



CORRELATION OF MAP UNITS

Qar	Holocene	QUATERNARY
Qe1 Qe Qs Qe		
Qoo Qoa		
UNCONFORMITY	Oligocene	TERTIARY
T4		
UNCONFORMITY	Cretaceous	CRETACEOUS
Kd		
UNCONFORMITY	Upper Jurassic	JURASSIC
Jmb		
Jmw		
Jms		
Jb		
Jc		
Jeu		
Jen	Upper Triassic	TRIASSIC
UNCONFORMITY		
Rw1		
Rwr Rws		
Rru		

DESCRIPTION OF MAP UNITS

Qar ARROYO ALLUVIUM (HOLOCENE)--Pale-orange to light-gray sandy to gravelly alluvium in very recent arroyos, along main channels in washes, and as outwash aprons on older surfaces

Qe1 ALLUVIUM (HOLOCENE AND PLEISTOCENE)--Grayish-orange to yellowish-gray sandy to gravelly alluvium primarily in washes, headward from arroyos, and as reworked eolian sediments along drainages

Qe COLLUVIUM (HOLOCENE AND PLEISTOCENE)--Dark-gray to reddish-brown silty to sandy gravity and sheet wash deposits. Commonly grades downlope into alluvium. Includes talus; mapped only where deposits substantially cover bedrock

Qs LANDSLIDE AND SLUMP DEPOSITS (HOLOCENE AND PLEISTOCENE)

Qe EOLIAN SAND DEPOSITS (HOLOCENE AND PLEISTOCENE)--Very pale orange to light-brown silt to medium-grained sand. Mapped only where areally significant or where more than 0.6 m thick

Qsp OLD PEDIMENT GRAVELS (PLEISTOCENE)--Unlithified to semi-indurated gravel deposits in medium-gray to grayish-orange silty clay matrix. Gravel composed dominantly of diorite porphyry with minor amounts of older sedimentary rocks. Farms dissected pediment surface around Carrizo Mountains

Qoa OLD ALLUVIUM (PLEISTOCENE)--Unlithified to semi-indurated gravel deposits in medium-gray to grayish-orange silty clay matrix. Gravel composed dominantly of diorite porphyry and minor to subequal amounts of older sedimentary rocks. Lies topographically above younger sediment and valley floor surfaces

T4 INTRUSIVES (OLIGOCENE)--Dark-gray to black dikes and plugs composed of andesite and trachybasalt tuff breccia with sparse to abundant small fragments to large blocks of igneous, metamorphic, and sedimentary rocks. Nearby andesite dikes and plugs have been dated at 27.0±3 to 35.5±3.1 m.y. (Armstrong, 1969; Neaser, 1971)

Kd DAKOTA SANDSTONE (UPPER CRETACEOUS)--Light-gray to yellowish-gray crossbedded medium- to coarse-grained sandstone with one or more 1.2 m thick conglomerate beds at base. Conglomerate composed of granule to cobble size subrounded to well rounded black, gray, red, and tan chert, silicified wood, and pink and light-gray quartzite. Base is a sharp scour surface with little visible relief. Uppermost 30 m of carbonaceous shale, coal, and sandstone eroded, but preserved in adjacent quadrangles. Incomplete section; thickness greater than 15 m

MORRISON FORMATION (UPPER JURASSIC)

Jmb Brushy Basin Member--Dominantly grayish-green to pale-green shaly mudstone and siltstone with interbedded grayish-green chert, limestone, and quartzite. Includes 7.6-9 m thick lenses of yellowish-gray crossbedded medium-grained calcareous arkosic sandstone. Upper 15-30 m contains thin light-gray quartzite beds and chert pebble conglomerate composed of subrounded to well-rounded red, green, black, and tan chert pebbles and may be in part equivalent to Burro Canyon Formation (Lower Cretaceous). Thickness 61-76 m

Jmw Westwater Canyon Member--Yellowish-gray to pale-red crossbedded fine- to medium-grained calcareous arkosic sandstone interbedded with medium-gray to greenish-gray silty mudstone. Sandstone units trough crossbedded, commonly with silt shifs and chert granule conglomerate at base of troughs. Upper and lower contacts gradational. Thickness 61-76 m

Jms Recapture Member--Pinkish-gray to pale-red crossbedded fine- to medium-grained calcareous arkosic interbedded with medium- to greenish-gray and reddish-brown claystone in an apparently cyclic manner (Stokes and others, 1953), with a 1-2 m strongly trough crossbedded channel sandstone at the base followed by 2.4-3 meters of massive and crossbedded sandstone overlain by 1-2 meters of siltstone and claystone. Contact with Salt Wash Member gradational. Thickness about 61 m

Jb Salt Wash Member--Yellowish-gray to greenish-gray crossbedded very fine to medium-grained calcareous sandstone interbedded with greenish-gray and reddish-brown claystone in an apparently cyclic manner (Stokes and others, 1953). Each cycle is 3-6 m thick and differs from the Recapture Member cycles primarily in the absence of a thick siltstone or claystone sequence at the top, but contains more numerous interbedded thin claystone beds. Uranium occurrences within the quadrangle are found principally in the lower third of the Salt Wash in massive and finely laminated calcareous sandstone. Lower contact sharp and placed at base of lower channel sand or underlying thin gray clay bed. Thickness 61-76 m

