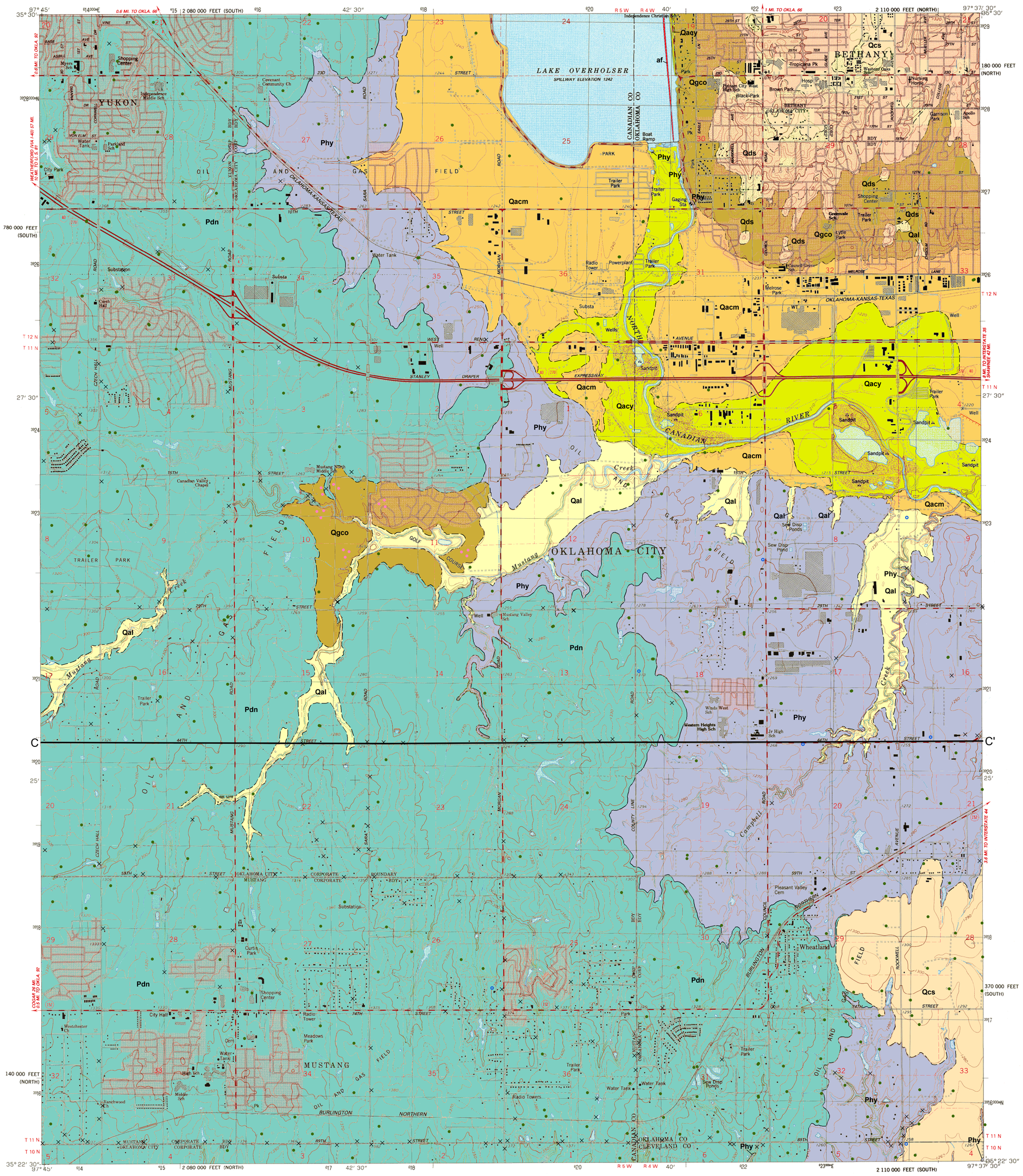
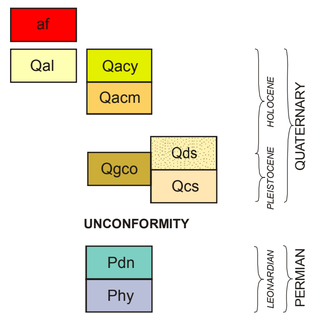
OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

