ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

Preliminary Interpretive Report 2025-2A
Twelker and others, 2025
SHEET 1 OF 1
Explanatory text accompanies map
http://doi.org/10.14509/31649

Photo of Fairbanks-Chena assemblage calc-silicate gneiss (pMfces) outcrop at station 18ET552. Photograph taken 8/13/2022 by E. Twelker.

Migmatitic paragneiss of the Lake George assemblage (unit pMlmpg) exposed in a quarry at mile 9.5 of the Pogo Road. Photograph taken 8/16/2017 by E. Twelker.

GEOLOGIC MAP UNITS

Please see accompanying report for descriptions of the map units.

PLUTONIC ROCKS

SLATE CREEK INTRUSIVE SUITE

- Kfp — FELSIC PORPHYRY (Paleogene)

FAIRBANKS-SALCHA PLUTONIC SUITE

- Klsg — GRANITE (early Late Cretaceous)
- Klsgd — GRANODIORITE (early Late Cretaceous)
- Klsp — PORPHYRY (early Late Cretaceous)
- Klsmg — WHITE MICA-BEARING GRANITE (early Late Cretaceous)

HARPER PLUTONIC SUITE

- Khgd — GRANODIORITE (late Early Cretaceous)

MAP UNIT POINTS — Dikes or other localized map unit with observations too small to draw at map scale; colored and labeled the same as map units above.

METAMORPHIC ROCKS

PARAUTOCHTHONOUS NORTH AMERICA

BUTTE ASSEMBLAGE

- MDbms — METASEDIMENTARY ROCKS (Mississippian to Devonian)

FAIRBANKS-CHENA ASSEMBLAGE

- TrDuc — META-ULTRAMAFIC ROCKS (Triassic? to Paleozoic)
- MDlca — AMPHIBOLITE (Mississippian to Devonian)
- MDlco — ORTHOGNEISS (Mississippian to Devonian)
- pMlccs — CALC-SILICATE GNEISS (Pre-Mississippian)
- pMlcg — GRAPHITIC ROCKS (Pre-Mississippian)
- pMlcm — MARBLE (Pre-Mississippian)
- pMlcq — QUARTZITE (Pre-Mississippian)
- pMlcsg — SCHIST AND GNEISS (Pre-Mississippian)

LAKE GEORGE ASSEMBLAGE

- MDag — DIVIDE MOUNTAIN AUGEN GNEISS (Early Mississippian to Late Devonian)
- MDla — AMPHIBOLITE (Early Mississippian to Late Devonian)
- MDlo — ORTHOGNEISS (Early Mississippian to Late Devonian)
- pMlms — METASEDIMENTARY ROCKS (Pre-Mississippian)
- pMlp — PARAGNEISS (Pre-Mississippian)
- pMlrp — RECRYSTALLIZED PARAGNEISS (Pre-Mississippian)
- pMlmpg — MIGMATITIC PARAGNEISS (Pre-Mississippian)
- MZlu — LAKE GEORGE ASSEMBLAGE, UNDIVIDED (Mississippian to Proterozoic)

EXPLANATION OF MAP SYMBOLS

Linework is solid where location is accurate, long-dashed where location is approximate, and short-dashed where location is inferred. Question marks indicate the existence or identity of the feature is questionable. Localities with multiple planar feature measurements use asymmetric symbols with the tail ends joined at the measurement point.

CONTACTS AND FAULTS

- CONTACT
- FAULT — sense of movement indeterminate
- LOW-ANGLE FAULT (UNKNOWN SENSE OF SLIP) — half-circles on hanging wall

PLANAR FEATURES

- SMALL, MINOR INCLINED FAULT — showing strike and dip
- SMALL, MINOR INCLINED JOINT — showing strike and dip
- INCLINED METAMORPHIC or TECTONIC FOLIATION — showing strike and dip
- SMALL, MINOR INCLINED DIKE — showing strike and dip
- SMALL, MINOR FOLD, INCLINED AXIAL SURFACE — showing strike and dip
- INCLINED CLEAVAGE — showing strike and dip
- INCLINED GNEISSIC LAYERING — showing strike and dip

LINEAR FEATURES

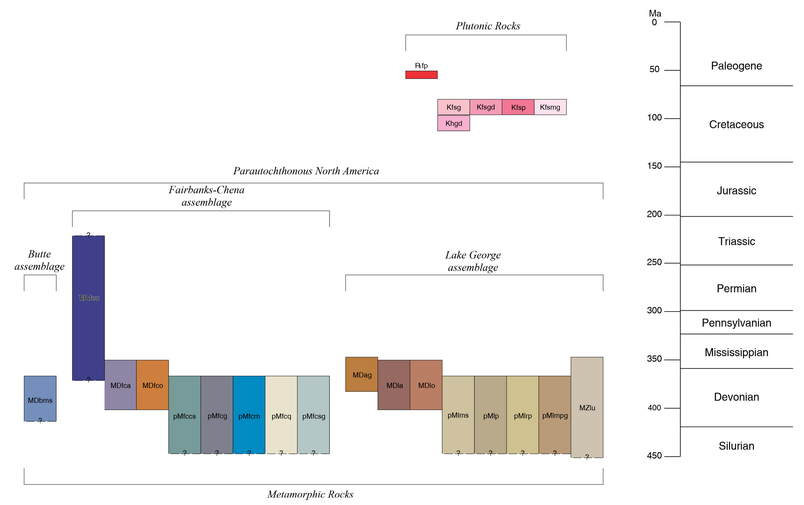
- INCLINED SLICKENLINE ON FAULT SURFACE — showing trend and plunge
- INCLINED ALIGNED-MINERAL LINEATION — showing trend and plunge
- INCLINED CRENULATION LINEATION — showing trend and plunge
- INCLINED GENERIC LINEATION — showing trend and plunge
- INCLINED FOLD HINGE OF SMALL, MINOR FOLD — showing trend and plunge
- INCLINED ALIGNED STRETCHED-OBJECT LINEATION — showing trend and plunge

