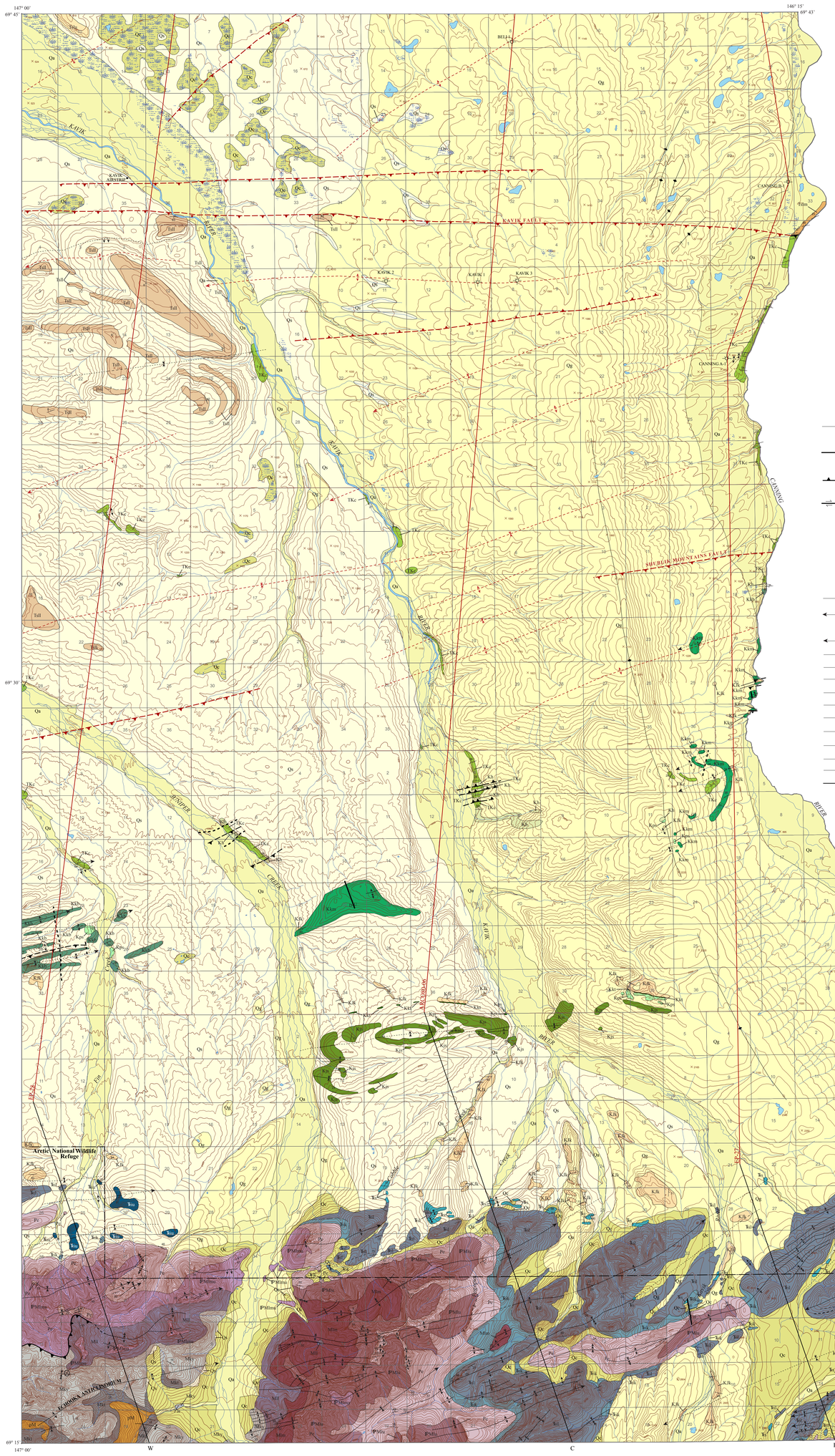
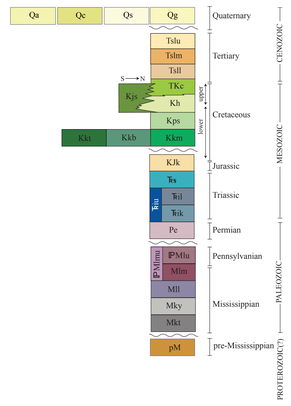
ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

