



GEOLOGIC MAP UNITS
Please see accompanying report for descriptions of the map units.

SEDIMENTARY ROCKS
SEDIMENTARY ROCKS UNDIFFERENTIATED (Cretaceous - Cretaceous)

VOLCANIC ROCKS
FELSIC VOLCANIC ROCKS (Late Cretaceous)
ALKALINE VOLCANIC ROCKS (Late Cretaceous)
INTERMEDIATE VOLCANIC ROCKS (Late Cretaceous)
WEST FORK FELSIC TUFF (mid-Cretaceous)
SIXTYMILE BUTTE FELSIC VOLCANIC ROCKS (mid-Cretaceous)

INTRUSIVE ROCKS
FELSIC HYPABISSAL INTRUSIONS (Palaeogene)
MONZONITE (Late Cretaceous)
GRANODIORITE AND QUARTZ DIORITE (Late Cretaceous) of the TAYLOR PLUTONIC SUITE
GRANODIORITE (mid-Cretaceous) of the GARDINER CREEK PLUTONIC SUITE

MOUNT HARPER PLUTONIC SUITE
Kgp GRANITE PORPHYRY (mid-Cretaceous)
Kg GRANITE (mid-Cretaceous)

TAYLOR MOUNTAIN PLUTONIC SUITE
NAPOLON CREEK PLUTONIC SUITE UNDIVIDED (Jurassic)

TAYLOR MOUNTAIN PLUTONIC SUITE
TRONDHJEMITE (Triassic)
GRANODIORITE TO TONALITE (Triassic)
GABBRO, DIORITE, AND QUARTZ DIORITE (Triassic)

METAMORPHIC ROCKS
META-ULTRAMAFIC ROCKS (Triassic - Palaeogene)

CHICKEN ASSEMBLAGE
METASEDIMENTARY ROCKS UNDIVIDED (Mississippian)
METAMAFIC ROCKS (Mississippian)

FORTYMILE RIVER ASSEMBLAGE
ORTHOGNEISS (Mississippian - Devonian)
AMPHIBOLITE (Mississippian - Devonian)
METASEDIMENTARY ROCKS UNDIVIDED (Mississippian - Devonian)

JARVIS ASSEMBLAGE
METAGABBRO (Triassic)
QUARTZITE AND QUARTZ SCHIST

LAKE GEORGE ASSEMBLAGE
DIVIDE MOUNTAIN AUGEN GNEISS (Mississippian - Devonian)
ORTHOGNEISS (Mississippian - Devonian)
AMPHIBOLITE (Mississippian - Devonian)
METASEDIMENTARY ROCKS UNDIVIDED (Mississippian - Proterozoic)
PARAGNEISS (Mississippian - Proterozoic)

