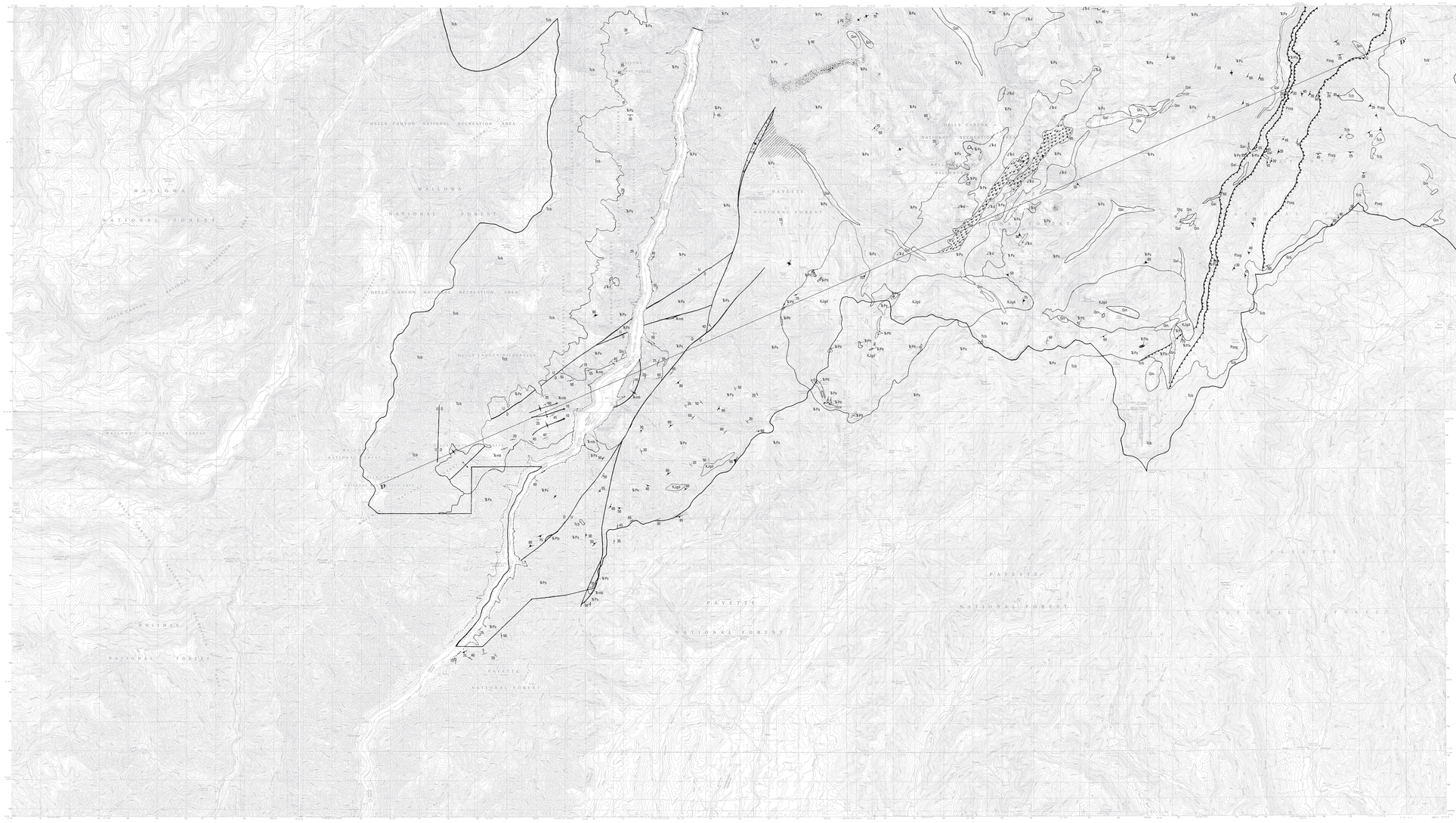
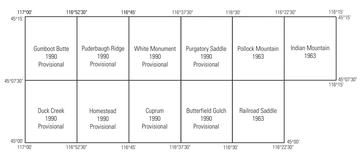
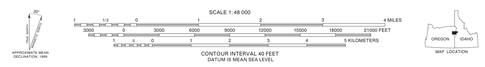
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

SCIENTIFIC INVESTIGATIONS REPORT 2007-5046
PLATE 1 OF 2
[South part]
Version 1.0
Report accompanies map





Universal Transverse Mercator projection.
1927 North American datum.
10,000-meter grid ticks, Idaho and Oregon coordinate systems, north zone.
1000-meter Universal Transverse Mercator grid ticks, zone 11



Geology by George C. Simmons, 1974–76, 1979; J. L. Gualtieri, 1974–75; H. A. Waldrop, 1974; D. M. Pinckney, 1976, assisted by J. D. Bartlett, 1976; J. D. Bartlett, 1976; J. Lewis, 1976; R. J. Weber, 1976; J. J. Ciesielski, 1976; J. C. Vavra, 1974; R. J. Stein, 1975; Bert Cowe, 1979; and K. R. Perez, 1976. Part of map modified from T.L. Vallier, 1973; Warren Hamilton, 1963; and W. H. White, 1968.

