



# Bedrock Geology of the Cochrane River area, Northeast Wollaston Domain (Parts of NTS 64L/10, /11, /14 and /15) at 1:50 000 scale

Preliminary Geological Map (2006)

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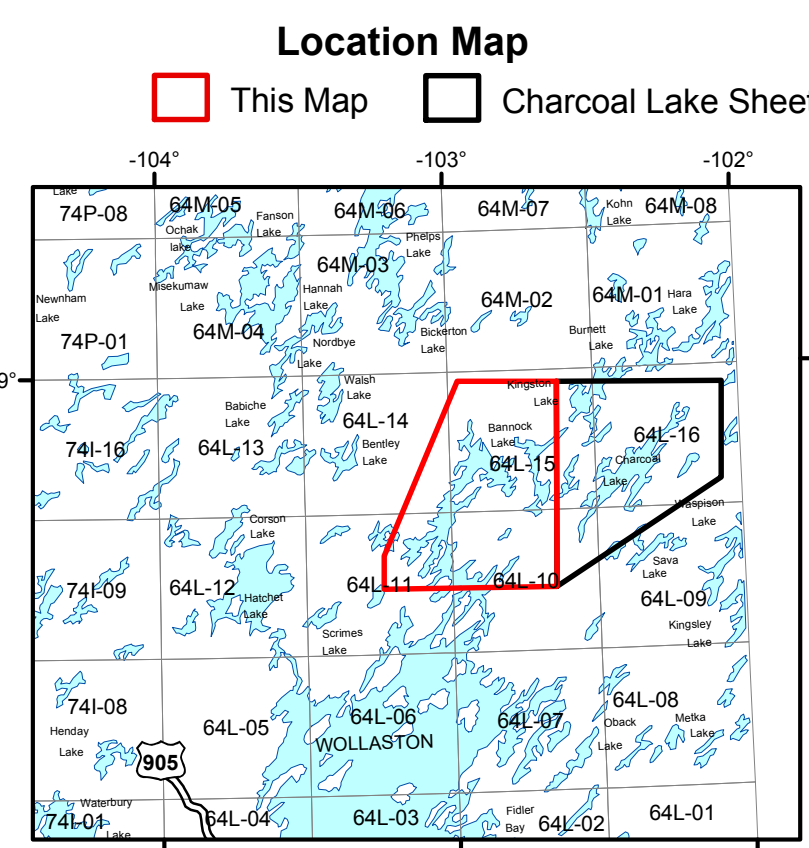
The area was mapped by C.D. Card, C.T. Harper, J. Lesperance, N. Barsi and J.S. Smith in the summer of 2006.

This map was printed from the geologist's digital file. Geological data were processed using PenDragon Forms, Microsoft Access, and ArcView 9.1 software. Base maps were compiled from 1:50 000 scale digital topographic maps licensed from Saskatchewan Information Services Corporation. Grid coordinates are NAD 83 UTM zone 13. The map was produced using ArcView 9.1 software.

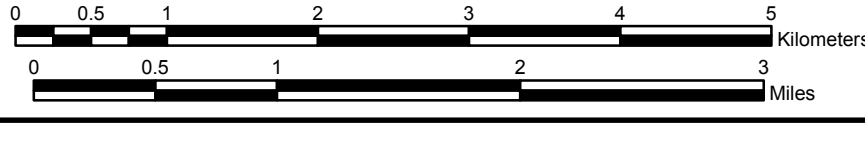
The map is issued in a package with Summary of Investigations 2006, Volume 2, Saskatchewan Geological Survey, and is available separately.

The map accompanies the following report: Card, C.D., Harper, C.T., Barsi, N., Lesperance, J., and Smith, J.S. (2006): Investigation of the Wollaston-Mudjatik Transition, Charcoal Lake and Cochrane River (Parts of NTS 64L-9, -10, -11, -14, -15 and -16), in Summary of Investigations 2006, Volume 2, Saskatchewan Geological Survey, Sask. Industry and Resources, Misc. Rep. 2006-4.2.

