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OPEN-FILE REPORT
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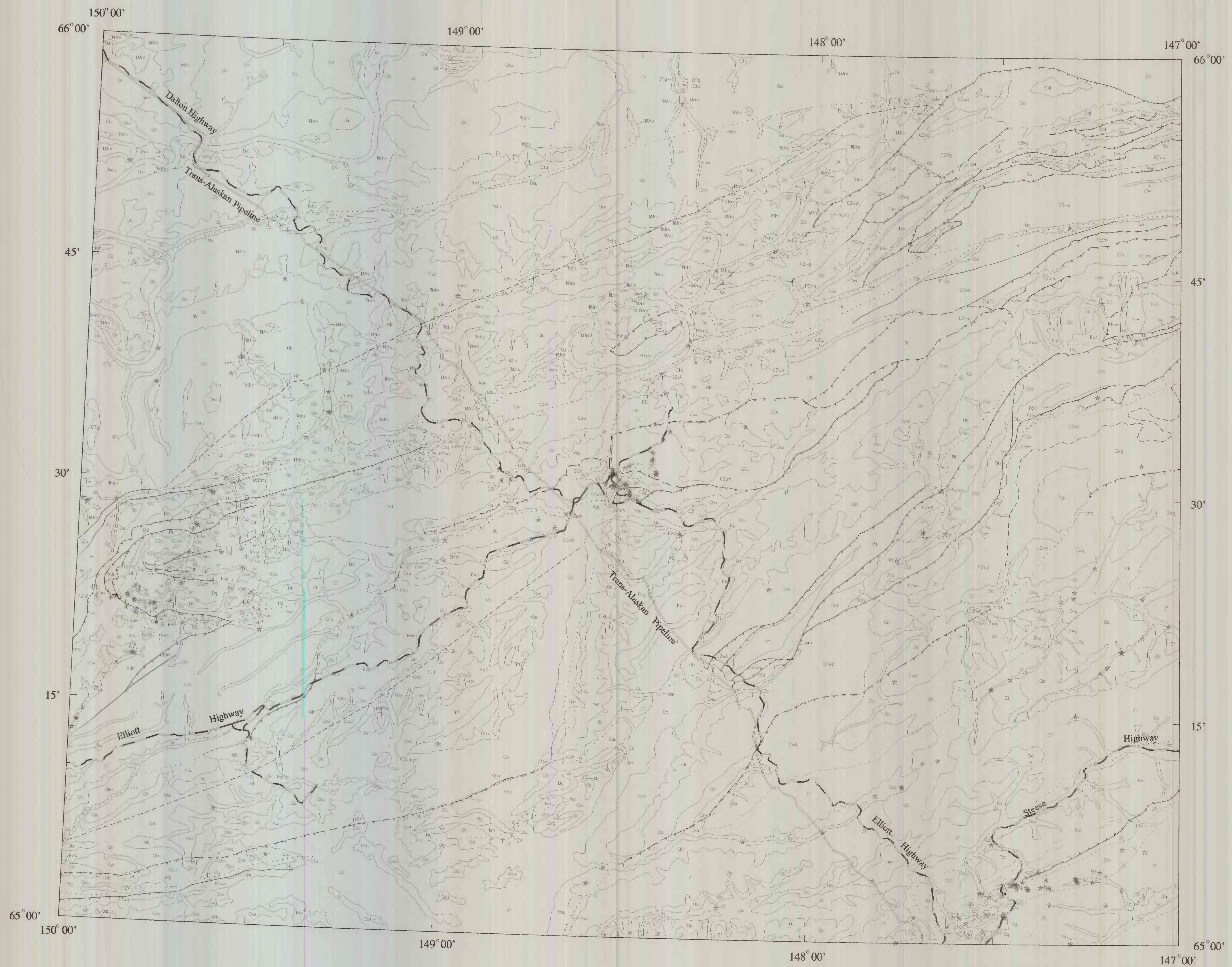

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SCALE 1:250,000

5 0 5 10 15 20 25 30 KILOMETERS

5 0 5 10 15 20 STATUTE MILES

DEFINITION OF MAP UNITS

UNCONSOLIDATED DEPOSITS

- Qa — Alluvium (Holocene)
- Qg — Reworked creek gravels in placer mining areas (Holocene)
- Qlc — Loess and colluvium (Holocene)—Includes minor upland alluvium
- Qsu — Reworked silt and organic deposits, undivided (Holocene)—Includes swamp deposits

