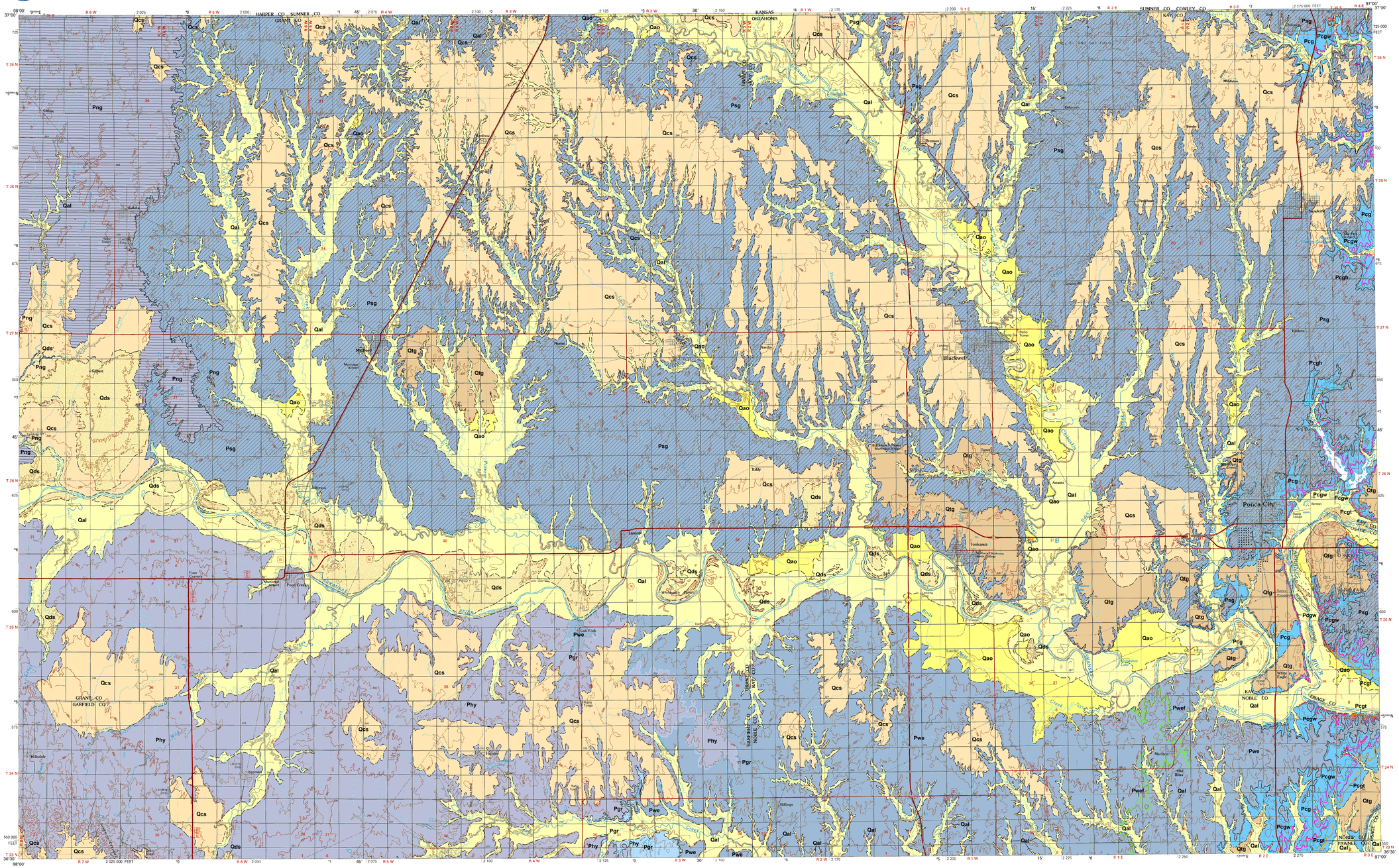
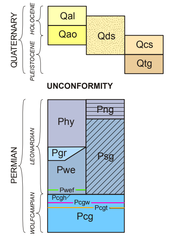
OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

Oklahoma Geologic Quadrangle **OGQ-69**
Geologic Map of the Ponca City
30´X 60´ Quadrangle



CORRELATION OF MAP UNITS



DESCRIPTION OF UNITS

Qal ALLUVIUM—Clay, silt, sand, and some gravel composed of locally derived unconsolidated sediment deposited in channels and on flood plains of modern streams

Qao OLDER ALLUVIUM—Clay, silt, sand, and some gravel composed of locally derived unconsolidated sediment located between 5 to 20 feet above and adjacent to modern flood plains and alluvial valleys.

Qds DUNE SAND—Generally windblown, fine- to very fine-grained, unconsolidated sand formed into definite dune structure and ridges. Deposits most likely derived from aeolian reworking of modern and older alluvial and terrace deposits, often vegetated except for most recently formed structures.

Qcs COVER SHEET SAND—Composed of unconsolidated windblown, very-fine grained sand and silt deposited as a featureless plain. Derivation similar to that of dune deposits

Qtg TERRACE GRAVEL—Unconsolidated gravel, sand, silt, and clay deposited at several levels above and along the former courses of modern rivers and streams.