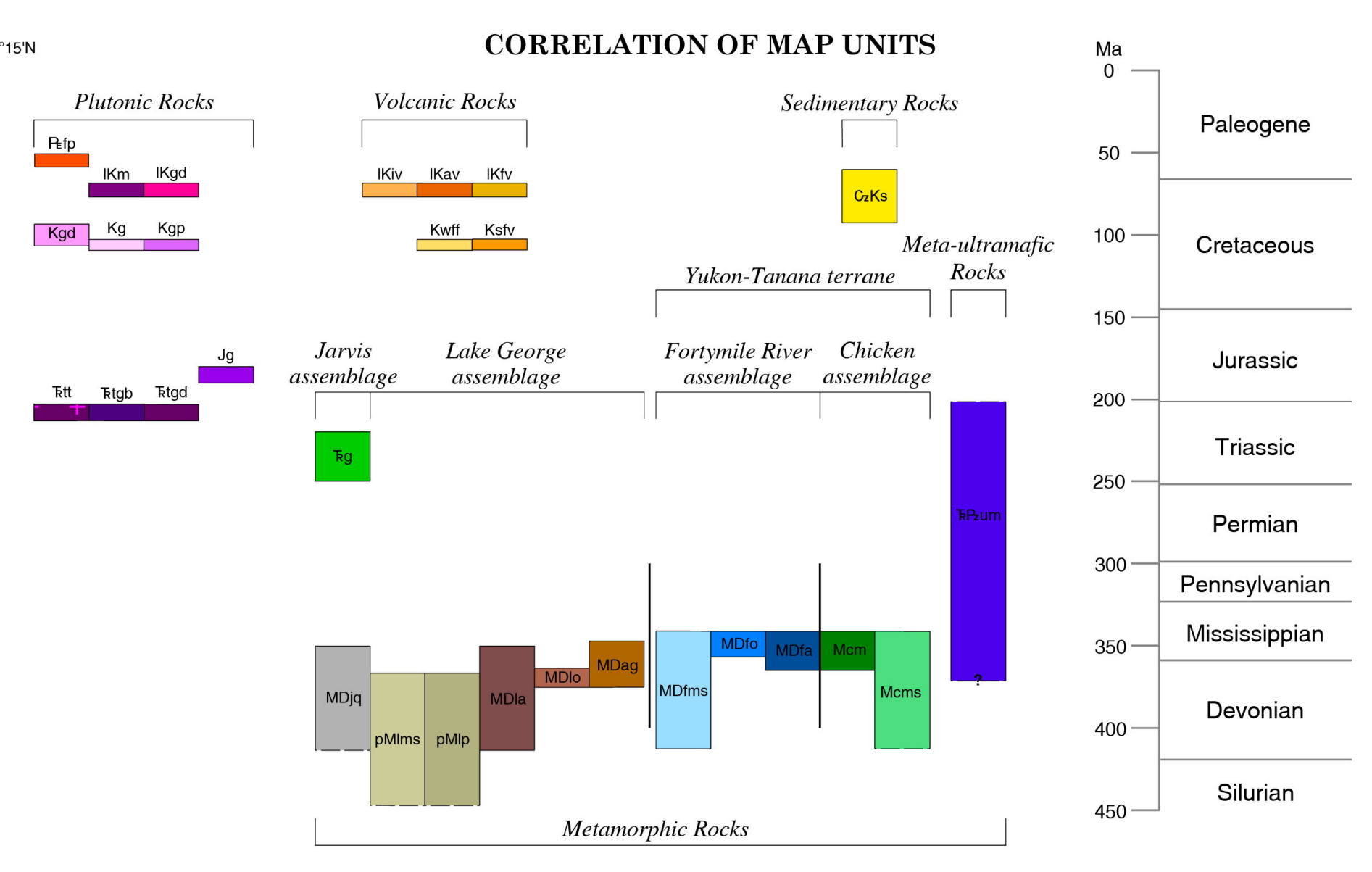
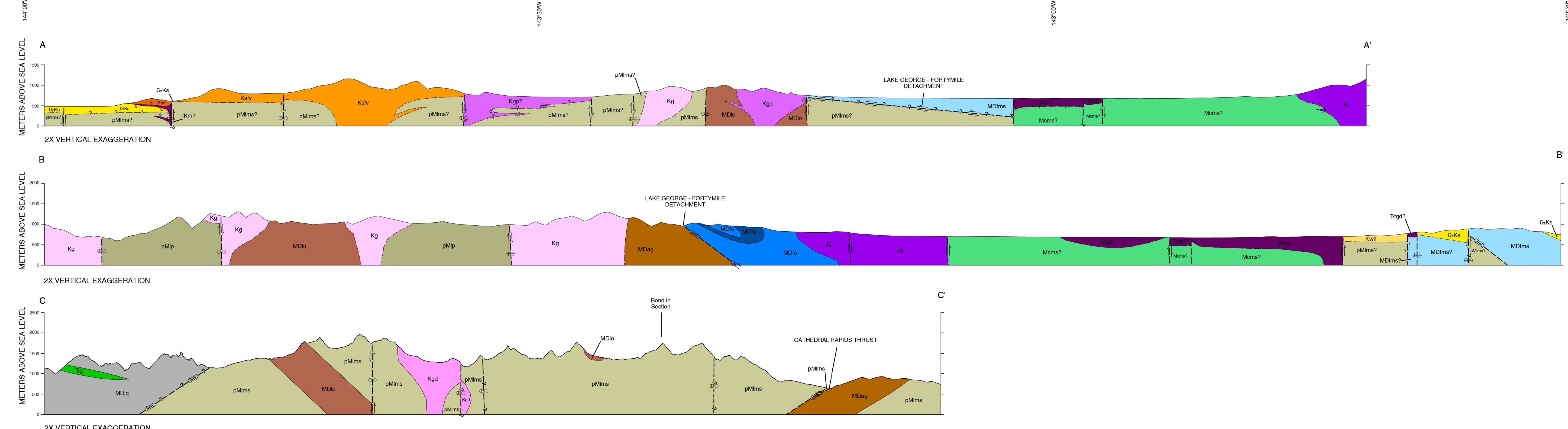
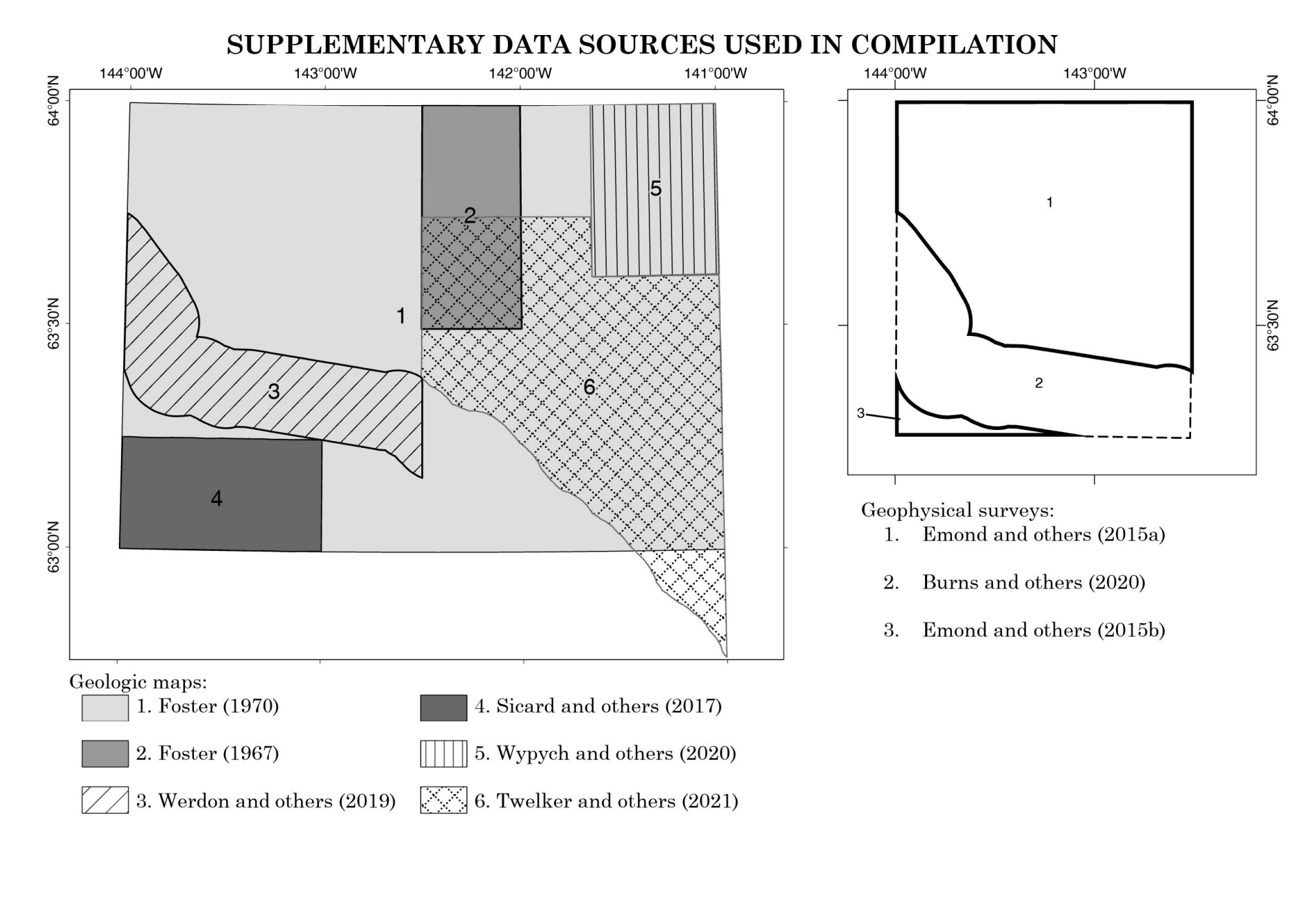
EXPLANATION OF MAP SYMBOLS
Lines are solid where location is accurate, long-dashed where location is approximate, and short-dashed where location is inferred. Question marks indicate the existence or identity of the feature is questionable.

