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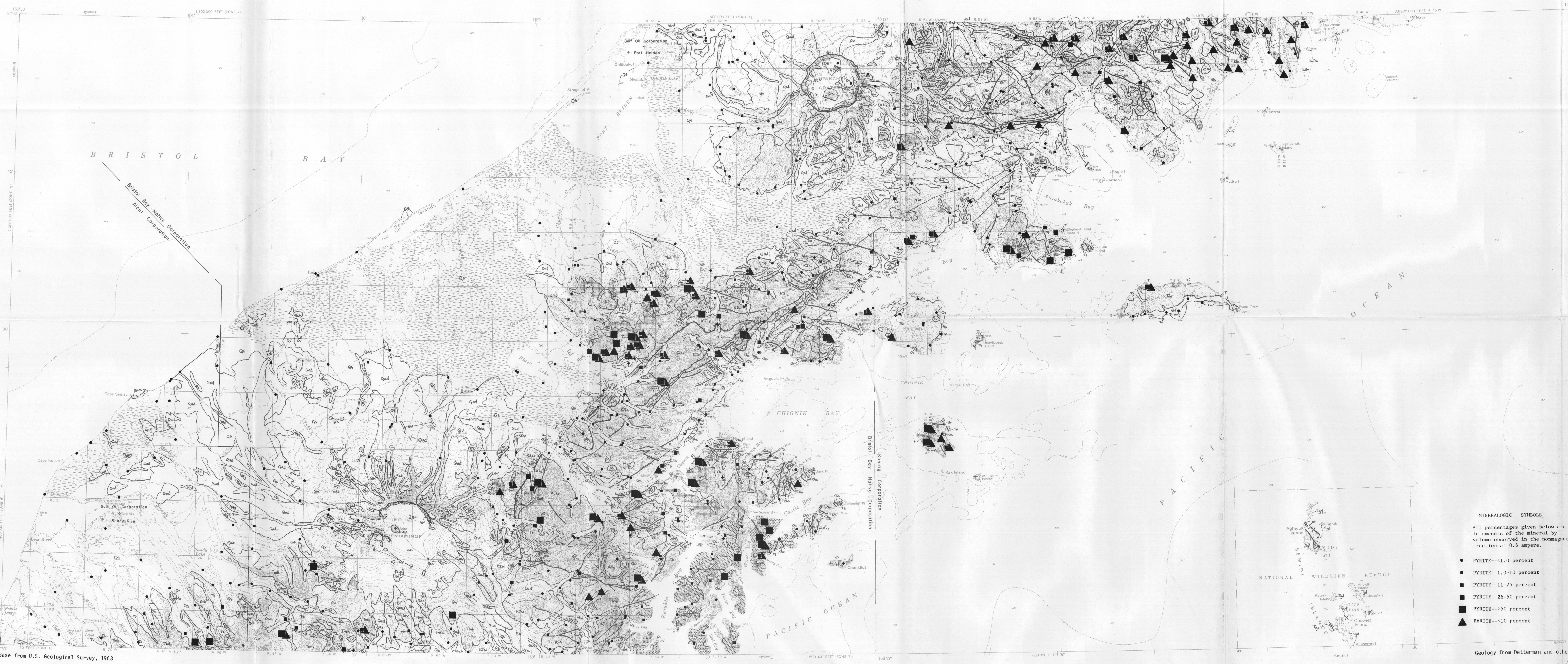
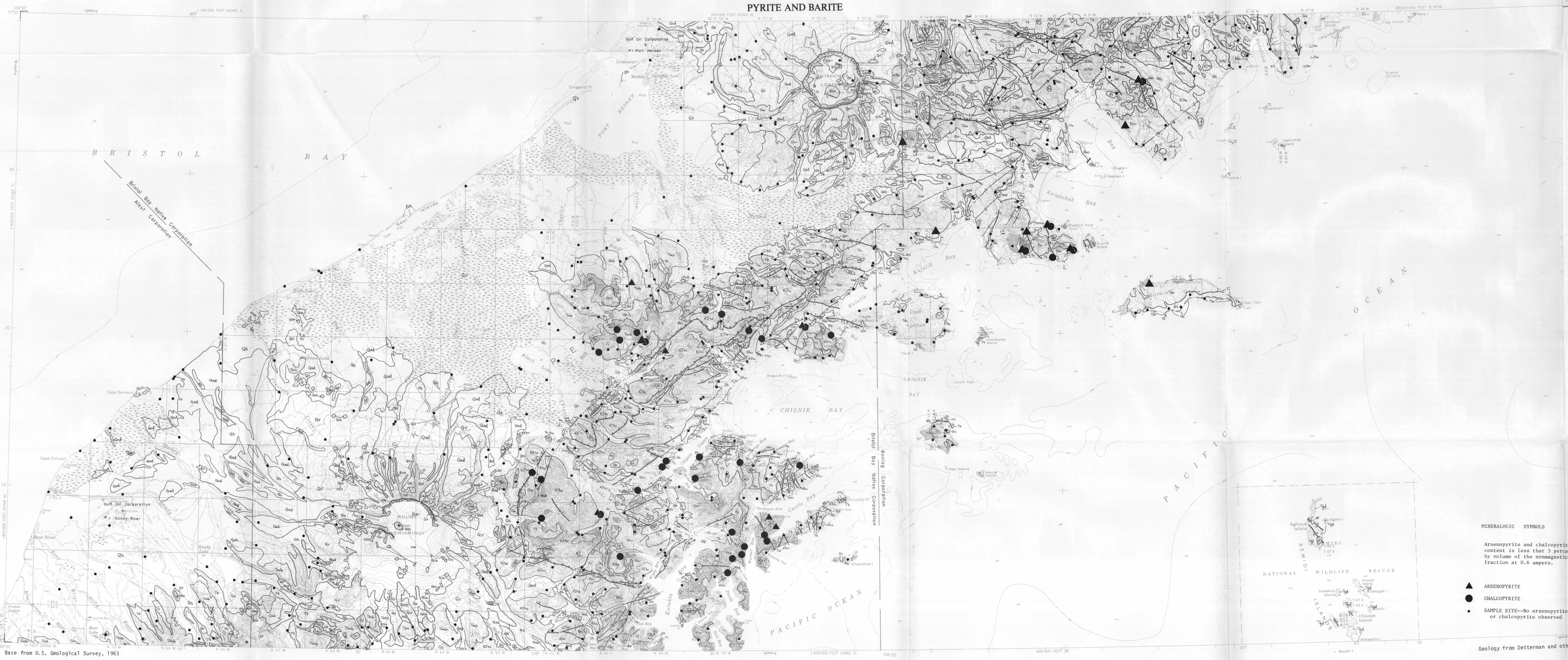
MISCELLANEOUS FIELD STUDIES
MAP MF-1053-I
FOLIO OF THE CHIGNIK AND SUTWIK ISLAND QUADRANGLES, ALASKA
MINERALOGIC MAPS FOR SELECTED MINERALS
SHEET 1 OF 2



