OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

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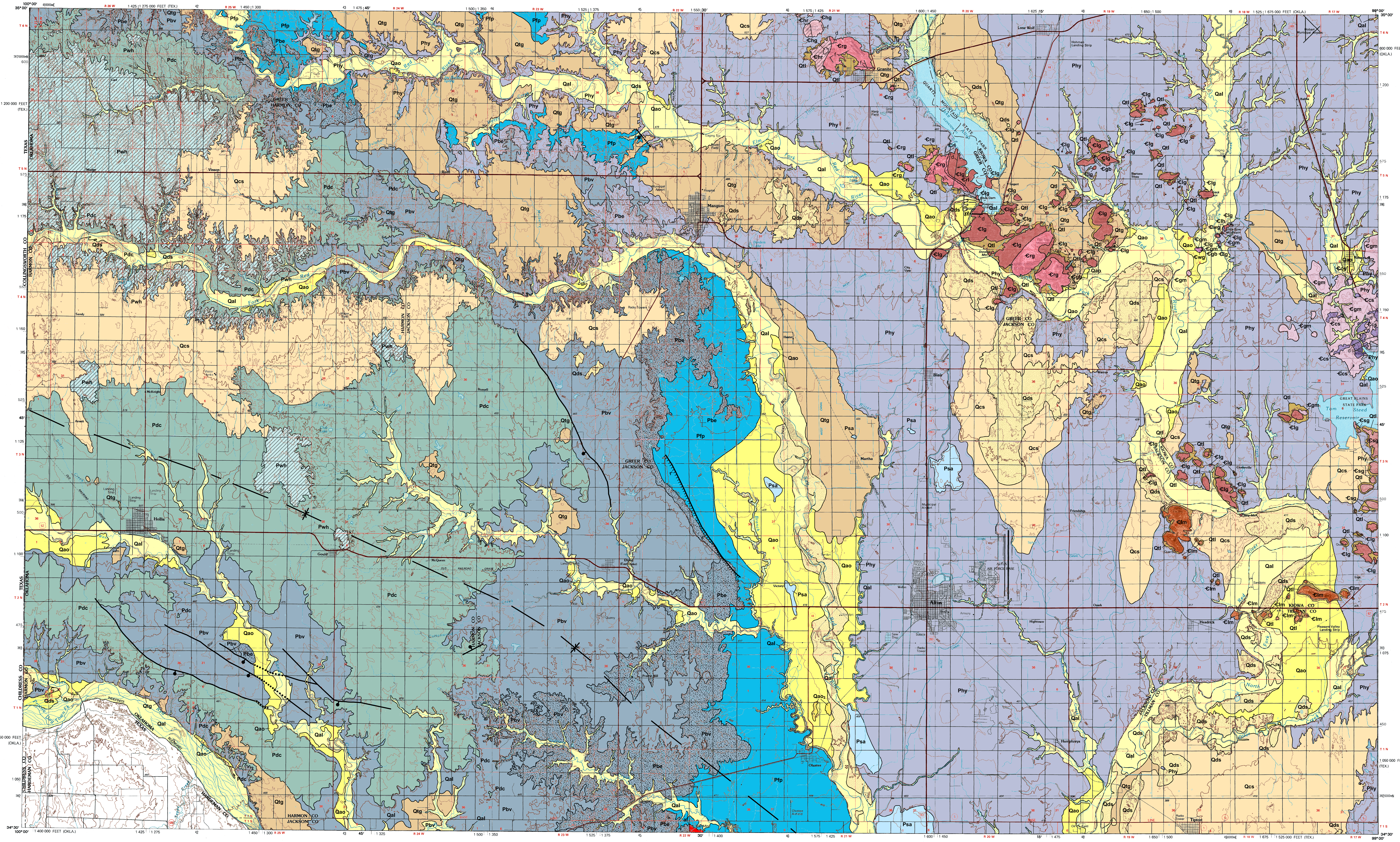

