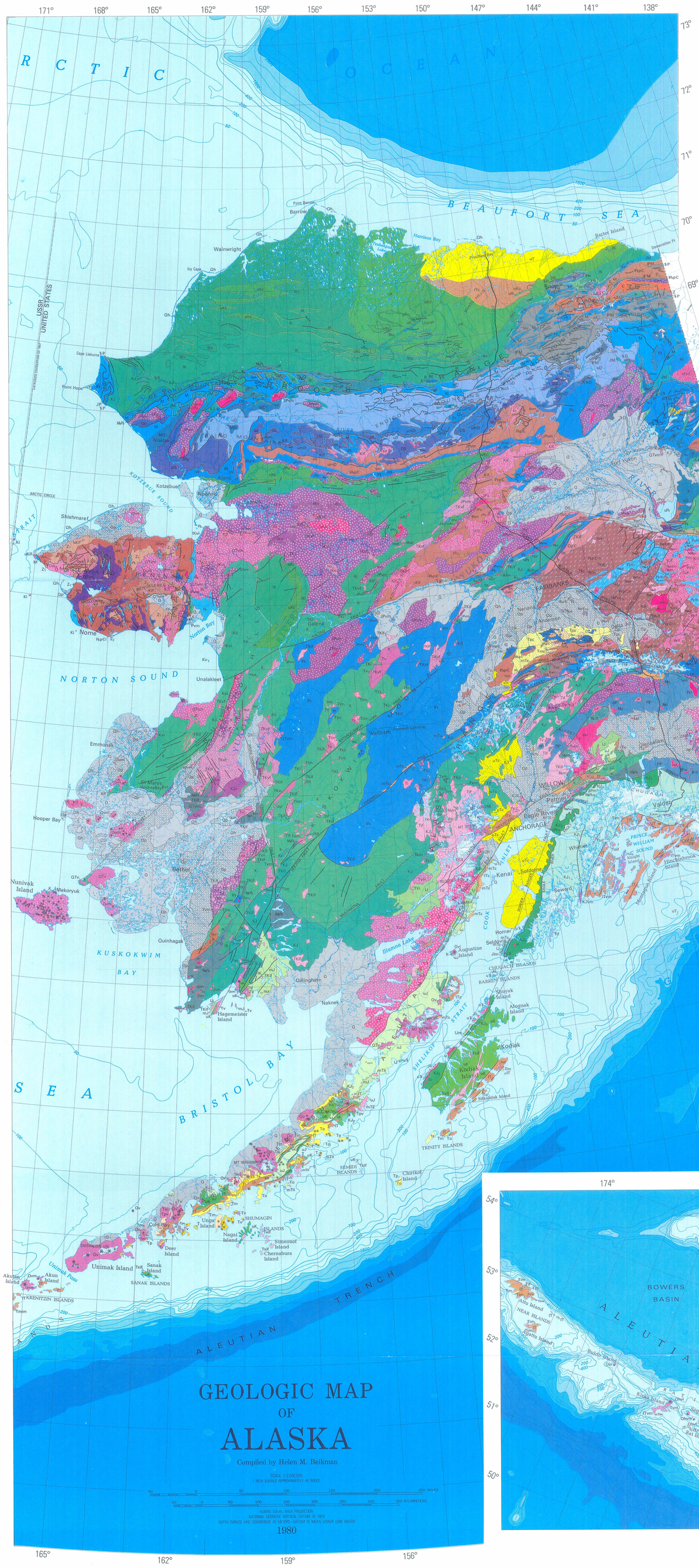

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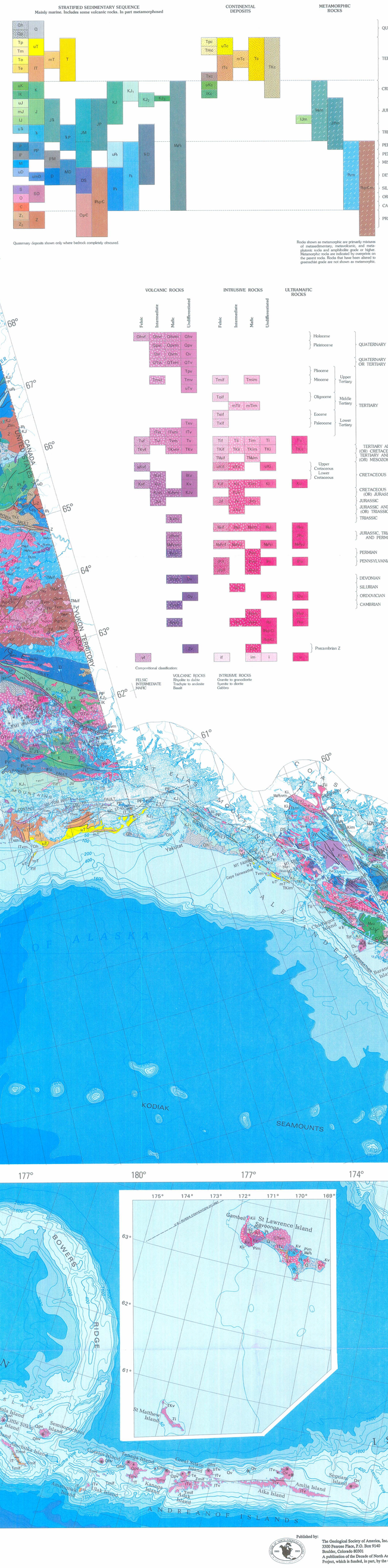
CORRELATION OF MAP UNITS



EXPLANATION

DESCRIPTION OF MAP UNITS

STRATIFIED SEDIMENTARY SEQUENCE
Mainly marine. Includes some volcanic rocks. In part metamorphosed

Qh — HOLOCENE DEPOSITS—Alluvial, glacial, lake, estuarine, swamp, landslide, flood plain, and beach deposits

Q — QUATERNARY DEPOSITS—Alluvial, glacial, lake, eolian, beach, and volcanic deposits. Includes the marine Bootlegger Cove Clay

QTu — PLEISTOCENE DEPOSITS—Alluvial, glacial, dune sand, loess, and reworked sand and silt deposits

Tp — PLIOCENE ROCKS—Sandstone, siltstone, and conglomerate. Includes Tachilni Formation on the Alaska Peninsula and Tugidak Formation on Tugidak and Chirikof Islands

uT — UPPER TERTIARY ROCKS—Sandstone, siltstone, shale, mudstone, and conglomerate of Miocene and Pliocene age. Includes upper part of the Sagavanirktok Formation on the Arctic Coastal Plain, and the Yakataga Formation in the Gulf of Alaska area