BEDROCK

Schwatka-Rampart area

- QTg — Gravel, sand, and silt (Holocene to Pliocene?)—Poorly consolidated deposits
- Tvs — Volcanic and sedimentary rocks, undivided (Eocene)—Conglomerate, sandstone, shale, and basalt
- Ka — Alaskite (Late Cretaceous)—Exposed at Raven Creek Hill

Rampart Group (Triassic to Mississippian)—Consists of:

- TRMrv — Volcanic rocks—Intrusive and extrusive mafic igneous rocks; a few intermixed sedimentary rocks
- TRMrs — Sedimentary rocks—Argillite, chert, graywacke, shale, and limestone
- MzPzr — Raven Creek Hill unit (Mesozoic or Paleozoic)—Metasedimentary gneiss, mica schist, phyllite, and hornfels
- PDms — Metamorphic and sedimentary rocks, undivided (Permian? to Devonian?)—Black and greenish-gray siliceous slate, chert, siltstone, debris flows, and greenstone

Schwatka unit (Middle and Early Devonian)—Consists of:

- Dsv — Mafic volcanic rocks and minor clastic sedimentary rocks
- Dsl — Limestone

Wickersham unit (earliest Cambrian and Late Proterozoic)—Unit age ranges into the Hadrynian. Consists of:

- Ꞓwl — Dark-gray arenaceous limestone
- ꞒZwa — Maroon and green argillite, grit, quartzite, siltite, graywacke, and phyllite
- ꞒZwg — Grit, quartzite, phyllite, and slate—Differs from other grit units in that it contains chert. Includes limestone interbeds that lithologically resemble unit Ꞓwl

Livengood area

- QTg — Gravel, sand, and silt (Holocene to Pliocene)—Poorly consolidated deposits
- Tqm — Quartz monzonite (Paleocene)—Tolovana Hot Springs pluton
- Tm — Monzonite(?) or Monzodiorite(?) (Paleocene?)—Northeast of Tolovana Hot Springs pluton
- TKm — Monzonite (Tertiary and (or) Cretaceous)—Cascaden Ridge pluton
- TKg — Felsic granitic rocks (Tertiary and (or) Cretaceous)—Small intrusive bodies in the upper Wilber Creek area
- Kmo — Quartz monzonite, monzonite, and syenite (Late Cretaceous)—Sawtooth, Wolverine, Elephant Mountains, and Hunter Creek plutons
- Km — Minto unit (Late Cretaceous?)—Siltstone, mudstone, graywacke, quartzose sandstone, and plant-fragment-bearing siltstone
- Kwc — Wilber Creek unit (Early Cretaceous, Albian)—Shale, siltstone, graywacke, conglomeratic graywacke, and conglomerate
- KJw — Wolverine unit (Early Cretaceous and (or) Jurassic)—Quartzite
- KJv — Vrain unit (Early Cretaceous and (or) Jurassic)—Pyritiferous shale and minor siltstone
- TRc — Black shale and chert (Triassic)
- TRs — Calcareous phosphatic shale and limestone (Triassic)—Includes minor calcareous sandstone and granule conglomerate
- MzPzp — Phyllite, schist, amphibolite, quartzite, and diorite (Mesozoic or Paleozoic)
- Ps — Sedimentary rocks (Permian)—Argillite, siltstone, sandstone, and minor conglomerate
- Pzs — Greenish-gray siliceous slate, quartzite, chert, and greenstone (late Paleozoic)
- Dq — Quail unit (Late Devonian)—Conglomerate, phyllite, calc-phyllite, siltstone, and sandstone. Includes limestone buildups (?) at base of unit
- Dt — Troublesome unit (Devonian?)—Argillite, chert, and mafic intrusive and extrusive rocks
- Dc — Cascaden Ridge unit (Middle Devonian)—Shale, siltstone, sandstone, conglomerate, and minor limestone
- DSl — Lost Creek unit (Devonian and Silurian)—Limestone and varied sedimentary rocks
- Old — Livengood Dome Chert (Late Ordovician)—Chert and siliceous slate with rare greenstone and limestone
- SZa — Amy Creek unit (Silurian? to Late Proterozoic?)—Siliceous dolomite, chert, and basaltic greenstone and minor limestone, shale, and siltstone
- PzZm — Mafic igneous rocks (Paleozoic and (or) Late Proterozoic)—Includes minor interlayered sedimentary rocks
- ꞒZum — Ultramafic and mafic rocks (Early Cambrian and (or) Late Proterozoic)—Serpentinite and greenstone intruded by gabbro and diorite

Wickersham unit (earliest Cambrian and Late Proterozoic)—Unit ranges into Hadrynian. Consists of:

