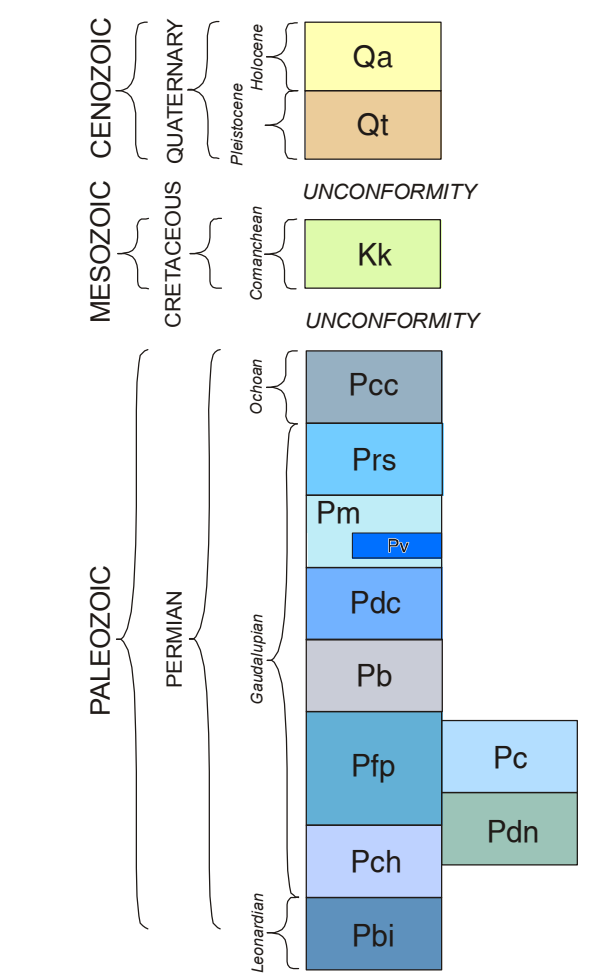
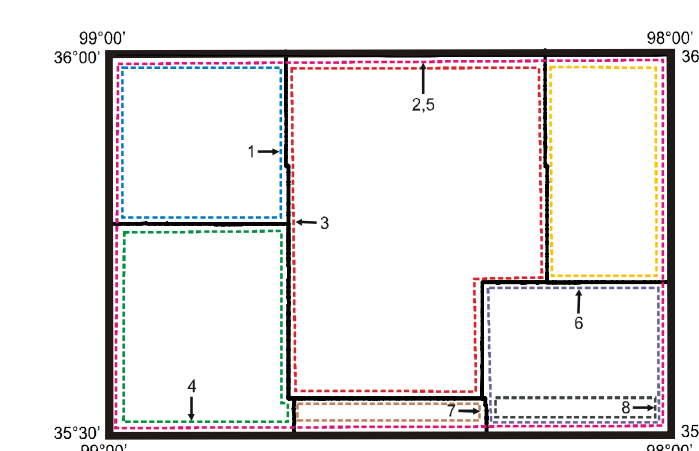


CORRELATION OF UNITS



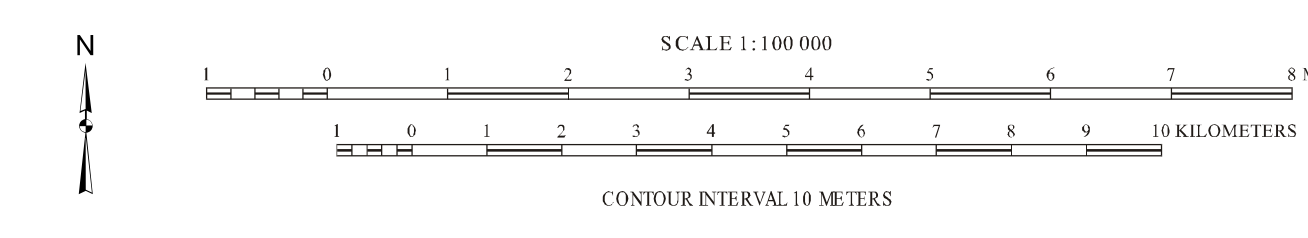
DESCRIPTION OF UNITS

- Qa** ALLUVIUM—Unconsolidated sand, silt, clay, and gravel in stream and river channels and on modern flood plains
- Qt** TERRACE DEPOSITS—Unconsolidated sand, silt, clay, gravel, and volcanic ash above modern flood plains
- Kk** KIOWA FORMATION—Outliers of dark-gray shale with some thin beds of fossiliferous tan limestone
- Pcc** CLOUD CHIEF FORMATION—Reddish-brown to orange-brown shale with silty sandstone and sandstone in middle part and some dolomite and much gypsum in lower part
- Prs** RUSH SPRINGS FORMATION—Orange-brown, cross-bedded, fine-grained sandstone with some dolomite and gypsum beds
- Pm** MARLOW FORMATION—Orange-brown, fine-grained sandstone and siltstone with two gypsum and/or dolomite beds in upper part. Contains VERDEN SANDSTONE lenti (mapped as Pvi)—Coarse-grained, calcareous, fossiliferous sandstone
- Pdc** DOG CREEK SHALE—Reddish-brown shale with thin beds of siltstone and dolomite
- Pb** BLAINE FORMATION—Reddish-brown shale with three to four gypsum and dolomite beds
- Pfp** FLOWERPOT SHALE—Reddish-brown shale with several gypsum beds in upper part. Gradational, interfingering boundary with Chickasha Formation and Duncan Sandstone toward the southeast
- Pc** CHICKASHA FORMATION—Reddish-brown to maroon conglomerate with some shale, siltstone, and fine- to coarse-grained sandstone. Gradational boundary with Flowerpot Shale
- Pdn** DUNCAN SANDSTONE—Light-gray and reddish-brown, cross-bedded, fine-grained sandstone and mudstone conglomerate with some interbedded yellowish-gray and reddish-brown shale. Gradational boundary with Cedar Hills Sandstone and Flowerpot Shale
- Pch** CEDAR HILLS SANDSTONE—Greenish-gray siltstone and reddish-brown shale. Gradational, interfingering boundary with Duncan Sandstone
- Pbi** BISON FORMATION—Orange-brown and greenish-gray, fine-grained sandstone and siltstone



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Base map from a USGS topographic map of the Watonga quadrangle, dated 1965. Universal Transverse Mercator projection, 1927 North American Datum. Geology compiled by Robert O. Fay 1966-1997. Geology not field checked. Cartography by M.S. Geary, 1997. Initial layout by T.W. Fort, 2000, and final layout by G.S. Blankenship, 2010. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program (NCGMP), under USGS H9464G-01151. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official position, either expressed or implied, of the U.S. Geological Survey. The use of trade names or product names is for identification only and does not constitute endorsement. Reservoir soundings were compiled to suit OGS compilation efforts and digital topographic data for NAD 83 100m scale digital mapping. The digital data were not published. Currently underway, the geology is being field checked and new mapping being done, when needed. A preliminary geologic map has been made available and a final map can be published.



**PRELIMINARY GEOLOGIC MAP OF THE WATONGA 30' X 60' QUADRANGLE,  
BLAINE, CADDO, CANADIAN, CUSTER, DEWEY, AND KINGFISHER COUNTIES, OKLAHOMA**

Compiled by Robert O. Fay  
2010