Tm — MIOCENE ROCKS—Sandstone, siltstone, conglomerate, argillite, graywacke, and basaltic rocks. As shown, includes Bear Lake Formation on the Alaska Peninsula, Narrow Cape Formation (Oligocene or Miocene) on Kodiak and Sitkinak Islands, and Chuniksak Formation (Miocene?) on Attu Island

To — OLIGOCENE ROCKS—Volcanic conglomerate, sandstone, volcanic breccia, shale, and siltstone. As shown, includes the Meshik Formation and Stepovak Formation of Burk (1965) on the Alaska Peninsula and the Sitkinak Formation on Sitkalidak, Sitkinak, and Chirikof Islands

Te — EOCENE ROCKS—Sandstone, siltstone, and shale interbedded with mafic flows and sills of the Andrew Lake Formation on Adak Island

T — TERTIARY ROCKS—Sedimentary rocks concealed beneath Quaternary cover on Point Hope and volcanogenic sedimentary rocks and flows, dikes, and sills on the Alaska Peninsula and Unnak Island

mT — MIDDLE TERTIARY ROCKS—Siltstone, sandstone, organic shale, and locally, volcanic rocks. Includes Poul Creek, Katalla, and Topsy Formations ranging from Oligocene to Miocene age in Gulf of Alaska area

