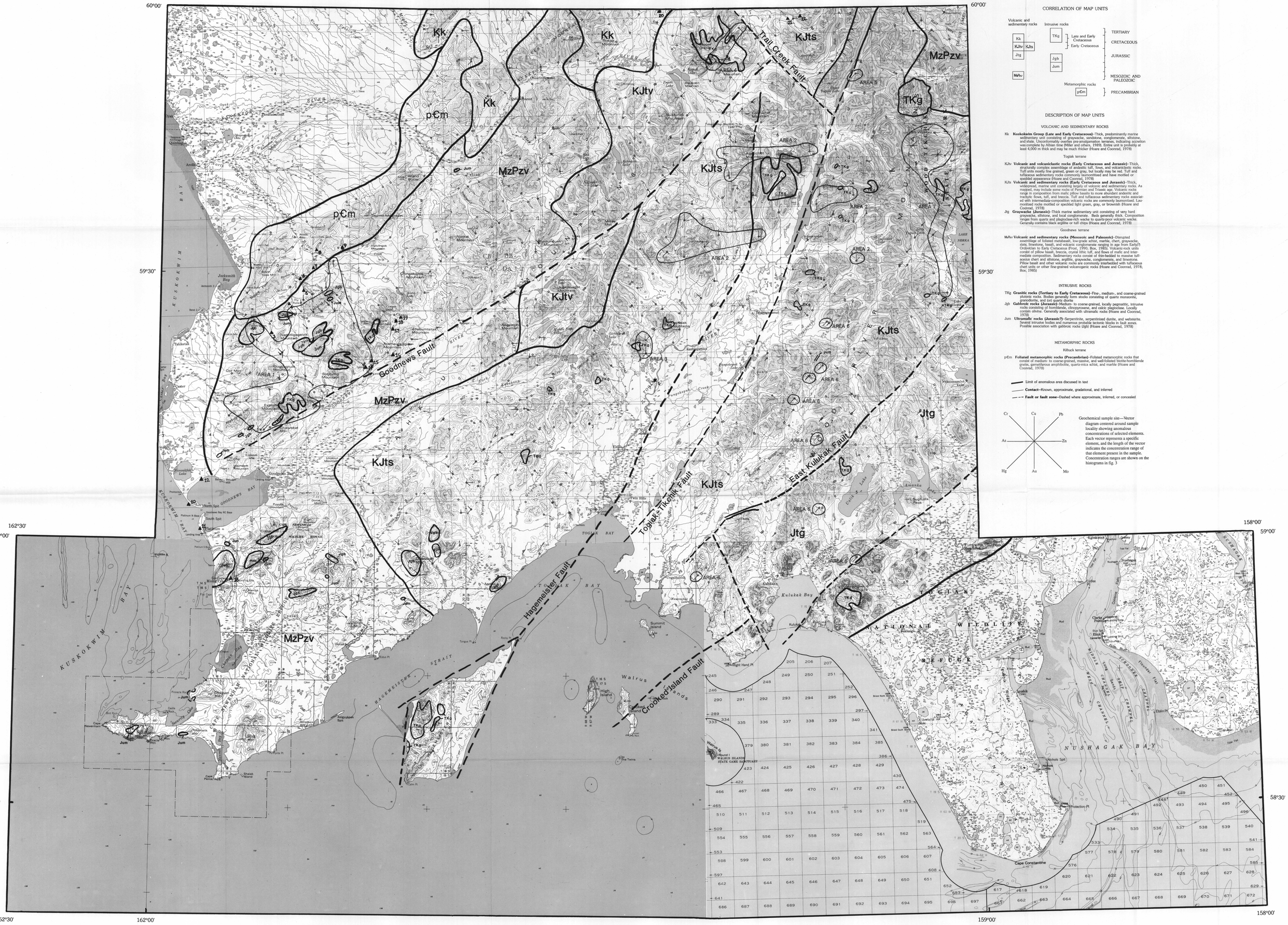

CORRELATION OF MAP UNITS

Volcanic and sedimentary rocks	Intrusive rocks		
Kk	TKg	Late and Early Cretaceous	TERTIARY
KJtv, KJts		Early Cretaceous	CRETACEOUS
Jtg	Jgb, Jum		JURASSIC
MPzv			MESOZOIC AND PALEOZOIC
	Metamorphic rocks: p€m		PRECAMBRIAN

