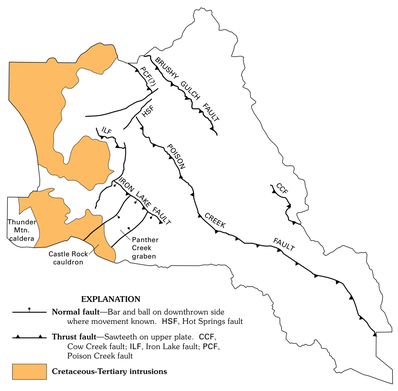
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

GEOLOGIC INVESTIGATIONS SERIES
I–2765 (Sheet 1 of 2)
Pamphlet accompanies map



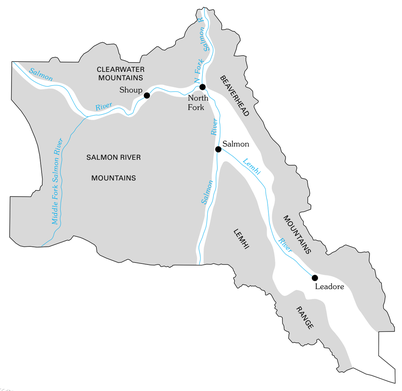
EXPLANATION

Normal fault—Bar and ball on downthrown side where movement known. **HSF**, Hot Springs fault

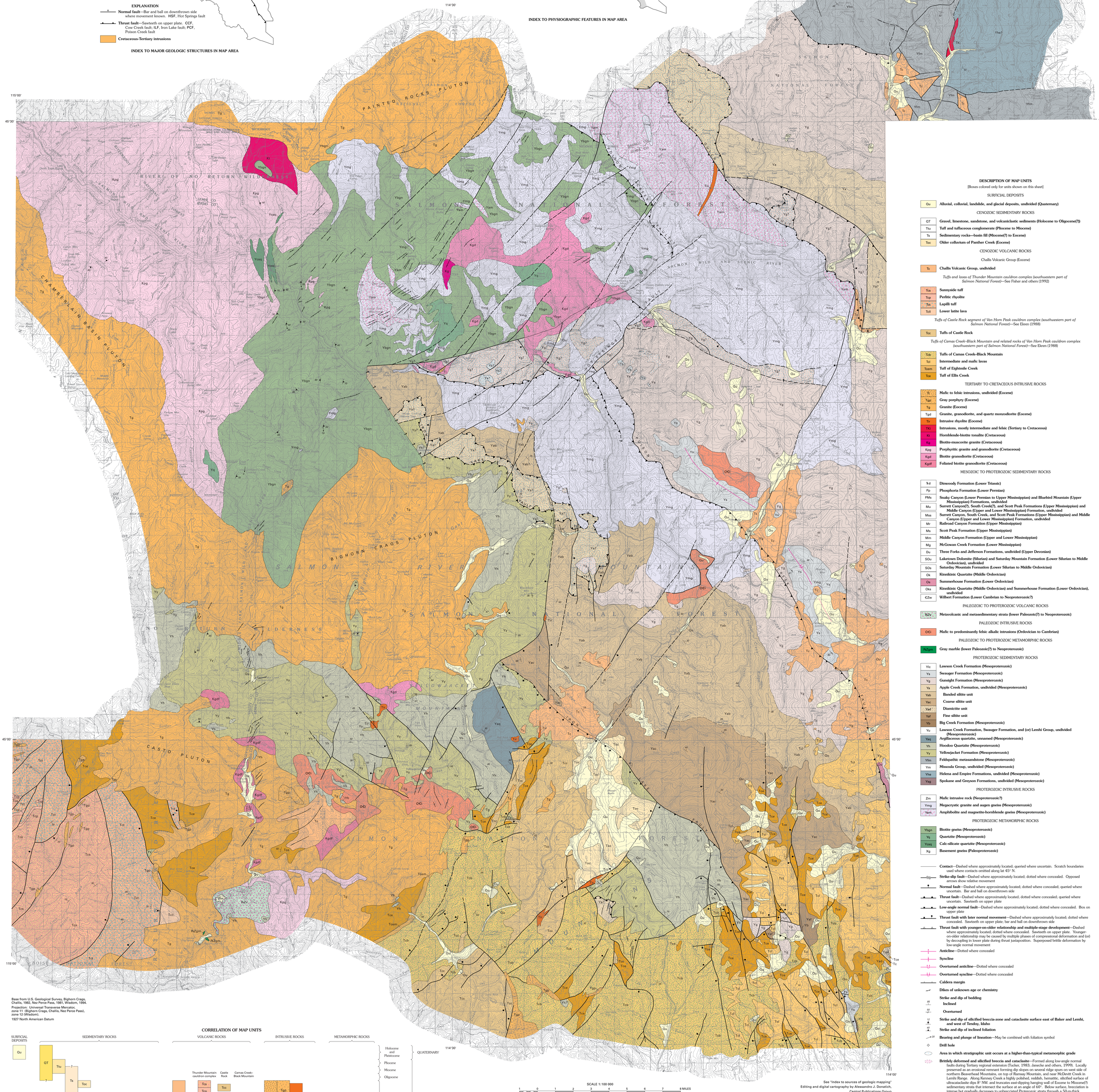
Thrust fault—Sawteeth on upper plate. **CCF**, Cow Creek fault; **ILF**, Iron Lake fault; **PCF**, Poison Creek fault

