Newfoundland Labrador

HOLLINGER LAKE

The Hollinger Lake area (NTS 23J/16) is located 20 km east of Schefferville, Québec, in the south-central part of the Labrador Trough or New Québec Orogen (NQO; Wardle et al., 2002; Corrigan et al., 2009). The area is underlain by Paleoproterozoic (*ca.* 2.17–1.87 Ga) rift basin and passive margin volcano-sedimentary successions and mafic sills that were weakly metamorphosed and deformed during the *ca.* 1.80 Ga Trans-Hudson orogeny (Corrigan et al., 2009), in addition to minor late- to post-orogenic felsic intrusive rocks.

This updated map of the Hollinger Lake area is based on field survey data collected in the summer of 2017. Additional data, including outcrop locations and structural measurements compiled from existing geological maps were used to guide extrapolation of unit contacts, as were aeromagnetic maps. The updated map is supplemented by numerous whole-rock geochemical analyses (Butler, 2019a, b, 2020), one new U–Pb zircon age, and Sm-Nd isotopic data for two samples (see map; Butler and Hamilton, 2022). Data sources used in the preparation of the updated map include:
1) Station data, including rock types, structural measurements, sample locations, and photographs collected in the summer of 2017. Location data (UTM coordinates) were collected using a computer and digital camera, with an accuracy of approximately 2–10 m,
2) Additional station data, outcrop locations, rock types, and structural measurements compiled from the previous 1:100,000-scale map of the Labrador Trough by Wardle (1982), as well as maps by Bloomer (1954), Hoag (1971), and Doherty (1979),
3) Digital elevation data (Shuttle Radar Topography Mission; SRTM (1 arc-second resolution), and,
4) Aeromagnetic maps (50 m resolution; Dumont, 2009).

The stratigraphy presented in the legend borrows heavily from previous work in the Hollinger Lake area (e.g., Doherty, 1979; Wardle, 1979; 1982). The primary revisions include:
1) Determination of the age of the Martin Lake porphyry (*ca.* 1811 Ma; Butler and Hamilton, 2022). This unit was previously interpreted as part of Montagnais Intrusive Series (Wardle, 1982), but has been assigned its own unit on this updated map based on new geochronological data. The age of the porphyry overlaps with a previously determined age for a post-tectonic monzonite intrusion near Nachicapau Lake, Québec (Machado et al., 1997),
2) Subdivision of gabbros previously assigned to the Montagnais Intrusive Series (Wardle, 1982) into the Wakuach and Gerido Intrusive suites, following Bilodeau and Caron-Côté (2018). This scheme subdivides the mafic–ultramafic sills of the Kaniapiskau Supergroup according to whether they intrude Cycle 1 (Attikamagen, Swampy Bay, and Seward groups) or Cycle 2 (Ferriman and Doublet groups) sedimentary units (Clark and Wares, 2005).

Age constraints on the units described in the legend are as follows:
1) For the Martin Lake porphyry, an age of 1811.2±3.6 Ma obtained via CA-ID-TIMS U–Pb zircon geochronology, is interpreted as the age of igneous crystallization (Butler and Hamilton, 2022). The sample location and age are shown on the map.
2) The age of the Gerido Intrusive Suite is constrained by a zircon U–Pb age of 1878.5±0.8 Ma for a sill intruded into the Menihek Formation near Howse Lake (Findlay et al., 1995; Bleeker and Kamo, 2018). The dated sill is located outside the Hollinger Lake map area, approximately 60 km along-strike of Martin Lake. This age also provides a lower limit on the timing of deposition of the Menihek Formation siltstones there.
3) The age of the Wakuach Suite is constrained by a zircon U–Pb of 2169±2 Ma for a granitic vein that cuts a gabbro sill (the vein is interpreted as a late-stage differentiate of the mafic magma) intruded into Seward Group sandstones near Cramolet Lake, Québec, approximately 230 km northwest of the Hollinger Lake map area (Rohon et al., 1993).
4) The age of the Nimish Formation is constrained by a zircon U–Pb age of 1877.8±1.3 Ma for a syenite cobble extracted from a volcanogenic conglomerate associated with the Nimish Formation near Dyke Lake, approximately 60 km southwest of the Hollinger Lake area (Findlay et al., 1995).
5) The age of the Le Fer Formation is constrained by a zircon U–Pb age of 2142 +4/-2 Ma obtained from a rhyolite representing the correlative Mistamisk Formation near Colombet Lake, approximately 530 km northwest of the Hollinger Lake area (T.E. Krogh and B. Dressler, unpublished data cited in Clark, 1984).

