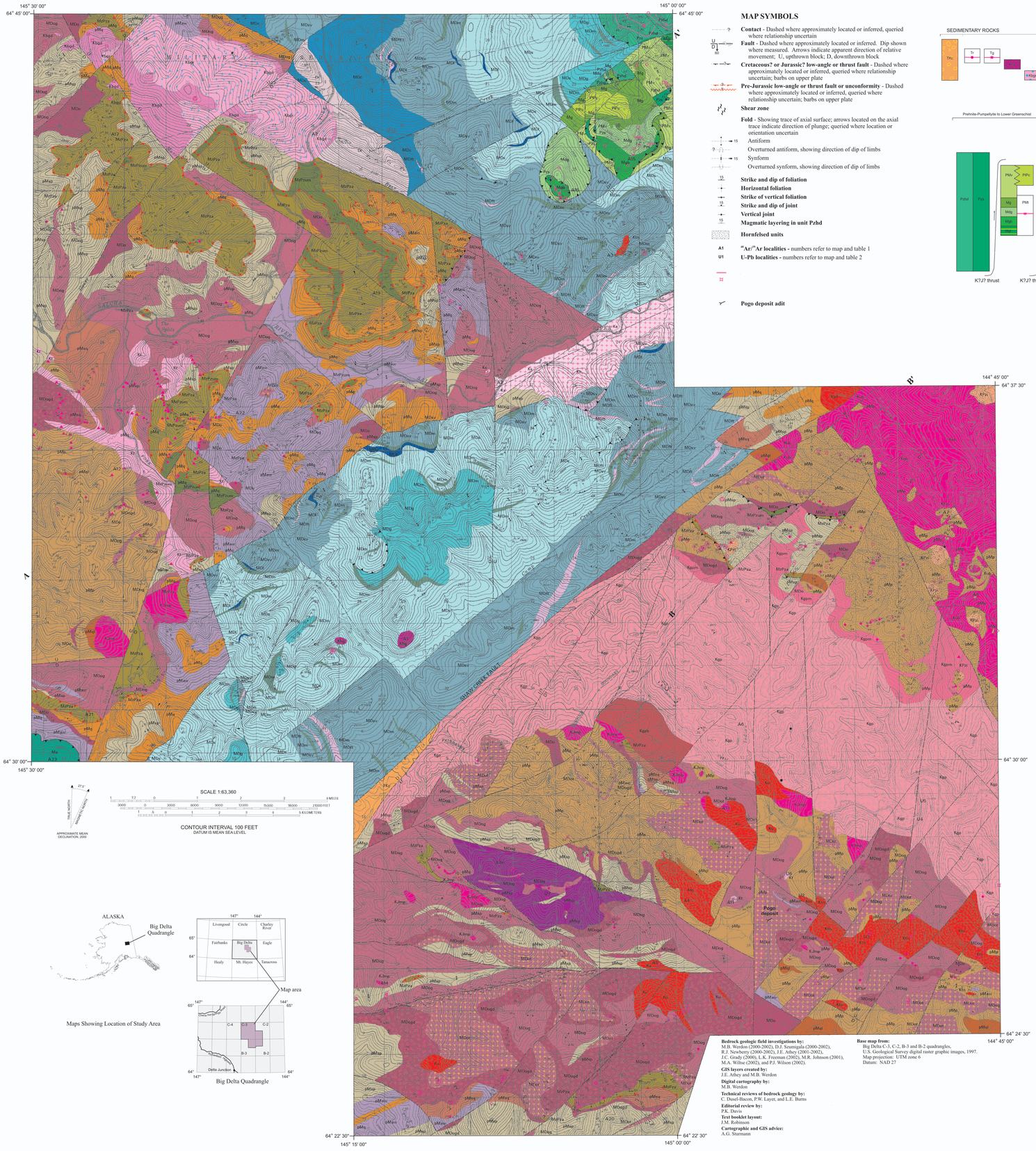


MAP SYMBOLS

Contact - Dashed where approximately located or inferred, queried where relationship uncertain