lT — LOWER TERTIARY ROCKS—Interbedded sedimentary, volcanogenic, and volcanic rocks of Paleocene, Eocene, and Oligocene age on the Alaska Peninsula and Aleutian Islands and intensely deformed marine and continental clastic rocks of Paleocene and Eocene age in the Gulf of Alaska area. Includes the Tolstoi and Belkofski Formations of Burk (1965) in the Alaska Peninsula; the Ghost Rocks Formation on Kodiak Island; the Arnchitka and Barajo Point Formations on Amchitka Island; Gunners Cove Formation on Rat Island; the Kruglosi Formation on Agattu Island; and Kultheth, Kushtaka, and Tokun Formations and clastic rocks of the Orca Group in the Gulf of Alaska area

uK — UPPER CRETACEOUS ROCKS—Shale, sandstone, and conglomerate of the Nanushuk Group and the Seabee and Schrader Bluff Formations of the Colville Group in the Arctic Coastal Plain and Foothills, nonmarine and marine clastic rocks, siltstone, and shale of the Chignik and Hoodoo Formations on the Alaska Peninsula, graded beds of sandstone and slate of the Kodiak Formation on Kodiak and Afognak Islands; sandstone and mudstone of Shumagin Formation on Shumagin and Sanak Islands

K — CRETACEOUS ROCKS—Volcanic graywacke, mudstone, and sandstone with some coal-bearing rocks in the Yukon-Koyukuk province; graywacke and shale of the Kuskokwim Group in the Kuskokwim Mountains; and shelf deposits of sandstone, siltstone, shale and limestone of the Kenai Group, Moonshine Creek, Schulze, Chititu, and MacColl Ridge Formations in the southern Wrangell Mountains, the Matanuska Formation in the Matanuska Valley, and the Kagvyak Formation on the Alaska Peninsula

lK — LOWER CRETACEOUS ROCKS—Graywacke, sandstone, shale, siltstone, and conglomerate of part of the Tiglukpuk Formation of former usage, Okpilakak, Fortress Mountain, Torok, and Kukpowruk Formations in the western Arctic Foothills; the Kongakut Formation, Bathtub Graywacke, and Tuktu and Grandstand Formations in the eastern Brooks Range and Arctic Foothills; unnamed graywacke, argillite, conglomerate, and minor limestone southeast of the mouth of the Kuskokwim River; interlayered submarine and subaerial andesitic fragmental volcanic rocks, flows, tuffs, and volcaniclastic rocks of the Chisana Formation north of the Wrangell Mountains; and unnamed graywacke, argillite, and minor andesite on Etolin Island

KJ — CRETACEOUS AND JURASSIC ROCKS—Argillite, shale, graywacke, quartzite, conglomerate, lava, tuff, and agglomerate. Almost barren of fossils and probably includes rocks ranging in age from Early Jurassic to Late Cretaceous. In places moderately to highly metamorphosed (amphibolite facies)

KJ_1 — CRETACEOUS AND UPPER JURASSIC ROCKS—Graywacke, slate, argillite, minor conglomerate, volcanic detritus, and interbedded mafic volcanic rocks. Includes Valdez and part of Yakutat Groups and Sitka Graywacke. Mildly metamorphosed, locally to greenschist

KJ_2 — LOWER CRETACEOUS AND UPPER JURASSIC ROCKS—Shallow and deep water clastic deposits (Oxfordian to Barremian) north of the Wrangell Mountains; includes sandstone, arkose, siltstone, and limestone of the Stankukovich Formation (Burk, 1965) and Herendeen Limestone on the Alaska Peninsula; and slate, graywacke and conglomerate of the Seymour Canal Formation on Admiralty and Kupreanof Islands

KJ_3 — LOWER CRETACEOUS AND UPPER JURASSIC(?) ROCKS—Melange of flysch, greenstone, limestone, chert, granodiorite, glaucophane-bearing greenschist, and layered gabbro and serpentinite. Melange consists of Upper Jurassic(?) and Lower Cretaceous pelitic matrix enclosing blocks several kilometers in dimension of Permian to Lower Jurassic rocks. Includes the Uyak Formation, McHugh Complex, melange within the Yakutat Group, and Waterfall Greenstone and Khaz Formation of the Kelp Bay Group

uJ — UPPER JURASSIC ROCKS—Sandstone, siltstone, shale, and conglomerate on the Alaska Peninsula, Cook Inlet area, and southern flank of the Talkeetna Mountains. Includes the Chinitna and Naknek Formations

