OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

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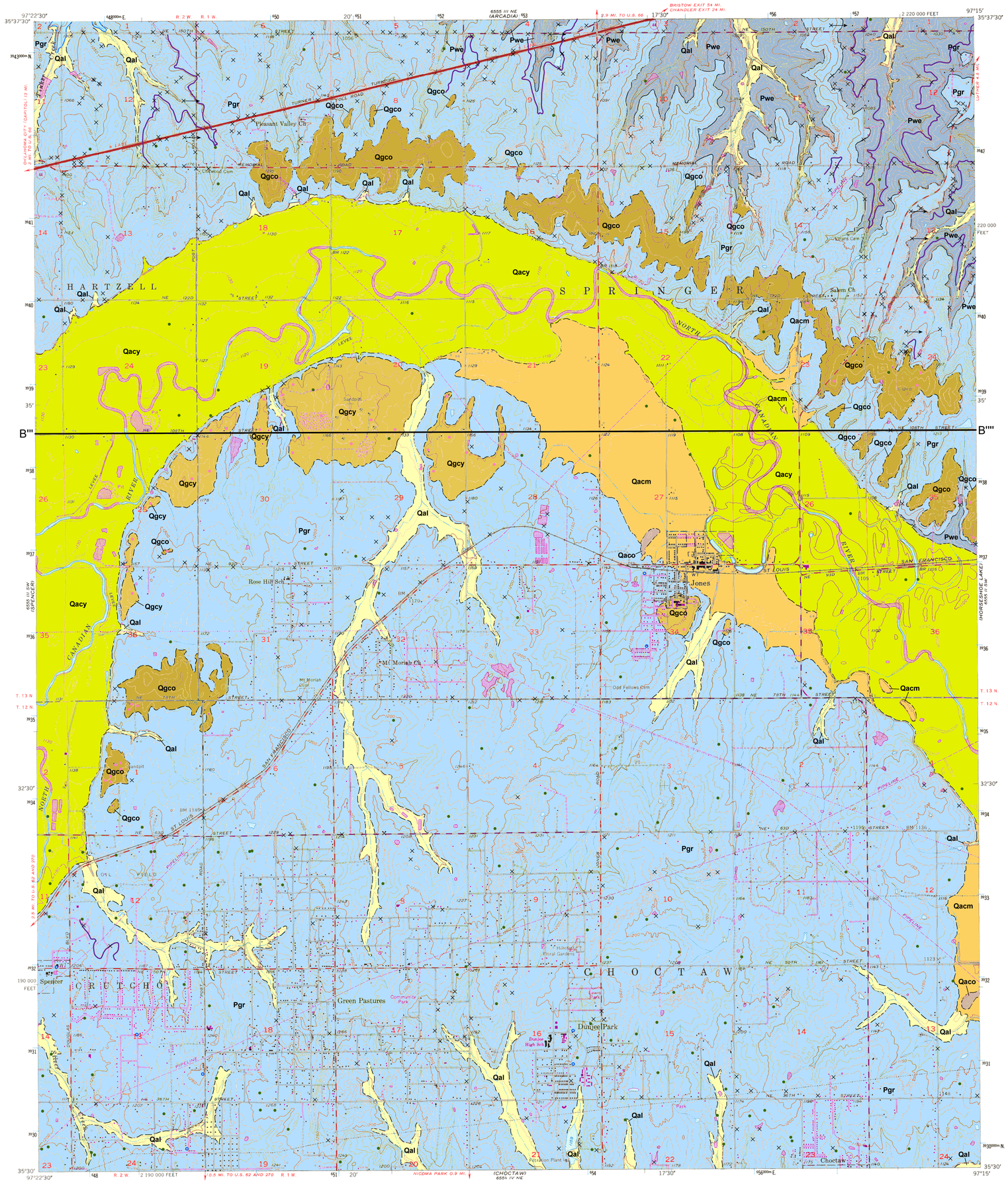
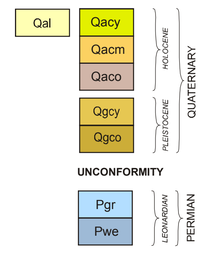
Oklahoma Geologic Quadrangle **OGQ-51**
**Geologic Map of the Jones**
**7.5′ Quadrangle**
(previously Open-File Report OF7-2004)




