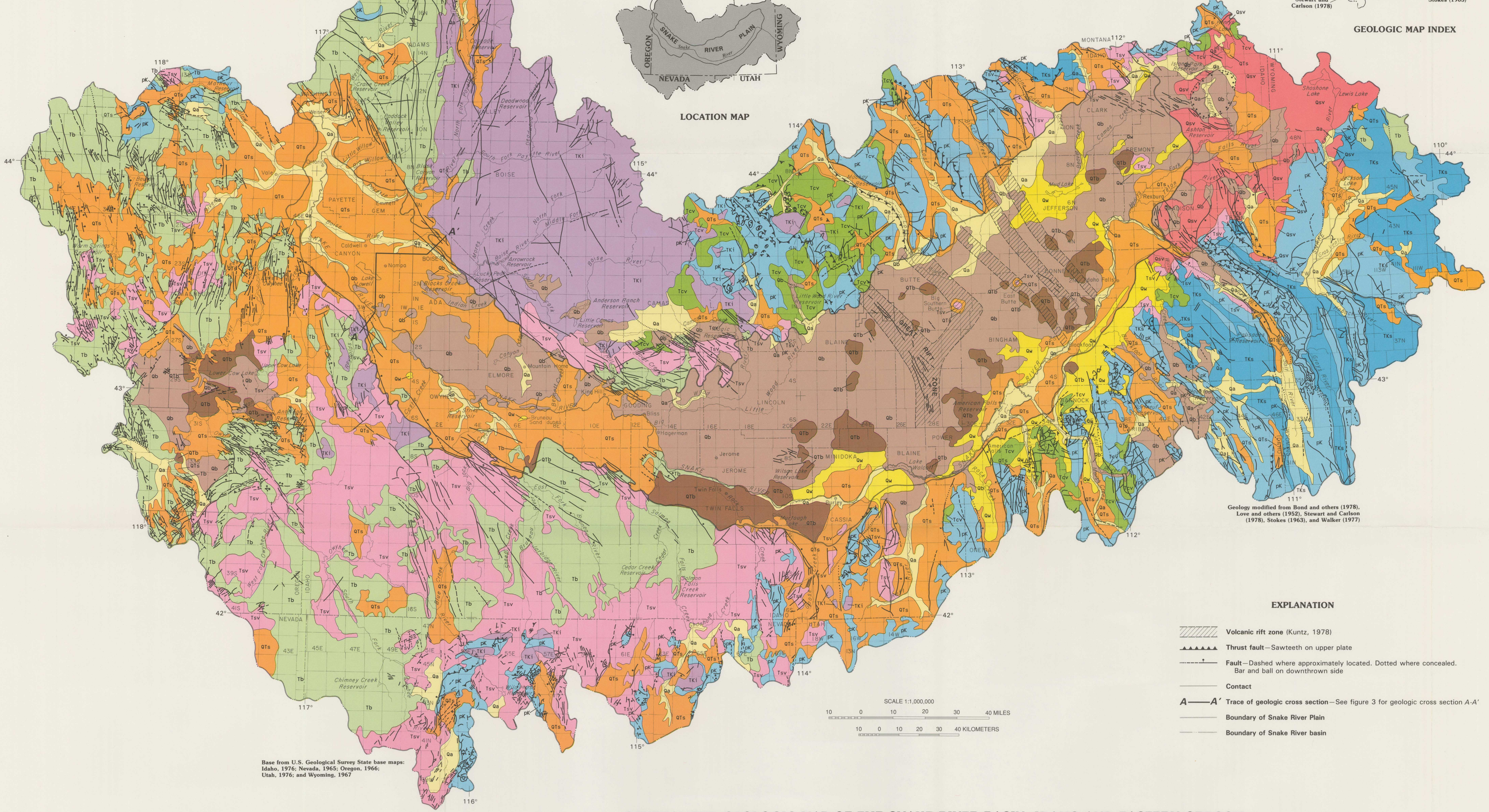
LOCATION MAP

GEOLOGIC MAP INDEX



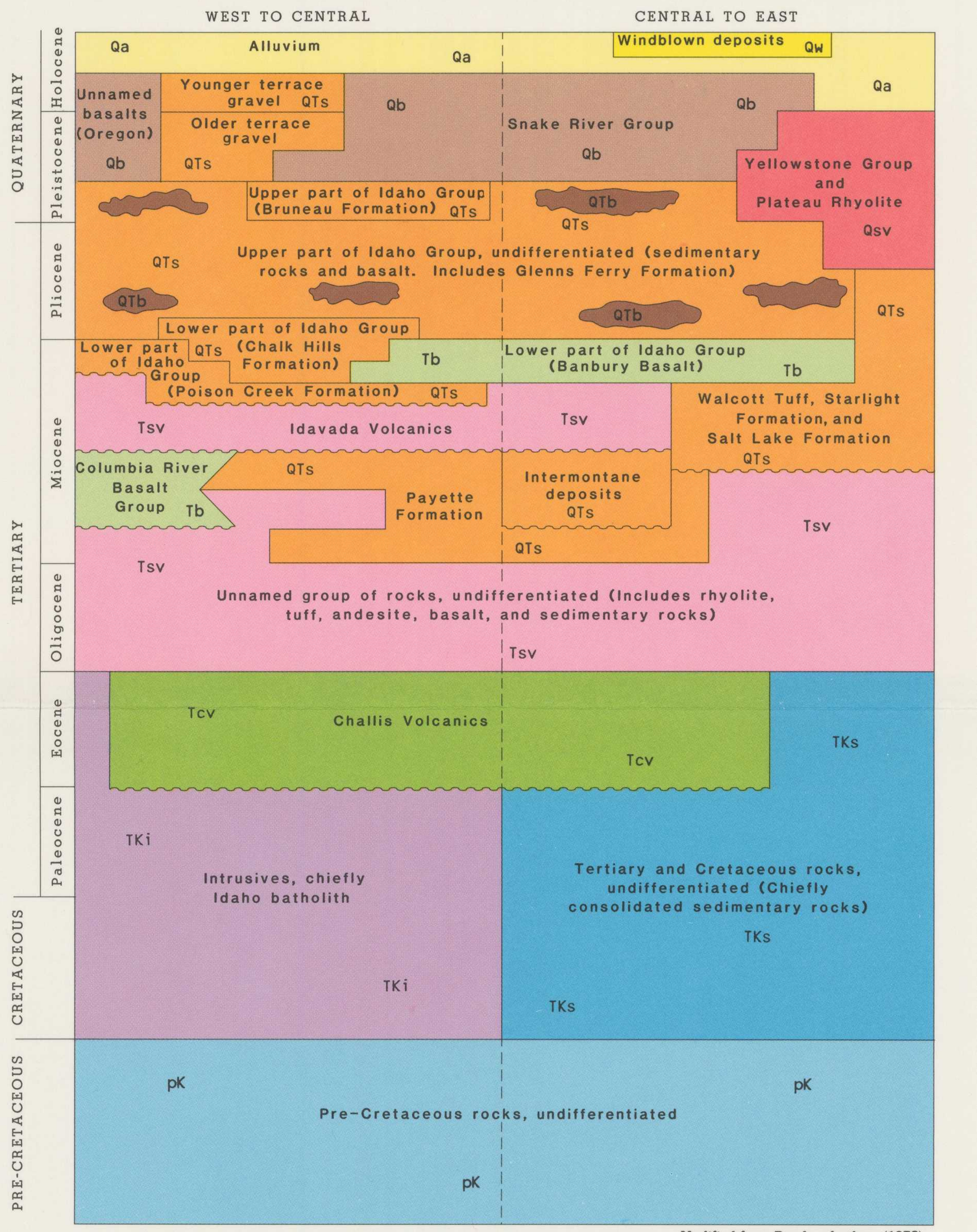
Base from U.S. Geological Survey State base maps: Idaho, 1976; Nevada, 1965; Oregon, 1966; Utah, 1976; and Wyoming, 1967

EXPLANATION

- Volcanic rift zone (Kuntz, 1978)
- Thrust fault—Sawteeth on upper plate
- Fault—Dashed where approximately located. Dotted where concealed. Bar and ball on downthrown side
- Contact
- A——A′ Trace of geologic cross section—See figure 3 for geologic cross section A-A′
- Boundary of Snake River Plain
- Boundary of Snake River basin