mJ — MIDDLE JURASSIC ROCKS—Argillite, graywacke, and conglomerate southeast of the Kuskokwim River and sandstone, shale, siltstone, and conglomerate on the Alaska Peninsula and Cook Inlet area where it includes the Kialagvik and Shelikof Formations and Tuxedni Group

lJ — LOWER JURASSIC ROCKS—Sandstone and argillite interbedded with volcanic flows and pyroclastic rocks of the Talkeetna Formation in the Cook Inlet area and southern Talkeetna Mountains

J — JURASSIC ROCKS—Shale, siltstone, and sandstone. Includes the Kingak Shale along the northern front of the Brooks Range, Glenn Shale (which includes rocks of Triassic and Cretaceous age) in the east-central part of the State, the Nutra Mountain Formation and Kotsina Conglomerate along the southern Wrangell Mountains, and unnamed slaty detrital rocks on Gravina and Annette Islands

JTs — JURASSIC AND(OR) TRIASSIC ROCKS—Chert and argillite north of the Porcupine River; limestone with minor dolomite, shale, and chert of the Chitistone Limestone, Nizina Limestone, McCarthy Formation, and Lubbe Creek Formation along the southern Wrangell Mountains; and hornfels and phyllite of the Hasilton(?) Group in southeast Alaska

uTs — UPPER TRIASSIC ROCKS—Limestone, shale, and chert of the Karnishak Formation in the Cook Inlet area; a shelf facies of limestone, tuff, tuffaceous conglomerate and breccias at the southern tip of the Kenai Peninsula (west of the Border Ranges fault) and equivalent rocks on Shuyak, Afognak, and Kodiak Islands; a deep water flysch and melange facies of chert, pillow basalt and associated graywacke, argillite, and minor ultramafic rocks (east of the Border Ranges fault) on the southern Kenai Peninsula; chert, limestone, sandstone, and greenstone of the Whitestripe Marble and Pinnacle Peak Phyllite (both Triassic?) on Chichagof and Baranof Islands, of the Hyd Group on Admiralty Island and Keku Straits area, and of the Nehenta and Chapin Peak Formations on Gravina Island

lTs — TRIASSIC ROCKS—Shale, chert, and limestone of the Shublik Formation and quartzitic sandstone of the Karen Creek Sandstone on the north flank of the Brooks Range

TRP — TRIASSIC AND PERMIAN ROCKS—Sandstone, siltstone, and shale of the Sadlerochit Group on the north flank of the Brooks Range; mafic volcanic rocks, red beds, limestone, and calcareous argillite in the Chulitna River area; argillite, limestone, siltstone, conglomerate, and abundant gabbroic sills in the east-central Alaska Range where it includes the upper part of the Mankomen Group; and schist, graywacke, slate, conglomerate, phyllite, andesite flows and tuffs on Admiralty Island where it includes the Barlow Cove Formation

JP — JURASSIC, TRIASSIC, AND PERMIAN ROCKS—Shale, siltstone, and chert, and graywacke in the Brooks Range. Includes upper part of Nuka Formation and Siksikpuk and Shublik Formations

MzPz — MESOZOIC AND PALEOZOIC ROCKS—Sandstone, shale, chert, dolomite and conglomerate, in a discordant rock sequence of unknown provenance that includes rocks of Mississippian, Triassic, Jurassic, and Cretaceous age in the western Brooks Range (includes Nuka Formation); Lower Jurassic, Pennsylvanian, and Permian rocks, in part covered by Tertiary sedimentary rocks and intruded by granitic rocks of Tertiary age in north-central Chugach Mountains; and slate, quartzite, schist and phyllite with interlayered beds of marble, layered gneiss and amphibolite of Ordovician to Jurassic or Cretaceous age along the west flank of the Coast Mountains

Pz — PERMIAN ROCKS—Chert, shale, and siltstone of the Siksikpuk and Echooka Formatons in the central Arctic Foothills and volcanic argillite and graywacke with local chert, pillow flows, limestone, and dolomite of the Cantwell, Pybus, and Halleck Formations on Admiralty, Kuiu, and Kupreanof Islands

