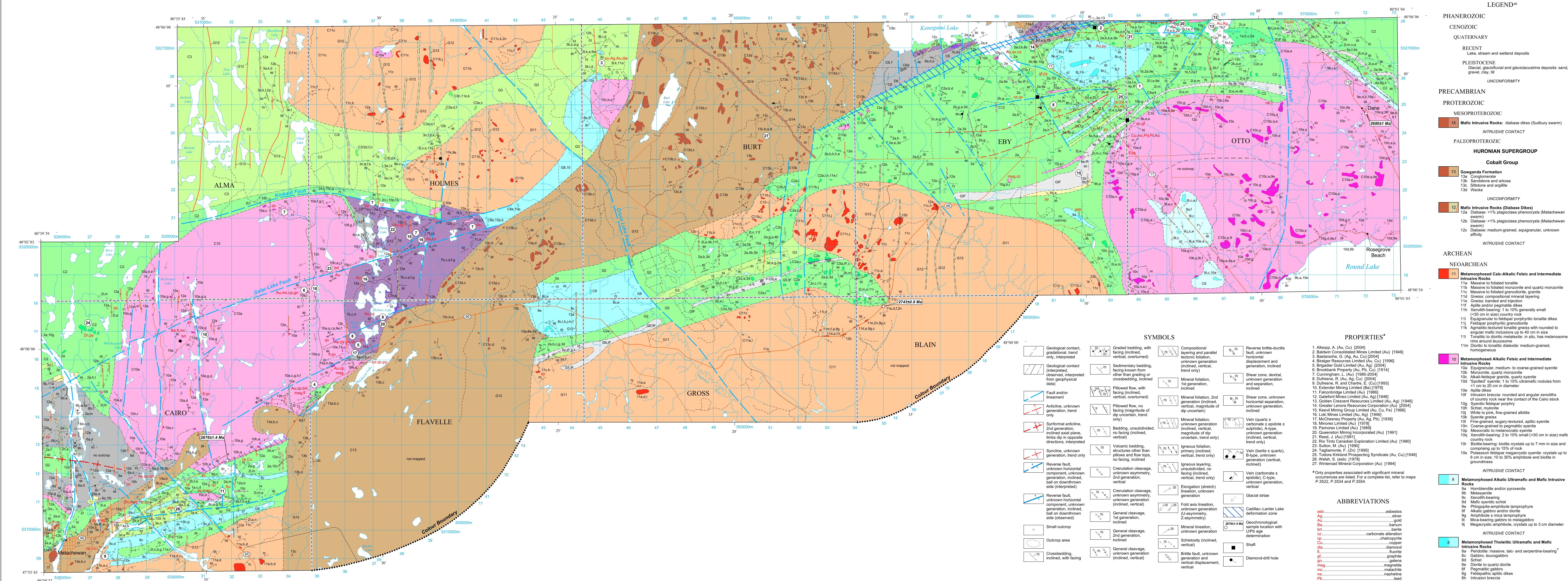
Cartographic production by S. MacLean and A. Evers.

Editing by M. Ruska.

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 does not 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.

Issued 2006.

Berger, B.R., Pigeon, L. and LeBlanc, G. 2006. Precambrian geology, Highway 66 area, Swastika to Matachewan, Ontario Geological Survey, Map 2677, scale 1:50 000.



SYMBOLS

- Geological contact, gradational, trend only, interpreted
- Geological contact (interpreted, interpreted from geophysical data)
- Fault and/or lineament
- Anticline, unknown generation, trend only
- Synformal anticline, 2nd generation, inclined axial plane, limbs dip in opposite directions, interpreted
- Syncline, unknown generation, trend only
- Reverse fault, unknown horizontal component, unknown generation, inclined, ball on downthrown side (interpreted)
- Reverse fault, unknown horizontal component, unknown generation, inclined, ball on downthrown side (observed)
- Small outcrop
- Outcrop area
- Crossbedding, inclined, with facing
- Graded bedding, with facing (inclined, vertical, overturned)
- Sedimentary bedding, facing known from other than grading or crossbedding, inclined
- Pillow flow, with facing (inclined, vertical, overturned)
- Pillow flow, no facing (magnitude of dip uncertain, trend only)
- Bedding, unsubsided, no facing (inclined, vertical)
- Volcanic bedding, structures other than pillows and flow tops, no facing, inclined
- Crenulation cleavage, unsubsided, no facing (inclined, vertical)
- Crenulation cleavage, unknown generation, 2nd generation, vertical
- Elongation (stretch) (U-symmetry)
- Fold axis lineation, unknown generation (U-symmetry)
- General cleavage, 1st generation, inclined
- Mineral lineation, unknown generation (inclined, vertical)
- Schistosity (inclined, vertical)
- Brittle fault, unknown generation and vertical displacement, vertical
- Reverse brittle-ductile fault, unknown horizontal displacement and generation, trend only
- Shear zone, dextral, unknown generation and separation, inclined
- Shear zone, unknown horizontal separation, unknown generation, inclined
- Vein (quartz ± epidote ± calcite ± apatite ± magnetite, unknown generation (inclined, vertical, trend only)
- Vein (barite ± quartz), B-type, unknown generation (vertical, inclined)
- Vein (carbonate ± epidote), C-type, unknown generation, vertical
- Alkalic strike
- Cadillac-Larder Lake deformation zone
- Geochronological sample location with U/Pb age determination
- Shaft
- Diamond-drill hole

PROPERTIES*

- Allopp, A. (Au, Cu) [2004]
- Baldwin Consolidated Mines Limited (Au) [1946]
- Basaracha, G. (Ag, Au, Cu) [2004]
- Biniger Resources Limited (Au, Cu) [1966]
- Brigador Gold Limited (Au, Cu) [2004]
- Brookbank Property (Au, Pb, Cu) [1914]
- Cumrigham, L. (Au) [1988-2004]
- Dufresne, R. (Au, Ag, Cu) [2004]
- Dufresne, R. and Charro, E. (Cu) [1993]
- Extender Mining Limited (Ba) [1979]
- Falconbridge Limited (Au) [1985]
- Goldcrest Mines Limited (Au, Ag) [1946]
- Golden Crescent Resources Limited (Au, Ag) [1946]
- Greater Lanco Resources Corporation (Au) [2004]
- Kevel Mining Group Limited (Au, Cu, Fe) [1966]
- Loki Mines Limited (Au, Ag) [1946]
- McChesney Property (Au, Ag, Fe) [1936]
- Minorex Limited (Au) [1978]
- Panorex Limited (Au) [1989]
- Queenston Mining Incorporated (Au) [1991]
- Rend, J. (Au) [1991]
- Rio Tinto Canadian Exploration Limited (Au) [1980]
- Sutton, M. (Au) [1990]
- Tagliamonte, F. (Zn) [1995]
- Todor Kirilov Prospecting Syndicate (Au, Cu) [1948]
- Weiss, S. (As) [1978]
- Winterado Mineral Corporation (Au) [1994]

*Only properties associated with significant mineral occurrences are listed. For a complete list, refer to maps P-3522, P-3534 and P-3554.

ABBREVIATIONS

- asb. asbestos
- Ag silver
- Au gold
- Ba barium
- brt. barite
- cc. carbonate alteration
- ch. chalcopyrite
- cl. cl. copper
- di. diamond
- fl. fluorite
- gf. graphite
- gn. galena
- g. gabbro
- mg. magnetite
- ms. malachite
- ne. nepheline
- lead lead
- pd. palladium
- pl. pyrite
- py. quartz vein
- qtz. quartz
- sp. sphalerite
- sp. sphalerite
- tour. tourmaline