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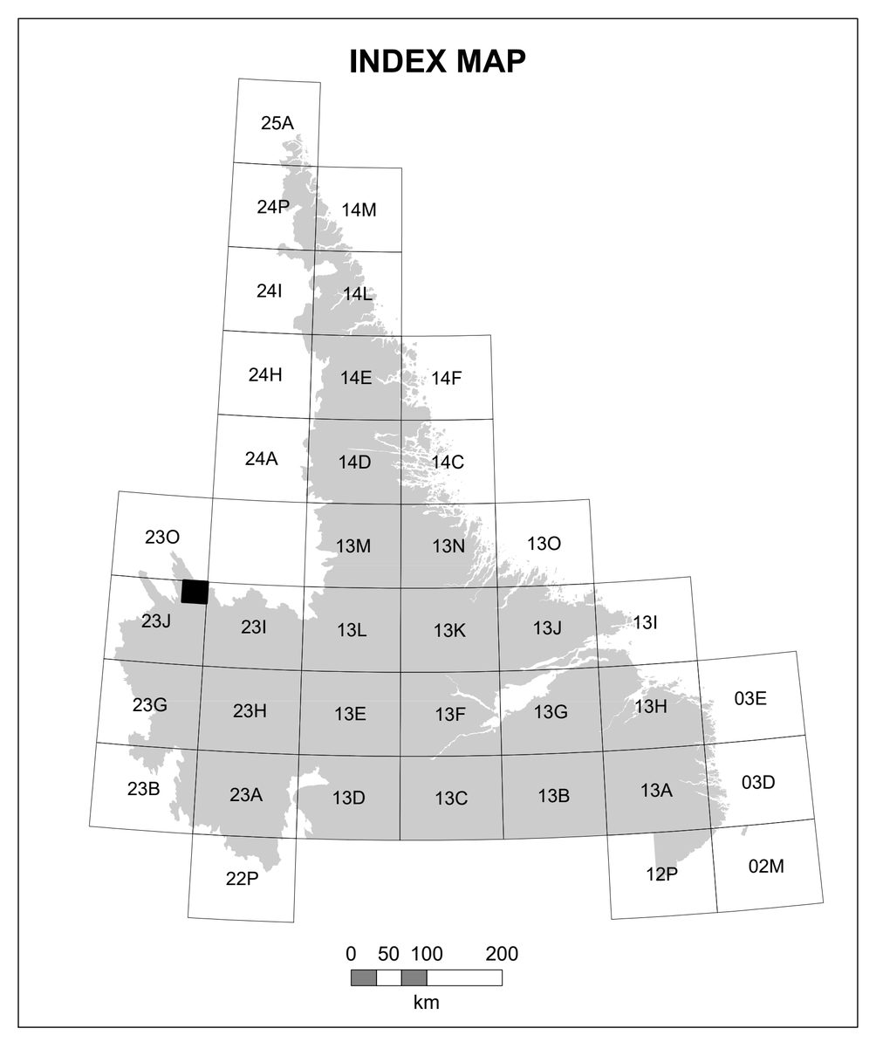