PP — PERMIAN AND PENNSYLVANIAN ROCKS—Basaltic to andesitic lavas and derivative volcaniclastic rocks, tuffs, minor gabbro, and local shallow-water sedimentary rocks metamorphosed to greenschist facies, and locally, amphibolite facies. Includes Skolai Group, Station Formation (Permian), and Tetelna Volcanics in the Wrangell and Talkeetna Mountains. Consists of unnamed phyllite, slate, schist, greenschist, amphibolite, gneiss, and migmatite in St. Elias Mountains

IP — PENNSYLVANIAN ROCKS—Siltstone, sandstone, and limestone of the Klawak Formation and Ladrones Limestone on Prince of Wales Island

IPM — PENNSYLVANIAN AND MISSISSIPPIAN ROCKS—Limestone, conglomerate, shale, dolomite, and chert of the Ketchikan Conglomerate and Kayak Shale (both of Mississippian age) of the Endicott Group and the Alapah and Wahoo Limestones of the Lisburne Group

M — MISSISSIPPIAN ROCKS—Conglomerate, shale, limestone with subordinate chert and dolomite of the Ketchikan Conglomerate and Kayak Shale of the Endicott Group and the Utukok Formation and Wachsmuth and Alapah Limestones of the Lisburne Group on the northern flank of the Brooks Range. Limestone, dolomite, and interbedded chert of the Iyonkeem Formation on Chichagof Island and Peratrovich Formation on Prince of Wales Island

JM — JURASSIC TO MISSISSIPPIAN ROCKS—Unnamed slate and quartzite northwest of Porcupine River and Lisburne and Sadlerochit Groups and Kingak Shale at northeast front of Brooks Range

ŠD — TRIASSIC TO DEVONIAN ROCKS—Radiolarian chert, slate, and argillite

uPz — UPPER PALEOZOIC ROCKS—Argillite, chert, shale, limestone, and siltstone. Greenstone, limestone, shale, clastic sedimentary rocks, schist, gneiss, and undifferentiated metamorphic rocks east of Juneau

Pz — PALEOZOIC ROCKS—Limestone, marble, dolomite, and chert on Seward Peninsula and St. Lawrence Island; limestone, slate, and conglomerate in central Alaska Range; argillite and graywacke slightly metamorphosed west of Chulitna River; flysch, conglomerate, limestone and pillow basalt southwest of Mount McKinley; marble, in places containing tremolite in Wrangell Mountains where it includes parts of a Devonian section designated the Kaslawaiish Group in the Yukon Territory (Canada); and sedimentary, metasedimentary, and metavolcanic rocks in southeastern Alaska

MD — MISSISSIPPIAN AND(OR) DEVONIAN ROCKS—Sandstone, graywacke, quartzite, and conglomerate. Includes the Noatak Sandstone in western Brooks Range and Kekiktuk and Kanayut Conglomerates in eastern Brooks Range

Df — DEVONIAN ROCKS—Phyllite, hornfels, graywacke, and sandstone on the Seward Peninsula; pyroclastic rocks and ash flows interbedded with sedimentary rocks metamorphosed to schist and gneiss on northcentral flank of Alaska Range; limestone east of Kuskokwim Bay; clastic rocks and limestone of the Kennel Creek Limestone (which may also include Silurian rocks) and Cedar Cove Formation on Chichagof Island; schist, phyllite, marble, and amphibolite of the Retreat Group and Gambier Bay Formation on Admiralty and Kupreanof Islands and equivalent rocks to the north and south; and limestone, shale, graywacke, conglomerate and basaltic rocks of the St. Joseph Island Volcanics (Devonian?), Madleigh Limestone, and Port Refugio Formation on Prince of Wales Island

uD — UPPER DEVONIAN ROCKS—Shale, sandstone, chert, conglomerate, and quartzite in eastern and central Brooks Range and limestone and dolomite in western Brooks Range. Includes Hunt Fork Shale, Kanayut Conglomerate, Kagvirurok Formation, and Eli Limestone (Middle and Upper Devonian)

umD — UPPER AND(OR) MIDDLE DEVONIAN ROCKS—Conglomerate, graywacke, phyllite, shale, sandstone, siltstone, and limestone. Includes Nanook Limestone in Shublik Mountains

