DESCRIPTION OF MAP UNITS

Map unit	Major lithology	Areal extent	Water-bearing properties
QTf	YOUNGER BASIN-FILL DEPOSITS (Holocene to Pliocene)—Unconsolidated to semiconsolidated, poorly sorted to well-sorted, coarse- to fine-grained deposits of alluvial fans, flood plains, lowlands, playas, and Pleistocene lakes	QTf and , in many areas, Tf represent erosion products from present-day mountain ranges. QTf underlies present-day valleys of the Great Basin. Alluvial fans and pediments usually underlain by coarse-grained deposits, and fine-grained deposits underlie lowlands. Flood plains are underlain by alternating intervals of sorted coarse- and fine-grained deposits. Tf is found mainly along valley margins and in mountain blocks. This unit, however, may not as yet have been recognized in many areas (Stewart, 1980, p. 95), and may underlie QTf in many basins	These units yield most of the ground water used in the Great Basin. QTf may be more productive than Tf because the latter is usually more consolidated. Deposits below flood plains usually are more productive than those below alluvial fans, which are, in turn, more productive than deposits below lowlands. Aquifer-test data for basins in central and eastern Nevada and western Utah, gathered for the MX missile-siting investigation, were compiled by Bunch and Harrill (1984, p. 115–118). Estimated hydraulic conductivities computed from these test results (transmissivity divided by the length of screened interval in the well) range from 0.02 ft/d (feet per day) in Sevier Desert, Utah to 140 ft/d in Railroad and Hot Creek Valleys, Nev. (Bunch and Harrill, 1984, p. 115–118). The average value determined from 18 tests in 14 basins is 74 ft/d. The maximum and minimum values appear to represent a reasonable range of conductivities for basin-fill deposits. The average value, however, may be biased toward higher values because the purpose of the investigation was to find and eventually develop high-yield sources of ground water
Tf	OLDER BASIN-FILL DEPOSITS (Pliocene and upper Miocene)—Conglomerate, sandstone, siltstone, mudstone, freshwater limestone, evaporite beds, tuff , and interbedded lava flows		
QTv	VOLCANIC ROCKS (Holocene to Eocene)—Lava flows, flow breccias, shallow intrusive rocks, and ash-fall, air-fall, and water-lain tuffs. Compositions range from basalt to rhyolite	Mountain ranges throughout the Great Basin; also underlie or are interbedded with QTf and Tf in many basins	Water-bearing properties generally not known except for basalt aquifers at Fallon, Nev., and Pavant Valley, Utah, and lava flow and tuff aquifers at Nevada Test Site in south-central Nev. Estimates of transmissivity are 4,100–170,000 ft^2/d (feet squared per day) at Fallon (Glancy, 1981, p. 7), 24,000–2,700,000 ft^2/d in Pavant Valley (Mower, 1965, p. 36-38), and 170–9,100 ft^2/d at Nevada Test Site (Winograd and Thordarson, 1975, p. 22–23)
T₸Ri	INTRUSIVE ROCKS (Miocene to Upper Triassic)—Mostly granodiorite and quartz monzonite	Outcrops of these rocks are found in many mountain ranges. Aeromagnetic data indicate that many intrusive bodies are much more extensive in the subsurface than is indicated by outcrop areas	Shallow fractures may be capable of storing and transmitting small quantities of water; however, unit generally is considered to be a barrier to regional ground-water movement
T₸Rc	MARINE AND CONTINENTAL ROCKS (Lower Miocene to Middle Triassic)—Unit represents diverse lithologies that include continental fluvial, lacustrine, and aeolian deposits and clastic and carbonate sedimentary rocks and volcanic rocks of marine origin	Mountain ranges, mostly near the eastern and western margins of the Great Basin	Water-bearing properties unknown, although transmissivities could range through several orders of magnitude because of the diversity of lithologies
