OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

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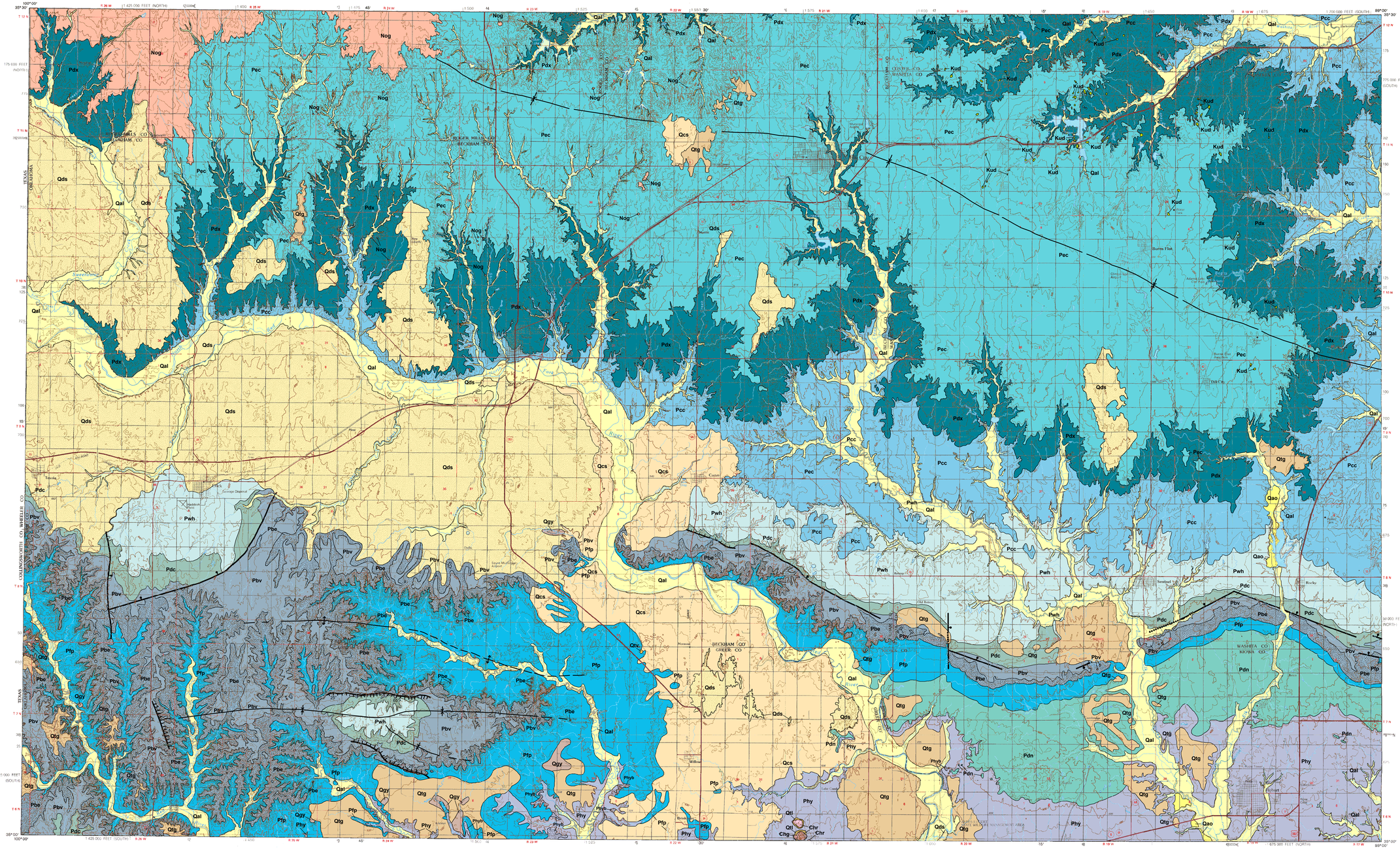
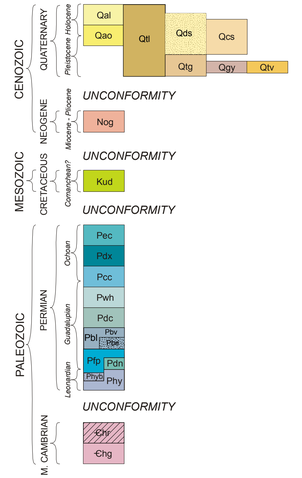
Oklahoma Geologic Quadrangle **OGQ-44**
Geologic Map of the Elk City
30′X 60′ Quadrangle
(previously Open-File Report OF20-2003)



