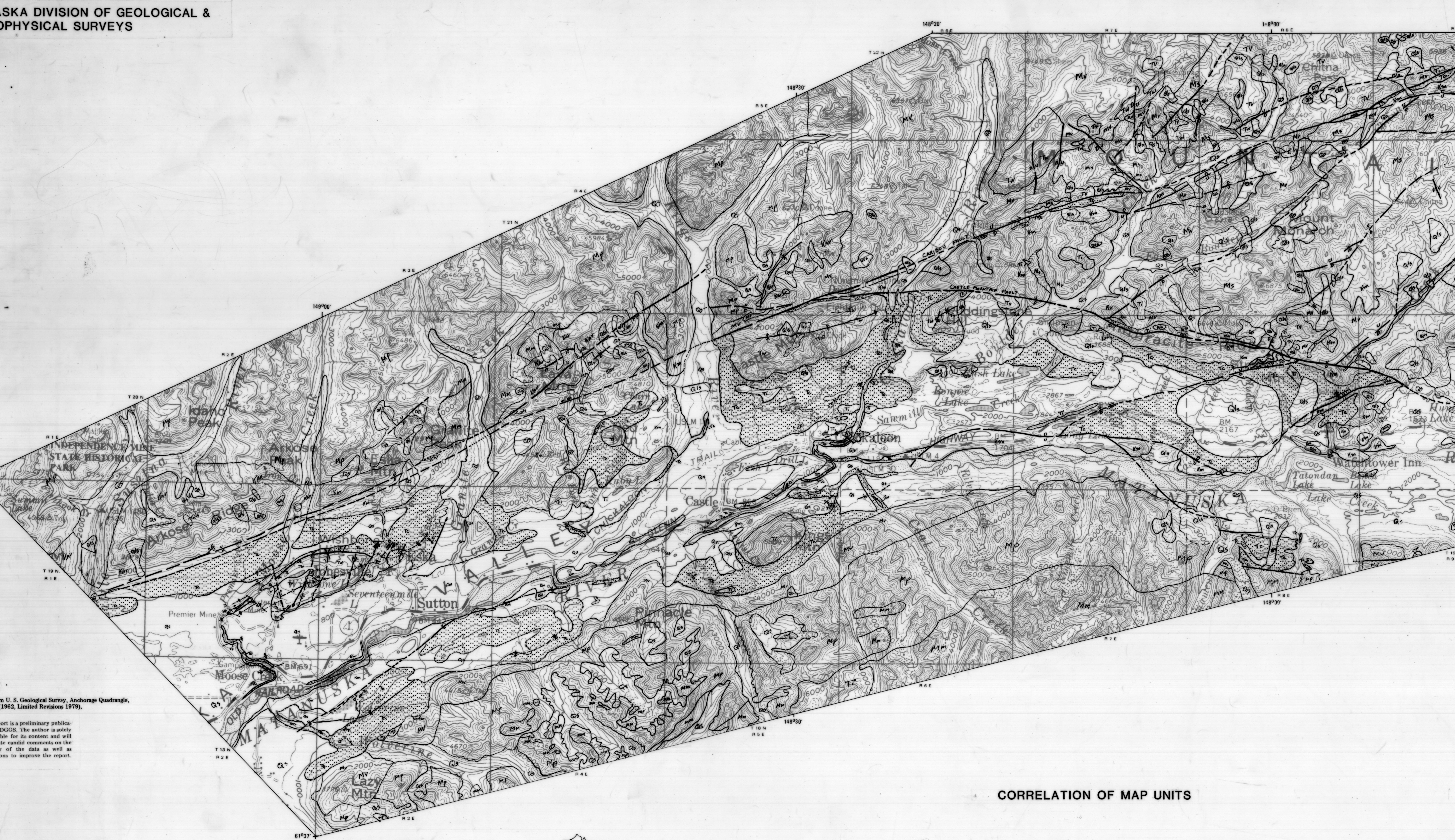
ALASKA DIVISION OF GEOLOGICAL &
GEOPHYSICAL SURVEYS

PUBLIC-DATA FILE 85-45
MERRITT & BELOWICH, SHEET 1 OF 3



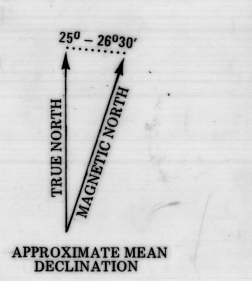
Cartography by M. A. Belowich.