REPORT OF INVESTIGATIONS 2011-3A
Wartes and others, 2011
SHEET 1 OF 1
Explanatory booklet accompanies map



CORRELATION OF MAP UNITS



MAP SYMBOLS

- Contact - dashed where approximately located; queried where uncertain; dotted where concealed
- Fault - dashed where approximately located; shown in red where interpreted by P.L. Decker from seismic data
- Thrust Fault - sawteeth on upper plate
- Transverse Fault - displacement indicated where known
- Strike and dip of beds
  - Horizontal
  - Inclined
  - Overturned
- Moraine - crest queried where uncertain
- Fold axis - shows trace of axial plane and direction of plunge; dashed where approximately located; dotted where concealed; shown in red where interpreted by P.L. Decker from seismic data
- Small fold - shows down-plunge profile view
- Anticline
- Syncline - locally omitted between closely spaced anticlines for legibility
- Overturned anticline
- Overturned syncline
- Overturned anticline; double arrow on steep limb
- Overturned syncline; double arrow on steep limb
- Anticline; double arrow on steep limb
- Syncline; double arrow on steep limb
- Monocline; double arrow on steep limb
- Monocline; double arrow on steep limb
- Line of section; shown in red where it coincides with seismic line (refer to cross sections and structural discussion in companion publication, [Wallace, in review])
- Well location

ABBREVIATED UNIT DESCRIPTIONS

Full descriptions available in accompanying booklet

SURFICIAL DEPOSITS

Qa ALLUVIAL DEPOSITS (Quaternary)—Well sorted, pebble to cobble gravel with lesser sand and minor silt; associated with modern and abandoned alluvial channels, fans, and terraces

Qc COLLUVIAL DEPOSITS (Quaternary)—Poorly sorted, sub angular to angular, boulder-rich gravel near the base of bedrock slopes; includes silt and organic silt in thaw lakes

Qs COMPLEX DEPOSITS (Quaternary)—Undifferentiated, irregular blankets of massive to stratified aeolian silt and organics

Qg GLACIAL DEPOSITS (Quaternary)—Undifferentiated gravel associated with remnant moraines; includes poorly sorted, matrix-supported glacial drift, and well sorted outwash and kame deposits

BEDROCK DEPOSITS

BROOKIAN MEGASEQUENCE

SAGAVANIRKTOK FORMATION (early Paleogene to early Neogene, Paleocene–Miocene)

Tslu LOWER SAGAVANIRKTOK FORMATION, UPPER PART (early Paleogene, Paleocene)—Poorly consolidated pebble conglomerate

Tslm LOWER SAGAVANIRKTOK FORMATION, MIDDLE PART (early Paleogene, Paleocene)—Light gray salt-and-pepper sandstone, lesser gray siltstone, and rare thin conglomerate

Tsll LOWER SAGAVANIRKTOK FORMATION, LOWER PART (early Paleogene, Paleocene)—Light gray friable, salt-and-pepper sandstone, conglomerate, and local carbonaceous mudstone, siltstone, and coal

TKc CANNING FORMATION (Upper Cretaceous to lower Paleogene, Campanian–Paleocene)—Thin-bedded lithic sandstone and gray non-bioturbated mudstone

Kh HUE SHALE UNIT (middle to Upper Cretaceous, Aptian–Campanian)—Dark gray, organic-rich paper shale, yellow-green bentonite, and orange-yellow silicified tuff

Kjs JUNIPER SANDSTONE (Cretaceous)—Tan to light gray fine-grained lithic sandstone and poorly exposed siltstone

BEAUFORTIAN MEGASEQUENCE

Kps PEBBLE SHALE UNIT (Lower Cretaceous, Barremian)—Medium to dark gray, soft, sub-fissile claystone and siltstone with rare outsized floating grains; local ironstone concretions

KEMIK SANDSTONE (Hauterivian)