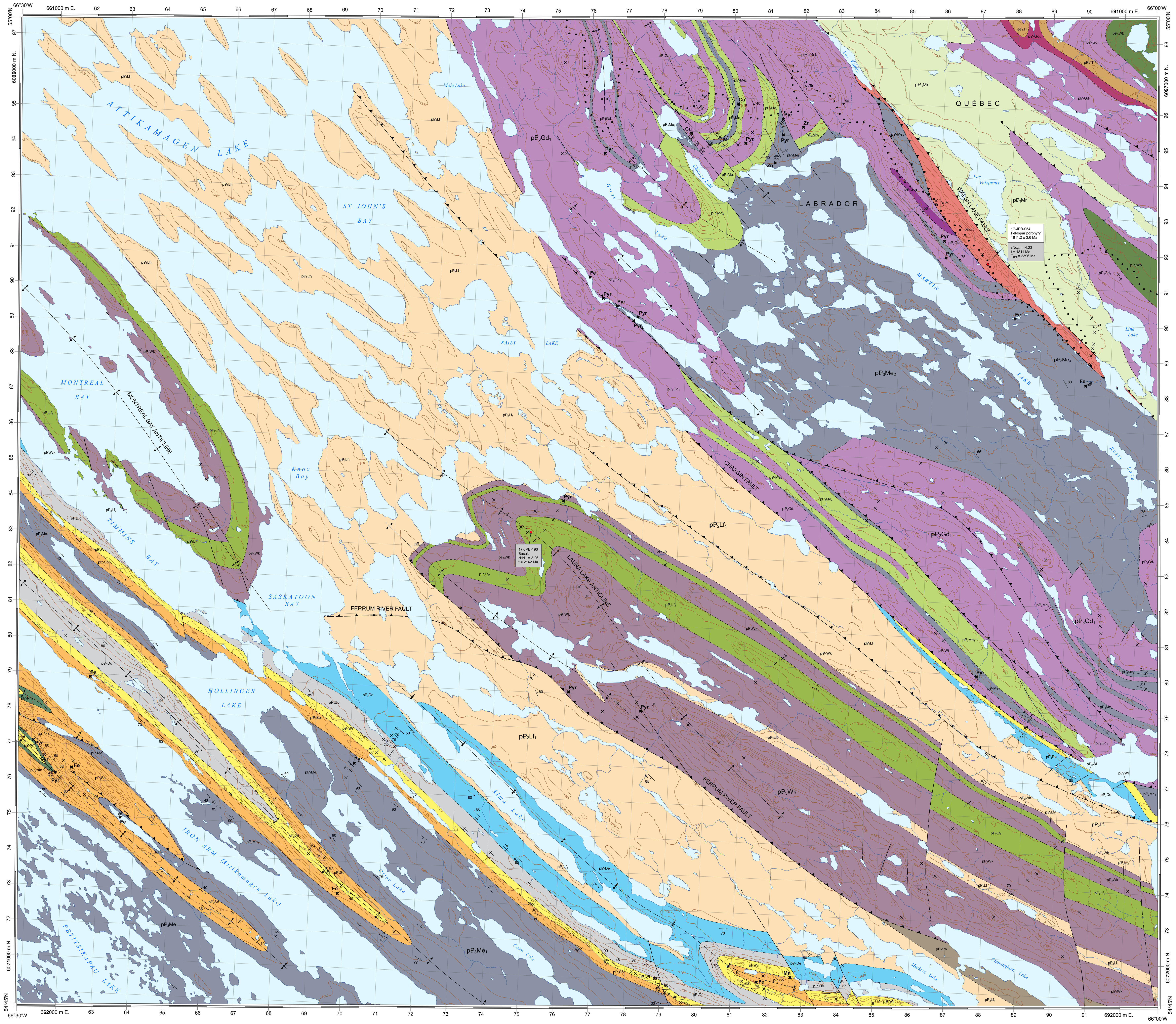

Geology by J. P. Butler.
GIS/digital cartography by S. McNamara.

The digital topographic database map NTS 23J/16 used here is available from the Surveyor General Branch, Natural Resources, Canada.

Elevations are in metres above sea level. Contour interval is 50 m.
Magnetic declination at centre of the map is 20° 47' West (June 2019).
North American Datum (NAD) 1927.