## CORRELATION OF MAP UNITS




## SYMBOLS

- Unit contact; dashed where approximate
- Mappable bed
- Outcrop, geologic observation
- Outcrop, bearing of paleocurrent direction
- Outcrop, location used for composite measured section
- Exotic (quartz, quartzite) pebbles and cobbles
- 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

## DESCRIPTION OF UNITS

**Qal** ALLUVIUM (Holocene)–Clay, silt, sand, and gravel in channels and on flood plains of modern streams. Includes terrace deposits of similar composition located directly above and adjacent to modern channels and flood plains. Thickness: 0 to about 30 ft

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

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

**Qaco** ALLUVIUM OF NORTH CANADIAN RIVER (Holocene and/or Pleistocene(?))–Clay, silt, sand, and gravel in valley of the North Canadian River and about 10 ft above Qacm. Present only as small remnants. Thickness: unknown, at least 20 ft

**Qgcy** REMNANTS OF YOUNGER 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 about 15-20 ft above Qacm and ranges in elevation from about 1135 ft to 1160 ft above sea level. The base of the unit increases in elevation away from the river. The top of the unit is as much as 70 ft above Qacm (as high as 1200 ft above sea level). Present only south of the North Canadian River. Thickness: 0 to 30 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 is about 30-100 ft above the modern flood plain and ranges in elevation from 1140 ft to 1190 ft above sea level. Top of the unit is as much as 130 ft above the modern flood plain and is as high as 1260 ft above sea level. Unit includes small amount of sand and gravel washed down into small north-flowing streams. Present only on north side of the North Canadian River. Thickness: 0 to 40 ft

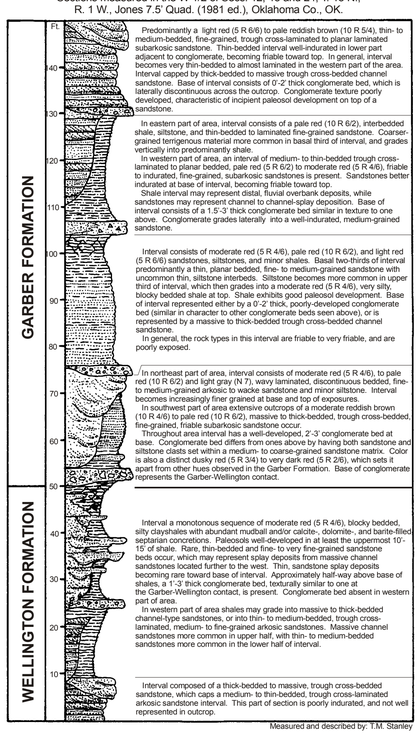
**Pgr** GARBER FORMATION (Permian)–Sandstone, mostly fine-grained to less commonly very fine to medium-fine-grained; appears to be very fine grained near base; moderate reddish brown (10R4/6), moderate reddish orange (10R6/6), moderate red (5R5/4), light brown (5YR5/6), and dark yellowish orange (10YR6/6); minor sandstone- and siltstone-pebble conglomerate and/or breccia, dolomite conglomerate and/or breccia, siltstone, and shale. Sandstone typically porous and friable. Commonly weathers to smooth, rounded outcrops; locally with platy to flaggy to rarely slabby appearance. Locally weathers to hard, dark-colored (grayish black [N2]) beds completely cemented with hematite, calcite, and/or silica. Dark-colored sandstone blocks locally form lag deposit over weathered outcrops. Large- and small-scale crossbeds, trough crossbeds common; many outcrops characterized by inclined beds and channelform deposits, although plane-parallel stratification also present. Shale and/or siltstone rip-up clasts uncommon; burrows extremely rare; one plant fossil observed. Sandstone locally color-banded (e.g. moderate reddish brown (10R4/6), grayish red purple (5RP4/2), and grayish yellow green (5GY7/2)) or with mottled appearance. Small calcareous iron-oxide spheres occur locally on weathered surfaces. Sandstone locally contains calcite-, dolomite-, and/or barite-cemented septarian nodules. Circular iron-reduction spots very rare. Sandstone, siltstone, and dolomite conglomerate and breccias appear to be of two types; one is clearly sedimentary, the other appears to be diagenetic and may represent incipient paleosol development on a sand. Conglomerates and breccias common near base of formation. A widespread moderate red (5R6/2) to pale red (5R6/2) 3-, to rarely 7-ft-thick conglomerate bed is also present near top of formation. The bed consists of coarse-granule to pebble-size siltstone, shale, and dolomite(?) clasts in a medium- to coarse-grained sandstone matrix. Siltstone and shale sandy, color-banded (e.g., moderate reddish brown (10R4/6) and yellowish gray (5Y7/2)), stratified to unstratified, and with uncommon iron-reduction spots as large as 2 in. in diameter. Typically soft, weather to "badlands"- type topography. Locally contain abundant septarian nodules similar to those found in sandstone. Siltstone and shale common near base and top of formation. In places, siltstone and shale contain evidence of paleosol development such as blocky weathering, fractures with fracture surfaces marked by small slickensides, through-going curved fractures, and calcareous concretions. South of the North Canadian River and north of NE 50th Street Garber sandstones typically are deeply weathered and large areas are covered with a sandy soil, some of which may include a thin veneer of wind-blown sand. Thickness: about 600 ft, based on cross section