GENERALIZED GEOLOGIC MAP OF THE SNAKE RIVER BASIN, IDAHO AND EASTERN OREGON

GENERALIZED STRATIGRAPHY OF THE SNAKE RIVER BASIN


WEST TO CENTRAL
CENTRAL TO EAST
QUATERNARY
TERTIARY
CRETACEOUS
PRE-CRETACEOUS
Holocene
Pleistocene
Pliocene
Miocene
Oligocene
Eocene
Paleocene
Qa
Alluvium
Windblown deposits Qw
Unnamed basalts (Oregon) Qb
Younger terrace gravel QTs
Older terrace gravel QTs
Qb
Snake River Group
Yellowstone Group and Plateau Rhyolite Qsv
Upper part of Idaho Group (Bruneau Formation) QTs
QTb
Upper part of Idaho Group, undifferentiated (sedimentary rocks and basalt. Includes Glenns Ferry Formation)
Lower part of Idaho Group (Chalk Hills Formation)
Lower part of Idaho Group (Poison Creek Formation) QTs
Lower part of Idaho Group (Banbury Basalt) Tb
Tsv
Idavada Volcanics
Walcott Tuff, Starlight Formation, and Salt Lake Formation QTs
Columbia River Basalt Group Tb
Payette Formation
Intermontane deposits QTs
Unnamed group of rocks, undifferentiated (Includes rhyolite, tuff, andesite, basalt, and sedimentary rocks)
Tcv
Challis Volcanics
TKs
TKi
Intrusives, chiefly Idaho batholith
Tertiary and Cretaceous rocks, undifferentiated (Chiefly consolidated sedimentary rocks)
pK
Pre-Cretaceous rocks, undifferentiated

Modified from Bond and others (1978), Malde and Powers (1962), and Malde (1982)