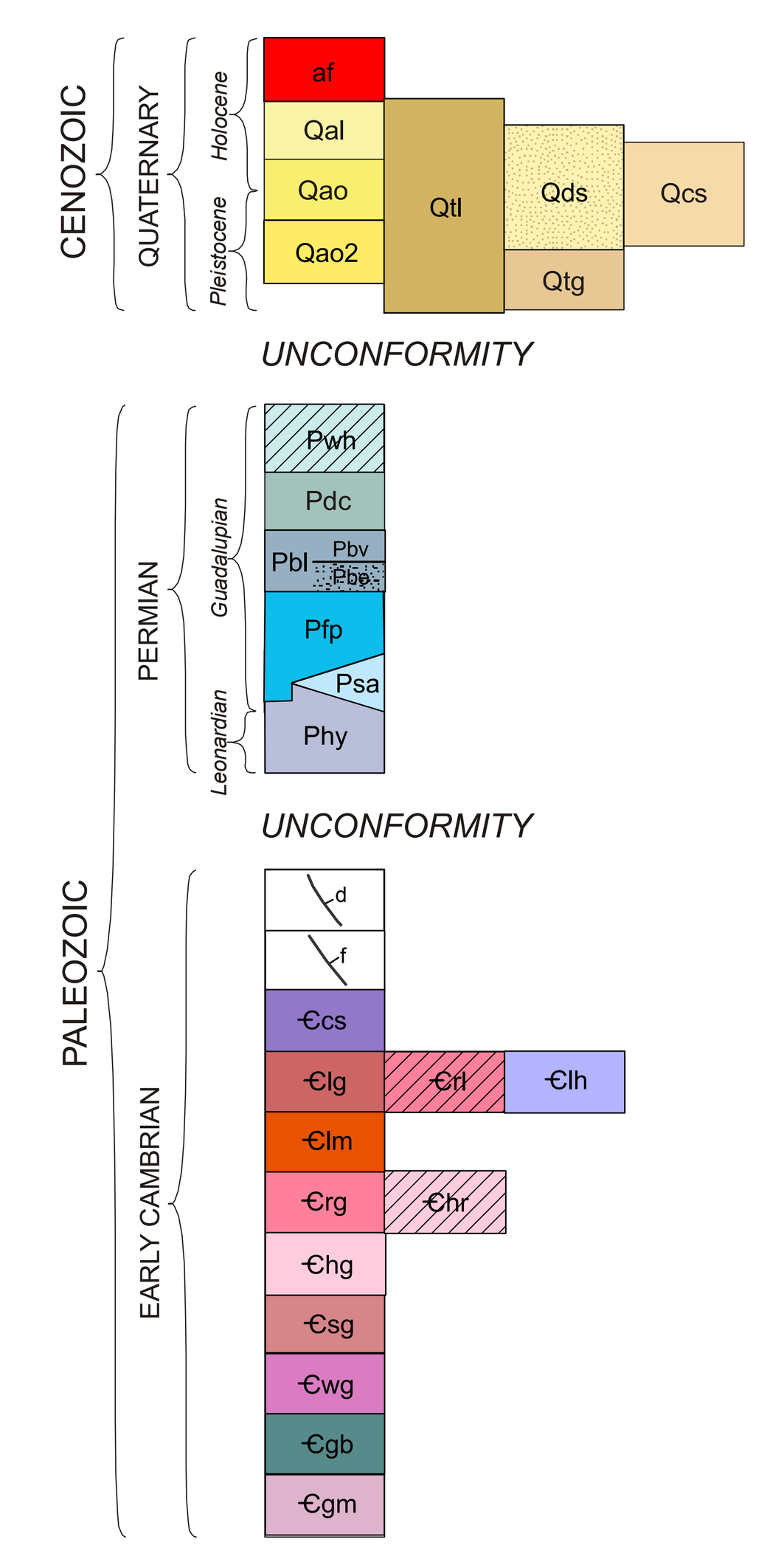

DESCRIPTION OF UNITS

af ARTIFICIAL FILL—Natural or artificial talus, slumps, and tailings covering formally exposed areas around active and inactive mining operations

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

Qao2 OLDER ALLUVIUM—Unconsolidated sand, silt, clay, and gravel in stream and river channels concentrated between 12–24 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

UNCONFORMITY

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). Units undifferentiated due to absence of the Emanuel gypsum bed at the top of the Marlow Formation. Maximum thickness about 30 meters

EL RENO GROUP

Pdc DOG CREEK SHALE—Reddish-brown, silty shale. Contains thin interbeds of greenish-gray shale and several thin layers of light-gray dolomite. Thickness varies between 25 to 60 meters

