Saskatchewan Energy and Mines
Saskatchewan Geological Survey

Geology of the Gunnar Area
(Part of NTS 74N/6 and 7)
at 1:20 000 scale

Preliminary Geological map (2000)

by K.E. Ashton, J. Kraus, and R. Morelli

Catalogue Number 2000-4.2 (3.3)

ATHABASCA GROUP

Amf — **Manitou Falls Formation - fluviatile sandstone:** commonly intraclast rich

---------- Unconformity ----------

Diabase (possibly coeval with Martin basalts of Rgv)

MARTIN GROUP

Rm — **Melville Lake Formation - siltstone, arkose and conglomerate:** chocolate red to maroon

Rs — **Seaplane Base Formation - interbedded conglomerate, reddish sandstone, and mudstone**

Rg — **Gillies Channel Formation -**

Rgv — Sandstone with locally amygdaloidal basaltic flows

Rgc — Sandstone and conglomerate

Rc — **Chariot Point and Gravel Island Formations - arkosic sandstone with conglomerate**

Rj — **Jug Bay Formation - siliceous sandstone/arkrose:** fine grained; probable stratigraphic equivalent to Rb

Rb — **Beaverlodge Formation - basal conglomerate and arkose:** variable thickness

---------- Deformation, M3 metamorphism, unconformity ----------

Pg — **Granite:** pink to white, medium grained to pegmatitic, biotite bearing

Granite: white, medium-grained to pegmatitic dykes, muscovite ? tourmaline bearing

---------- Deformation, M2 metamorphism ----------

Qf — **Undifferentiated quartzofeldspathic rock:** grey, white to buff, pink, fine to medium grained, Cl 0-10, foliated to sheared mix of Ms, Gl, and Qu; minor Qs and Db (plagioclase-quartz ± K-feldspar ± sericite ± biotite/chlorite)

Qu — **Granite of uncertain age and affinity:** fine to medium grained, massive to mylonitic, Cl 0-10 (biotite/chlorite-K-feldspar-plagioclase-quartz)

Gl — **Leucogranite:** pink, fine to medium grained, Cl 0-5 (biotite/chlorite-K-feldspar-quartz-plagioclase); occurs as small plutons and sheets a few metres or tens of metres thick; age relative to Gd, Gr, and Gb uncertain

Db — **Diorite:** grey, medium grained, Cl 30-40 (hornblende-plagioclase)

Gb — **Gabbro:** black, medium to coarse grained, multi-phase, Cl 40-70, (hornblende-plagioclase); hornblende aggregates replacing primary pyroxene?; partially melted under upper amphibolite facies conditions

Gr — **Granite:** pink, coarse grained, homogeneous, Cl 0-10 (K-feldspar-plagioclase-quartz ± biotite/chlorite ± hornblende)

Gd — **Inclusion-rich to migmatitic leucocratic granite to tonalite:** white to pink-grey, medium grained, Cl 0-5 (biotite/chlorite-quartz-plagioclase) ± hornblende ± K-feldspar); invades and contains inclusions of Murmac Bay Group; preliminary ca. 2.64 Ga age, formerly part of Donaldson Lake Gneiss

---------- Deformation, M1 metamorphism, unconformity ----------

MURMAC BAY GROUP (Archean)

Ms — **Psammite;** minor feldspathic quartzite, grit; grey, fine to medium grained, generally layered (cm to m scale), Cl 0-15 (plagioclase-quartz ± K-feldspar ± biotite ± sericite)

Maf — **Ferruginous siltstone and argillite:** red, fine to medium grained

Mp — **Psammopelite to pelite:** grey-brown, fine to medium grained (biotite-white mica-feldspar-quartz ± graphite foliated)

Mpg — **Psammopelitic to pelitic gneiss and migmatite:** grey-brown with approximately 50 % white medium-grained melt leucosome and well defined melanosome, garnet up 1.5 cm (biotite-feldspar-quartz ± garnet ± sillimanite ± graphite)

Mpc — **Calcic psammopelite to pelite:** grey, fine to medium grained (hornblende bearing); commonly intruded by leucogranite; may be metasomatized Gb and/or Mv in part

Mg — **Gabbro:** dark green to black, fine to medium grained, homogeneous; broadly coeval with ultramafic intrusions

Mv — **Serpentinite:** buff to dark green, fine to coarse grained, homogeneous except for spinifex textured chilled margin, probably derived from shallow komatiitic ultramafic intrusion