Phy HENNESSEY FORMATION—An undistinguishable suite of reddish brown, interbedded silty claystones, mudstones, and argillaceous siltstones and very fine-grained sandstones. In areas north of the Arkansas River, into which the Garber Sandstone does not extend, this interval mapped as part of either the Upper Sumner Group or Lower Nippewalla Group of Kansas stratigraphic nomenclature. Only the lower 680 meters of unit are exposed in the map area.

Png NIPPEWALLA GROUP—In the Ponca City Quadrangle consists chiefly of interbedded red to reddish brown, very argillaceous siltstones, very fine-grained sandstones, and very silty claystones and mudstones belonging to the Harper Sandstone of Kansas stratigraphic nomenclature. The Chikaskia Sandstone Member at the base of the Harper Sandstone roughly correlates to the Garber Sandstone of Oklahoma, but is generally located higher in the Lower Permian section. Group mapped north of the Arkansas River, where the Garber pinches out. Only the lower 150 meters of the group are exposed in the map area.

Pgr GARBER SANDSTONE—Generally a reddish brown, fine-grained to very fine-grained, trough-cross-bedded, channel sandstone, with local interbeds of mudstone and shale-pebble conglomerate. Unit pinches out north of the Arkansas River. Thickness from 0 to 10 meters.

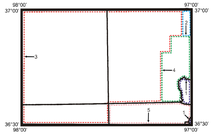
Pwe WELLINGTON FORMATION—Mostly multicolored mudstone, mudshale and silty claystone, with local, thin interbeds of gray, argillaceous limestone and dolostone, and gypsum. Shales commonly concretionary, particularly in the upper third of the unit. Reddish brown, fine-grained to very fine-grained tabular sandstones also occur in the upper parts of unit, locally. At about 35 meters above the base encounter the Fallis Sandstone (Pwef), a medium brown colored, thin bedded to thickly laminated, medium- to fine-grained sandstone. The Fallis is only 1 to 2 meters thick within this quad, and does not extend north of the Arkansas River. Thickness of the Wellington in this area is about 700 meters.

Psg SUMNER GROUP—Within the map area the Sumner Group lithostratigraphically includes all of the Wellington Formation, Garber Sandstone, and lower part of the Hennessey Shale of Oklahoma; and includes the Wellington Formation (lower Sumner) and Ninnescah Shale (upper Sumner) of Kansas. The Ninnescah Shale is texturally similar to the Hennessey Shale. Total thickness of group about 1240 meters.

Pcg CHASE GROUP—Mostly multicolored calcareous, silty clayshales, claystones and mudstones interlayered with prominent, escarpment forming limestone intervals. Important limestones include in ascending order: the Herington Limestone (Pcgh) of the Nolans Formation, a 1.5 meter thick, thin-bedded, argillaceous, carbonate mudstone, the top of which marks the top of the Chase Group; the 3.5 meter thick Winfield Limestone (Pcgw), consists of 2, thin-bedded, cherty carbonate mudstones to wackestones separated by a thin shale interval; and the Towanda Limestone (Pcgt), a 1 meter thick, planar thin-bedded carbonate mudstone. Only the uppermost 30 meters of the group is exposed in the map area.

SYMBOLS

——— — — Unit contact; dashed where approximate



MAP REFERENCES

1. Fisher, H.C. Jr., 1956, Surface geology of the Belford area, Osage County, Oklahoma: University of Oklahoma unpublished M.S. thesis, 102p.

2. Hurthy, A.J., 1955, Surface geology of northeastern Kay County, Oklahoma: University of Oklahoma unpublished M.S. thesis, 72 p.

3. Miser, H.D., and others, 1954, Geologic map of Oklahoma: U.S. Geological Survey and the Oklahoma Geological Survey, 1 sheet.

4. Nolt, C.R. jr., 1955, Geology of southeastern Kay County, Oklahoma: University of Oklahoma unpublished M.S. thesis, 88 p.

5. Shelton, J.W., Bingham, R.H., and Jenkins, W.A., 1979, Geology and mineral resources of Noble County, Oklahoma: Oklahoma Geological Survey Bulletin, 128, 66 p.

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-scale topographic maps dated 1967-1968. Planimetry revised from aerial photographs taken 1973. Projection and 10,000-foot ticks: Oklahoma coordinate system, Lambert conformal conic projection. 1927 North American Datum. 25,000-foot grid ticks based on Oklahoma coordinate system, north zone. 10,000-meter UTM grid ticks, zone 14.

Geologic Map Credits

Geology compiled and field checked by Thomas M. Stanley and Galen W. Miller, 2006-2007. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under Assistance Award Number 06HQAG0028. 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. Cartography and layout prepared by G. Russell Standridge, 2007

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

APPROXIMATE MEAN DECLINATION

GEOLOGIC MAP OF THE THE PONCA CITY 30′ X 60′ QUADRANGLE, GARFIELD, GRANT, KAY, NOBLE, OSAGE, AND PAWNEE COUNTIES, OKLAHOMA

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Cartography by G. Russell Standridge
2007