Cretaceous-Tertiary intrusions

INDEX TO MAJOR GEOLOGIC STRUCTURES IN MAP AREA



INDEX TO PHYSIOGRAPHIC FEATURES IN MAP AREA



DESCRIPTION OF MAP UNITS

[Boxes colored only for units shown on this sheet]

SURFICIAL DEPOSITS

Qu — **Alluvial, colluvial, landslide, and glacial deposits, undivided (Quaternary)**

CENOZOIC SEDIMENTARY ROCKS

QT — **Gravel, limestone, sandstone, and volcaniclastic sediments (Holocene to Oligocene(?))**
Ttu — **Tuff and tuffaceous conglomerate (Pliocene to Miocene)**
Ts — **Sedimentary rocks—basin fill (Miocene(?) to Eocene)**
Toc — **Older colluvium of Panther Creek (Eocene)**

CENOZOIC VOLCANIC ROCKS

Challis Volcanic Group (Eocene)

Tc — **Challis Volcanic Group, undivided**

Tuffs and lavas of Thunder Mountain cauldron complex (southwestern part of Salmon National Forest)—See Fisher and others (1992)

Tcs — **Sunnyside tuff**
Tcp — **Perlitic rhyolite**
Tct — **Lapilli tuff**
Tcll — **Lower latite lava**

Tuffs of Castle Rock segment of Van Horn Peak cauldron complex (southwestern part of Salmon National Forest)—See Ekren (1988)

Tcc — **Tuffs of Castle Rock**

Tuffs of Camas Creek–Black Mountain and related rocks of Van Horn Peak cauldron complex (southwestern part of Salmon National Forest)—See Ekren (1988)

Tcb — **Tuffs of Camas Creek–Black Mountain**
Tcl — **Intermediate and mafic lavas**
Tcem — **Tuff of Eightmile Creek**
Tce — **Tuff of Ellis Creek**

TERTIARY TO CRETACEOUS INTRUSIVE ROCKS

Ti — **Mafic to felsic intrusions, undivided (Eocene)**
Tgp — **Gray porphyry (Eocene)**
Tg — **Granite (Eocene)**
Tgd — **Granite, granodiorite, and quartz monzodiorite (Eocene)**
Tir — **Intrusive rhyolite (Eocene)**
TKi — **Intrusions, mostly intermediate and felsic (Tertiary to Cretaceous)**
Kt — **Hornblende-biotite tonalite (Cretaceous)**
Kg — **Biotite-muscovite granite (Cretaceous)**
Kpg — **Porphyritic granite and granodiorite (Cretaceous)**
Kgd — **Biotite granodiorite (Cretaceous)**
Kgdf — **Foliated biotite granodiorite (Cretaceous)**

MESOZOIC TO PROTEROZOIC SEDIMENTARY ROCKS

Trd — **Dinwoody Formation (Lower Triassic)**
Pp — **Phosphoria Formation (Lower Permian)**
PMs — **Snaky Canyon (Lower Permian to Upper Mississippian) and Bluebird Mountain (Upper Mississippian) Formations, undivided**
Mu — **Surrett Canyon(?), South Creek(?), and Scott Peak Formations (Upper Mississippian) and Middle Canyon (Upper and Lower Mississippian) Formation, undivided**
Mss — **Surrett Canyon, South Creek, and Scott Peak Formations (Upper Mississippian) and Middle Canyon (Upper and Lower Mississippian) Formation, undivided**
Mr — **Railroad Canyon Formation (Upper Mississippian)**
Ms — **Scott Peak Formation (Upper Mississippian)**
Mm — **Middle Canyon Formation (Upper and Lower Mississippian)**
Mg — **McGowan Creek Formation (Lower Mississippian)**
Du — **Three Forks and Jefferson Formations, undivided (Upper Devonian)**
SOu — **Laketown Dolomite (Silurian) and Saturday Mountain Formation (Lower Silurian to Middle Ordovician), undivided**
SOs — **Saturday Mountain Formation (Lower Silurian to Middle Ordovician)**
Ok — **Kinnikinic Quartzite (Middle Ordovician)**
Os — **Summerhouse Formation (Lower Ordovician)**
Oks — **Kinnikinic Quartzite (Middle Ordovician) and Summerhouse Formation (Lower Ordovician), undivided**
€Zw — **Wilbert Formation (Lower Cambrian to Neoproterozoic?)**

