Table 3.--*Stratigraphic and hydrogeologic units in the Blanding-Durango area, Utah and Colorado*

[Based in part from Ekren and Houser (1965), Haynes, Vogel, and Wyant (1972), O'Sullivan (1965), Sears (1956), Stewart, Poole, and Wilson (1972), Wengerd and Matheny (1958), Wengerd and Strickland (1954), and Witkind (1964)]

| System | Series or Epoch | Stratigraphic unit | Thickness (meters) | Lithologic characteristics | Principal water-bearing characteristics | Hydrogeologic unit |
|---|---|---|---|---|---|---|
| Quaternary | Holocene and Pleistocene | Alluvium | 0–110+ | Alluvium-silt, clay, sand and gravel beneath flood plains and terraces. | Composes the principal water-bearing material and source of fresh ground water beneath major flood plains. | Quaternary alluvial aquifer. |
| Tertiary | Pliocene (?) and Miocene (?) | Intrusive laccoliths, stocks, dikes, and sills | | Igneous rocks; mostly diorite monzonite and diorite, monzonite porphyry. | Precipitation may enter these rocks where they are intensely fractured and subsequently recharge adjacent permeable sedimentary rocks. | Tertiary and Cretaceous confining beds. |
| | | | | Unconformity | | |
| | Eocene | San Jose Formation | 0–760 | Sandstone, shale, and conglomerate. | Yields small to moderate quantities of water. | |
| | Paleocene | Animas Formation | 0–420 | Varicolored shale, with interbedded breccia, conglomerate, and tuffaceous sandstone. | Yields small to moderate quantities of water. | |
| Cretaceous | Upper Cretaceous | Kirtland Shale | 335 | Three members, olive to greenish-gray chloritic shale with lenses of sandstone, grayish-orange to olive, cliff-forming sandstone, olive to greenish-gray shale with conglomerate sandstone lenses. | Yields little or no water. | |
| | | Fruitland Formation | 152 | Gray, brown, olive and black chloritic shale, yellowish-brown or gray; locally carbonaceous cross-bedded sandstone and coal. Intertongues with Pictured Cliffs Sandstone. | | |
| | | Pictured Cliffs Sandstone | 76 | Yellowish-orange to light gray, cross-bedded well-sorted quartzose marine sandstone, cliff-forming unit. | Yields small quantities of water. | |
| | | Lewis Shale | 442–549 | Gray marine clay shale, concretions, thin platy sandstone beds near top and bottom. | Yields little or no water. | |
| | | Mesaverde Group: Cliff House Sandstone | 122 | Yellowish-orange to yellowish-brown fine-to medium-grained cross-bedded marine sandstone and gray shale. Intertongues with Menefee Formation. | Yields small quantities of water. | |
| | | Mesaverde Group: Menefee Formation | 107–244 | Lenticular beds of yellowish-gray and brown cross-bedded sandstone, gray and brown claystone and shale, coal seams and ironstone, and limestone concretions. | | |
| | | Mesaverde Group: Point Lookout Sandstone | 122 | Massive cross-bedded yellowish-gray to brown cliff-forming marine sandstone with alternating thin beds of yellowish-gray sandstone and gray shale. | | |
| | | Mancos Shale | 610–914 | Gray to dark gray, soft, fissile sparsely fossiliferous marine clay and shale; a few calcareous sandstone and sandy clayey limestone ledges. Intertongues with Mesaverde Group. | Not water-yielding. | |
| | | Dakota Sandstone | 10– 69 | Interbedded sandstone and conglomerate, carbonaceous shale, and impure coal. | Yields water to numerous, small freshwater springs, particularly those high on the flanks of mountains. | |
| | | Unconformity | | | | |
| | Lower Cretaceous | Burro Canyon Formation | 18– 46 | Sandstone and conglomerate, green and reddish-purple shale. | | |
| Jurassic | Upper Jurassic | Morrison Formation: Brushy Basin Member | 46–213 | Variegated bentonitic mudstone, siltstone, red sandstone and conglomerate, thin limestone beds. | Not water-yielding. | Mesozoic sandstone aquifer. |