This map may be referenced as: Card, C.D., Harper, C.T., Barsi, N., Lesperance, J., and Smith, J.S. (2006): Bedrock Geology of the Cochrane River area, Northeast Wollaston Domain (parts of NTS area 64L/10, /11, /14 and /15), 1:50 000 scale prelim. map, with Summary of Investigations 2006, Volume 2, Saskatchewan Geological Survey, Sask. Industry and Resources, Misc. Rep. 2006-4.2.



Scale 1:50 000



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### Legend

- D** Diabase, dark grey on fresh surfaces, brown on weathered surfaces, fine to medium grained; ophitic, 50% pyroxene and magnetite.
- D<sub>1</sub>-D<sub>2</sub>** Deformation
- LATE TRANS-HUDSON INTRUSIONS**
- Pt** Granitic Pegmatite, white to pink, coarse grained to pegmatitic; massive to weakly foliated (S<sub>1</sub>), +/- garnet, +/- biotite, +/- cordierite.
- Eg** Granite, pink, medium to coarse grained, equigranular; massive, 5-10% biotite.
- Pg** Peraluminous granite, white to grey, medium to coarse grained; well foliated, 5-10% biotite, 5% garnet.
- INTRUSIVE CONTACT**
- D<sub>1</sub>-D<sub>2</sub> deformation, M<sub>1</sub> granulite facies (<1.85Ga >1.83 Ga)-M<sub>2</sub> amphibolite facies (1.812 Ga)**
- WOLLASTON SUPERGROUP (<1.88 Ga)**
- Wa** Arkose, pink, fine grained; abundant concordant pink leucosome; millimetre- to centimetre-scale, white leucosome blebs and calc-silicate pods are common but not ubiquitous; 5% biotite, +/- cordierite porphyroblasts, +/- diopside.
- Wca** Calcareous arkose, pink, fine to medium grained; well layered; diopside-rich bands and layers.
- Wcs** Calc silicate rocks, white to green, medium to coarse grained; 15-25% diopside and biotite, +/- hornblende, +/- scapolite.
- Wpsp** Psammopelite, pink blebby leucosome, grey to pink, medium grained; 10-15% biotite, 2-4% cordierite, +/- garnet.
- Wpsw** Psammite to psammopelite, white blebby leucosome, light grey to white, medium grained; white leucosome blebs 2-10 cm in long dimension, siliceous, 3-10% biotite, +/- garnet, +/- cordierite; locally cordierite, garnet, biotite, sillimanite, +/- kyanite, +/- orthopyroxene restite.
- Wcp** Calcic psammopelite to pelite, grey to green, medium grained; well layered, diopside-rich calc-silicate layers +/- scapolite, quartz veins, 20-30% diopside, biotite and hornblende.
- Wpq** Psammite to feldspathic quartzite, white to light grey, fine to medium grained; 0-5% biotite, +/- garnet; commonly interlayered with Wps.
- Wps** Psammopelite to pelite, grey, medium grained; 10-15% biotite, 2-5% garnet, 3-15% cordierite, +/- graphite; associated with white, commonly cordierite-bearing pegmatite.
- Graphitic pelite**
- Wgpu** Upper graphitic pelite, grey to rusty, fine to medium grained; 10-20% biotite, 5-10% graphite, 1-5% garnet; associated with units Wa, Wca, Wcs, and white pegmatite.
- Wgpl** Lower graphitic pelite, grey to rusty, medium grained; 0-15% sillimanite, 2-10% graphite, 10-30% biotite, 5% garnet; rare layers contain up to 25% garnet; generally found in close proximity to basement and with abundant white pegmatite.
- UNCONFORMITY**