PALEOZOIC TO PROTEROZOIC VOLCANIC ROCKS

PzZv — **Metavolcanic and metasedimentary strata (lower Paleozoic(?) to Neoproterozoic)**

PALEOZOIC INTRUSIVE ROCKS

OCi — **Mafic to predominantly felsic alkalic intrusions (Ordovician to Cambrian)**

PALEOZOIC TO PROTEROZOIC METAMORPHIC ROCKS

PzZgm — **Gray marble (lower Paleozoic(?) to Neoproterozoic)**

PROTEROZOIC SEDIMENTARY ROCKS

Ylc — **Lawson Creek Formation (Mesoproterozoic)**
Ys — **Swauger Formation (Mesoproterozoic)**
Yg — **Gunsight Formation (Mesoproterozoic)**
Ya — **Apple Creek Formation, undivided (Mesoproterozoic)**
Yab — **Banded siltite unit**
Yac — **Coarse siltite unit**
Yad — **Diamictite unit**
Yaf — **Fine siltite unit**
Yb — **Big Creek Formation (Mesoproterozoic)**
Yu — **Lawson Creek Formation, Swauger Formation, and (or) Lemhi Group, undivided (Mesoproterozoic)**
Yaq — **Argillaceous quartzite, unnamed (Mesoproterozoic)**
Yh — **Hoodoo Quartzite (Mesoproterozoic)**
Yy — **Yellowjacket Formation (Mesoproterozoic)**
Yfm — **Feldspathic metasandstone (Mesoproterozoic)**
Ym — **Missoula Group, undivided (Mesoproterozoic)**
Yhe — **Helena and Empire Formations, undivided (Mesoproterozoic)**
Ysg — **Spokane and Greyson Formations, undivided (Mesoproterozoic)**

PROTEROZOIC INTRUSIVE ROCKS

Zm — **Mafic intrusive rock (Neoproterozoic?)**
Ymg — **Megacrystic granite and augen gneiss (Mesoproterozoic)**
Yam — **Amphibolite and magnetite-hornblende gneiss (Mesoproterozoic)**

PROTEROZOIC METAMORPHIC ROCKS

Ybgn — **Biotite gneiss (Mesoproterozoic)**
Yq — **Quartzite (Mesoproterozoic)**
Ycsq — **Calc-silicate quartzite (Mesoproterozoic)**
Xg — **Basement gneiss (Paleoproterozoic)**

Contact—Dashed where approximately located; queried where uncertain. Scratch boundaries used where contacts omitted along lat 45° N.

Strike-slip fault—Dashed where approximately located; dotted where concealed. Opposed arrows show relative movement

Normal fault—Dashed where approximately located; dotted where concealed; queried where uncertain. Bar and ball on downthrown side

Thrust fault—Dashed where approximately located; dotted where concealed; queried where uncertain. Sawteeth on upper plate

Low-angle normal fault—Dashed where approximately located; dotted where concealed. Box on upper plate

Thrust fault with later normal movement—Dashed where approximately located; dotted where concealed. Sawteeth on upper plate; bar and ball on downthrown side

Thrust fault with younger-on-older relationship and multiple-stage development—Dashed where approximately located; dotted where concealed. Sawteeth on upper plate. Younger-on-older relationship may be caused by multiple phases of compressional deformation and (or) by decoupling in lower plate during thrust juxtaposition. Superposed brittle deformation by low-angle normal movement

Anticline—Dotted where concealed

Syncline

Overturned anticline—Dotted where concealed

Overturned syncline—Dotted where concealed

Caldera margin

Dikes of unknown age or chemistry

Strike and dip of bedding
Inclined
Overturned

Strike and dip of silicified breccia-zone and cataclasite surface east of Baker and Lemhi, and west of Tendoy, Idaho

Strike and dip of inclined foliation

Bearing and plunge of lineation—May be combined with foliation symbol

Drill hole

Area in which stratigraphic unit occurs at a higher-than-typical metamorphic grade