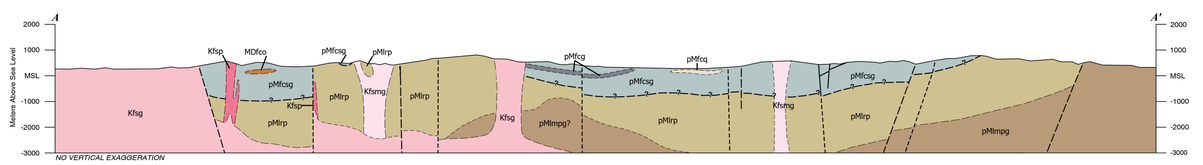
MISCELLANEOUS MAP SYMBOLS

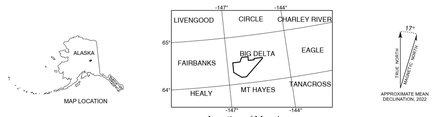
- D—D′ — CROSS SECTION LINE
- FIELD STATION LOCALITY
- USGS LEGACY FIELD STATION LOCALITY (Weber and Foster, 1960–1979, Swainbank and others, 1984, Grham and others, 2007)
- U-Pb GEOCHRONOLOGY SAMPLE
- $^{40}Ar/^{39}Ar$ GEOCHRONOLOGY SAMPLE

See table 1 in accompanying report (Twelker and others, 2025)

CORRELATION OF MAP UNITS







Bedrock Geologic map of the Richardson mining district, Big Delta Quadrangle, Alaska

by

Evan Twelker[1], R.J. Newberry[1], T.J. Naibert[1], and Alicja Wypych[2]

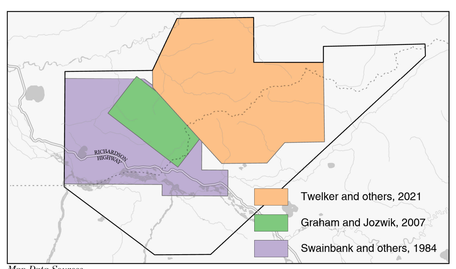
2025

SCALE 1:100 000

1 0 1 2 3 4 5 6 7 8 MILES

1 0 1 2 3 4 5 6 7 8 9 10 KILOMETER S

CONTOUR INTERVAL 100 FEET
North American Vertical Datum of 1988



Map Data Sources

Shaded-relief base map and topographic lines created from:
U.S. Geological Survey, EROS Data Center, 2013, Digital elevation, Interferometric Synthetic Aperture Radar (IFSAR) Alaska
Hydrology from:
U.S. Geological Survey National Hydrologic Dataset (2017)
Projection:
Universal Transverse Mercator Zone 6N
Datum:
North American Datum of 1983
Geologic field investigations by:
Evan Twelker, Alicja Wypych, T.J. Naibert, K.R. Sicard, M.B. Werdon, J.E. Athey, A.L. Willingham, A.C. Lockett, (2017)
Evan Twelker, R.J. Newberry, T.J. Naibert, K.R. Sicard, Alicja Wypych, W.C. Wyatt (2018)
Evan Twelker, R.J. Newberry, T.J. Naibert, D.J. Szumigala, M.M. Gavel, A.D. Wildland, I.P. Muller (2022)
Alicja Wypych, D.A. Harvey, Evan Twelker, I.P. Muller, J.W. Buchanan, M.L. Barrera, M.M. Gavel, R.J. Newberry, T.J. Naibert, D.J. Szumigala (2023)
Geologic interpretation by:
Evan Twelker (2017–2025)
Geologic GIS data layers created by:
Evan Twelker, A.D. Wildland, C.M. Truskowski (2022–2025)
Cartography by:
T.J. Naibert, C.M. Truskowski (2023–2025)
Cartographic review by:
A.E. Macpherson (2025)
Peer review by:
S.P. Reagan (2025)

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Twelker, Evan, Wildland, A.D., Werdon, M.B., Sicard, K.R., Wypych, Alicja, Naibert, T.J., Athey, J.E., Willingham, A.L., and Lockett, A.C., 2021. Preliminary bedrock geologic map database, northeastern Richardson mining district, Alaska: Alaska Division of Geological & Geophysical Surveys Raw Data File 2021-9, 4 p. https://doi.org/10.14509/30676

Twelker, Evan, Newberry, R.J., Naibert, T.J., Wypych, Alicja, Gavel, M.M., Barrera, M.L., Szumigala, D.J., Truskowski, C.M., Muller, I.P., Fessenden, S.N., Blackwell, N.J., Harvey, D.A., and Wildland, A.D., 2025. Bedrock geologic maps of the Mount Harper-Middle Fork area, Volkmar River-Healy River area, Goodpaster River-Shaw Creek area, and the Richardson mining district, Alaska: Alaska Division of Geological & Geophysical Surveys Preliminary Interpretive Report 2025-2, 38 p. http://doi.org/10.14509/31648

Weber, F.R., and Foster, H.L., 1960–1979. Unpublished field station locations, archived rock samples, and field notebooks from the Big Delta and Eagle quadrangles; courtesy of U.S. Geological Survey.