DESCRIPTION OF MAP UNITS

VOLCANIC AND SEDIMENTARY ROCKS

Kk **Kuskokwim Group (Late and Early Cretaceous)**—Thick, predominantly marine sedimentary unit consisting of graywacke, sandstone, conglomerate, siltstone, and shale. Unconformably overlies pre-amalgamation terranes, indicating accretion was complete by Albian time (Miller and others, 1989). Entire unit is probably at least 4,000 m thick and may be much thicker (Hoare and Coonrad, 1978)

Togiak terrane

KJtv **Volcanic and volcaniclastic rocks (Early Cretaceous and Jurassic)**—Thick, structurally complex assemblage of andesitic tuff, flows, and volcaniclastic rocks. Tuff units mostly fine grained, green or gray, but locally may be red. Tuff and tuffaceous sedimentary rocks commonly laumontitized and have mottled or speckled appearance (Hoare and Coonrad, 1978)

KJts **Volcanic and sedimentary rocks (Early Cretaceous and Jurassic)**—Thick, widespread, marine unit consisting largely of volcanic and sedimentary rocks. As mapped, may include some rocks of Permian and Triassic age. Volcanic rocks range in composition from mafic pillow basalts to more abundant andesitic and trachytic flows, tuff, and breccia. Tuff and tuffaceous sedimentary rocks associated with intermediate-composition volcanic rocks are commonly laumontitized. Laumontitized rocks mottled or speckled light green, gray, or brownish (Hoare and Coonrad, 1978)

Jtg **Graywacke (Jurassic)**—Thick marine sedimentary unit consisting of very hard graywacke, siltstone, and local conglomerate. Beds generally thick. Composition ranges from quartz and plagioclase-rich wacke to quartz-poor volcanic wacke. Generally contains black argillite or tuff chips (Hoare and Coonrad, 1978)

Goodnews terrane

MPzv **Volcanic and sedimentary rocks (Mesozoic and Paleozoic)**—Disrupted assemblage of foliated metabasalt, low-grade schist, marble, chert, graywacke, slate, limestone, basalt, and volcanic conglomerate ranging in age from Early(?) Ordovician to Early Cretaceous (Frost, 1990; Box, 1985). Volcanic-rock units consist of pillow basalt, breccia, crystal lithic tuff, and flows of mafic and intermediate composition. Sedimentary rocks consist of thin-bedded to massive tuffaceous chert and siltstone, argillite, graywacke, conglomerate, and limestone. Pillow basalt and other volcanic rocks are commonly interbedded with tuffaceous chert units or other fine-grained volcanogenic rocks (Hoare and Coonrad, 1978; Box, 1985)

INTRUSIVE ROCKS

TKg **Granitic rocks (Tertiary to Early Cretaceous)**—Fine-, medium-, and coarse-grained plutonic rocks. Bodies generally form stocks consisting of quartz monzonite, granodiorite, and (or) quartz diorite

Jgb **Gabbroic rocks (Jurassic)**—Medium- to coarse-grained, locally pegmatitic, intrusive rocks consisting of hornblende, clinopyroxene, and calcic plagioclase. Locally contain olivine. Generally associated with ultramafic rocks (Hoare and Coonrad, 1978)

Jum **Ultramafic rocks (Jurassic?)**—Serpentinite, serpentinized dunite, and websterite. Several intrusive bodies and numerous probable tectonic blocks in fault zones. Possible association with gabbroic rocks (Jgb) (Hoare and Coonrad, 1978)

METAMORPHIC ROCKS

Kilbuck terrane

p€m **Foliated metamorphic rocks (Precambrian)**—Foliated metamorphic rocks that consist of medium- to coarse-grained, massive, and well-foliated biotite-hornblende gneiss, garnetiferous amphibolite, quartz-mica schist, and marble (Hoare and Coonrad, 1978)

Limit of anomalous area discussed in text

Contact—Known, approximate, gradational, and inferred

Fault or fault zone—Dashed where approximate, inferred, or concealed

Geochemical sample site—Vector diagram centered around sample locality showing anomalous concentrations of selected elements. Each vector represents a specific element, and the length of the vector indicates the concentration range of that element present in the sample. Concentration ranges are shown on the histograms in fig. 3

Base from U.S. Geological Survey
Goodnews Bay, 1979; Hagemeister Island, 1957;
and Nushagak Bay, 1952

Geology generalized from Hoare and Coonrad (1978)

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GEOCHEMICAL MAP SHOWING THE DISTRIBUTION OF SELECTED ELEMENTS IN STREAM SEDIMENTS FROM THE GOODNEWS BAY, HAGEMEISTER ISLAND, AND NUSHAGAK BAY QUADRANGLES, ALASKA

By

James E. Kilburn and Janet L. Jones

1992

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1992

For sale by U.S. Geological Survey Map Distribution