| | | Morrison Formation: Westwater Canyon Member | 0– 55 | Mostly yellowish and greenish-gray to pinkish-gray lenticular fine-to coarse-grained arkosic sandstone; some interbedded greenish-gray or grayish-red sandy shale and mudstone. | Yields small quantities of freshwater. | |
| | | Morrison Formation: Recapture Member | 0– 86 | Reddish-gray, white, and brown fine-to-medium grained sandstone characterized by light- and dark-colored grains; interbedded reddish-gray siltstone and mudstone. | | |
| | | Morrison Formation: Salt Wash Member | 0–168 | Lenticular sandstone, mudstone, few thin limestone beds. | Sandstone yields small quantities of freshwater locally. | |
| | Middle Jurassic | San Rafael Group: Bluff Sandstone[1/] | 0–103 | Light-gray to light-brown fine-to-medium grained aeolian cross-bedded quartz sandstone. | Yields small to moderate quantities of freshwater. | |
| | | San Rafael Group: Summerville Formation | 18– 61 | Thin bedded sandstone, sandy shale, and mudstone. | Not water-yielding. | |
| | | San Rafael Group: Entrada Sandstone: Moab Member | 14– 36 | White cross-bedded fine-grained sandstone. | Yields small quantities of freshwater. | |
| | | San Rafael Group: Entrada Sandstone: Slick Rock | 6– 15 | Cross-bedded buff, orange, and white fine-grained sandstone. | | |
| | | San Rafael Group: Entrada Sandstone: Dewey Bridge Member | 25– 35 | Red earthy sandstone and siltstone, contorted bedding, considered a formation in old reports. | Yields little or no water. | |
| | | San Rafael Group: Carmel Formation | 0– 50 | Dark reddish-brown to grayish-red silty shale, siltstone, and silty sandstone. | Yields little or no water. | |
| | | Unconformity | | | | |
| | | Glen Canyon Group: Navajo Sandstone | 0–137 | Buff and gray cross-bedded fine-grained sandstone. | Yields small to large quantities of freshwater. | Mesozoic sandstone aquifer |
| Triassic (?) | Lower Jurassic and Upper Triassic (?) | Unconformity | | | | |
| | Upper Triassic (?) | Glen Canyon Group: Kayenta Formation | 11– 63 | Lenticular channel sandstone, siltstone, and mudstone. | Yields small quantities of freshwater. | |
| | | Glen Canyon Group: Wingate Sandstone | 70–103 | Fine-grained, reddish-brown, thick-bedded, massive and cross-bedded, cliff forming sandstone. | Yields small quantities of freshwater. | |
| | | Dolores Formation | 0–575 | Red siltstone, sandstone, and shale. Lateral equivalent of Chinle Formation. | Yields little or no water. | Mesozoic confining beds. |
| Triassic | Upper Triassic | Chinle Formation: Church Rock Member | 120–322 | Pale-reddish-brown, reddish-orange, and light-brown fine and coarse siltstone. | Generally yields small quantities of freshwater, but locally may yield large quantities. | |
| | | Chinle Formation: Owl Rock Member | 0–152 | Pale-red and pale-reddish-brown, coarse siltstone interstratified with pale-red and light greenish-gray limestone beds. | | |
| | | Chinle Formation: Petrified Forest Member | 0– 61 | Three interfingering lithologies: (1) Structureless nonresistant claystone or clayey siltstone; (2) cross-stratified, nonresistant, clayey sandstone; and (3) cross-stratified ledge-forming sandstone that is locally conglomeratic. Rocks are mostly red or green, but color is highly variable. | | |
| | | Chinle Formation: Moss Back Member | 0– 46 | Yellowish-gray and very pale orange fine-to medium-grained, well-sorted cliff-forming sandstone. Conglomerate and conglomeratic sandstone lenses are common. | | |
| | | Chinle Formation: Monitor Butte Member | 0– 78 | Greenish-gray bentonitic claystone and clayey fine-grained sandstone interstratified with resistant ledge-forming sandstone lenses. | | |