EXPLANATION AND DESCRIPTION OF MAP UNITS

Age		Rock unit and map symbol	Physical characteristics and areal distribution	Water-yielding characteristics	Known thickness (ft)
QUATERNARY	Holocene	Alluvium (Qa)	Chiefly flood-plain deposits. May contain some glacial deposits and colluvium in the uplands. Clay, silt, sand, gravel, and boulders; unconsolidated to well compacted; unstratified to well stratified. Alluvium floors the tributary valleys and flood plains of the main streams and forms fans at mouths of some valleys.	Hydraulic conductivity variable, moderately high in coarse-grained deposits. Sandy and gravelly alluvium yields moderate to large quantities of water to wells. Transmissivity ranges from about 16,000 to more than 160,000 ft^2/d (Nace and others, 1957, p. 55). Specific capacities commonly range from 20 to 100 (gal/min)/ft. An important aquifer.	<250 (?)
		Windblown deposits (Qw)	Chiefly windblown deposits, include some lake and glacial-flood deposits; mantle much of the lowland areas; include active sand dunes in places, generally in northern Owyhee County and in northern part of eastern plain.	Generally above the water table.	<100 (?)
	Holocene–Pleistocene	Younger basalt (Qb)	Olivine basalt, dense to vesicular, aphanitic to porphyritic; irregular to columnar jointing; thickness of individual flows variable, but averages about 20-25 ft (Mundorff and others, 1964, p. 143). Includes beds of basaltic cinders, rubbly basalt, and interflow sedimentary rocks. Chiefly basalt of the Snake River Group. Crops out in much of Snake River Plain; mantled in many places with alluvium, terrace gravel, and windblown deposits.	Hydraulic conductivity variable but extremely high in places; formational conductivity high because of jointing and rubbly contacts between numerous flows; rock conductivity low. Unit constitutes the Snake River Plain aquifer east of King Hill (Mundorff and others, 1964, p. 8). Specific capacities of 500-1,000 (gal/min)/ft are common. Transmissivity determined from aquifer tests ranges from about 100,000 to more than 1,000,000 ft^2/d in much of the Snake River Plain (Mundorff and others, 1964, p. 159; Nace and others, 1957, p. 55).	>4,000 Includes QTb below
	Pleistocene	Younger silicic volcanic rocks (Qsv)	Rhyolitic ash-flow tuff, occurs as thick flows and blankets of welded tuff with associated fine- to coarse-grained ash and pumice beds. Include rocks of upper part of the Yellowstone Group and Plateau Rhyolite. Mantle much of Yellowstone Plateau in northeastern part of basin.	Hydraulic conductivity generally unknown but may be high as indicated by rapid percolation of surface runoff (Whitehead, 1978, p. 10). Tightly welded in places. Specific capacities range from 2 to 60 (gal/min)/ft. An important aquifer locally.	>3,000
QUATERNARY AND TERTIARY	Pleistocene, Pliocene, and Miocene	Basalt (QTb)	Olivine basalt similar to Qb above. Included as part of the Snake River Plain aquifer. Tentatively assigned to upper part of Idaho Group. Exposures generally have well-developed soil cover.	Hydraulic conductivity slightly lower than Qb above. It decreases with increasing age.	Included with Qb above
		Older alluvium (QTs)	Subaerial and lake deposits of clay, silt, sand, and gravel. Compacted to poorly consolidated; poorly to well stratified; beds somewhat lenticular and intertongued: contains beds of ash and intercalated basalt. Widespread tuffaceous sedimentary rocks and tuff in western part of basin. Includes upper part of Idaho Group and Payette and Salt Lake Formations. In places, underlies the older basalt (Tb).	Hydraulic conductivity highly variable; generally contains water under confined conditions; yields to wells range from a few gallons per minute from clayey beds to several hundred gallons per minute from sand and gravel. Specific capacities range from 5 to 60 (gal/min)/ft. In places, an important aquifer.	>5,500
TERTIARY	Pliocene and Miocene	Older basalt (Tb)	Flood-type basalt, dense, columnar jointing in many places; folded and faulted (except for the Banbury Basalt); may include some rhyolitic and andesitic rocks; some flows of vesicular olivine basalt (Banbury), interbedded locally with minor amounts of stream and lake deposits. Includes Columbia River Basalt Group or equivalent (Miocene) and the Banbury Basalt of the Idaho Group (Miocene).	Hydraulic conductivity variable, may be high in places. Locally yields small to moderate amounts of water to wells from fractures and faults; some interbedded zones of sand and silt yield good supplies of water under confined or unconfined conditions. Specific capacities range from 3 to 900 (gal/min)/ft. An important aquifer.	>7,000 (The Banbury Basalt is generally <1,000. The older basalt may be >7,000 in the western plain)
	Pliocene to Oligocene	Older silicic volcanic rocks (Tsv)	Rhyolitic, latitic, and andesitic rocks, massive and dense; jointing ranges from platy to columnar; occur as thick flows and blankets of welded tuff with associated fine- to coarse-grained ash and pumice beds (commonly reworked by flowing water) and as clay, silt, sand, and gravel; locally folded, tilted, and faulted. Include Idavada Volcanics.	Hydraulic conductivity highly variable. Joints and fault zones in flows and welded tuff and interstices in coarse-grained ash, sand, and gravel yield small to moderate, and rarely large, amounts of water to wells. Commonly contain thermal water under confined conditions. Specific capacities range from 1 to >2,000 (gal/min)/ft and are generally <400 (gal/min)/ft. An important aquifer.	>3,000
	Eocene and Paleocene	Volcanic rocks, undifferentiated (Tcv)	Extrusive rocks range in composition from rhyolite to basalt; include welded tuff, pyroclastic, tuffaceous, and other clastic and sedimentary rocks. Chiefly Challis Volcanics; mainly crop out in mountains and foothills north of the eastern plain; may include some intrusive rocks.	Hydraulic conductivity generally low. Little information available on yields to wells. May be an important aquifer locally for domestic and stock use.	>5,000
TERTIARY AND CRETACEOUS		Sedimentary rocks, undifferentiated (TKs)	Undifferentiated shale, siltstone, sandstone, and freshwater limestone of Tertiary and Cretaceous age. Younger rocks composed chiefly of breccia, conglomerate, and sandstone. Exposed in eastern part of basin. May include a few small outcrops of Jurassic age.	Hydraulic conductivity generally low. Little information available on yields to wells; weathered zones and fractures may yield moderate quantities of water to wells; large yields may be obtained in places. May be an important aquifer locally.	>10,000
		Intrusive rocks (TKi)	Chiefly granitic rocks of the Idaho batholith; include older and younger crystalline rocks; crop out in a few places south of Snake River in Idaho and northern Nevada.	Hydraulic conductivity generally low. Faults, fractures, and weathered zones may yield small quantities of water to wells. Not an important aquifer.	Unknown
PRE-CRETACEOUS		Pre-Cretaceous rocks, undifferentiated (pK)	Well-indurated sedimentary and metamorphic rocks that have been folded, faulted, and intruded by igneous rocks. Crop out in mountainous areas. Include extrusive rocks of Permian and Triassic age in western part of basin. May include Cretaceous or younger sedimentary rocks.	Hydraulic conductivity low. Faults, fractures, and weathered zones may yield small quantities of water to wells. Little information available on yields to wells. Not an important aquifer.	>12,000