CONTACTS AND FAULTS
CONTACT
FAULT - sense of movement indeterminate
HIGH-ANGLE FAULT - sense of movement indicated by U - up, D - down
STRIKE-SLIP FAULT, LEFT-LATERAL, or OBLIQUE OFFSET
THRUST FAULT - teeth on hanging wall
DETACHMENT FAULT - teeth on hanging wall

PLANAR FEATURES
SMALL, MINOR INCLINED FAULT - showing strike and dip
SMALL, MINOR INCLINED JOINT - showing strike and dip
INCLINED CLEAVAGE - showing strike and dip
INCLINED FLOW BANDING, LAMINATION, LAYERING, or FOLIATION IN IGNEOUS ROCK - showing strike and dip
INCLINED METAMORPHIC or TECTONIC FOLIATION - showing strike and dip
INCLINED GNEISS LAYERING - showing strike and dip
INCLINED MYLONITIC FOLIATION - showing strike and dip
SMALL, MINOR INCLINED DIKE - showing strike and dip

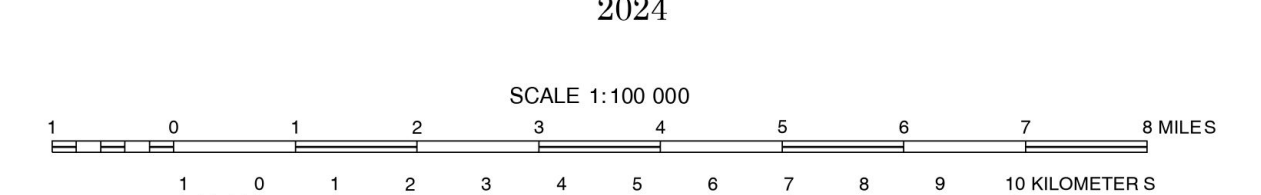
LINEAR FEATURES
INCLINED SLICKENLINES ON FAULT SURFACE - Showing trend and plunge
INCLINED ALIGNED-MINERAL LINATION - Showing trend and plunge
INCLINED ALIGNED STRETCHED-OBJECT LINATION - Showing trend and plunge

MISCELLANEOUS MAP SYMBOLS
A-A' CROSS SECTION LINE
STRIKE-SLIP FAULT (IN CROSS SECTION) - MINUS, AWAY FROM OBSERVER, PLUS, TOWARD OBSERVER
FIELD STATION LOCALITY
U-Pb GEOCHRONOLOGY SAMPLE
DETritAL ZIRCON SAMPLE
⁴⁰Ar/³⁹Ar GEOCHRONOLOGY SAMPLE



Bedrock geologic map of the Western Tanacross area, Tanacross Quadrangle, Alaska

by
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Hydrology from:
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Projection:
Universal Transverse Mercator Zone 7N

Datum:
North American Datum of 1983

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REFERENCES CITED
Burns, L.E., Graham, G.R.C., Emond, A.M., Stevens Exploration Management Corp., and Fugro Airborne Surveys, 2020. Alaska Highway corridor electromagnetic and magnetic airborne geophysical survey data compilation: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2020-15, 17 p. <https://doi.org/10.14509/30402>