Fault - Dashed where approximately located or inferred. Dip shown where measured. Arrows indicate apparent direction of relative movement; U, upthrown block; D, downthrown block

Cretaceous? or Jurassic? low-angle or thrust fault - Dashed where approximately located or inferred, queried where relationship uncertain; barbs on upper plate

Pre-Jurassic low-angle or thrust fault or unconformity - Dashed where approximately located or inferred, queried where relationship uncertain; barbs on upper plate

Shear zone

Fold - Showing trace of axial surface; arrows located on the axial trace indicate direction of plunge; queried where location or orientation uncertain

Antiform

Overturned antiform, showing direction of dip of limbs

Synform

Overturned synform, showing direction of dip of limbs

Strike and dip of foliation

Horizontal foliation

Strike of vertical foliation

Strike and dip of joint

Vertical joint

Magmatic layering in unit Pzhd

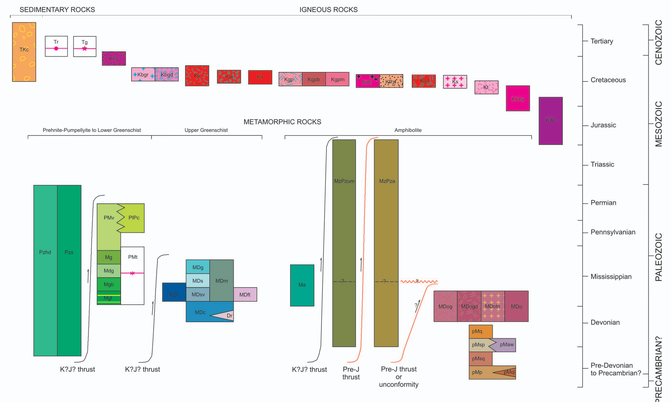
Hornfelsed units

A1 **$^{40}Ar/^{39}Ar$ localities -** numbers refer to map and table 1

U1 **U-Pb localities -** numbers refer to map and table 2

Pogo deposit adit

CORRELATION OF MAP UNITS



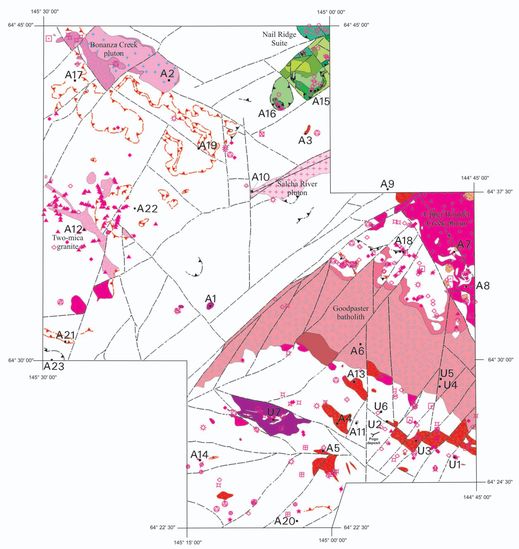
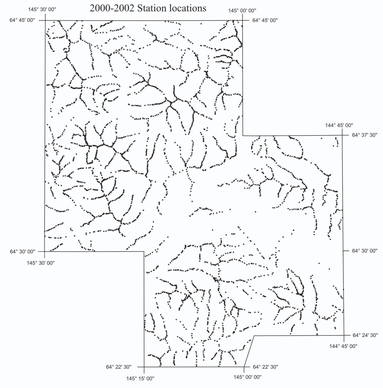


Figure 1. Index map of dike locations and compositions, igneous rocks, faults, and age data locations

DIKE SYMBOLS (on map and figure 1)