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Copies of this map may be obtained from the Department of Industry, Energy and Technology, Government of Newfoundland and Labrador, P.O Box 8700, St. John's, NL, Canada A1B 4J6

This map is subject to revision and modification. Symbols for bedding and selected minor structures are not plotted directly at the exposure site.

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Map 2023-01
BEDROCK GEOLOGY OF THE HOLLINGER LAKE AREA (NTS 23J/16)

OPEN FILE 023J/16/0403

Scale 1:50 000

0 0.5 1 2 3 4
km

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Note

Disclaimer

LEGEND

KANIAPISKAU SUPERGROUP

PALEOPROTEROZOIC INTRUSIVE ROCKS

Statherian

pP$_3$vp — Martin Lake porphyry. Feldspar porphyry. Aphanitic, with brown-weathering, rhomb-shaped plagioclase phenocrysts in a massive, dark-red to maroon K-feldspar and quartz matrix. Accessory phases include disseminated magnetite and ilmenite. Brecciation observed locally. No flow-banding present. Unit is likely fault bounded, but contacts are not exposed

Orosirian

Gerido Intrusive Suite

pP$_3$Gd$_1$ — Gabbronorite and olivine-gabbronorite. Fine to medium grained, with (sub)-ophitic textures. Disseminated pyrite and chalcopyrite are common. Some sills exhibit vertical zonation, wherein aphanitic margins grade into coarser grained, plagioclase-glomeroporphyritic internal zones. Coarse-grained anorthositic internal zones also appear locally. Map unit includes numerous thin, typically gossanous fine-grained sedimentary lenses either rafted within, or separating sills

pP$_3$Gd$_2$ — Glomerporphyritic gabbronorite. Fine to medium grained, with plagioclase glomerocrysts ranging between 1 and 5 cm in diameter

pP$_3$Gd$_3$ — Peridotite. Brown-weathering, and medium to coarse grained with orthopyroxene phenocrysts

Rhyacian

Wakuach Suite

pP$_3$Wk — Gabbronorite and olivine gabbronorite. Fine to medium grained, with (sub)-ophitic textures. Olivine is rare. Disseminated pyrite and chalcopyrite common. Map unit includes numerous thin, gossanous fine-grained sedimentary lenses (typically argillite) either rafted within, or separating sills

PALEOPROTEROZOIC SEDIMENTARY AND VOLCANIC ROCKS

Orosirian to Statherian

Ferriman Group (southwest of Walsh Lake Fault)

Menihek Formation

pP$_3$Me$_1$ — Bluish-grey to black shale, slate, and siltstone, black slate; minor greywacke

pP$_3$Me$_2$ — Greywacke, dolomitic siltstone, grey and black slate

pP$_3$Me$_3$ — Dark-grey to black pyritiferous siltstone, slate, and argillite. Mostly found northwest of Martin Lake as metre- to decametre-scale gossanous sedimentary lenses within gabbro sills

pP$_3$Me$_4$ — Aphanitic basalt, minor tuff

Sokoman Formation

pP$_3$So — Oxide-facies iron formation. Medium to thick bedded with alternating bluish-grey hematite-rich and red jasper-rich beds; map unit includes basal pyritiferous black slate and minor interbedded chert of the Ruth Formation

Nimish Formation

pP$_3$Nm — Olivine basalt. Aphanitic, massive and locally porphyritic

Wishart Formation

pP$_3$Wi — White orthoquartzite interbedded with grey siltstone. Beds vary from 10 cm to 1 m thick. Hummocky crossbedding is common. Black-banded chert horizons and thin lenses of granule conglomerate appear locally

Doublet Group (northeast of Walsh Lake Fault)

Willbob Formation

pP$_3$Wb — Pillow basalt, minor tuff

Thompson Lake Formation

pP$_3$Tl — Laminated black siltstone, pyritiferous slate; gossanous. Typically exposed as thin, metre- to decametre-scale lenses within gabbro (*Gd$_1$*)

Murdoch Formation

pP$_3$Mr — Mafic volcaniclastic rocks, chlorite phyllite; chlorite siltstone; minor aphanitic basalt. Strongly foliated and locally crenulated