| | | Chinle Formation: Shinarump Member | 0– 53 | Light-gray conglomeratic sandstone occurring in lenticular beds. | | |
| | | Unconformity | | | | |
| Triassic (?) | Middle (?) and Lower Triassic | Moenkopi Formation | 0– 73 | Brown shale, mudstone, arkosic sandstone, and conglomerate. Thin beds of gypsum locally near base of formation. | Not water-yielding. | |
| | | Moenkopi Formation: Hoskinnini Member[2/] | 0– 40 | Alternating thin layers of orange-red, brownish-red, chocolate brown, and grayish-white sandstone. | Yields small quantities of freshwater. | Cutler aquifer. |
| | | Unconformity | | | | |
| Permian | | Cutler Formation: DeChelly Sandstone Member | 0– 41 | Red-brown sandstone, cross-bedded in upper part, more massive in lower part. | | |
| | | Cutler Formation: Organ Rock Tongue | 0–250 | Brownish-to orange-red thin-bedded fine-grained sandstone and sandy mudstones. Grayish-green mottling in patches and stringers common. | | |
| | | Cutler Formation: Cedar Mesa Sandstone Member | 0–365 | Pale-orange and yellowish-gray fine-grained, calcareous sandstone. | | |
| | | Cutler Formation: Halgaito Tongue | 0–146 | Hard and soft thin-bedded brownish-red sandstone, siltstone, and mudstone, with a few thin beds of gray limestone and white to buff sandstone. | | |
| Pennsylvanian | Upper and Middle Pennsylvanian | Rico Formation | 91–168 | Hard gray limestone and massive sandstone interspersed with thicker zones of prevailingly softer red sandstone and thin-bedded mudstones. | Yield not well known, but probably very small. | Upper and Middle Pennsylvanian confining beds. |
| | | Local Unconformity | | | | |
| | | Hermosa Formation: Upper Member | 152–366 | Fossiliferous gray limestone, some shale and lenticular sandstones. | Yield not well known, but probably very small. | |
| | | Hermosa Formation: Paradox Member | 0–2000 | Salt, with interbeds of gypsum, carbonaceous shale, sandstone, and dolomite. | Rarely transmits water. Interbeds produce gas, oil, and salt water locally. | Evaporite confining beds. |
| | | Hermosa Formation: Lower Member | 46– 61 | Interbedded limestone, dolomite, shale, and anhydrite. | Yields little or no water. | Middle and Lower Pennsylvanian confining beds. |
| | Lower Pennsylvanian | Molas Formation | 9– 55 | Interbedded red siltstone, sandstone, limestone, and shale. | | |
| | | Unconformity | | | | |
| Mississippian | | Leadville Limestone or equivalents | 92–152 | Limestone and dolomite. | Transmits salt water through fractures, karst zones, and dolomitized intervals, mostly in the Leadville Limestone. | Lower Paleozoic aquifer. |
| Devonian | Upper Devonian | Ouray Formation | 11– 30 | Limestone and shale. | | |
| | | Elbert Formation | 64–146 | Dolomite and limestone. | | |
| | | Elbert Formation: McCracken Sandstone Member[3/] | 11– 37 | Sandstone, limestone, and dolomite. | | |
| | | Aneth Formation[3/] | 47– 81 | Pink, dark-gray, dark-brown and black dolomite containing some green and black shale. Some shale, may be gypsiferous and carbonaceous. | Yields little or no water. | |
| | | Unconformity | | | | |
| Cambrian | Upper Cambrian | Ignacio Quartzite or equivalents | 46– 88 | Quartzite with shale partings. | Water-bearing characteristics not known, but probably yields water only where fractured. | Lower Paleozoic and Precambrian confining beds. |
| | | Unconformity | | | | |
| Precambrian | | -- | -- | Rock types undifferentiated; includes gneiss, schist, granite, and pegmatite. | | |

Upper ground-water system

Lower ground-water system

[1/] In southwestern Utah designated a member of the Upper Jurassic Morrison Formation.

[2/] Where Hoskinnini is present Moenkopi is also Triassic (?).

[3/] Of local subsurface usage.