USGS
science for a changing world

Oklahoma Geologic Quadrangle **OGQ-45**
Geologic Map of the Mustang
7.5′ Quadrangle
(previously Open-File Report OF1-2004)



CORRELATION OF MAP UNITS



DESCRIPTION OF UNITS

af ARTIFICIAL FILL–Natural or artificial slumps, cavings, or talus covering formerly exposed areas. Most deposits of this type found around man-made earthen dams and large-scale land-fills. Thickness variable

Qal ALLUVIUM (Holocene)–Clay, silt, sand, and gravel in channels and on flood plains of modern streams. Thickness: 0 to about 25 ft

Qacy ALLUVIUM OF NORTH CANADIAN RIVER (Holocene)–Clay, silt, sand, and gravel in channels and on flood plain of North Canadian River. Area probably subject to frequent flooding. Thickness: generally 0 to 40 ft; rarely more than 40 ft

Qacm ALLUVIUM OF NORTH CANADIAN RIVER (Holocene)–Clay, silt, sand, and gravel on Recent flood plain of North Canadian River about 5 to 10 ft above Qacy. Area rarely subject to flooding. Thickness: unknown, possibly as much as 50 ft

Qds DUNE SAND (Holocene and Pleistocene?)–Fine- to coarse-grained, moderately to poorly sorted sand. Consists mainly of rounded to subrounded quartz grains, with some silt and clay-size material. Probably represents eolian reworking of Pleistocene terrace deposit Qgco. Dunes best seen east of Lake Overholser in sections 19 through 21 and 28 through 33, T. 12 N., R. 4 W. Thickness: 0 to 50 ft

Qcs COVER SAND (Pleistocene)–Poorly sorted fine-grained sand and silt with some clay-size material. Forms extensive, almost flat surfaces 50 or more feet above Canadian River. Thickness: generally 5 to 10 ft, rarely as much as 50 ft

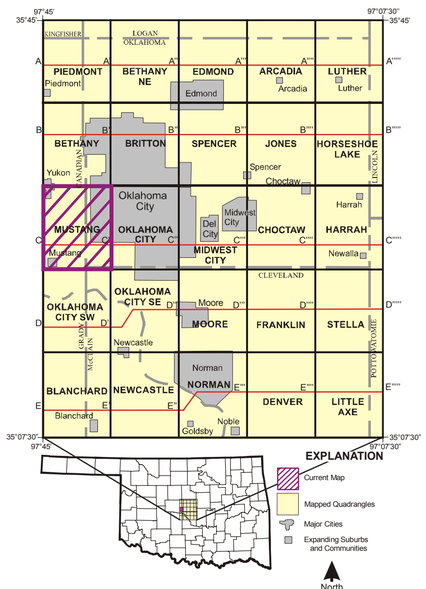
Qgco REMNANTS OF OLDER TERRACE DEPOSITS (Pleistocene)–Clay, silt, sand, and gravel adjacent to the flood plain of the North Canadian River. Sand commonly is medium- to coarse-grained and very light colored; gravel locally consists of concentrations of distally derived pebbles and cobbles, mostly subrounded quartz and quartzite. Base of unit varies from 0 to 20 ft above the modern flood plain of the North Canadian River and ranges in elevation to about 1235 to 1250 ft above sea level. The top of the unit is as much as 65 ft above the modern flood plain and is as high as 1310 ft above sea level. Thickness: 0 to 65 ft

