

WYLIE LAKE LEGEND

- PRECAMBRIAN\***
- SEDIMENTARY ROCKS**
- ATHABASCA FORMATION:** typically hematite red, to purple to buff; flaggy to rubbly bedded; medium-grained sandstone, with gritty bands and well-rounded quartz pebbles 2 to 6 cm in diameter.
- Rubble**
- Underlain in part by highly altered basement regolithic material (Br); shows intense hematite stains, numerous fractures, and minor quartz veinlets.
- REGIONAL CATACLASTIC ZONES**
- Zones of regional cataclasis and recrystallization have principally affected granite gneisses and metasedimentary rocks to produce: ultramylonite, mylonite, cataclaste, blastomylonite, and flaser gneiss; megastructure is typically streaky; may contain rounded or augen rock clasts or feldspar porphyroclasts (Z).
- RECRYSTALLIZED CATACLASTIC 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 apatite and pegmatite. Largely Fishing Creek Quartz Diorite and Wylie Lake Granodiorite Phase parent materials.
- RECRYSTALLIZED CATACLASTIC ROCK:** green to black; granuloze (siliceous) to schistose, with biotite, chlorite, sericite; feldspar and minor quartz porphyroclasts in a massive to foliated, finely banded, aphanitic matrix. Largely metasedimentary rock parent material.
- RECRYSTALLIZED CATACLASTIC 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. Largely granite gneiss parent material.
- GRANITOID ROCK GROUP**
- CHIEPEYAN RED GRANITE:** typically red to pink; equigranular, medium-grained but locally fine-grained; massive to poorly foliated, degree of foliation generally increases with biotite (chloritic) content; fairly homogeneous lithology with very few small-scale xenoliths, locally gneissic; minor pegmatites and quartz veins.

- WYLIE LAKE GRANITOIDS**
- LEUCOCRATIC GRANITE:** commonly found as small masses intimately mixed with all other Wylie Lake Granitoid rocks. Present in a wide range of proportions in outcrop, only concentrations over 50 percent are shown. White to pink to reddish leucocratic masses of varied textural character; typically equigranular, medium-grained but ranging to coarse- and fine-grained, massive; borders sharp or gradational, simple or complex in outline (-:-).
- UNDIFFERENTIATED GRANITOIDS:** lack of local field data does not allow better definition and subdivision of these areas; this broadly defined unit is composed principally of Fishing Creek Quartz Diorite and Wylie Lake Granodiorite Phase, Granodiorite D and Granodiorite E are subordinate.
- GRANODIORITE D:** mottled appearance with gray, white (locally pink) feldspar megacrysts in a gray (locally pink) matrix; subhedral to euhedral feldspar megacrysts 20 to 50 mm long, typically up to 10 to 15 percent abundance, in a medium- to coarse-grained matrix of feldspar, quartz, and biotite; massive to well foliated. Predominant rock-type is granodiorite, but composition ranges to granite and quartz diorite.
- 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.
- GRANODIORITE E:** generally greenish or brownish overall; may be finely mottled; pink to red subhedral feldspars (6 to 8 mm) 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.
- WYLIE LAKE GRANODIORITE PHASE:** generally dark greenish or brownish red; may appear finely mottled; medium-grained, typically equigranular except for rare pink feldspar megacrysts (15 mm) in a feldspar, quartz, biotite matrix; typically poorly foliated to massive. Rock-type is predominantly granodiorite with minor quartz diorite.

- Megacrystic Phase: white feldspar megacrysts up to 15 mm long and forming up to 15 percent of the rock; either randomly oriented or aligned with the foliation of map-units 131, 132, or 133 ( | ).
- METASEDIMENTARY ROCK GROUP**
- 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, goossans, and milky or bluish gray quartz pods and veins. Minor amphibolite may be present. Common local lithologic gradational variations to: (1) fine- to medium-grained, metamorphic quartz-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 (K<sub>2</sub>O) (2) fine-grained, retrograde phyllite and schist (biotite, chlorite, sericite, and uncommonly hornblende), and phyllonite.