Mc — **Dolostone:** buff to white or pale green, fine to medium grained (dolomite ± diopside ± actinolite), locally interlayered with quartzite

Oxide facies iron formation: (magnetite-quartz)

Mf — **Felsite:** white, fine grained, homogeneous (plagioclase-quartz); possibly syn-volcanic

Ma — **Amphibolite:** black, fine to medium grained, variably layered (hornblende-plagioclase); mainly derived from mafic and minor intermediate volcanic rocks

Mvb — **Basalt:** black, fine grained, exhibiting primary flow layering, cooling cracks, and local amygdules

Mq — **Quartzite, minor feldspathic quartzite:** white, fine to medium grained

Mqp — **Interlayered quartzite and psammite**

Mqc — **Interlayered quartzite and carbonate, derived calc-silicates:** includes pegmatitic diopsidite

Mqg — **Quartzite grits:** white to red (ferruginous), medium grained

Mqs — **Interlayered quartzite, grit, and oligomictic conglomerate:** quartz(ite) pebbles and rare cobbles in a quartzite matrix

---------- Unconformity ----------

Bg — **Granitoid rocks:** pink to white, medium grained, massive to well foliated, rare mafic inclusions (ca. 3.05 Ga age)

Symbols:

Structures

- Geological contact
- Bedding (S0; tops known, unknown)
- Main S0/1/2 transposition foliation (inclined, vertical)
- S3/4 foliation (inclined, vertical)
- Lineation (tectonic stretching; mineral, unknown)
- Minor S fold (F2, F3/4)
- Minor Z fold (F2, F3/4)
- Minor W fold (F2, F3/4)
- Minor symmetrical fold (F2, F3/4)
- Axial plane (F2, F3/4)
- Ductile shear zone
- Lineament (generally late, brittle fault with minor offset)
- Isograd: first appearance of partial melt
- Limit of mapping

Mineral and Alteration Occurrences

- Past-producing Uranium Mine
- Past-producing Gold Mine
- Anthophyllite-rich rocks (syn-volcanic Mg metasomatic alteration)

Other

- Contour Interval: 50 feet
- Road
- Trail

Other major sources used in the compilation of this map:

Hartlaub, R.P. (1999): New insights into the geology of the Murmac Bay Group, Rae Province, northwest Saskatchewan; in Summary of Investigations 1999, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 99-4.2, p17-28.

Macdonald, R. and Slimmon, W.L. (1985): Bedrock geology of the Greater Beaverlodge Area, NTS 74N-8 to -11; Saskatchewan Energy and Mines, Map 241A, scale 1:100 000.

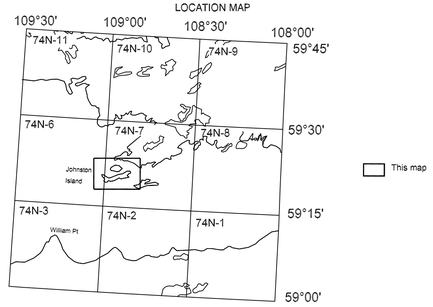
Sibbald, T.I.I. (1982): Uranium metallogenic studies: Nicholson Bay area; in Summary of investigations 1982, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 82-4, p43-45.

Sibbald, T.I.I. (1984): Gold metallogenic studies, Goldfields area; in Summary of investigations 1984, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 84-4, p118-121.

Sibbald, T.I.I. and Lewry, J.F. (1980): Uranium metallogenic studies: Lodge Bay area, Lake Athabasca; in Summary of investigations 1980, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 80-4, p44-46.

Thomas, D.J. (1982): Uranium metallogenic studies: Mickey Lake area; in Summary of investigations 1982, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 82-4, p51-59.

LOCATION MAP



Project M.123 of 2000, Database No. 0047

The area was mapped by K.E. Ashton (project leader), J. Kraus, R. Morelli, and R.P. Hartlaub, in the summer of 2000, with the assistance of E. Chorney, S. Ehman, D. Boivin, and A. Yanko.

This map was printed from the geologist's digital file. Geological data were processed using Fieldlog version 3.0 provided by the Geological Survey of Canada. Base maps were compiled from 1:50 000 scale digital topographic maps licensed from Saskatchewan Land Information Services Corporation. The map was processed overall using AutoCAD Release 14 software.