DS — DEVONIAN AND SILURIAN ROCKS—Limestone, dolomite, marble, and shale of the Katakturuk Dolomite and the Skajit Limestone in Brooks Range and Karheen Formation in Prince of Wales Island

S — SILURIAN ROCKS—Graywacke, shale, siltstone, limestone, sandstone, and argillite. Includes siltstone, mudstone, limestone, conglomerate, sandstone, graywacke, minor red beds and volcanic rocks of the Rendu Formation, and Willoughby Limestone in Glacier Bay area; the Point Augusta Formation on Chichagof Island; Bay of Pillars Formation on Admiralty, Kuiu, and Prince of Wales Islands; and Kuiu Limestone and Heceta Limestone on Prince of Wales Island

O — ORDOVICIAN ROCKS—Limestone and shale on Seward Peninsula; argillite, chert and limestone of the Hood Bay Formation on Admiralty Island

SO — SILURIAN AND ORDOVICIAN ROCKS—Graywacke, conglomerate, shale, siltstone, tuff, lava, and local limestone of the Descon Formation on Prince of Wales Island

C — CAMBRIAN ROCKS—Siltstone, sandstone, and phyllite

OpC — ORDOVICIAN, CAMBRIAN, AND PRECAMBRIAN ROCKS—Phyllite, sandstone, siltstone, limestone, chert, and quartzite

ℓŠ — LOWER PALEOZOIC ROCKS—Includes rocks of Cambrian through Devonian age. In places metamorphosed to greenschist and amphibolite facies. Sedimentary rocks include limestone, dolomite, argillite, chert, and graywacke and metasedimentary rocks include schist, quartzite, slate, greenstone, carbonate rocks, and phyllite. Includes Holitna Group in Kuskokwim Mountains, Tonzona Group along Kuskokwim River, rocks formerly included in Birch Creek Schist in Yukon-Tanana Upland, unmetamorphosed rocks of the Funnel Creek, Adams, Hillard, Road River, McCann Hill and Hillard Formations, and Puppets Formation on Gravina and Annette Islands

PzpC — PRECAMBRIAN AND(OR) PRECAMBRIAN ROCKS—Sandstone, limestone, shale, chert, phyllite, argillite, and quartzite of the Neruokpuk Formation in the northeast Brooks Range; quartz mica schist, mafic greenschist, calcareous schist, chloritic schist, phyllite and quartzite along south flank of Brooks Range and southwest through Kokrine-Hodzana Highlands; schist and quartzite of the Birch Creek Schist of former usage in Yukon-Tanana Highlands; highly metamorphosed clastic rocks including the Keevy Peak Formation in the north flank of Brooks Range; and volcanogenic greenschist with interstratified marble in Prince of Wales, Long and Dall Islands, where it includes the Wales Group and possibly Descon Formation

Z — PRECAMBRIAN Z ROCKS—Siltite, phyllite, graywacke, quartz schist, and graphitic schist of slate of the York region on Seward Peninsula; schist, gneiss, and small amounts of amphibolite and marble east of Kuskokwim Bay; quartz wacke, semi-schist, phyllite, and argillite of the Neruokpuk Formation in northeastern Brooks Range; phyllite, slate, and siltstone east of Fort Yukon; and limestone, dolomite, sandstone, shale, and basalt of the Tindir Group north of Tintina fault

Z_1 — YOUNGER PRECAMBRIAN Z ROCKS—Schistose, argillaceous, dolomitic limestone and tactite on Seward Peninsula

Z_2 — OLDER PRECAMBRIAN Z ROCKS—Schist, gneiss, and migmatic and metamorphic rocks, including rocks equivalent to slate of the York region, in the Kigluaik and Bendeleben Mountains on the Seward Peninsula

CONTINENTAL DEPOSITS

Tpc — PLIOCENE CONTINENTAL DEPOSITS—Pebble to boulder conglomerate, coarse sandstone, siltstone, claystone, and thin lignite beds. Includes Nenana Gravel (Pliocene?)