SCALE 1:100,000

5 0 5 10 MILES

5 0 5 10 KILOMETERS

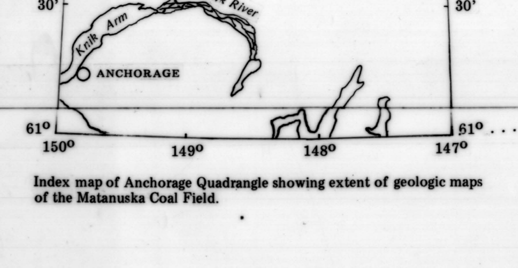
CONTOUR INTERVAL 200 FEET



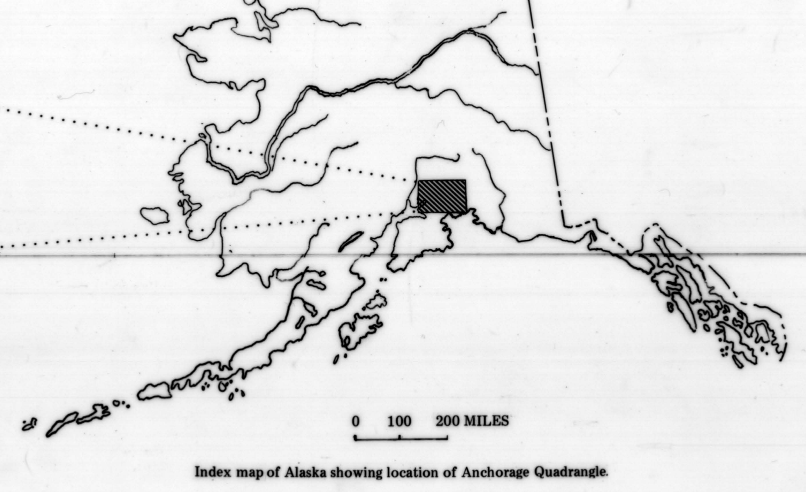
APPROXIMATE MEAN DECLINATION

Base from U. S. Geological Survey, Anchorage Quadrangle, Alaska, (1962, Limited Revisions 1979).

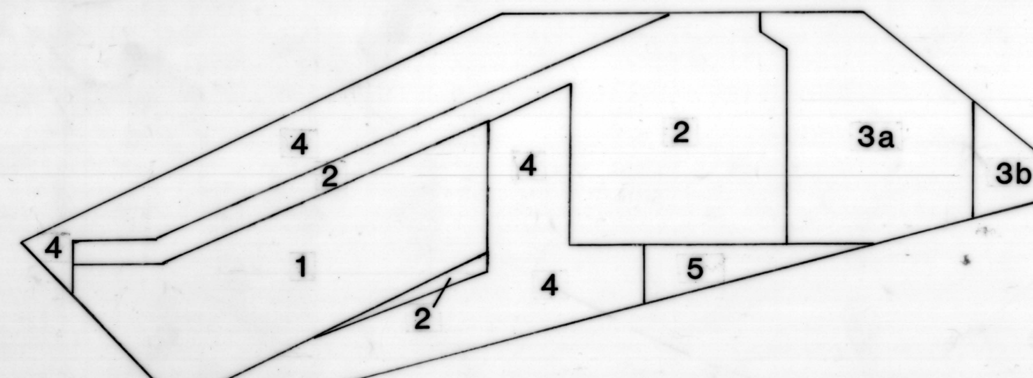
This report is a preliminary publication of DGGS. The author is solely responsible for its content and will appreciate candid comments on the accuracy of the data as well as suggestions to improve the report.



Index map of Anchorage Quadrangle showing extent of geologic maps of the Matanuska Coal Field.



Index map of Alaska showing location of Anchorage Quadrangle.



Index map of Matanuska Valley with reference sources for geologic data.

MAPPING REFERENCES

1 Barnes, F. F., 1962, Geologic map of lower Matanuska Valley, Alaska: U. S. Geological Survey Miscellaneous Geologic Investigations Map I-359, scale 1:63,360.

2 Detterman, Robert L., Plafker, George, Tysdal, Russell G., and Hudson, Travis, 1976, Geology and surface features along part of the Talkeetna segment of the Castle Mountain-Caribou fault system, Alaska: U. S. Geological Survey Miscellaneous Field Studies Map MF-738, scale 1:63,360.

3a Grantz, Arthur, 1961, Geologic map and cross sections of the Anchorage (D-2) Quadrangle and northeasternmost part of the Anchorage (D-3) Quadrangle, Alaska: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-342, scale 1:48,000.

3b Grantz, Arthur, 1961, Geologic Map of the north two-thirds of Anchorage (D-1), Quadrangle, Alaska: U. S. Geological Survey Miscellaneous Geologic Investigations Map I-343, scale 1:48,000.

4 Magoon, L. B., Adkison, W. L., and Egbert, R. M., 1976, Map showing geology, wildcat wells, Tertiary plant fossil localities, K-Ar age dates, and petroleum operations, Cook Inlet area, Alaska: U. S. Geological Survey Miscellaneous Investigations Series Map I-1019, scale 1:250,000.

5 Burns, L. E., Little, T. A., Newberry, R. J., Decker, J. E., and Pessel, G. H., 1983, Preliminary geologic map of parts of the Anchorage C-2, C-3, D-2, and D-3 Quadrangles, Alaska: Alaska Division of Geological and Geophysical Surveys Report of Investigations 83-10, scale 1:25,000.