Base from U.S. Geological Survey, 1963

Geology from Detterman and others, 1979

PYRITE AND BARITE



Base from U.S. Geological Survey, 1963

Geology from Detterman and others, 1979

ARSENOPYRITE AND CHALCOPYRITE

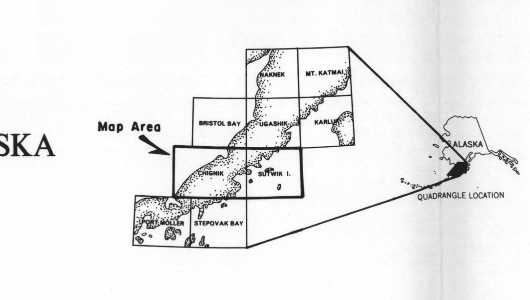
SCALE 1:250 000

0 5 10 15 20 25 MILES

0 5 10 15 20 25 KILOMETERS

MAPS SHOWING MINERALOGIC DATA FOR SELECTED MINERALS IN NONMAGNETIC HEAVY-MINERAL CONCENTRATES OF STREAM SEDIMENTS IN THE CHIGNIK AND SUTWIK ISLAND QUADRANGLES, ALASKA

By
R. B. Tripp and D. E. Detra
1980



CORRELATION OF MAP UNITS

SURFICIAL DEPOSITS AND SEDIMENTARY ROCKS	VOLCANIC ROCKS	INTRUSIVE ROCKS		
Qs	Qad, Qcs, Qv		Holocene and Pleistocene	QUATERNARY
Tmb; Unconformity	Tv	Ti	Pliocene and Miocene	TERTIARY
	Tm		Miocene or Oligocene	TERTIARY
Tt; Unconformity			Eocene and Paleocene	TERTIARY
		Tgd	Paleocene	TERTIARY
Khc; Unconformity			Upper Cretaceous	CRETACEOUS
KJhs			Lower Cretaceous to Middle Jurassic	CRETACEOUS AND JURASSIC

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS AND SEDIMENTARY ROCKS

Qs SURFICIAL DEPOSITS--Unconsolidated alluvium, colluvium, glacial, marine, swamp and eolian deposits; mainly sand, silt, gravel and pumice

Tmb MILKY RIVER FORMATION OF GALLOWAY (1974) AND BEAR LAKE FORMATION--Milky River Formation (Pliocene); mainly volcanogenic sandstone and conglomerate, non-marine. Bear Lake Formation (Miocene); sandstone, conglomerate, siltstone, shale, and coal; shallow marine to non-marine

Tt TOLSTOI FORMATION OF BURK (1965) (Paleocene and Eocene)--Sandstone, conglomerate, siltstone, dark shale, coal; high percent volcanic debris; mainly non-marine

Khc HOODOO AND CHIGNIK FORMATIONS--Hoodoo Formation (Upper Cretaceous); dark shale and siltstone; deep water deposit. Chignik Formation (Upper Cretaceous); sandstone, shale, conglomerate, siltstone, and coal; shallow water to non-marine

KJhs HERENDEEN LIMESTONE AND STANIUKOVICH, NAKNEK, AND SHELIKOF FORMATIONS--Herendeen Limestone (Lower Cretaceous); thin-bedded calcarenite composed of _Inoceramus_ prisms and thin calcareous sandstone. Staniukovich Formation (Upper Jurassic and Lower Cretaceous); thin-bedded feldspathic and laumontitic sandstone. Naknek Formation (Upper Jurassic); dark siltstone and shale in upper part, light arkosic sandstone and conglomerate in lower part. Shelikof Formation (Middle Jurassic); dark siltstone and shale

VOLCANIC ROCKS

Qad ASH AND DEBRIS FLOW DEPOSITS--Volcanic ash, pumice, tuff, and breccia; includes air-fall, ash flow, and avalanche deposits; unsorted to well-sorted; poorly- to well-stratified; includes some lava flows

Qcs CINDER AND SPATTER CONES, AND DOMES--Cinders, scoria, and associated pyroclastic rock

Qv VOLCANIC ROCKS--Andesite and dacite flows, tuff, volcanic breccia, and lahars

Tv VOLCANIC ROCKS--Rhyolite, andesite, dacite, and basalt flows; tuff, volcanic rubble flows, and lahars; includes hypabyssal plugs and domes

Tm MESHIK FORMATION (Miocene or Oligocene)--Basalt flows, volcanic rubble flows, and lahars; minor volcanogenic sedimentary rock

INTRUSIVE ROCKS

Ti INTRUSIVE ROCKS--Quartz diorite, diorite, and gabbro; medium- to coarse-grained; mainly small plutons

Tgd GRANODIORITE--Semidi Islands pluton; medium- to coarse-grained; hornblende- and biotite-bearing

GEOLOGIC MAP SYMBOLS

Contact--Dotted where concealed

Fault--Dashed where approximately located, dotted where concealed, queried where probable. U, upthrown side; D, downthrown side. Arrows indicate relative lateral movement

Thrust or high-angle reverse fault--Dotted where concealed; sawteeth on upper plate

