Adjoining Sheet No. 28

111°30′ 111°15′ 59°30′ 59°15′

R9 25′ 20′ R8 W4M

TP121 TP120 TP119 TP118

25′ 20′

Adjoining Sheet No. 25

Adjoining Sheet No. 20

RIVER Bocquene River La Butte Creek Hornaday River SLAVE Murdock Creek

WOOD BUFFALO NATIONAL PARK

312 313 314 322 323 324 325 329 330 335 336 337 338 342 343 344

BOCQUENE LAKE LEGEND

DEVONIAN

254 LA BUTTE FORMATION: light to medium, brownish gray, thin- to thick-bedded to massive, fossiliferous, bioclastic argillaceous fine-grained limestone, with laminations of brownish gray shale.

253 HAY CAMP FORMATION: light brown to orange brown, generally (collapse) brecciated limestones and dolomitic limestones, containing laminated, lithographic dolostone, partly gypsiferous, and light gray fossiliferous, argillaceous limestone, with light gray, calcareous shale laminations.

252 FITZGERALD FORMATION: pale brown, weathering light orange brown, thin to rubbly bedded to massive, fine grained, vuggy, dolostone and dolomitic limestone. Carbonaceous dolostone locally; transitional through sandy and argillaceous dolostone to underlying La Loche Formation. Locally bitumen impregnated.
(subdivision based on Norris, A.W, 1963, G.S.C., Bulletin 313)

PRECAMBRIAN**

REGIONAL SHEAR ZONES

Zones of regional shearing and recrystallization have principally affected granite gneisses and metasedimentary rocks to produce: ultramylonite, mylonite, cataclasite, blastomylonite, and flaser gneiss; megastructure is typically streaky; may contain rounded or augen rock clasts or feldspar porphyroclasts (*0*).

223 RECRYSTALLIZED MYLONITIC ROCK: dark colored, with white to gray anhedral feldspar porphyroclasts and euhedral feldspar porphyroblasts 10 to 50 mm long; foliated, locally gneissose; aphanitic matrix, locally medium-grained; minor aplite and pegmatite. Parent material largely Slave Granitoids and Arch Lake Granitoids.

223 RECRYSTALLIZED MYLONITIC ROCK: green to black; granulose (siliceous) to schistose, with biotite, chlorite, sericite; feldspar and minor quartz porphyroclasts in a massive to foliated, finely banded, aphanitic matrix. Parent material largely metasedimentary rock.

223 RECRYSTALLIZED MYLONITIC ROCK: mostly light colored, with white to pink feldspar porphyroclasts 5 to 20 mm long making up 2 to 5 percent of the rock, in a foliated, finely banded, aphanitic matrix. Parent material largely granite gneiss.

GRANITOID ROCKS

ARCH LAKE GRANITOIDS

161 ARCH LAKE GRANITE PHASE: typically reddish overall; 20 to 40 percent red, subhedral, elongate to tabular feldspar megacrysts, from 15 to 30 mm long, aligned subparallel in a medium-grained (locally coarse-grained) usually well-foliated matrix of feldspar, blue quartz and biotite. Locally reduced amounts of feldspar megacrysts. Mafic mineral content 6 to 14 percent. Commonly mildly cataclastic, with crushed matrix and augen megacrysts.

162 ARCH LAKE TRANSITIONAL GRANITE PHASE: (transitional to Slave Granitoids); typically reddish overall; up to 10 percent white to pink subhedral, elongate to tabular feldspar megacrysts, from 10 to 15 mm long, aligned subparallel in a medium-grained (locally coarse-grained) usually well-foliated matrix of feldspar, blue quartz, and biotite. Quartz content locally reduced from 25 to 10 percent. Commonly mildly cataclastic.

164 FRANCIS GRANITE: typically pink spots on a medium gray background. Commonly medium-grained, locally fine- to medium-grained, large pink to reddish pink tabular feldspar megacrysts 25 to 35 mm long, from 5 to 15 percent abundance, contrast texturally with a finer matrix of feldspar, quartz, and biotite. Commonly massive, locally poorly foliated; megacrysts typically random to subparallel oriented. Rock type is predominantly granite, but ranges to granodiorite.