- ꞒZwl — Dark limestone—Sparsely or non-arenaceous limestone
- ꞒZwa — Maroon and green argillite, phyllite, quartzite, graywacke, siltite, and phyllite—Unit is characterized by the relative lack of grit except in the far western part of the quadrangle

Fairbanks-White Mountain area

- QTg — Gravel, sand, and silt (Holocene to early Tertiary)—Poorly consolidated deposits
- Tb — Olivine basalt (Tertiary)
- Tgp — Peraluminous granite (Paleocene)—Caribou Mountain pluton
- TKg — Felsic granitic rocks (Tertiary and (or) Cretaceous)—Vault pluton
- Ks — Syenite (Late Cretaceous)—Roy Creek stock
- Kg — Granite (Late Cretaceous)—Pedro Dome and rocks in its vicinity. Intrudes unit Kgd
- Kgd — Granodiorite (Late Cretaceous)—Pedro Dome and rocks in its vicinity
- TRm — Mafic igneous rocks (Triassic)—Gabbro and diabase sills and dikes. Intrudes the Globe unit
- Mg — Globe unit (Mississippian)—Vitreous quartzite, phyllite, and slate
- Dcg — Chert-pebble conglomerate, graywacke, and shale (Devonian?)
- DSt — Tolovana Limestone (Middle Devonian to Early(?) Silurian)—Limestone and rare dolomite
- Ofv — Fossil Creek Volcanics (Late to Early Ordovician)—Alkali basalt, agglomerate, and gabbro. Also includes shale, chert, and limestone, all intruded by gabbro
- Pzc — Chatanika unit (Paleozoic)—Allochthonous, garnet-bearing quartz-biotite-muscovite schist, and quartzite. Primarily epidote-amphibolite facies rocks, but also includes eclogitic rocks

Wickersham unit (earliest Cambrian and Late Proterozoic)—Unit age ranges into the Hadrynian. Consists of:

- ꞒZwa — Maroon and green argillite, grit, quartzite, siltite, graywacke, phyllite, and dolomite—Includes thin beds of dark limestone, which are probably equivalent to unit ꞒZwl as mapped in other areas, but which are areally restricted and are not mapped separately in this area. Intruded by gabbro in and near the White Mountains
- Zwg — Grit (Late Proterozoic)—Bimodal quartzite and gray and olive-gray greenschist-facies argillite. Unit age is considered to be Hadrynian
- Zf — Fairbanks schist unit (Late Proterozoic)—Greenschist facies muscovite-chlorite schist, quartzite, and phyllite. Locally divided into:
- Zfc — Cleary subunit—Facies characterized by white felsic schist, micaceous quartzite, chloritic or actinolitic greenschist, greenstone, and marble

CORRELATION OF MAP UNITS

UNCONSOLIDATED DEPOSITS

Units	Epoch	Period	Era
Qa, Qg, Qlc, Qsu	Holocene	QUATERNARY	CENOZOIC

BEDROCK

Schwatka-Rampart area

Units	Epoch	Period	Era
QTg	Holocene to Pliocene(?)	QUATERNARY AND TERTIARY(?)	CENOZOIC
Tvs	Eocene	TERTIARY	CENOZOIC
Ka	Late Cretaceous	CRETACEOUS	MESOZOIC
TRMrv > TRMrs		TRIASSIC TO MISSISSIPPIAN	MESOZOIC AND PALEOZOIC
MzPzr			MESOZOIC OR PALEOZOIC
PDms		PERMIAN(?) TO DEVONIAN(?)	PALEOZOIC
Dsv > Dsl	Middle and Early Devonian	DEVONIAN	PALEOZOIC
Unconformity			
Ꞓwl, ꞒZwa, ꞒZwg	earliest Cambrian and Late Proterozoic	CAMBRIAN AND PROTEROZOIC	PALEOZOIC AND PROTEROZOIC