CORRELATION OF MAP UNITS
(Composite for Plates 1 and 2)

Qal	Qls	Holocene	QUATERNARY
Qtg		Holocene and Pleistocene	
Qm		Pleistocene	
Tcb		Miocene	TERTIARY
Kd			CRETACEOUS
KJgd			CRETACEOUS–JURASSIC
Jch			JURASSIC
JTRgd	JTRdg	JTRd	JURASSIC–TRIASSIC
TRmb	TRsk		TRIASSIC
TRPs	my	myd	TRPz	TRPls	TRIASSIC–PERMIAN
Pzsg			UNKNOWN, PROBABLY PALEOZOIC

EXPLANATION
(Composite for Plates 1 and 2)

- Contact
- High angle fault. U, upthrown side; D, downthrown side
- Thrust fault—sawteeth on upper plate
- Mylonite zone
- Shear zone
- Anticline—showing crestline and direction and degree of plunge
- Syncline—Showing crestline and direction and degree of plunge
- Overturned anticline—Showing direction and dip of limbs
- Overturned syncline—Showing direction and dip of limbs
- Strike and dip of beds
- Strike of vertical beds
- Horizontal beds
- Strike and dip of overturned beds
- Approximate strike of beds showing direction of dip
- Strike and dip of foliation or shear layering
- Strike of vertical foliation or shear layering
- Strike and dip of foliation and direction of plunge of lineation
- Strike and dip of joints
- Strike of vertical joints
- Veins
- Dike
- Hydrothermally altered, iron-stained rock
- Silicified of propylitized rock
- Boundary of study area

DESCRIPTION OF MAP UNITS
(Composite list for Plates 1 and 2)

HOLOCENE DEPOSITS

Qal Alluvial deposits

Qls Landslide deposits

HOLOCENE AND PLEISTOCENE DEPOSITS

Qtg Terrace gravels

PLEISTOCENE DEPOSITS

Qm Morainal deposits

MIOCENE ROCKS

Tcb Columbia River Basalt Group, undivided

CRETACEOUS ROCKS

Kd Diorite

CRETACEOUS AND JURASSIC ROCKS

KJgd Granodiorite and quartz diorite

JURASSIC ROCKS

Jch Coon Hollow Formation—Mostly carbonaceous mudstone and interbedded siltstone; minor amounts of sandstone and conglomerate

JURASSIC AND TRIASSIC ROCKS

JTRgd Granodiorite and quartz diorite

JTRdg Diorite and gabbro; minor amounts of quartz diorite

JTRd Diorite

TRIASSIC ROCKS

TRmb Martin Bridge Limestone

TRsk Kurry Creek Member of the Doyle Formation of the Seven Devils Group—Conglomerate, sandstone, siltstone, and shale derived from volcanic sources; volcanic flows, flow breccias and tuff; and minor limestone

TRIASSIC AND PERMIAN ROCKS

TRPs Seven Devils Group, undivided—Mostly pyroclastic and epiclastic basalt and andesite and their alltitized equivalents; some flows; all metamorphosed to greenstone; very sparse acidic units

my Mylonite, protomylonite, or intensely sheared rock, chiefly of the Seven Devils Group

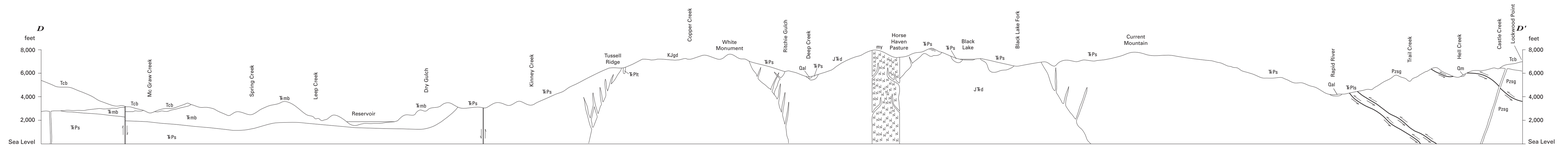
myd Mylonite—Foliated and schistose rocks chiefly derived from the Seven Devils Group, but possibly including older basement rocks; intruded by many dikes of intermediate and mafic rocks

TRPls Limestone inclusions in granitic rock; tactite developed around and in limestone

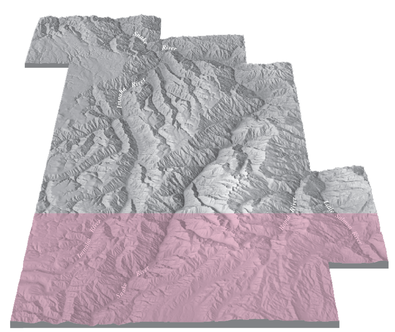
TRPls Limestone—Almost everywhere shear layered and in places intercalated with sheared greenstone

BASEMENT COMPLEX, PROBABLY PALEOZOIC

Pzsg Schist and gneiss



SHADED RELIEF MAP OF PLATE 1 (SOUTH PART)
(Shaded relief derived from U.S. Geological Survey 10-meter DEMs)



SHADED RELIEF MAP OF PLATES 1 and 2
Shaded relief derived from U.S. Geological Survey 10-meter DEMs.
Color indicates area mapped on this part of plate.

Geology mapped in 1974–79
Manuscript approved for publication July 28, 1986

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For sale by U.S. Geological Survey Information Services
Box 25286, Federal Center, Denver, CO 80225
This map was produced on request, directly from digital files, on an electronic plotter
This map is also available online at
"http://pubs.usgs.gov/"

RECONNAISSANCE GEOLOGIC MAP OF THE HELLS CANYON STUDY AREA, WALLOWA COUNTY, OREGON, AND IDAHO AND ADAMS COUNTIES, IDAHO

By
J.L. Gualtieri and George C. Simmons

2007