Jc TODILTO LIMESTONE (UPPER JURASSIC)--Light olive-gray to light-gray very thin bedded silty limestone 0.6-1.5 m thick underlain by 0.3-1.2 m of pale-red to grayish-red siltstone to very fine grained parallel and cross laminated sandstone. Lower contact is a scour surface with as much as 1 m relief. Limestone thins northward and is absent at Oak Springs where Todilto is 1-1.5 m grayish-orange-pink to grayish-orange medium-grained calcareous sandstone underlain by 0.3-1 m of grayish-red siltstone and mudstone. Thickness 1-3 m

Jeu ENTRADA FORMATION (UPPER JURASSIC)

Jeu Upper Sandstone Member--Moderate reddish-orange, very fine to fine-grained calcareous sandstone. Dominantly horizontally wavy laminated with some zones of small-scale wedging cross lamination. Basal 15-30 m bleached white. Thickness 12-15 m

Jen Medial Siltstone Member--Moderate reddish-brown clayey siltstone to very fine grained structureless sandstone. Weathers to shaly or earthy slope or rounded biscuit-type cliff. Thickness 7.5-10.5

WINGATE FORMATION (UPPER TRIASSIC)

Rw1 Lukachukai Member--Moderate reddish-orange to light-brown fine- to medium-grained calcareous sandstone. Bedding is dominantly thick coasts of large-scale high-angle tangential tabular crossbeds but there are also considerable thicknesses of horizontally wavy laminated sandstone. Upper contact mapped at top of 0.3-1 m thick bleached fine-grained calcareous sandstone containing subrounded to subangular pebble-size white blebs of calcite-cemented sandstone. Unit interbedded and apparently interfingering with Rock Point Member over a thickness of 60-90 m. Thickness above the interbedded zone 60-120 m

Rwr Rock Point Member--Moderate reddish-brown calcareous siltstone and very fine grained sandstone. Dominantly structureless with some beds finely cross laminated and rippled. Lower contact sharp and placed at top of uppermost limestone ledge. Thickness beneath interbedded zone 30-60 m

Rws Sandstone--Pale-red and medium-gray very fine to medium-grained trough crossbedded calcareous micaceous sandstone and medium dark-gray limestone cobble conglomerate ledges separated by beds of pale-red to light-gray siltstone and very fine grained sandstone. Whole complex lens shaped in cross section, narrow and sinuous in plan. Occurs 10-12 m above base of Rock Point and commonly has petrifified wood associated with it or just above. Upper contact, gradational lower contact is a scour surface. Thickness 0-12 m

Rru CHINLE FORMATION (UPPER JURASSIC)

Rru Upper part--Pale-red and greenish-gray nodular cherty limestone interbedded with pale reddish-brown calcareous silty claystone. Limestone beds 0.6-2 m thick form ledges in upper 30-45 m of unit. Beds of grayish-red and greenish-gray very fine grained calcareous micaceous sandstone and limestone pebble conglomerate form ledges in middle portion of unit. Lower portion of unit composed of moderate-red calcareous silty claystone. Incomplete thickness 91 m

Jb BLUFF SANDSTONE (UPPER JURASSIC)--Moderate reddish-orange to light-brown, fine- to medium-grained laminated sandstone. Wavy and parallel laminated throughout except for light-brown wedge crossbedded 0.3-0.6 m thick sandstone containing abundant white chert grains which occurs near the top. Weathers to massive rounded (slicetrack) form. Thickness 9-12 m

Jb SUMMERVILLE FORMATION (UPPER JURASSIC)--Upper 30 m composed of interbedded moderate reddish-brown silt and fine-grained, horizontally wavy laminated sandstone and light-brown fine- to medium-grained horizontally laminated and cross laminated sandstone. Distinctive ledge-forming light-brown to grayish orange-pink fine- to medium-grained crossbedded, burrowed, 2 m thick sandstone, 9-10.5 m below top. Lower 10.5-12 m composed of moderate reddish-orange very fine grained horizontally wavy laminated sandstone banded by irregular 15-30 cm white bands in 3-m units. Weathers to massive rounded form. Lower contact sharp. Thickness 39-42 m

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CONTACT

FAULT--Showing dip and relative movement

STRIKE AND DIP OF BEDS

ANTICLINE--Showing crestline and direction of plunge. Long dashed where approximately located; short dashed where covered

SYNCLINE--Showing troughline and direction of plunge. Long dashed where approximately located; short dashed where covered

SHATTERED AND ALTERED SEDIMENTARY ROCKS--Irregularly intruded by igneous materials

EARTH DAM

PROSPECT PIT

ADIT

SHAFT

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Stokes, W. L., Jones, D. J., and Sadlick, W., 1953. Primary sedimentary features in relation to uranium deposits in the Salt Wash sandstone. Technical report for April 1, 1952 to March 31, 1953: U.S. Atomic Energy Comm. RME-3043, 74 p.