Livengood area

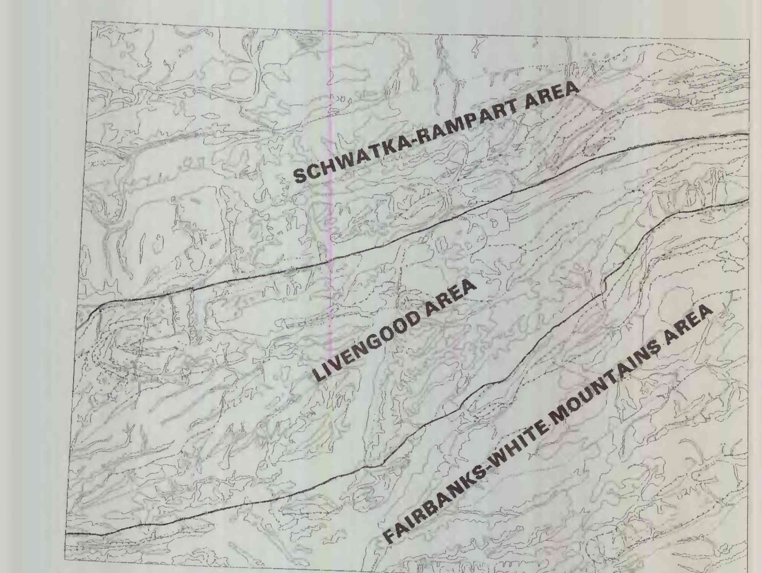
Units	Epoch	Period	Era
QTg	Holocene to Pliocene	QUATERNARY AND TERTIARY	CENOZOIC
Tqm	Paleocene(?)	TERTIARY	CENOZOIC
Tm	Paleocene	TERTIARY	CENOZOIC
TKm, TKg		TERTIARY AND (OR) CRETACEOUS	CENOZOIC AND (OR) MESOZOIC
Kmo	Late Cretaceous	CRETACEOUS	MESOZOIC
Km	Late Cretaceous(?)	CRETACEOUS	MESOZOIC
Kwc	Early Cretaceous	CRETACEOUS	MESOZOIC
KJw, KJv	Early Cretaceous and (or) Jurassic	CRETACEOUS AND (OR) JURASSIC	MESOZOIC
TRc, TRs		TRIASSIC	MESOZOIC
MzPzp			MESOZOIC OR PALEOZOIC
Ps		PERMIAN	PALEOZOIC
Pzs		LATE PALEOZOIC	PALEOZOIC
Dq \ Dq	Late Devonian	DEVONIAN	PALEOZOIC
Dt	Devonian(?)	DEVONIAN	PALEOZOIC
Dc	Middle Devonian	DEVONIAN	PALEOZOIC
Unconformity			
DSl		DEVONIAN AND SILURIAN	PALEOZOIC
Old	Late Ordovician	ORDOVICIAN	PALEOZOIC
SZa		SILURIAN(?) TO LATE PROTEROZOIC(?)	PALEOZOIC AND (OR) LATE PROTEROZOIC
PzZm			PALEOZOIC AND (OR) LATE PROTEROZOIC
ꞒZum			PALEOZOIC AND (OR) LATE PROTEROZOIC
ꞒZwl, ꞒZwa	earliest Cambrian and Late Proterozoic	CAMBRIAN AND LATE PROTEROZOIC	PALEOZOIC AND (OR) LATE PROTEROZOIC

Fairbanks-White Mountains area

Units	Epoch	Period	Era
QTg	Holocene to Pliocene(?)	QUATERNARY AND TERTIARY(?)	CENOZOIC
Tb		TERTIARY	CENOZOIC
Tgp	Paleocene	TERTIARY	CENOZOIC
TKg		TERTIARY AND (OR) CRETACEOUS	CENOZOIC AND (OR) MESOZOIC
Ks, Kg, Kgd	Late Cretaceous	CRETACEOUS	MESOZOIC
TRm		TRIASSIC	MESOZOIC
Mg		MISSISSIPPIAN	PALEOZOIC
Dcg		DEVONIAN(?)	PALEOZOIC
DSt	Middle Devonian to Early Silurian	DEVONIAN TO SILURIAN	PALEOZOIC
Ofv	Late to Early Ordovician	ORDOVICIAN	PALEOZOIC
Pzc			PALEOZOIC
Thrust fault			
ꞒZwa, Zwg	Early Cambrian and Late Proterozoic	CAMBRIAN AND PROTEROZOIC	PALEOZOIC AND PROTEROZOIC
Zf, Zfc	Late Proterozoic	PROTEROZOIC	PROTEROZOIC

EXPLANATION

- Contact—Dashed where approximately located; dotted where concealed.
- Fault—Dashed where inferred; dotted where concealed.
- Thrust fault—Sawteeth on upper plate; dashed where inferred.
- Eclogitic horizons in the Chatanika allochthon.
- Dikes, various compositions and ages.
- Rock sample locality.
- Heavy-mineral concentrate sample locality.
- Stream-sediment sample locality.



Three-fold division of Livengood Quadrangle used in this report

DISTRIBUTION AND OCCURRENCE OF GOLD-BEARING SAMPLES IN THE LIVENGOOD QUADRANGLE, ALASKA

By

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1997