Pdn DUNCAN FORMATION (Permian)–Sandstone, fine- to very fine grained, rarely medium-grained; mudstone and siltstone pebble conglomerate, and minor siltstone and shale. Basal parts of section consisting of poorly indurated moderate reddish orange (10R6/6) to light brown (5YR6/4), thin- to medium-bedded, fine-grained arkosic sandstone that locally fines upward to moderate reddish brown (10YR5/4) to moderate reddish orange (10R6/6) very fine grained sandstone and siltstone. Trough cross-laminations common and well-developed. Locally, this lower part consists of moderate reddish orange (10R6/6) to pale brown (5YR5/2), fine- to medium-grained, poorly sorted, thin- to medium-bedded shaly sandstones interbedded with moderate reddish brown (10YR5/4) to pale olive (10Y6/2) well-laminated to fissile clayshale and moderately indurated, thin-bedded (beds 2 to 5 in. thick) to laminated siltstone to very fine-grained shaly sandstone. Shale intervals as thick as 3 ft; appear to grade laterally into siltstone and very fine-grained sandstone intervals. Up section, Duncan consists of interbedded or intercalated friable sandstones and moderately indurated mudstone- and siltstone-pebble conglomerates. Sandstones are massive, rarely exhibiting internal bedding; are moderate reddish brown (10YR5/4 and 10R4/6), moderate reddish orange (10R6/6), to pale brown (5YR5/2) in color; and are texturally fine- to very fine grained quartz-rich sandstones. Iron oxide is predominant cement, although calcite cement does occur in patches. Sandstones may laterally grade into moderately indurated siltstone- and/or shale-pebble conglomerates. Conglomerates consist of indurated siltstone and shale clasts, set within a fine-grained, quartz-rich sandstone matrix; typically pale brown (5YR5/2) in color; well cemented with calcite. Clasts may be imbricated or loosely oriented into planar crossbeds. Locally, greenish gray (5GY6/1), trough cross-bedded bands, beds, and irregular splotches occur in sandstones, siltstones and shales; burrows common. Thickness: may be as much as 400 ft based on cross section, but basal contact is poorly constrained, top not exposed

Phy HENNESSEY FORMATION (Permian)–Muddy siltstone, silty shale, and minor very fine grained sandstone, mostly moderate reddish brown (10R4/6) to light brown (5YR5/6), locally banded with yellowish gray (5Y7/2) and light greenish gray (5GY8/1) beds. Very poorly exposed in urban areas, poorly exposed in rural areas. Contains common iron-reduction spots, light greenish gray (5GY6/1 to 5GY8/1) to pale green (10G6/2) to very pale green (10G8/2), as large as 5 in. in diameter, and bands the same color subparallel to bedding. Shale typically unstratified and highly fractured to fissile; rarely with small-scale slickensides that are evidence of paleosol development. Siltstone moderately to well stratified. Sandstone locally cross-stratified on large and small scale, uncommonly trough-cross-stratified and/or ripple marked. Trace fossils and shale rip-up clasts very rare. Sandstone rarely forms channelform deposits. Shale outcrops locally weather to blocky, very fractured, or "hackly" appearance; form bare, rounded outcrops. In other places, shale weathers to muddy soil with abundant small calcareous nodules. Calcite veinlets uncommon. Siltstone and sandstone exhibit platy to flaggy weathering. Thickness: about 700 ft based on cross section, and thickens to west

SYMBOLS

- Unit contact; dashed where approximate
- Scarp in alluvium of North Canadian River
- Outcrop, geologic observation
- Petroleum well. Includes oil, gas, oil and gas, dry, service (water supply or injection), junked and abandoned, unknown. Modified from Natural Resources Information System database
- Municipal water well
- Exotic (quartz, quartzite) pebbles and cobbles