### Symbols

- Main S1 Foliation (Dip Inclined)
- S3 Foliation (Dip Inclined)
- S4 Foliation (Dip Inclined)
- Inclined Axial Plane (F3)
- Intersection Lineation (between S1 and S3)
- Minor S Fold (F3)
- Minor Z Fold (F3)
- Minor W Fold (F3)
- Minor U Fold (F3)
- Geological Contact
- Lineament interpreted as a brittle-ductile shear zone
- Esker
- Swamp
- Reef
- Contour (interval 50 feet)

### Mineral Occurrence

- Cu - Zn - Mo Sulphides

- G** Granite, pink, medium- to coarse-grained; rarely porphyritic, strongly-foliated; upper-amphibolite facies leucogranite to granite; granites have a Cl = 10 and contain 5-10% biotite +/- hornblende and magnetite; K-feldspar phenocrysts contain 5-20 mm long phenocrysts; leucocratic varieties contain 0-2% biotite, smoky quartz flattened parallel to the S<sub>1</sub> foliation.
- Gc** Chamokitic granite, green with waxy lustre on fresh surfaces, pink to rusty on weathered surfaces, medium to coarse grained; 5-10% orthopyroxene, biotite +/- magnetite.
- Gg** Granite gneiss, pink to rusty, medium- to coarse-grained; concordant granite sheets with up to 50% grey tonalite and leucotonalite ribs.
- INTRUSIVE CONTACT**
- T** Tonalite, upper amphibolite facies, grey to rusty, medium-grained; 10-20% biotite, hornblende and magnetite; granulite facies, waxy green; 5-10% orthopyroxene, 10-15% biotite, and magnetite; gneissic varieties contain up to 50% sheets of leucotonalite and granite combined; xenoliths of units **D<sub>1</sub>**, **D<sub>2</sub>**, **Am**, and **Imv** are common but not ubiquitous.
- INTRUSIVE CONTACT**
- Ogd** Quartz diorite to granodiorite, granodiorite and quartz diorite can not be separated at this scale; quartz diorite, grey, medium grained; well foliated, 15-25% hornblende, 10-15% biotite, and 1-2% magnetite; granodiorite, grey to pink, medium to coarse grained; in places K-feldspar phytic, strongly foliated, 15% biotite, 10% combined hornblende and magnetite.
- D<sub>1</sub>** Diorite to gabbro, dark grey to black, medium to coarse grained; 40-50% hornblende and magnetite, +/- diopside, +/- orthopyroxene; leucogabbro to gabbro, light grey to black, coarse-grained; igneous layering, 35-50% hornblende and biotite, +/- pyroxene; net veined by tonalite and granite; forms large inclusions in tonalite.
- Am** Amphibolite, dark grey to black, fine to medium grained; 45-50% hornblende and magnetite, and 0-5% biotite; mainly as metre-scale layers in tonalite.
- Fq** Feldspathic quartzite, white to rusty, medium grained; well foliated, 75% quartz with sillimanite common on foliation planes, and 1-2% biotite in the matrix; associated with white pegmatite.
- Fms** Ferruginous metasedimentary rocks, white to rusty, medium grained; well layered, 5-10% garnet, 5% biotite, +/- hornblende; interlayered with units **Imv**, **Fq**, and **Bif**.
- Bif** Banded iron formation, oxide facies, rusty to dark grey, medium grained; finely-layered magnetite and quartz - rich layers; silicate facies, grey to pink, medium to coarse grained; up to 50% garnet, gedrite and quartz; interlayered with the oxide-facies variety; found as isolated layers in unit **Fms**.
- Imv** Intermediate to mafic volcanic rocks, intermediate volcanic rocks, grey, medium grained; well layered with alternating hornblende- and pyroxene-rich layers, 30-45% hornblende, clinopyroxene, and orthopyroxene, +/- magnetite; mafic volcanic rocks, black, medium grained; layered, 50-55% combined hornblende, clinopyroxene, and orthopyroxene; dacite, grey, medium grained; 5% biotite, 5% orthopyroxene; associated with units **Fms**, **Fq** and **Fms**.