Kkm KEMIK SANDSTONE, MASSIVE FACIES—Resistant, tan to light brown, quartzose sandstone

Kkb KEMIK SANDSTONE, BIOTURBATED FACIES—Dark brown to gray, very-fine-grained bioturbated sandstone and thin mudstone

Kkt KEMIK SANDSTONE, THIN FACIES—Beige- to tan-weathering, massive, very-fine-grained quartzose sandstone

KJk KINGAK FORMATION (Lower Jurassic–Lower Cretaceous [Valanginian])—Recessive dark gray to black, soft, locally fissile clay shale with uncommon thin, very-fine-grained sandstone; abundant bedding-parallel concretions

ELLESMERIAN MEGASEQUENCE

Ts SHUBLIK FORMATION (Middle to Upper Triassic)—Dark gray to black, organic-rich mudstone and sooty paper shale, calcareous sandstone and siltstone, and nodular phosphate-rich beds

SADLEROCHIT GROUP (Permian to Middle Triassic)

Trtu IVISHAK FORMATION, UNDIFFERENTIATED (Lower to Middle Triassic)—Undifferentiated Ivishak Formation; applied where constituent members cannot be reliably distinguished

Trtl IVISHAK FORMATION, LEDGE SANDSTONE MEMBER (Lower to Middle Triassic)—Reddis-brown-weathering, well cemented, fine- to very-fine-grained quartzose sandstone, siltstone, and argillaceous siltstone

Trtk IVISHAK FORMATION, KAVIK SHALE MEMBER (Lower Triassic)—Recessive dark gray, laminated siltstone and thin-bedded silty shale

Pe ECHOOKA FORMATION (Permian)—Rusty red weathering, hard, dense, silicified, very-fine-grained sandstone and siltstone; rare thin, fossiliferous limestone

LISBURNE GROUP (Mississippian to Lower Pennsylvanian)

PMlmu LISBURNE GROUP, MIDDLE AND UPPER PARTS—Undifferentiated middle and upper Lisburne Group

PMlu LISBURNE GROUP, UPPER PART—Light gray, cliff-forming, resistant limestone and subordinate buff-weathering dolostone and chert nodules

Mlm LISBURNE GROUP, MIDDLE PART—Moderately resistant, medium gray limestone with finer-grained lime mudstone

Mll LISBURNE GROUP, LOWER PART—Recessive, dark-gray-weathering limestone with common black nodular chert layers and lenses

Mky KAYAK SHALE (Middle Mississippian)—Dark gray to black siltstone, fissile sooty shale, and uncommon fossiliferous limestone beds

Mkt KEKIKTUK CONGLOMERATE (Lower to middle Mississippian)—Gray-brown-weathering, resistant, fine- to very-fine grained quartzose sandstone and indurated siltstone

PRE-MISSISSIPPIAN ROCKS

pM PRE-MISSISSIPPIAN ROCKS, UNDIFFERENTIATED (Proterozoic(?))—Dark gray phyllite, argillite and light gray, thin quartzite

ACKNOWLEDGMENTS

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Both the map and associated text were improved significantly after thorough reviews by David Houseknecht and Thomas Homza.

Digital Cartography by: Andrea M. Loveland[1]

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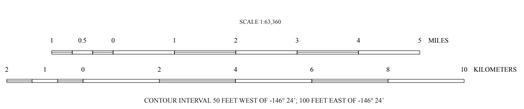
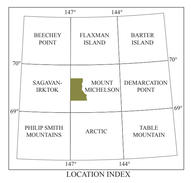
Base vectorized from United States Geological Survey Mount Michelson B-4, B-5, C-4, and C-5 quadrangles (1971). Universal Transverse Mercator projection, zone 6. 1927 North American Datum.

APPROXIMATE MEAN DECLINATION, 2011



CONTOUR INTERVAL 50 FEET WEST OF -146° 24'; 100 FEET EAST OF -146° 24'



LOCATION INDEX

GEOLOGIC MAP OF THE KAVIK RIVER AREA, NORTHEASTERN BROOKS RANGE, ALASKA

by

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