SCALE 1:24000

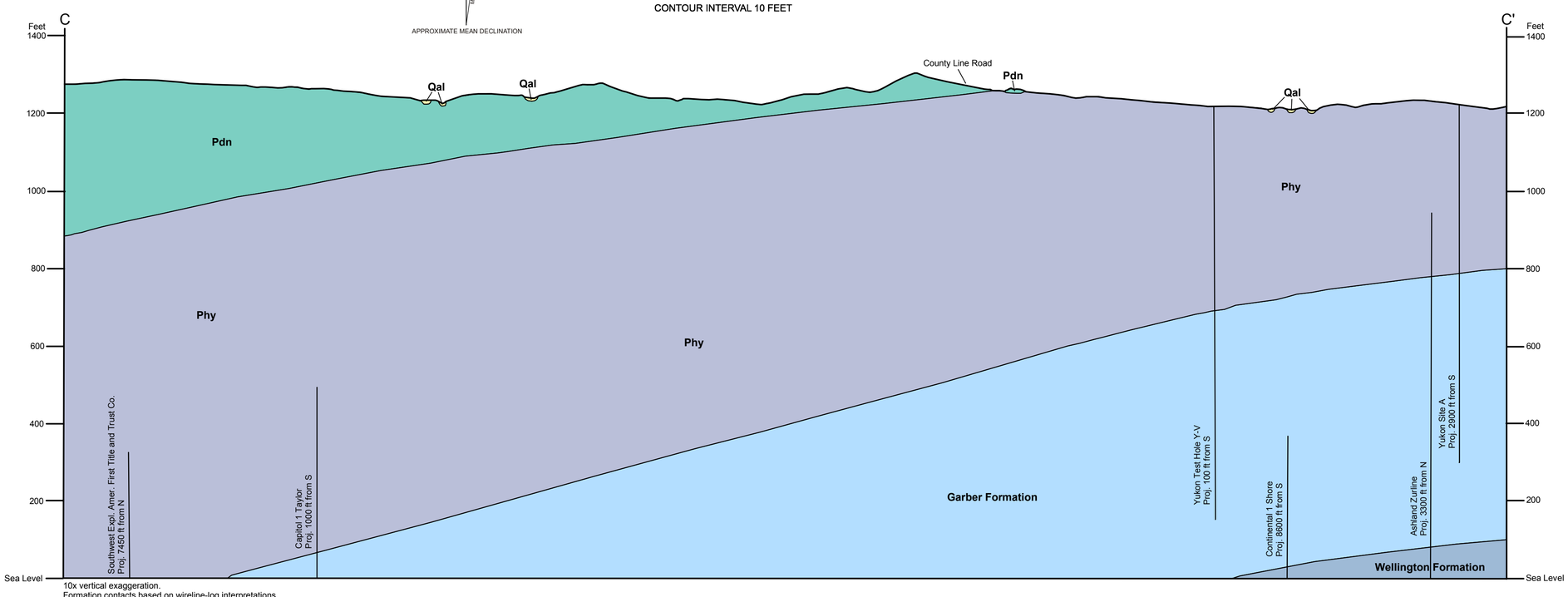
1 MILE .5 0 1

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

APPROXIMATE MEAN DECLINATION



10x vertical exaggeration.
Formation contacts based on wireline-log interpretations by N.H. Suneson and surface mapping by the authors.
Vertical lines show logs used in interpretations.

GEOLOGIC MAP OF THE MUSTANG 7.5′ QUADRANGLE, OKLAHOMA, CANADIAN, AND CLEVELAND COUNTIES, OKLAHOMA

Neil H. Suneson and Thomas M. Stanley

2000

Base Map Credits

The base map was compiled by the U.S. Geological Survey by photogrammetric methods from aerial photographs taken 1964. Field checked 1966. Revised from aerial photographs taken 1984. Field checked 1985. Map edited 1986. Universal Transverse Mercator (UTM) projection, 1927 North American Datum. 10,000-foot grid ticks based on Oklahoma coordinate system, north and south zones. 1,000-meter UTM grid, zone 14.

Geologic Map Credits

Geology by Neil H. Suneson and Thomas M. Stanley, 1999-2000. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under Assistance Award Number 99HQAG0137. 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. Published originally as Open-File Report 3-2000 as an author-prepared, black-and-white paper map. Digitally reproduced in color as Open-File Report OF1-2004. Map revised and published as OGQ-45. Cartography and layout prepared by G. Russell Standridge, 2002.