CORRELATION OF MAP UNITS

Era	Period	Epoch	Map units
CENOZOIC	QUATERNARY	Holocene and Pleistocene	Qs, Qls
			UNCONFORMITY
	TERTIARY	Miocene	Tr
		Middle Tertiary(?)	Ti, Tv
			UNCONFORMITY
		Eocene(?) and Paleocene	Tw, Tcb
		Paleocene	Tc
			UNCONFORMITY
MESOZOIC	CRETACEOUS	Upper	Km
		Lower(?)	Kar
			UNCONFORMITY
	JURASSIC	Upper	Ms, Mp
		Middle	Ms, Mp
		Lower	Ms, Mv
		Mesozoic(?)	Mm

DESCRIPTION OF MAP UNITS

Qls LANDSLIDE DEPOSITS—Fresh, unstabilized, unvegetated rock debris to completely stabilized and vegetated rock and vegetated slide and slump deposits; typically exhibiting hummocky topography and pull-away scarps at upper margins.

Qs SURFICIAL DEPOSITS—All sorted and unsorted surficial materials except landslide deposits; includes glacial moraine, outwash, rock glaciers, alluvium, colluvium, stream, talus, and terrace gravel deposits.

Tr TSADAKA FORMATION—Poorly indurated cobble-boulder conglomerate (mostly granite) with thin interbedded sandstone, siltstone, and shale.

Ti TERTIARY INTRUSIVES—Intrusive stocks, dikes, and sills, either of felsic or mafic composition; mainly gabbro, diabase, and basalt east of Kings River; dioritic and trachytic rocks west of Kings River, and rhyolite at Kings Mountain.

Tv TERTIARY VOLCANICS—Basaltic lava flows with interbeds of tuff, ash, and breccia.

Tw WISHBONE FORMATION—Predominantly a well-indurated pebble-cobble conglomerate with interbeds of crossbedded feldspathic sandstone, lenticular siltstone and some claystone. The conglomerate consists of firmly cemented pebbles of fine-grained igneous and metamorphic rocks, chert, vein quartz, and jasper in a sandy matrix.

Tcb TERTIARY COAL-BEARING STRATA—Sandstone, pebble conglomerate, siltstone and claystone. Contains thin coaly layers, thin beds of coal, and isolated outcrops in extreme eastern Matanuska Valley.

Tc CHICKALOON FORMATION—Moderately to well-indurated feldspathic sandstone, siltstone, claystone, mudstone, and conglomerate with numerous beds of bituminous coal. The fine-grained deposits are characteristically carbonaceous with numerous leaf impressions and coalified and silicified wood. Conglomeratic beds are more prevalent in the extreme upper and lower parts of the formation. Numerous channel-deposit sequences consist chiefly of medium- to thick-bedded, sandy pebble or granule conglomerate and crossbedded feldspathic sandstone.

Km MATANUSKA FORMATION—Predominantly dark shale and siltstone in lower part; interbedded dark shale and sandstone, locally conglomeratic, in the upper part, with sandstone predominating.

Kar ARKOSE RIDGE FORMATION—Highly indurated arkose, conglomerate, graywacke, siltstone, and shale, with all observed contacts fault-bounded; locally cut by hypabyssal rocks.

Ms MESOZOIC SEDIMENTS—Massive but highly fractured, unfossiliferous, recrystallized limestones, dark-gray shales and siltstones with interbedded sandstone and graywacke.

Mp MESOZOIC PLUTONICS—Granitic intrusives consisting mainly of medium-grained biotite and hornblende diorite, quartz diorite, and granodiorite.

Mv MESOZOIC VOLCANICS—Predominantly volcanic flows, hypabyssal intrusions, pyroclastic rocks, and volcaniclastic sediments. Some interbedded conglomerate, graywacke, fossiliferous siltstone, sandstone, and shale of minor amounts.

Mm MESOZOIC METASEDIMENTS AND METAMORPHICS—Biotite-quartz-feldspar gneiss, gneissic quartz diorite, amphibolite gneiss, and amphibolite in isolated occurrences on north side of Castle Mountain fault and south side of Matanuska River. Minor occurrences also of chaotically intermixed dark-gray argillite and gray-green metavolcanic rock (melange), thinly interlaminated gray and green phyllite, and small amounts of graywacke, pillow lava, and chert on Chugach side of Matanuska Valley.

GEOLOGIC MAP SYMBOLS

Contact — dashed where approximately located; dotted where concealed.

Fault — dashed where approximately located; dotted where concealed. U, upthrown side; D, downthrown side; arrows show relative horizontal movement; arrow shows direction and amount of dip on fault plane.

Thrust fault — showing dip - dashed where approximately located. T, upper plate.

Reverse fault — dashed where approximately located showing direction of dip; dotted where concealed. R, upthrown side.

Anticline — showing trace of axial plane and bearing and plunge of axis. Dashed where approximately located.

Syncline — showing trace of axial plane and bearing and plunge of axis. Dashed where approximately located.

COAL GEOLOGY AND STRUCTURE MAP OF THE MATANUSKA VALLEY

Compiled by R.D. Merritt and M.A. Belowich

1984