**Pwe** WELLINGTON FORMATION (Permian)–Sandstone, mostly fine- to very fine grained, moderate orange pink (10R7/4) to moderate reddish brown (10R4/6), moderate reddish orange (10R6/6) to pale red (5R6/2); siltstone, typically color-banded consisting of, for example, pale reddish brown (10R5/4) and light greenish gray (5GY8/1); siltstone- and dolomite-breccia and conglomerate; and minor shale, moderate reddish brown (10R4/6) and light greenish gray (5GY8/1). Sandstone mostly porous and friable, locally with variable amounts of hematite and calcite cement. Sedimentary structures include large- and small-scale crossbeds, trough crossbeds, locally steeply inclined stratification and less common channelform features. In places, weathers to "slickrock" appearance. Sandstone locally color-banded and multicolored. Siltstone commonly contains abundant concretions and septarian nodules with conspicuous calcite, dolomite and possible barite crystals lining radiating fractures. Siltstone and dolomite breccias and conglomerates similar to those in overlying Garber Formation; some clearly are sedimentary in origin and may represent slightly reworked paleosols; others may represent autochthonous paleosols. Shale typically is color-banded.

Principal difference between Garber and Wellington Formations is generally coarser grain size of Garber, although lower part of Garber appears to contain finer-grained sandstones and more siltstone and shale than middle part. In the northeastern part of the Jones quadrangle, the top of the Wellington consists of a widespread shale at least 20 ft thick that is capped by a thick, well-developed paleosol horizon. Thickness: 105 ft, base not exposed

## Composite Profile 'A' Across The Wellington-Garber Contact

Sections measured in the W 1/2 of Secs. 12, 13 and 24, T. 13 N., R. 1 W., Jones 7.5′ Quad. (1981 ed.), Oklahoma Co., OK.




Predominantly a light red (5 R 6/6) to pale reddish brown (10 R 5/4), thin- to medium-bedded, fine-grained, trough cross-laminated to planar laminated subarkosic sandstone. Thin-bedded interval well-indurated in lower part adjacent to conglomerate, becoming friable toward top. In general, interval becomes very thin-bedded to almost laminated in the western part of the area. Interval capped by thick-bedded to massive trough cross-bedded channel sandstone. Base of interval consists of 0'-2' thick conglomerate bed, which is laterally discontinuous across the outcrop. Conglomerate texture poorly developed, characteristic of incipient paleosol development on top of a sandstone.

In eastern part of area, interval consists of a pale red (10 R 6/2), interbedded shale, siltstone, and thin-bedded to laminated fine-grained sandstone. Coarser-grained terrigenous material more common in basal third of interval, and grades vertically into predominantly shale.