LA BUTTE GRANODIORITE

140 Generally light gray to brownish gray to mauve (bluish quartz combined with pink-gray feldspar), of uniform color and texture; in hand specimen specks and aggregates of dark mafic mineral in a lighter gray background. Medium grained but ranging to fine-and coarse-grained, with 8 to 20 mm long feldspar megacrysts from rare to 5 percent abundance in a quartz, feldspar, biotite matrix. Typically massive to uncommonly poorly foliated or locally gneissic. Rock types range from granite to granodiorite, quartz diorite, and quartz monzodiorite, with a mean composition of granodiorite.

WYLIE LAKE GRANITOIDS

133 FISHING CREEK QUARTZ DIORITE: medium gray overall; mottled grayish white on a medium- to dark-gray background in hand specimen; medium-grained, typically almost megacrystic but locally distinctly megacrystic or equigranular; megacrystic white to gray to pale green feldspars 5 to 10 mm long in a greenish gray matrix of feldspar, quartz and biotite; typically poorly foliated, locally massive or gneissic. Rock type is predominantly quartz diorite but composition ranges to quartz-bearing diorite and granodiorite. Schlieren of biotite or metasedimentary rocks may be present.

132 GRANODIORITE E: generally greenish or brownish overall; may be finely mottled; pink to red subhedral feldspars (6 to 8mm) tend to be megacrystic with occasional megacrysts (10 to 15 mm) in an essentially equigranular, massive to poorly foliated matrix of feldspar, quartz, and biotite (chloritic). Composition ranges to granite.

SLAVE GRANITOIDS

101 SLAVE GRANITE PHASE: typically whitish gray (locally white to greenish gray to pink feldspar mottled on a darker background); medium- to coarse-grained (locally fine-grained); up to 5 percent white feldspar megacrysts, 7 to 15 mm long, in a matrix of white feldspars, quartz and biotite (< 1 to 5 percent); massive to more commonly foliated (increase in biotite content tends to better define foliation); typically garnetiferous, in knots 5 ± mm across with a biotite envelope; may be locally gneissic; includes minor small-scale mafelsic lenses of metasedimentary appearance; minor gray white, fine- to medium-grained felsic dykes and quartz veins.

102 MAFIC SLAVE GRANITE PHASE: similar to Slave Granite but with a notably higher biotite content (up to 10 percent); distinctly foliated.

MEGACRYSTIC COMPONENT: up to 15 percent white feldspar megacrysts 15 to 50 mm long, either randomly oriented or aligned with the foliation of map units 101 and 102 (*f*).

103 RED SLAVE GRANITE PHASE: similar to Slave Granite Phase but with a distinct pinkish red color.

104 SPECKLED SLAVE GRANITE PHASE: similar to Slave Granite Phase, but reddish to mottled overall; red and white feldspars in a medium-grained matrix of feldspar, quartz, chloritic biotite, and sericite; mildly crushed and foliated matrix.

105 SLAVE PQ GRANITE PHASE: typically reddish pink to pink; commonly medium-grained; abundant white to pink to red feldspar megacrysts 6 to 12 mm across in a medium-grained matrix of feldspar, quartz, biotite (4 to 5 percent) and minor sericite; massive to foliated matrix, locally gneissic. The predominant rock type is granite with a gradation towards granodiorite; includes minor small-scale mafelsic lenses of metasedimentary appearance; minor fine- to medium-grained felsic dykes and quartz veins.

METASEDIMENTARY ROCKS

31 METASEDIMENTARY ROCKS: the high-grade metasedimentary rock types included in this map unit are lithologically and texturally gradational, and in part intermixed on outcrop scale. Typically impure quartzite; dark greenish (bluish) gray (fresh surface); fine-grained; layered, with ferruginous and garnetiferous zones, locally scattered pyrite, gossans, and milky to bluish gray quartz pods and veins. Minor amphibolite may be present. Common local lithologic gradational variations to: (1) fine- to medium-grained, metamorphic quartzo-feldspathic (granitic and minor pegmatitic) phase ranging from individual white feldspar porphyroblasts 5 to 15 mm long, to nebulous or distinct aggregations and masses; commonly foliated to locally gneissic (17); (2) fine-grained, retrograde phyllite and schist (biotite, chlorite, sericite, and uncommonly hornblende), and phyllonite.