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Rhyacian

Attikamagen Group

Dolly Formation

pP$_3$Do — Dolomitic siltstone, minor slate. Light to dark greenish-grey. Bedding ranges from fine laminations to cm-scale beds

Denault Formation

pP$_3$De — Dolomite. Beige-weathering, light to medium grey, fine grained, varying from massive to laminated and crosslaminated. Slump structures, stromatolitic horizons, chert beds, and dolomite breccias observed locally

Swampy Bay Group

Le Fer Formation

pP$_2$Lf$_1$ — Medium- to dark-grey to bluish laminated slate, siltstone, and minor greywacke. Locally gossanous. Slate shows well-developed axial planar cleavage. Basal sections are bluish slate that have minor sandy lenses, grading into massive greywacke. Graded bedding, flute and load casts appear locally

pP$_2$Lf$_2$ — Basalt. Massive, aphanitic, grey-green. Locally plagioclase-porphyritic. Carbonate-filled amygdules visible locally; in addition to pillow textures and columnar jointing

Seward Group

Undivided Seward Group

pP$_2$Sw — Crossbedded pink arkosic quartzite and white orthoquartzite

SYMBOLS

- Bedding (inclined, measured, younging known)
- Bedding (overturned, measured, younging known)
- Bedding (inclined, measured, younging unknown)
- Bedding (vertical, measured, younging unknown)
- Cleavage (slaty, measured)
- Schistosity (measured)
- Compositional layering
- Geological contact (defined, approximate, assumed)
- Fault (motion undefined, approximate)
- Anticline (approximate)
- Syncline (approximate)
- Thrust fault (approximate)
- Gossan
- Geochronological / Sm-Nd isotopic sample
- Zircon U-Pb geochronology: Sample Number; Rock Type; Crystallization age
- Sm-Nd isotopic data: Sample Number; Rock Type; $\varepsilon Nd_{(t)}$ - Epsilon value at time (t); time (t) - assumed or known age (Ma); T_{DM} - Depleted Mantle model age
- Mineral occurrence
- Station
- Provincial border

Mineral Occurrences

Mineral Occurrence	Easting	Northing	Name	Commodity	Status
Cu	678900	6094950	Chicago Lake	Copper	Indication
Cu	680190	6095830	Jimmick Lake	Copper	Showing
Fe	662170	6076340	Attikamagen Deposit	Iron	Developed Prospect
Fe	662590	6078920	Iron Arm East	Iron	Indication
Fe	663598	6074986	Jennie Lake	Iron	Showing
Fe	676210	6090770	Katey Lake Northeast No. 5	Iron	Showing
Fe	688240	6090090	Martin Lake East No. 4	Iron	Showing
Fe	690310	6088280	Martin Lake Southeast	Iron	Showing
Fe	669810	6073090	Otter Lake West	Iron	Indication
Fe	681720	6071080	Prudhomme Lake West	Iron	Showing
Fe	692500	6084900	Rusty Lake Southeast	Iron	Showing
Mn	682670	6071250	Tech Lake	Manganese	Showing
Pyr	676490	6094280	Gross Lake	Pyrite	Showing
Pyr	677490	6089590	Katey Lake Northeast #1	Pyrite	Showing
Pyr	677605	6089700	Katey Lake Northeast #2	Pyrite	Showing
Pyr	677010	6089990	Katey Lake Northeast #3	Pyrite	Showing
Pyr	676610	6090190	Katey Lake Northeast #4	Pyrite	Showing
Pyr	686160	6092200	Martin Lake East No. 1	Pyrite	Indication
Pyr	686220	6091730	Martin Lake East No. 2	Pyrite	Indication
Pyr	681490	6095010	Martin Lake North No. 2	Pyrite	Showing
Pyr	681470	6095450	Martin Lake North No. 3	Pyrite	Showing
Pyr	687570	6079950	Mountain Lake North	Pyrite	Indication
Zn	681290	6094210	Martin Lake North No. 1	Zinc	Prospect
Zn	682050	6095250	Martin Lake North No. 4	Zinc	Indication