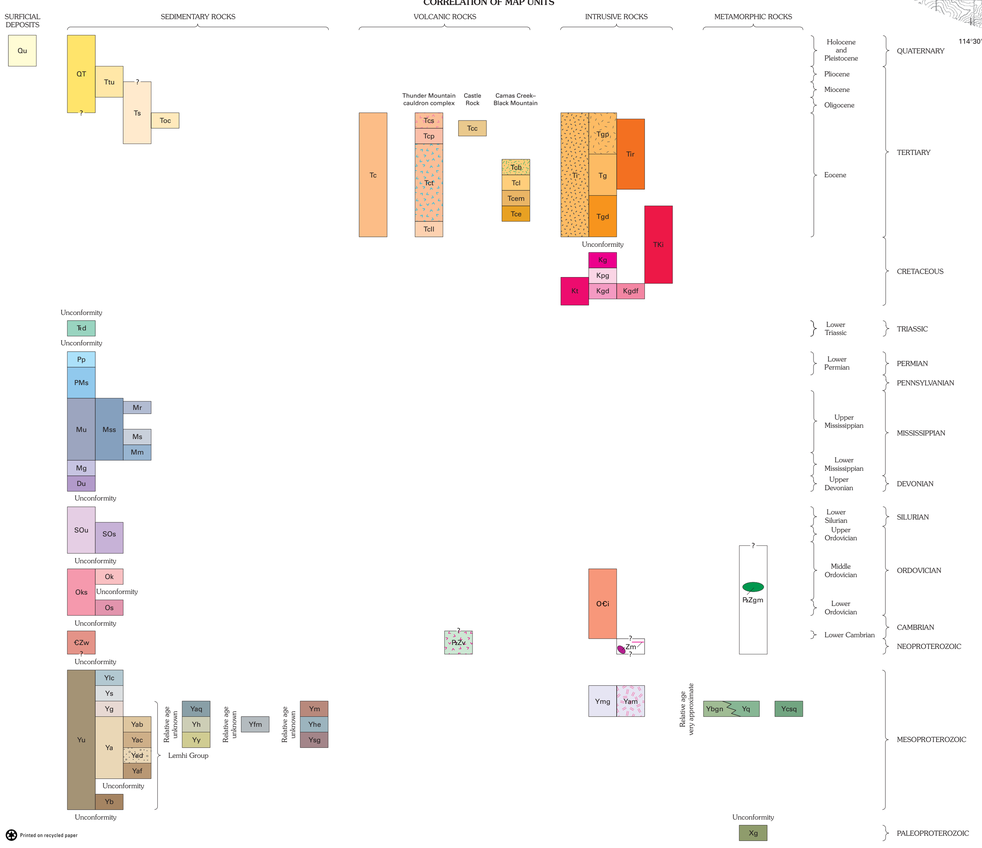
Brittlely deformed and silicified breccia and cataclasite—Formed along low-angle normal faults during Tertiary regional extension (Tucker, 1983; Janecke and others, 1999). Locally preserved as an erosional remnant forming dip slopes on several ridge spurs on west side of northern Beaverhead Mountains, on top of Ramsay Mountain, and near McDevitt Creek in Lemhi Range. Along Kenney Creek a highly polished, reddish, hematitic, silicified surface of ultracataclasite dips 8° NW. and truncates east-dipping hanging wall of Eocene to Miocene(?) sedimentary strata that intersect the surface at an angle of 60°. Below surface, brecciation is intense but gradually decreases to unbrecciated Proterozoic strata through a 50-m-thick transition zone. The same fault(s) that formed the cataclasite in Beaverhead Mountains has probably been intersected at depth in exploration drill holes at the Humbug gold prospect along Ditch Creek northwest of outpost of North Fork

Base from U.S. Geological Survey, Bighorn Crags, Challis, 1982, Nez Perce Pass, 1981, Wisdom, 1994.

Projection: Universal Transverse Mercator, zone 11 (Bighorn Crags, Challis, Nez Perce Pass), zone 12 (Wisdom).

1927 North American Datum

CORRELATION OF MAP UNITS



SCALE 1:100 000

1 0 1 2 3 4 5 6 7 8 MILES

1 0 1 2 3 4 5 6 7 8 9 10 KILOMETERS

CONTOUR INTERVAL 50 METERS

See "Index to sources of geologic mapping"

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Geologic Map of the Western Part of the Salmon National Forest

By
R.G. Tysdal, K.I. Lund, and K.V. Evans

DIGITAL ELEVATION MODEL OF SALMON NATIONAL FOREST AND VICINITY

INDEX MAP TO SALMON (PINK) AND PAYETTE (BLUE) NATIONAL FORESTS, IDAHO

INDEX TO STUDY AREA

GEOLOGIC MAP OF THE SALMON NATIONAL FOREST AND VICINITY, EAST-CENTRAL IDAHO

Compiled by
Karl V. Evans and Gregory N. Green

2003

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