CORRELATION OF UNITS



DESCRIPTION OF UNITS

Qal — ALLUVIUM—Unconsolidated sand, silt, clay, and gravel in stream and river channels on modern flood plains

Qao — OLDER ALLUVIUM—Unconsolidated sand, silt, clay, and gravel in stream and river channels, mainly between 0–12 m above modern flood plains

Qds — DUNE SAND—Unconsolidated windblown sand formed into definite dune structures and ridges

Qcs — COVER SHEET SAND—Featureless sheet of windblown silt and sand

Qtl — TALUS DEPOSIT—Unconsolidated debris of angular gravel and sand derived from the weathering of outliers of the Wichita Granite Group, forming immature alluvial fans and pediment surfaces

Qtg — TERRACE GRAVEL—Unconsolidated gravel, sand, silt, and clay laid down at several levels along former courses of present-day rivers and streams

Qgy — GYPSITE—Unconsolidated lacustrine deposits of fine-grained gypsum crystals intermixed with sand, silt, and clay

Qtv — VOLCANIC ASH—Unconsolidated volcanic ash concentrated in lacustrine deposits

UNCONFORMITY

Nog — OGALLALA FORMATION—Weakly cemented to unconsolidated, light-gray to light-brown, stream-laid deposits of sand, silt, clay, and gravel. May exhibit strong evidence of reworking by aeolian processes. Small outliers in middle of quad may be the result of dissolution and collapse onto older formations, similar to unit Kud

UNCONFORMITY

Kud — CRETACEOUS UNDIVIDED—Chaotic mixture of large blocks of Dakota and Cheyenne Sandstones, interbedded with Kiowa Shale. Preserved due to subsurface salt dissolution and collapse into older formations

UNCONFORMITY

Pec — ELK CITY SANDSTONE—Reddish-brown, fine-grained sandstone with local occurrences of siltstone and shale; weakly cemented by iron oxide, calcite, and gypsum

Pdx — DOXEY SHALE—Reddish-brown, moderately indurated siltstone and silty shale, generally well exposed in map area

Pcc — CLOUD CHIEF FORMATION—Reddish-brown to orange-brown shale, locally interbedded with thin, reddish-brown, fine-grained sandstone and siltstone in middle of formation, and some dolomite in lower parts. Base of the formation is the base of the Moccasin Creek Gypsum Bed

Pwh — WHITEHORSE GROUP, Undifferentiated—Reddish-brown and orange-brown, fine-grained sandstone and minor siltstone of the Marlow Formation (below) and the Rush Springs Formation (above)

Pdc — DOG CREEK SHALE—Reddish-brown, silty shale. Contains thin interbeds of greenish-gray shale and several thin layers of light-gray dolomite

Pbv / Pbe — BLAINE FORMATION—Nine thick beds of white, massive gypsum, each typically underlain by a thin bed of dolomite and thin to thick beds of reddish-brown shale. Typically 45–55 m thick. Formation divided into the lower Elm Fork Member (Pbe) and the upper Van Vacter Member (Pbv)

VAN VACTER MEMBER—Six beds of gypsum, each typically 1–5 m thick (each is thinner or absent to east). Dolomite and shale beds are 3 cm to 1.2 m thick. Total thickness is 20–25 m. Base mapped at the base of the Mangum Dolomite Bed

ELM FORK MEMBER—Three beds of gypsum, each typically 1.5–10 m thick (each is thinner to east). Dolomite beds typically 3 cm to 1 m thick; shale intervals typically 3–10 m thick. Total thickness is 25–30 m. Base mapped at the base of the Haystack Gypsum Bed