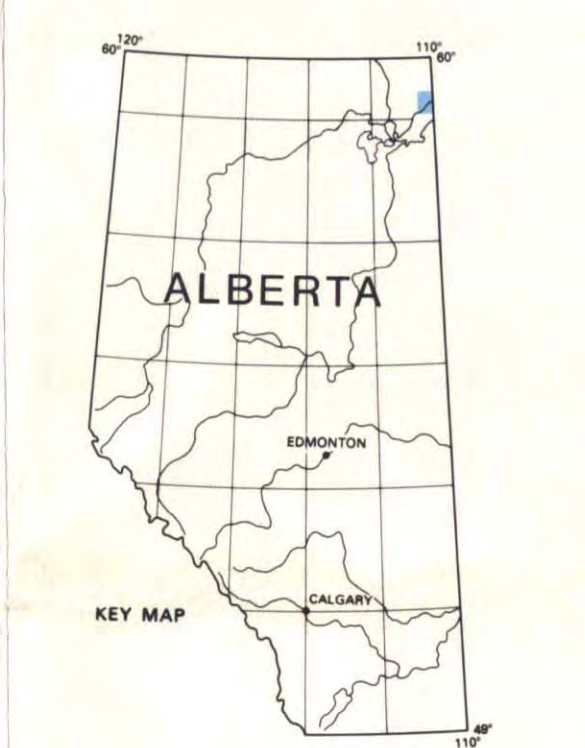
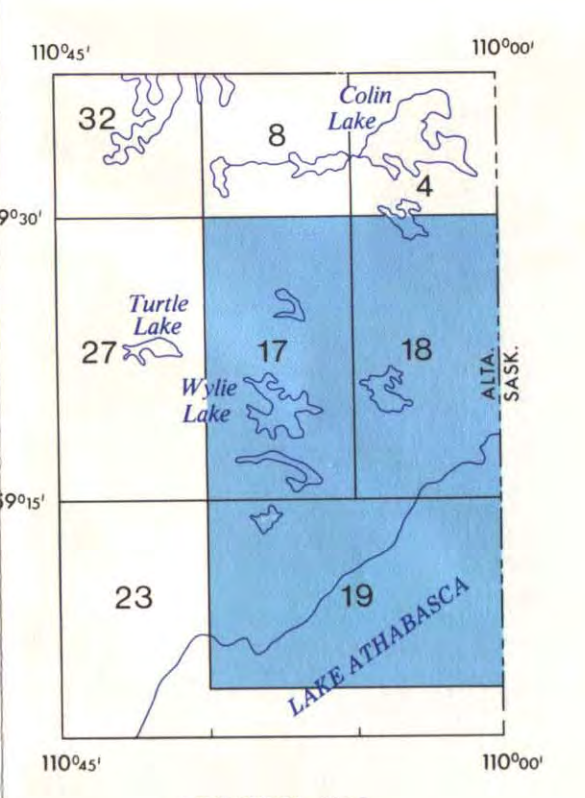
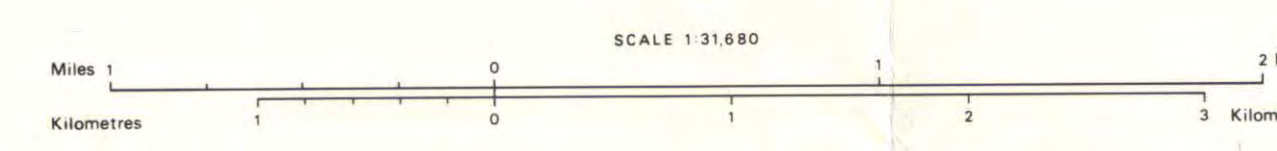
- AMPHIBOLITE**
- Dark brownish green (fresh surface) to grayish green, typically medium-grained; biotite may be common; composition ranges from essentially amphibole pure or amphibole rich to a feldspathic biotite amphibolite; commonly foliated but may be banded where feldspar rich; minor pyrite common.
- GRANITE GNEISS GROUP**
- HORNBLende GRANITE GNEISS:** typically pink to reddish with dark green bands; quartz-feldspar bands interlayered with mafic-rich bands (hornblende, with biotite; generally chloritic) on hand-specimen scale; fine- to medium-grained, typically equigranular, uncommonly megacrystic; typically well banded, uncommonly poorly banded, and rarely foliated. Composition is predominantly granite, with minor granodiorite, quartz diorite, and quartz monodiorite. Large areas are migmatitic, particularly where intimately associated with minor lenses, pods, or bands of metasedimentary rocks, pegmatite, or amphibolite.
- 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 monodiorite. Large areas are migmatitic, particularly where intimately associated with minor lenses, pods, and bands of metasedimentary rocks, pegmatite, or amphibolite.

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

Base maps compiled from planimetric sheets published by Alberta Energy and Natural Resources, Edmonton.  
Aerial photographs covering this area are obtainable from the Technical Division, Alberta Energy and Natural Resources, Edmonton, or the Mapping and Survey Branch of Energy, Mines and Resources, Ottawa.  
Approximate magnetic declination 2°48' East in 1978, decreasing approximately 4" annually.  
**Geology by John D. Godfrey, Peter Kiewchuk, and Maurice B. Dusseault, 1971.**  
Map drafted by D.E. Jacobs and C. Parent  
Cartographic editing by A.R. Campbell  
Scale 1:31,680 or 1 inch to 1/2 mile  
Published 1978  
Map to accompany Report 78-1.

GEOLOGY OF THE WYLIE LAKE DISTRICT, ALBERTA

Sheet No. 19



- Geological boundary (defined, approximate) .....
- Foliation (defined: dip known, dip vertical; foliation assumed) .....
- Foliation trend\* .....
- Extreme contortion (structural trend) .....
- Tight fold (structural trend) .....
- Syncline (showing direction of plunge of fold axis) .....
- Local gneissosity in generally massive to foliated rock .....
- Joint (dip known, vertical; unknown) .....
- Fault (defined, assumed) .....
- Shear .....
- Breccia .....
- Mylonite (local) .....
- Goossan .....
- Rock alteration (possibly fault related) .....
- Basement regolith .....
- Quartz vein .....
- Granitoid standard sample .....
- Metasedimentary band standard sample .....
- Radioactivity .....
- Yellow stain, mineral .....
- Garnet .....
- Chlorite (abundant) .....
- Epidote (abundant) .....
- Allanite .....
- Graphite .....
- Hornblende .....
- Muscovite .....
- Sericite .....
- Isotopic age (millions of years): biotite (b), muscovite (m), K-Ar; U. of A. ....
- Glacial stria (direction of ice movement indicated) .....
- Wind-out groove (wind direction indicated) .....
- Esker\* (flow direction known) .....
- Glaciofluvial delta\* .....
- Drumlin\* .....
- Raised beach\* (downslope direction indicated) .....
- Kettle\* .....
- Dune\* .....
- Sand-covered area\* .....
- Drainage (permanent, intermittent) .....
- Muskeg .....
- Township boundary .....
- Provincial boundary .....
- Spot elevation in feet above mean sea level .....

\*Aerial photographic interpretation priority.