₸R€c	MARINE SEDIMENTARY AND VOLCANIC ROCKS (Lower Triassic to Lower Cambrian)—Unit consists of deep-water clastic rocks, chert, and volcanic rocks	Structurally overlies units of approximately equivalent age along the Roberts Mountains and Golconda thrusts in central Nevada (fig. 2)	Water-bearing properties unknown. Probably does not store or transmit much water
PDc	CLASTIC ROCKS (Upper Permian to Upper Devonian)—Shale, sandstone, and conglomerate[1]	Eastern Great Basin	Water-bearing properties largely unknown. Presumed to act as a local barrier to flow between ₸RMld and D€ld
₸RMld	CARBONATE ROCKS (Upper Triassic to Lower Mississippian)—Limestone, commonly silty or sandy, and lesser amounts of dolomite, shale, siltstone, and sandstone. This unit is generally more clastic than D€ld. In parts of central Utah, proportion of clastic rocks may exceed that of carbonate rocks	Eastern Great Basin	Forms upper part of carbonate-rock aquifer. Water-bearing properties largely unknown. Estimated to be similar to those of D€ld at the Nevada Test Site (Winograd and Thordarson, 1975, p. 30–31)
D€sl	CARBONATE AND CLASTIC ROCKS (Middle Devonian to Middle Cambrian)—Thin bedded to laminated, sandy to silty limestone, sandstone, siltstone, and shale	Central Nevada	Water-bearing properties largely unknown. May be similar to those for units ₸R€c, ₸RMld, and D€ld
D€ld	CARBONATE ROCKS (Middle Devonian to Middle Cambrian)—Limestone and dolomite, with lesser amounts of shale, sandstone, and quartzite	Eastern Great Basin as far west as central Nevada	Forms lower part of carbonate-rock aquifer. Estimates of transmissivity are as follows: from 170–5,200 ft^2/d at Nevada Test Site (Winograd and Thordarson, 1975, p. 22); 14,000 ft^2/d in White River Valley, Nev. (Plume, 1984, p. 624); 200 ft^2/d in Steptoe Valley, Nev., 13,400 ft^2/d in Dry Lake Valley, Nev., 400 ft^2/d in Garden Valley, Nev., and 40,000 and 250,000 ft^2/d in Coyote Spring Valley, Nev. (Bunch and Harrill, 1984, p. 119)
€p€c	CLASTIC ROCKS (Lower Cambrian and upper Precambrian)—Quartzite, shale, siltstone, sandstone, limestone, and dolomite. Metamorphosed in some areas	Eastern Great Basin	Considered impermeable by Winograd and Thordarson (1975, p. 11). Significant secondary permeability probably does not develop below the older unit of carbonate rocks D€ld, (so this unit €p€c) may form a base for the carbonate-rock aquifer of the eastern Great Basin. Barrier to regional flow where it is in fault contact with the carbonate rock
p€b	BASEMENT ROCKS (Precambrian)—Gneiss, schist, gneissic granite, and granite	Outcrops near southern, southeastern, and northeastern boundaries of Great Basin. May underlie eastern Great Basin as far west as central Nevada (Stewart, 1980, p. 9–11)	Probably not capable of storing or transmitting much water. Barrier to regional flow where it is in fault contact with the carbonate-rock aquifer

[1]This unit mostly represents erosion products from the Antler and Sonoma highlands and from a continental source farther east (Welsh and Bissell, 1979, p. Y21). These deposits accumulated from Late Devonian through Mississippi time in eastern Nevada and western Utah. Farther west, however, the deposits appear to have accumulated through the Permian. This distinction is important because the unit stratigraphically separates ₸RMld and D€ld in eastern Nevada and western Utah.

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA—1988

Figure 17 - Continued

Geology from North American Geologic Map Committee (1965), Jennings (1977), Walker (1977), Bond (1978), Stewart and Carlson (1978), and Hintze (1980); modified by R.W. Plume and S.M. Carlton, 1983