Emond, A.M., Salsus, R.W., Graham, G.R.C., and Goldak Airborne Surveys, 2015b. Airborne magnetic geophysical survey of the Tanacross region, Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2015-6, 16 p. <https://doi.org/10.14509/29014>

Emond, A.M., Salsus, R.W., Graham, G.R.C., and Goldak Airborne Surveys, 2015a. Airborne magnetic geophysical survey of the Tanacross region, Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2015-2, 13 p. <https://doi.org/10.14509/29012>

Foster, H.L., 1967. Geology of the Mount Fairplay area, Alaska: U.S. Geological Survey Bulletin 1241-B, p. B1-B18, 1 sheet, scale 1:63,360.

Foster, H.L., 1970. Reconnaissance geologic map of the Tanacross Quadrangle, Alaska: U.S. Geological Survey Miscellaneous Geologic Investigations Map 503, 1 sheet, scale 1:250,000.

Naibert, T.J., Wypych, Alieja, Newberry, R.J., Twelker, Evan, Gavol, M.M., Wildland, A.D., Barrera, M.L., Szumigala, D.J., Regan, S.P., Avirett, D.F., Bernard, C.M., Blackwell, N.J.S., Fossenden, S.N., Hubbard, A.K., Masterson, S.S., Muller, I.P., Turner, M.M., and Wyatt, W.C., 2024. Geologic background and map unit descriptions to accompany bedrock geologic maps of the western Tanacross and Taylor Mountain areas, Tanacross and Eagle quadrangles, Alaska, in Naibert, T.J., Geologic maps and map unit descriptions to accompany Bedrock Geologic Maps of the Western Tanacross and Taylor Mountain areas, Tanacross and Eagle quadrangles, Alaska: Alaska Division of Geological & Geophysical Surveys Preliminary Interpretive Report 2024-6C, 39 p. <https://doi.org/10.14509/31167>

Sicaud, K.R., Naibert, T.J., Hubbard, T.D., Twelker, Evan, Wypych, Alieja, Werdon, M.B., Willingham, A.L., Gillis, R.J., Laude, L.L., and Newberry, R.J., 2017. Bedrock geologic map of the Lake to Tullin Junction, Alaska: Alaska Division of Geological & Geophysical Surveys Preliminary Interpretive Report 2017-3, 15 p., 1 sheet, scale 1:63,360. <https://doi.org/10.14509/29722>

Twelker, Evan, Newberry, R.J., Wypych, Alieja, Naibert, T.J., Wildland, A.D., Sicaud, K.R., Regan, S.P., Abney, J.E., Wyatt, W.C., and Lopez, J.A., 2021. Bedrock geologic map of the Lake River-Mount Fairplay area, Tanacross and Nabesna quadrangles, Alaska, in Twelker, Evan, et al., Geologic investigation of the Lake River-Mount Fairplay area, eastern Alaska: Alaska Division of Geological & Geophysical Surveys Report of Investigation 2021-5A, p. 1-32, 1 sheet, scale 1:100,000. <https://doi.org/10.14509/30355>

Werdon, M.B., Solie, D.N., Andrew, J.E., Freeman, L.K., Newberry, R.J., Szumigala, D.J., and Elliott, B.A., 2010. Bedrock geologic map, Alaska Highway corridor, Del Lake to Tullin Junction, Alaska: Alaska Division of Geological & Geophysical Surveys Preliminary Interpretive Report 2010-2, 14 p., 2 sheets, scale 1:63,360. <https://doi.org/10.14509/30037>

Wypych, Alieja, Hubbard, T.D., Naibert, T.J., Athey, J.E., Newberry, R.J., Sicaud, K.R., Twelker, Evan, Werdon, M.B., Willingham, A.L., Wyatt, W.C., and Lockett, A.C., 2020. Northeastern Tanacross geologic map, Tanacross D-1, D-2, C-1, and C-2 quadrangles, Alaska: Alaska Division of Geological & Geophysical Surveys Preliminary Interpretive Report 2019-6, 20 p., 1 sheet, scale 1:63,360. <https://doi.org/10.14509/30107>