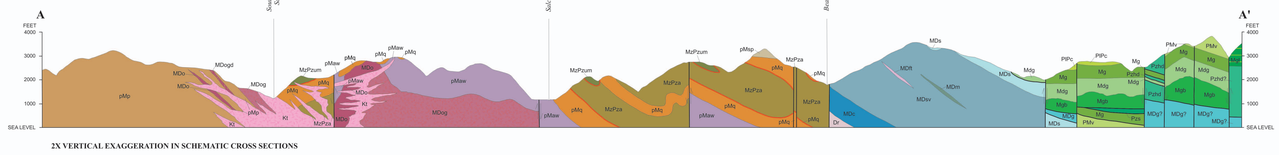
Dikes shown on geologic map as lines where orientation was recorded

- Rhyolite; equivalent to Tr (Tertiary)
- Basalt/gabbro; equivalent to Tg (Tertiary)
- Undifferentiated gabbro; spatially-associated with MzPzum and MzPza in the Big Delta C-3 Quadrangle; isolated dikes in the Big Delta B-3 Quadrangle (Cretaceous? to Paleozoic?)
- Undifferentiated basalt; isolated dikes in the Big Delta B-3, B-2, and C-2 Quadrangles (Cretaceous?)
- Quartz diorite (Cretaceous)
- Tonalite (Cretaceous)
- Two-mica (±tourmaline, ±garnet) granite; equivalent to Kt (Cretaceous)
- Pegmatite (Cretaceous to Jurassic?)
- Aplite (Cretaceous to Jurassic?)
- Undifferentiated granitic (Cretaceous to Jurassic?)
- Granite (Cretaceous to Jurassic?)
- Granodiorite (Cretaceous to Jurassic?)
- Trondhjemite; unit PMt (Permian? to Mississippian?)
- Gabbro; equivalent to Mdg (Mississippian?)
- Metagabbro; equivalent to MDm (Mississippian to Devonian)



Maps Showing Location of Study Area

Big Delta Quadrangle



2X VERTICAL EXAGGERATION IN SCHEMATIC CROSS SECTIONS

Bedrock geologic field investigations by:
M.B. Werdon (2000-2002), D.J. Szumigala (2000-2002), R.J. Newberry (2000-2002), J.E. Athey (2001-2002), J.C. Grady (2000), L.K. Freeman (2002), M.R. Johnson (2001), M.A. Wilise (2002), and P.J. Wilson (2002).
GIS layers created by:
J.E. Athey and M.B. Werdon
Digital cartography by:
M.B. Werdon
Technical reviews of bedrock geology by:
C. Dusel-Bacon, P.W. Layer, and L.E. Burns
Editorial review by:
P.K. Davis
Text booklet layout:
J.M. Robinson
Cartographic and GIS advice:
A.G. Sturmann

Base map from:
Big Delta C-3, C-2, B-3 and B-2 quadrangles, U.S. Geological Survey digital raster graphic images, 1997.
Map projection: UTM zone 6
Datum: NAD 27

DESCRIPTION OF MAP UNITS

SEDIMENTARY ROCKS

TKc — CONGLOMERATE (Tertiary? to Cretaceous?)

IGNEOUS AND META-IGNEOUS ROCKS

Dike symbol key shown below figure 1

Tr — FELSIC DIKES (Tertiary)

Tg — MAFIC DIKES (Tertiary?)

KTrg — HYPABYSSAL GRANITE (Late Cretaceous)

Kbgr — BONANZA CREEK PLUTON, GRANITE CORE (Cretaceous)

Kbgd — BONANZA CREEK PLUTON, GRANODIORITE MARGIN (Cretaceous)

Ku — UNDIFFERENTIATED GRANITIC PLUTONS (Cretaceous?)

Kton — TONALITE (Cretaceous)

Ka — QUARTZ-ALKALIC PLUTON (Cretaceous)

Kgp — GOODPASTER BATHOLITH (Cretaceous)

Kgpm — LOW-HORNBLENDE PHASE OF THE GOODPASTER BATHOLITH (Cretaceous)

Kgpm — NORTHEAST MARGIN OF GOODPASTER BATHOLITH (Cretaceous)

Kubc — UPPER BOULDER CREEK PLUTON (Cretaceous)

KPzi — INJECTION MIGMATITE (Cretaceous to Paleozoic)

Kgd — GRANODIORITE (Cretaceous?)