Pfp — FLOWERPOT SHALE—Reddish-brown, silty shale. Contains thin interbeds of greenish-gray shale and several thin layers of gypsum and dolomite in the upper part. Overlies the Duncan Sandstone in the east, where it is 30–50 m thick; overlies the Brinkman Sandstone Bed (Phb) in middle and western parts of quad, where it is 90 m thick

Pdn — DUNCAN SANDSTONE—Light-gray to reddish-brown, fine-grained, cross-bedded sandstone, with interbeds of yellowish gray and reddish-brown shale. Total thickness is 15–60 m. Only present in eastern half of map

Phyb / Phy — HENNESSEY FORMATION—Reddish-brown shale, with some reddish-brown siltstone beds. Top 15–45 m is exposed. Brinkman Sandstone Bed (Phb) is light-gray, very fine-grained, friable sandstone, generally 2–3 m thick; base of sandstone contains scattered coarse, sub-rounded grains of quartz and feldspar. Brinkman Bed is considered top of Hennessey Formation in center and western areas of map; present in one area in eastern part of quad (just east of North Fork Red River)

UNCONFORMITY

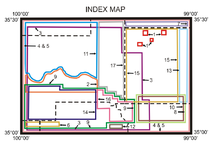
Chr — HEADQUARTERS/REFORMATORY GRANITE MIXED ZONE—Roof pendants and stoped blocks of Headquarters Granite cut by numerous dikes and apophyses of Reformatory Granite

Chg — HEADQUARTERS GRANITE—Brownish-red, finely crystalline, biotite-bearing microgranite with local porphyritic texture

EL RENO GROUP

WICHITA GRANITE GROUP (in Part)

INDEX MAP



MAP REFERENCES

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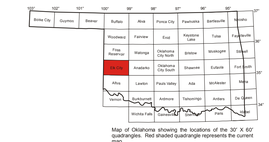
APPROXIMATE MEAN DECLINATION, 1990

SCALE 1:100 000

1 0 1 2 3 4 5 6 7 8 MILES
1 0 1 2 3 4 5 6 7 8 9 10 KILOMETERS

CONTOUR INTERVAL 10 METERS



Map of Oklahoma showing the locations of the 30′ X 60′ quadrangles. Red shaded quadrangle represents the current map

Base Map Credits

The base map was compiled by the U.S. Geological Survey from 1:24,000 and 1:62,500-scale topographic maps dated 1960-1983. Planimetry revised from aerial photographs taken 1978-1981. Projection: Universal Transverse Mercator. Transverse Mercator (UTM) projection. 1927 North American Datum. 25,000-foot grid ticks based on Oklahoma coordinate system, north zone. 10,000-meter UTM grid, zone 14.

Geologic Map Credits

Geologic compiled and field checked by Kenneth S. Johnson, Thomas M. Stanley, and Galen W. Miller, 2002-2003. The upper northwest part of the quadrangle includes the eastern part of Wheeler County, Texas. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under Assistance Award Number 02HQAG0052. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government. Originally published as Open-File Report OFQD-2003. Map revised and published as OGQ-44. Cartography and layout prepared by G. Russell Standridge, 2003.

SYMBOLS

Unit contact; approximately located

Axial trace of anticlinal structure, dashed where approximate

Axial trace of synclinal structure, dashed where approximate

Fault, dotted where covered; ball and spike on downthrown side. All faults are normal faults, dipping 60–65°

26° Monoclinal flexure, hachures show dip direction of flexed strata; dip angle of flexed strata shown locally

GEOLOGIC MAP OF THE ELK CITY 30′ X 60′ QUADRANGLE, BECKHAM, CUSTER, GREER, HARMON, KIOWA, ROGER MILLS, AND WASHITA COUNTIES, OKLAHOMA

Compiled by Kenneth S. Johnson, Thomas M. Stanley, and Galen W. Miller
Cartography by G. Russell Standridge
2003