

EXPLANATION
SEDIMENTARY ROCKS

Recent

QUATERNARY

Alluvium
Unconsolidated sand, silt, and clay; shown only where considered to be of importance as an aquifer and where scale of map permits; locally yields water to wells in small quantities

Pliocene (?)

TERTIARY

UNCONFORMITY

Chuska sandstone
Consolidated and semiconsolidated sand; includes some tuff beds; permeable throughout and yields water copiously to springs

Mesaverde group

Upper Cretaceous

CRETACEOUS

UNCONFORMITY

Menefee, Fruitland, and Kirtland formations (undifferentiated)
Consolidated sand and silt; essentially non-water-yielding

Point Lookout sandstone
Consolidated sand; yields water to wells in small quantities

Mancos shale
Consolidated silt and clay divided into an upper (Kmu) and a lower (Kml) part by the Gallup sandstone of the Mesaverde group (Kg); non-water-yielding except for the Gallup which yields water to wells in small quantities

Dakota sandstone
Consolidated sand; yields water to wells in small quantities

UNCONFORMITY

Upper Jurassic

JURASSIC

Morrison formation
Consolidated sand and mud subdivided in some areas into the Brushy Basin member (Jmbb), Westwater Canyon member (Jmwc), Recapture member (Jmr), and Salt Wash member (Jmsw) locally undifferentiated in its upper part (Jmu), or in its entirety (Jm); locally yields fairly large amounts of water to wells

Cow Springs sandstone
Consolidated sand; grades laterally into Morrison and Summerville formations; yields water freely to wells

Summerville formation (sandy facies)
Consolidated sand; yields water fairly freely to wells

San Rafael group

Todilto limestone
Dense gray limestone; an effective confining layer

Entrada sandstone
Consolidated sand and silt; includes both silty facies and upper sandy facies; yields water fairly freely to wells

Wingate sandstone
Consolidated sand and silt, including sandy upper member (Rwu) and silty lower member (Rwl); locally yields water to wells in small quantities

Upper Triassic

TRIASSIC

Chinle formation
Consolidated silt and clay; subdivided into an upper limy unit (Rcu), a middle Petrified Forest member (Rpf), and a lower sandy unit (Rcl). The Petrified Forest member contains a medial sandstone (Rpfm) which is locally mapped and divides the Petrified Forest member into an upper part (Rpfu) and a lower part (Rpfl); essentially non-water-yielding except for the medial sandstone of the Petrified Forest member and some sandstones in the lower unit which yield water to wells in small quantities

Shinarump conglomerate
Consolidated sand and gravel; yields water to wells in small quantities

UNCONFORMITY

PERMIAN

DeChelly sandstone
Consolidated sand; yields water to wells in fairly large quantity

TERTIARY

IGNEOUS ROCKS

Extrusive igneous rocks
Yield small quantities of water to springs

Intrusive igneous rocks
Yield small quantities of water to springs

High-angle fault
Dashed where approximately located; U, upthrown side; D, downthrown side

Anticline
Showing location of crest with direction and degree of plunge

Syncline
Showing position of trough with direction and degree of plunge

Monocline
Showing crest position of anticlinal flexure (upper) and trough position of synclinal flexure (lower)
Shorter arrows indicate steeper dips

Contact
(Dashed where approximately located)

Gradational contact

Indefinite contact

Canyon de Chelly National Monument Boundary

State Boundary Line

Perennial stream

Intermittent stream

Spring

Gaging point

Strike and dip of beds

Horizontal beds

Principal roads

Minor roads

Trail

Building or settlement

School

Church or mission

Drilled well with windmill

Dug well with hand pump

Flowing well

Natural lake

Reservoir with dam