Pbl (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. Thickness varies from 30 to 50 meters

Psa SAN ANGELO SANDSTONE—Light-gray to reddish-brown, fine-grained, cross-bedded sandstone, with local interbeds of yellowish-gray and reddish-brown shale; absent to the north; thickness about 0–30 meters

Phy HENNESSEY FORMATION—Reddish-brown shale, with some reddish-brown siltstone beds. In areas where the San Angelo Formation is missing (north-central part of map) the top of the Hennessey is represented by the Brinkman Sandstone Bed, a 2-3 m thick sandstone with scattered coarse grains of quartz and feldspar. Only upper 40–50 m are exposed

UNCONFORMITY

d diabase dikes—Various dark to medium gray, to dark green aphanitic mafic rock; usually exhibits strong hydrothermal alteration. Dikes range from 0.5 to 1 meter wide, and may extend for several kilometers

f felsic dikes—Various light colored, aphanitic, fine-crystalline, to sometimes medium crystalline rocks of granitic composition. Most are only a few centimeters wide, and extend for only a few 100 meters

Ꞓcs COLD SPRINGS BRECCIA—Dark gray microdiorite blocks set in matrix of leucogranite; locally medium gray quartz monzodiorite blocks in light gray granodiorite matrix

WICHITA GRANITE GROUP (In Part)

Ꞓlg LUGERT GRANITE—Reddish-pink to reddish-brown, medium-grained granite. Feldspar crystals typically twice as large as quartz; hornblende more common than biotite. Some porphyritic texture may occur along contact with Reformatory Granite absent a mixed zone

Ꞓrl REFORMATORY/LUGERT GRANITE MIXED ZONE—Roof pendants and stoped blocks of Reformatory Granite incorporated along margins of main Lugert Granite intrusion at Quartz Mountain. Texture more aphanitic than either granite

Ꞓlh LUGERT GRANITE HYBRID—Gabbro assimilation phase of the Lugert Granite. High quartz content, with abundant biotite. May contain some inclusions of diabase dikes, Raggedy Mountain gabbros, and apophyses of Lugert Granite. Phase best expressed at Little Bow Mountain

Ꞓlm LONG MOUNTAIN GRANITE—Light colored, highly granophyric microporphyry with hornblende as dominant ferromagnsian mineral

Ꞓrg REFORMATORY GRANITE—Reddish, coarse-grained, equigranular granite; hornblende dominant, while biotite may be present; locally xenoliths of gabbro and andesite occur

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

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

Ꞓsg MOUNT SCOTT GRANITE—Variably granophyric porphyry with ovoid feldspar crystals; hornblende dominant ferromagnesian mineral

Ꞓwg WICHITA GRANITE GROUP, Undifferentiated—Pink, medium crystalline granite; both biotite and hornblende present, but biotite dominates; appears to contain apophyses of Lugert Granite. Unit pertains to Merritt's (1958) hornblende-biotite granite, and Gilbert's (1986b) biotite-hornblende granite from Little Bow Mountain

RAGGEDY MOUNTAIN GABBRO GROUP

Ꞓgb gabbro—Small, isolated outcrops of dark gray to black, medium- to coarsely crystalline gabbro containing high amounts of labradorite and pyroxene. Unit normally exhibits strong hydrothermal alteration

Ꞓgm GLEN MOUNTAINS LAYERED COMPLEX—Medium to light gray, medium- to sometimes coarsely crystalline; at least 5 distinctly layered zones containing variable amounts of plagioclase, augite, and olivine yielding anorthosite, anorthositic gabbro, and troctolite (see Powell and others, 1980).