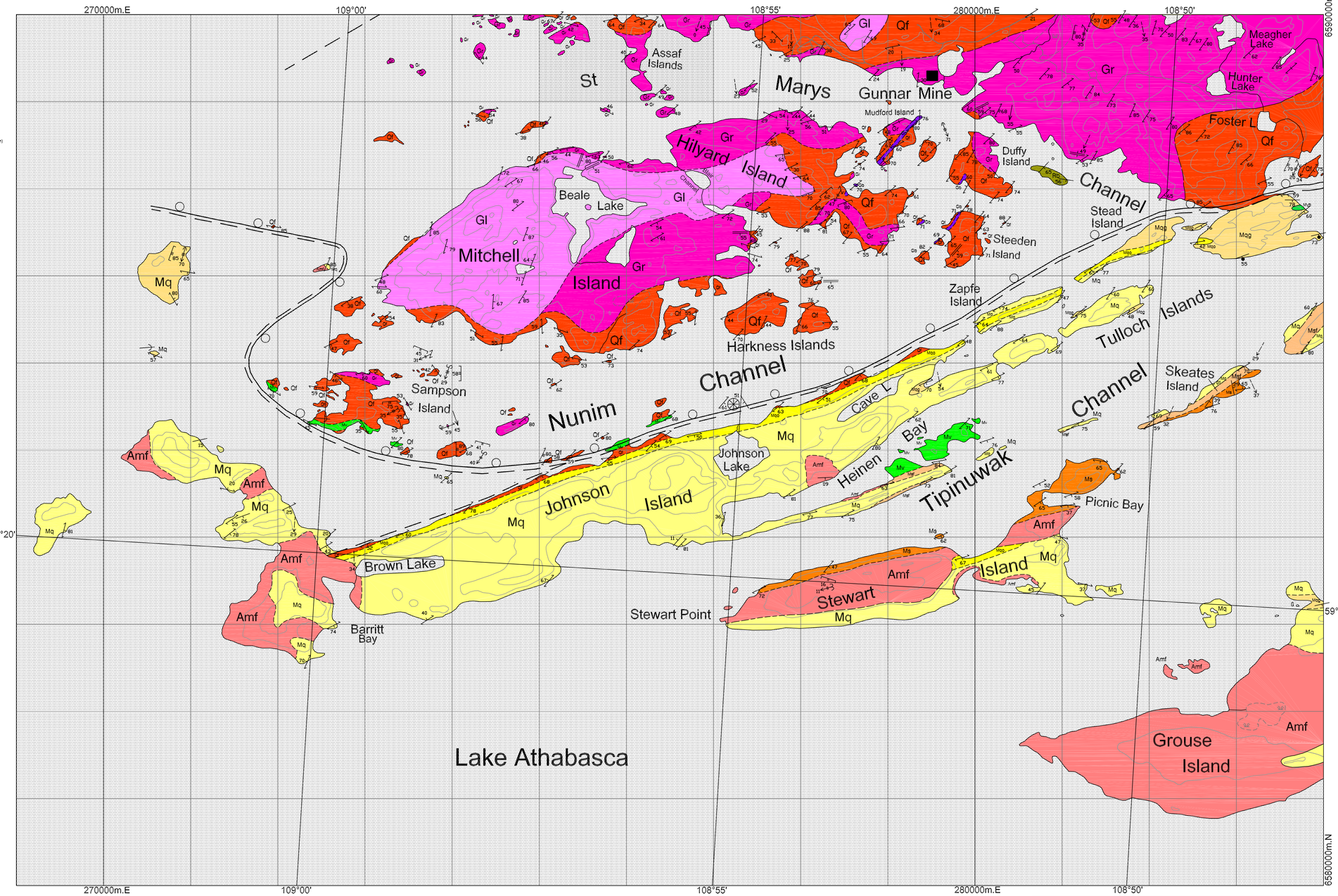
The map is issued in a package with the Summary of Investigations 2000 Volume 2, Saskatchewan Geological Survey, and is available separately.

This map may be referenced as part of the following publication:
Ashton, K.E., Kraus, J., Hartlaub, R.P., and Morelli, R. (2000): Uranium City revisited: a new look at the rocks of the Beaverlodge Mining Camp; in Summary of Investigations 2000 Volume 2, Saskatchewan Geological Survey, Sask. Energy Mines, Misc. Rep. 2000-4.2.

Scale 1:20 000

Metres 1000 500 0 500 1000 Metres

Feet 1000 0 1000 2000 3000 4000 5000 Feet



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