uTc — UPPER TERTIARY CONTINENTAL DEPOSITS—Sandstone, siltstone, claystone, minor conglomerate, and coal beds. Includes upper part of Kenai Group in Cook Inlet area and Nenana Gravel and related unnamed rocks in west-central Alaska Range. Rocks range in age from Oligocene(?) through Pliocene

TmC — MIOCENE CONTINENTAL DEPOSITS—Sandstone, siltstone, shale, claystone, conglomerate, and coal beds. Includes the Sanctuary, Suntrana, Grubstake, and Lignite Creek Formations in central Alaska Range and the Freidenka Formation in Wrangell Mountains

mTc — MIDDLE TERTIARY CONTINENTAL DEPOSITS—Sandstone, siltstone, claystone and coal beds. Includes the Healy Creek Formation in central Alaska Range, the Gakona Formation in east-central Alaska Range, and the Tsadaka Formation in Matanuska Valley. Rocks range in age from Oligocene through Miocene

lTc — LOWER TERTIARY CONTINENTAL DEPOSITS—Claystone, siltstone, sandstone, conglomerate, and coal beds. Includes lower part of Sagavanirktok Formation in the Arctic Coastal Plain and the Chickaloon and Wishbone Formations in the Matanuska Valley. Rocks range in age from Paleocene through Oligocene

TKc — PALEOCENE CONTINENTAL DEPOSITS—Conglomerate, sandstone, coaly shale, and shale. Includes Cantwell Formation in central Alaska Range

Tc — TERTIARY CONTINENTAL DEPOSITS—Sandstone, coal, conglomerate and shale of the Kootznahoo Formation on Admiralty, Kuiu, Kupreanof, and Zarembo Islands

TKc — TERTIARY AND CRETACEOUS CONTINENTAL DEPOSITS—Conglomerate, breccia, sandstone, arkose, mudstone, shale, tuffaceous rocks, and lignite. Includes Arkose Ridge Formation (Cretaceous?) in Matanuska Valley

uKc — UPPER CRETACEOUS CONTINENTAL DEPOSITS—Sandstone and conglomerate and interbedded shale, clay, silt, and bentonite of the Nakogon Tongue of the Chandler Formation of the Nanushuk Group and the Prince Creek Formation of the Colville Group on the Arctic Coastal Plain; shale and siltstone in the Yukon-Koyukuk basin; and pebble conglomerate around the margins of the basin

lKc — LOWER CRETACEOUS CONTINENTAL DEPOSITS—Shale, claystone, siltstone, sandstone, conglomerate, coaly shale and coal, ironstone, and bentonite. Includes Corwin Formation (Lower and Upper Cretaceous) of Nanushuk Group and Killik Tongue of Chandler Formation of Nanushuk Group on Arctic Coastal Plain

METAMORPHIC ROCKS

lJm — LOWER JURASSIC METAMORPHIC ROCKS—Intercalated blueschist, quartz mica schist, greenschist with subordinate amphibolite, marble, and metachert at southern tip of Kenai Peninsula and on Afognak Island

Mzm — MESOZOIC METAMORPHIC ROCKS—Small masses of metamorphosed sedimentary, volcanic, and igneous rocks, largely of pre-Cretaceous age, scattered throughout the Aleutian Range batholith. Amphibolite facies schist along north side of Matanuska Valley

JPzm — JURASSIC, TRIASSIC, AND PERMIAN METAMORPHIC ROCKS—Metasedimentary, metaplutonic, and metavolcanic rocks near Anchorage and along south side of Matanuska Valley

Pzm — PALEOZOIC METAMORPHIC ROCKS—Hornfels, schist, amphibolite, minor marble, and undivided metamorphic rocks north of Icy Strait in southeastern Alaska, and gneiss, schist, phyllite, and undifferentiated metasedimentary and metaigneous rocks in the Yukon-Tanana Upland

PzpCm — PALEOZOIC AND(OR) PRECAMBRIAN METAMORPHIC ROCKS—Metasedimentary and metaigneous rocks, including schist and gneiss of many different compositions, primarily of the greenschist and amphibolite facies, in the Yukon-Tanana Upland. Formerly included in the Birch Creek Schist