SYMBOLS

Unit contact; approximately located

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°

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

TEXT REFERENCES

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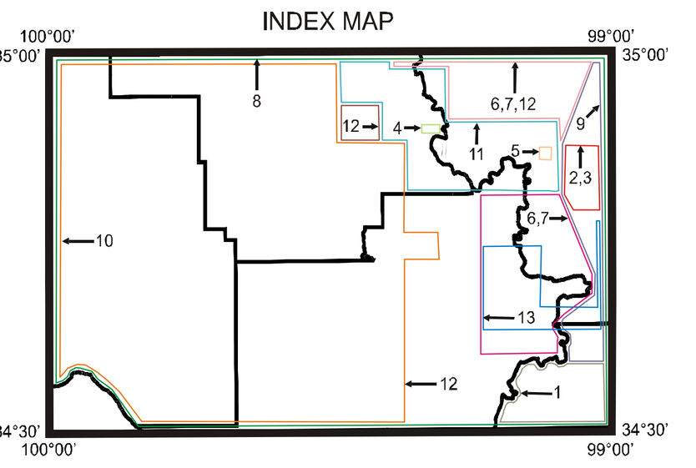
INDEX MAP



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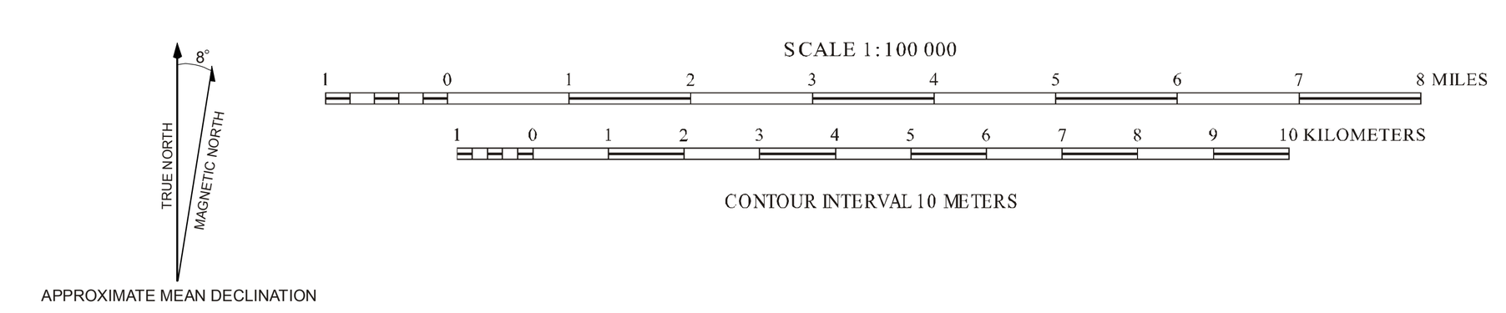

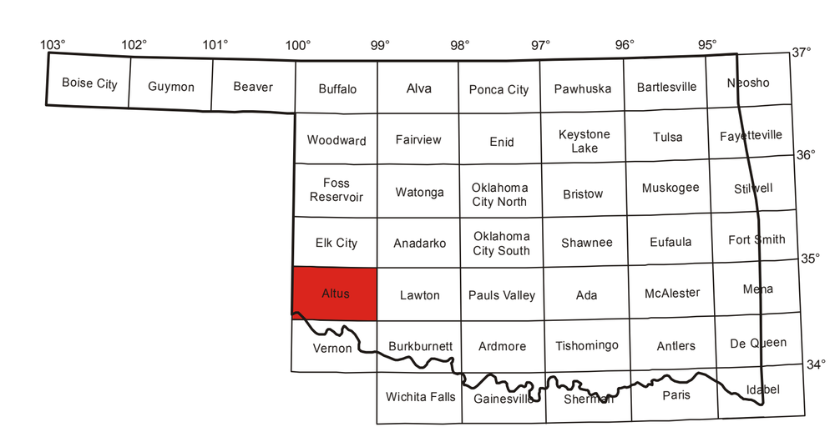

Map of Oklahoma showing the locations of the 30′ X 60′ quadrangles. Red shaded quadrangle represents the current map

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 1961-1971. Planimetry revised from aerial photographs taken 1983. Map edited 1985. Universal 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

Geology compiled and field checked by Thomas M. Stanley and Galen W. Miller, 2003 - 2004. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under Assistance Award Number 03HQAG0014. 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 OF5-2005. Map revised and published as OGQ-59. Cartography and layout prepared by G. Russell Standridge, 2004.

GEOLOGIC MAP OF THE OKLAHOMA PART OF THE ALTUS 30′ X 60′ QUADRANGLE, GREER, HARMON, JACKSON, KIOWA, AND TILLMAN COUNTIES, OKLAHOMA

Compiled by Thomas M. Stanley and Galen W. Miller
Cartography by G. Russell Standridge

2004