In western part of area, an interval of medium- to thin-bedded trough cross-laminated to planar bedded, pale red (5 R 6/2) to moderate red (5 R 4/6), friable to indurated, fine-grained, subarkosic sandstones is present. Sandstones better indurated at base of interval, becoming friable toward top.

Shale interval may represent distal, fluvial overbank deposits, while sandstones may represent channel to channel-splay deposition. Base of interval consists of a 1.5'-3' thick conglomerate bed similar in texture to one above. Conglomerate grades laterally into a well-indurated, medium-grained sandstone.

Interval consists of moderate red (5 R 4/6), pale red (10 R 6/2), and light red (5 R 6/6) sandstones, siltstones, and minor shales. Basal two-thirds of interval predominantly a thin, planar bedded, fine- to medium-grained sandstone with uncommon thin, siltstone interbeds. Siltstone becomes more common in upper third of interval, which then grades into a moderate red (5 R 4/6), very silty, blocky bedded shale at top. Shale exhibits good paleosol development. Base of interval represented either by a 0'-2' thick, poorly-developed conglomerate bed (similar in character to other conglomerate beds seen above), or is represented by a massive to thick-bedded trough cross-bedded channel sandstone.

In general, the rock types in this interval are friable to very friable, and are poorly exposed.

In northeast part of area, interval consists of moderate red (5 R 4/6), to pale red (10 R 6/2) and light gray (N 7), wavy laminated, discontinuous bedded, fine- to medium-grained arkosic to wacke sandstone and minor siltstone. Interval becomes increasingly finer grained at base and top of exposures.

In southwest part of area extensive outcrops of a moderate reddish brown (10 R 4/6) to pale red (10 R 6/2), massive to thick-bedded, trough cross-bedded, fine-grained, friable subarkosic sandstone occur.

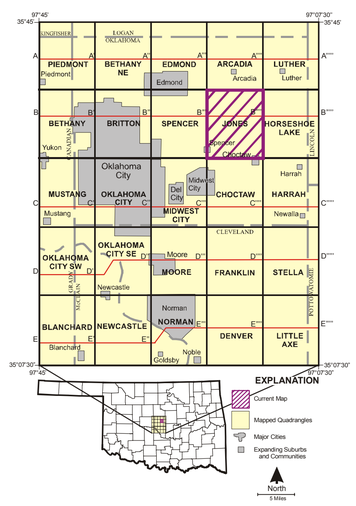
Throughout area interval has a well-developed, 2'-3' conglomerate bed at base. Conglomerate bed differs from ones above by having both sandstone and siltstone clasts set within a medium- to coarse-grained sandstone matrix. Color is also a distinct dusky red (5 R 3/4) to very dark red (5 R 2/6), which sets it apart from other hues observed in the Garber Formation. Base of conglomerate represents the Garber-Wellington contact.

Interval a monotonous sequence of moderate red (5 R 4/6), blocky bedded, silty clayshales with abundant mudball and/or calcite-, dolomite-, and barite-filled septarian concretions. Paleosols well-developed in at least the uppermost 10'-15' of shale. Rare, thin-bedded and fine- to very fine-grained sandstone beds occur, which may represent splay deposits from massive channel sandstones located further to the west. Thin, sandstone splay deposits becoming rare toward base of interval. Approximately half-way above base of shales, a 1'-3' thick conglomerate bed, texturally similar to one at the Garber-Wellington contact, is present. Conglomerate bed absent in western part of area.

In western part of area shales may grade into massive to thick-bedded channel-type sandstones, or into thin- to medium-bedded, trough cross-laminated, medium- to fine-grained arkosic sandstones. Massive channel sandstones more common in upper half, with thin- to medium-bedded sandstones more common in the lower half of interval.

Interval composed of a thick-bedded to massive, trough cross-bedded sandstone, which caps a medium- to thin-bedded, trough cross-laminated arkosic sandstone interval. This part of section is poorly indurated, and not well represented in outcrop.