Ka — SALCHA RIVER PLUTON (Cretaceous)

Kt — TWO-MICA (±tourmaline, ±garnet) GRANITE (Cretaceous)

KJmu — UNDIFFERENTIATED METAGRANITIC PLUTONS (Cretaceous to Jurassic?)

KJgn — METAGRANODIORITE (Cretaceous to Jurassic?)

METAMORPHIC ROCKS

MAFIC, ULTRAMAFIC, AND SEDIMENTARY ROCKS METAMORPHOSED TO PREHNITE-PUMPELLYITE TO LOWERMOST GREENSCHIST FACIES: NAIL RIDGE SUITE, SEVENTYMILE TERRANE

PIPc — METACHERT AND VOLCANICLASTIC CONGLOMERATE/BRECCIA (Early Permian to late Pennsylvanian)

PMv — METASANDSTONE, META-ARGILLITE, AND GREENSTONE (Permian to Mississippian)

PM — TRONDHJEMITE DIKES (Permian? to Mississippian?)

Mg — GREENSTONE (Mississippian?)

Mdg — DIABASE AND MICROGABBRO (Mississippian?)

Mgb — GABBRO (Mississippian?)

Mgbl — LAYERED GABBRO (Mississippian?)

PzPzd — HARZBURGITE AND DUNITE (Paleozoic)

Pzs — SERPENTINITE (Paleozoic)

SEDIMENTARY AND LESSER VOLCANIC ROCKS METAMORPHOSED TO GREENSCHIST FACIES

MDg — METAGRIT AND METASANDSTONE (Mississippian to Devonian)

MDs — METASANDSTONE, PHYLLITE, AND METAGRIT (Mississippian to Devonian)

MDlt — METALIMESTONE AND DOLOMITE (Mississippian to Devonian)

MDft — FELSIC METATUFF (Mississippian to Devonian)

MDsv — METASANDSTONE, PHYLLITE, METAGRIT, AND METAGRAYWACKE (Mississippian to Devonian)

MDm — GREENSTONE (Mississippian to Devonian)

MDc — CARBONACEOUS PHYLLITE AND META-SANDSTONE (Mississippian to Devonian)

Dr — METARHYOLITE (Devonian)

SEDIMENTARY, PLUTONIC, VOLCANIC, AND ULTRAMAFIC ROCKS METAMORPHOSED TO AMPHIBOLITE FACIES

Ma — GARNET AMPHIBOLITE (Mississippian)

MDog — GRANITE ORTHOGNEISS (Mississippian to Devonian)

MDogd — GRANODIORITE ORTHOGNEISS (Mississippian to Devonian)

MDton — TONALITE ORTHOGNEISS (Mississippian to Devonian)

MDo — UNDIFFERENTIATED ORTHOGNEISS (Mississippian to Devonian)

MzPzum — META-ULTRAMAFIC AND MAFIC ROCKS (Mesozoic to Paleozoic)

MzPza — AMPHIBOLITE, HORNBLENDE GNEISS, TONALITIC ORTHOGNEISS (Mesozoic to Paleozoic)

pMq — QUARTZITE (pre-Mississippian)

pMsp — SCHIST AND PARAGNEISS (pre-Mississippian)

pMav — AMPHIBOLITE (pre-Mississippian)

pMsq — SCHIST AND QUARTZITE (pre-Mississippian)

pMgp — SILLIMANITE-BEARING PARAGNEISS (pre-Mississippian)

pMqt — LOWER QUARTZITE (pre-Mississippian)

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BEDROCK GEOLOGIC MAP OF THE SALCHA RIVER–POGO AREA, BIG DELTA QUADRANGLE, ALASKA

by
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