AMPHIBOLITE

20 Dark brownish green (fresh surface) to grayish green; typically medium grained; biotite may be common; composition ranges from essentially amphibole pure or amphibole rich to a feldspathic biotite amphibolite; commonly foliated but may be banded where feldspar rich; minor pyrite common.

GRANITE GNEISS

11 BIOTITE GRANITE GNEISS: typically pink to reddish; quartz-feldspar bands interlayered with mafic-rich bands (biotite, possibly with subordinate hornblende; generally chloritic) on hand-specimen scale; fine- to medium-grained, generally equigranular, rarely megacrystic; commonly well banded but may be locally poorly banded to foliated, and leucocratic phases may be nearly massive. Composition is predominantly granite, with minor granodiorite, quartz diorite, and quartz monzodiorite. Large areas are migmatitic, particularly where intimately associated with minor lenses, pods, and bands of metasedimentary rocks, pegmatite, or amphibolite. Minor hornblende granite gneiss.

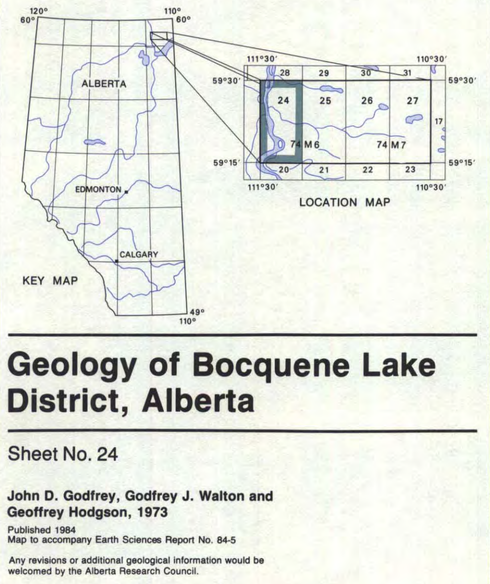
**NOTE: Rock groups are arranged in approximate chronological sequence. Nomenclature follows Strekeisen (1967): Classification and nomenclature of igneous rocks; Neues Jahrbuch für Mineralogie, Abhandlungen, 107, No. 2, p. 144-240.

Geological boundary (defined, approximate)
Foliation (defined: dip known, dip vertical; foliation assumed) 82
Foliation trend*
Lineation (combined with foliation) 76 73
Extreme contortion (structural trend shown)
Tight folds (structural trends shown)
Local gneissosity in generally massive to foliated rock
Joint (dip known, vertical, unknown) 76
Fault (defined: dip known, fault assumed) 79
Shear (dip known) 79
Breccia
Mylonite (local)
Rock alteration A
Quartz vein
Crystalline standard sample 329
Metasedimentary rock band standard sample 55
Yellow mineral stain Y
Chlorite C
Garnet G
Isotopic age (million years); biotite (b); K-Ar (k); University of Alberta Δ bk 1751
Glacial stria (direction of ice movement shown)
Crevasse filling* (ridge shown)
Dune*
Esker* (direction known, unknown)
Kettle
Raised beach* (downslope indicated)
Wind-cut groove (wind direction shown)
Sand-covered area*
Small outcrop (map unit shown) 31
Muskeg
Drainage (intermittent, permanent)
Township boundary
National Park Boundary
Trail
*Aerial photographic interpretation

Approximate magnetic declination 25°55′ East in 1984 decreasing approximately 4.3′ annually for the Bocquene Lake map area.

SCALE 1:31,680

Miles 1 0 1 Miles
Kilometres 0 Kilometres



Geology of Bocquene Lake District, Alberta

Sheet No. 24

John D. Godfrey, Godfrey J. Walton and Geoffrey Hodgson, 1973

Published 1984
Map to accompany Earth Sciences Report No. 84-5

Any revisions or additional geological information would be welcomed by the Alberta Research Council.

Base maps compiled from planimetric sheets published by Alberta Energy and Natural Resources, Edmonton.
Aerial photographs for the area obtainable from Alberta Energy and Natural Resources, Edmonton; or the Surveys and Mapping Branch of Energy, Mines and Resources, Ottawa.
Cartography by Alberta Research Council, Graphic Services, Richard J. Buck.

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