Measured and described by: T.M. Stanley

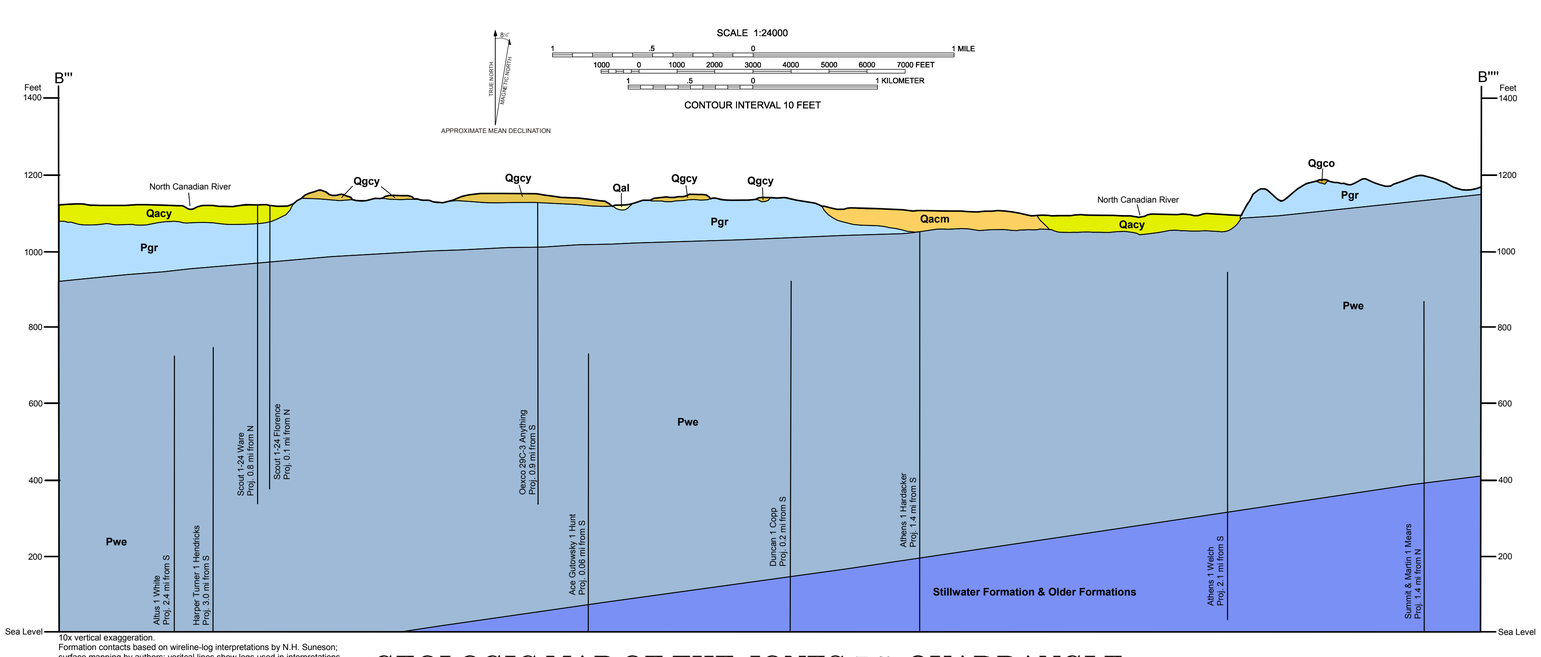



Base Map Credits

The base map was compiled by the U.S. Geological Survey. Topography from aerial photographs by Kelsh plotter and by planetable surveys 1955. Areal photographs taken 1954. Revisions from aerial photographs taken 1969 and 1975. Photoinspected 1981. Universal Transverse Mercator (UTM) projection. 1927 North American Datum. 10,000-foot grid ticks based on Oklahoma coordinate system, north zone. 1,000-meter UTM grid, zone 14.

Geologic Map Credits

Geology by Thomas M. Stanley and Neil H Suneson, 1998-1999. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under Assistance Award Number 98HQAG2060. 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 3-99 as an author-prepared, black-and-white paper map. Digitally reproduced in color as Open-File Report OF7-2004. Map revised and published as OGQ-51. Cartography and layout prepared by G. Russell Standridge, 2002.




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

# GEOLOGIC MAP OF THE JONES 7.5′ QUADRANGLE, OKLAHOMA COUNTY, OKLAHOMA

Thomas M. Stanley and Neil H. Suneson

1999