Folds--Showing trace of axial plane; dashed where approximately located; dotted where concealed. Arrow indicates direction of plunge

Anticline

Syncline

Volcanic crater

Volcanic vent or cinder cone

Hornfels

Alteration

Dikes and sills

Exploratory drill hole

Hot spring

Native Corporation boundary

DISCUSSION

Reconnaissance geochemical and mineralogic sampling was done in the Chignik and Sutwik Island quadrangles, Alaska, during 1977 and 1978 as part of the Alaska Mineral Resource Assessment Program (AMRAP) (Detterman and others, 1980). These maps show the occurrence of pyrite, barite, chalcopyrite, arsenopyrite, powellite, scheelite, anglesite, cerussite, cinnabar, cuprite, galena, molybdenite, corundum (var. sapphire), smithsonite, and sphalerite in the nonmagnetic fraction of heavy-mineral concentrates of stream-sediment samples.

The heavy-mineral concentrates were obtained by panning stream sediments in the field to remove most of the light minerals. The panned samples were then sieved through a 20-mesh (0.8 mm) sieve in the laboratory, and the minus-20-mesh fraction was further separated with bromoform (specific gravity, 2.86) to remove any remaining light-mineral grains. Magnetite and other strongly magnetic heavy minerals were removed from the heavy-mineral fraction by use of a hand magnet. The remaining sample was passed through a Frantz Isodynamic Separator[1] and a nonmagnetic fraction obtained. Samples from approximately 620 sites were examined for mineralogical content. Identifications were done with the aid of a binocular microscope and an x-ray diffractometer. The nonmagnetic concentrates primarily contained low-iron magnesium silicates, zircon, sphene, apatite, tourmaline, rutile, and anatase. Most ore and ore-related minerals also occurred in this fraction.

Minerals from heavy-mineral concentrates reflect known mineralized areas and indicate other anomalous areas.

[1] The use of trade names is for descriptive purposes only and does not constitute endorsement of these products by the U.S. Geological Survey.

REFERENCES

Detra, D. E., and Cooley, E. F., 1980, Distribution and abundance of copper in minus-80-mesh stream-sediment and nonmagnetic heavy-mineral concentrate samples, Chignik and Sutwik Island quadrangles, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1053C, scale 1:250,000.

_______1980, Distribution and abundance of silver and arsenic in minus-80-mesh stream-sediment and nonmagnetic heavy-mineral concentrate samples, Chignik and Sutwik Island quadrangles, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1053G, scale 1:250,000.

_______1980, Distribution and abundance of bismuth, tin, and tungsten in minus-80-mesh stream-sediment and nonmagnetic heavy-mineral concentrate samples, Chignik and Sutwik Island quadrangles, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1053H, scale 1:250,000.

Detra, D. E., and Day, G. W., 1980, Distribution and abundance of molybdenum in minus-80-mesh stream-sediment and nonmagnetic heavy-mineral concentrate samples, Chignik and Sutwik Island quadrangles, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1053F, scale 1:250,000.

Detra, D. E., and Hopkins, R. T., Jr., 1980, Distribution and abundance of lead in minus-80-mesh stream-sediment and nonmagnetic heavy-mineral concentrate samples, Chignik and Sutwik Island quadrangles, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1053D, scale 1:250,000.

Detra, D. E., and O'Leary, R. M., 1980, Distribution and abundance of zinc in minus-80-mesh stream-sediment and nonmagnetic heavy-mineral concentrate samples, Chignik and Sutwik Island quadrangles, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1053E, scale 1:250,000.

Detterman, R. L., Case, J. E., Cox, D. P., Detra, D. E., Miller, T. P., and Wilson, F. H., 1980, The Alaskan Mineral Resource Assessment Program: Background information to accompany folio of geologic and mineral resource maps of the Chignik and Sutwik Island quadrangles, Alaska: U.S. Geological Survey Circular 802.

Detterman, R. L., Miller, T. P., Yount, M. E., and Wilson, F. H., 1979, Generalized geologic map of the Chignik and Sutwik Island quadrangles, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-1053A, 1 sheet, scale 1:250,000.

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