MAP SYMBOLS

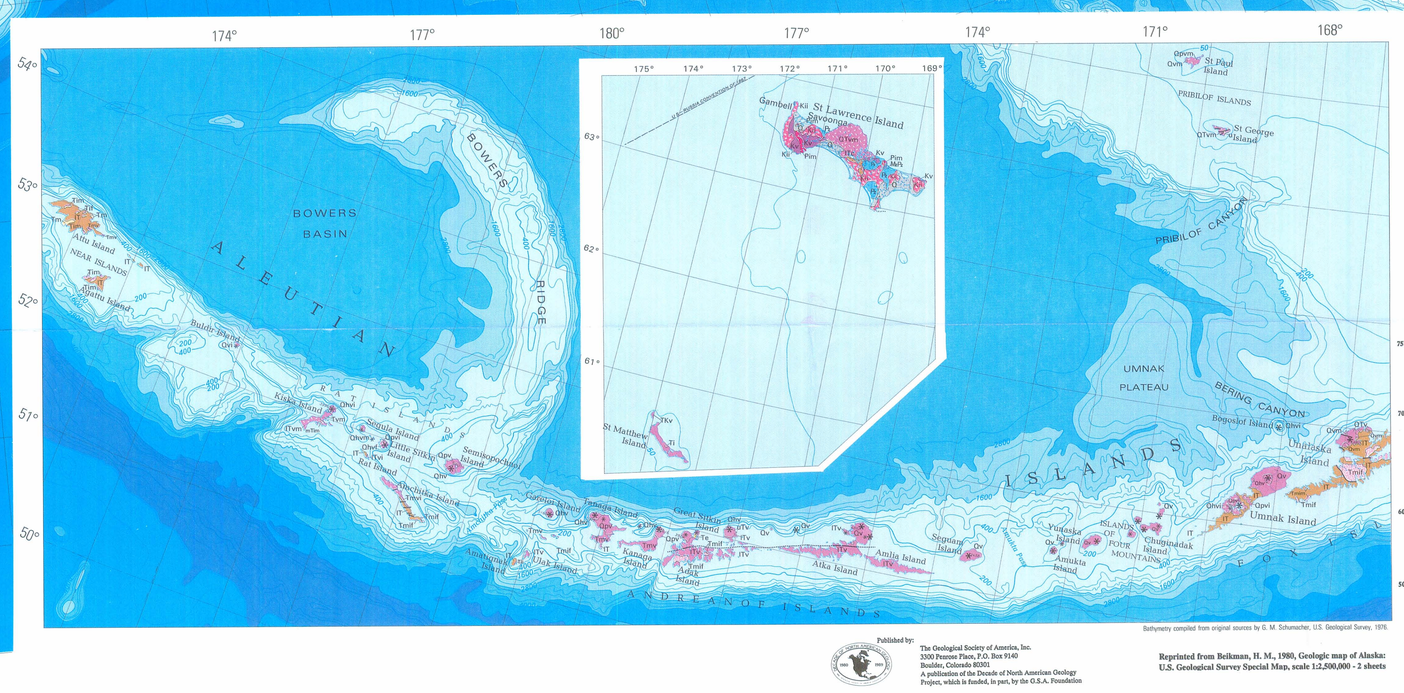
CONTACT—Dotted where concealed

FAULT—Dotted where concealed

VOLCANO—Active in historic time 1760 A.D. to present

VOLCANIC VENT OR INTRUSIVE CENTER

—1600— BATHYMETRIC CONTOURS—Contour intervals 50, 100, 200, and 400 meters



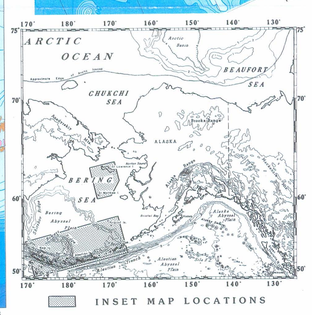


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Plate 3 Geologic Map of Alaska
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