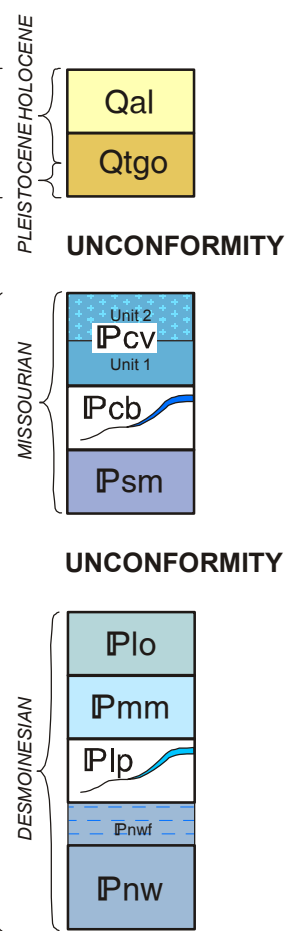


CORRELATION OF MAP UNITS



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.
- Qtgo** REMNANTS OF OLDER TERRACE DEPOSITS (Pleistocene)—Clay, silt, sand, and gravel adjacent to the flood plain of the Arkansas River. Sand commonly is medium- to rarely coarse-grained and very light colored; when present, gravel locally consists of concentrations of local and distally derived, subrounded pebble and cobble-sized clasts of limestone and dolomite composition. The upper third to half of the deposit exhibits signs of aeolian reworking and modification that suggests a prevailing northeast wind direction throughout the Holocene. Thickness: 0 to as much as 100 ft.
- Pcv** COFFEYVILLE FORMATION (Pennsylvanian, Missourian)—In the Jenks quad, formation consists of two informal units:

unit 2 (Pcv₂), consists predominantly of planar, thin- to locally medium-bedded, fine-grained sandstone with intervals of interbedded mudstone and siltstone between major sandstone intervals. Sandstones are yellowish gray (5Y7/2) to grayish orange (10YR7/4), but weather a distinct dark yellowish orange (10YR6/6) to light brown (5YR5/6) color, are friable to moderately indurated, planar bedded with bedding ranging from 1"-14" thick, although locally some beds may be up to 24" thick; grain texture is fine, although it may be medium-grained to rarely coarse-grained near base of sandstone sequences; in general, sandstones are coarser grained and thicker bedded at the base of each interval, and may contain a well-developed chert-pebble conglomerate; cement is a weak silica to iron oxide and clay, although rare calcareous cement does occur; current lineations and current ripples (including linguoid ripples) common. The rocks contain variable amounts of horizontal trace fossils, and a *Calamites* fossil was also observed.

Mudstones within unit 2 are light olive gray (5Y6/1), weakly laminated to blocky bedded, and may contain grayish red purple (6R4/2) nodular iron concretions. Discontinuous intervals of a yellowish gray (5Y7/2), laminated siltstone may occur locally within mudstones, and just below contacts with major sandstone intervals. Thickness of unit 2 about 50 ft, top not exposed.

unit 1 (Pcv₁), primarily a shale dominated unit. Lower 5 to 10 ft, just above the Checkerboard Limestone, consists of a dark gray (N5) to medium dark gray (N4) to olive black (5Y2/1), well-laminated to fissile, phosphatic clayshale, which grades upward into a yellowish gray (5Y7/2), light olive gray (5Y5/2), olive gray (5Y4/1), to medium gray (N5), blocky bedded, concretionary, silty claystone to mudstone with local occurrences of interbedded sandstone; concretions are dark gray to yellowish orange (10YR6/6) to light brown (5YR5/6), nodular to discontinuously bedded, and primarily composed of hematite; sandstones are grayish orange (10YR7/4) to grayish orange pink (5YR7/2), friable to weakly indurated, thin-bedded, fine to less frequently, medium-grained; individual sandstone layers typically 2 in to 3 ft thick, although some may attain a thickness of over 8 ft in some exposures. Overall thickness about 35 ft thick.

Pcb CHECKERBOARD LIMESTONE (Pennsylvanian, Missourian)—The Checkerboard Limestone is medium gray (N5), greenish gray (5Y6/1), to dark greenish gray (5Y4/1), but weathers to a distinct moderate yellowish brown (10YR5/4) to dark yellowish orange (10YR6/6) color. Texturally, it is a skeletal to whole-fossil carbonate mudstone to concretionary bedding is commonly absent in the formation at most exposures, although thin, planar to wavy beds of about 2" to 3" thick have been observed locally, occurring above the main, basal bed. Fossils include crinoid stems, corals, and brachiopods. Thin calcite veins (< 1 cm wide), are present in some exposures. Thickness is consistent 1 ft.

Psm SEMINOLE FORMATION (Pennsylvanian, Missourian)—Formation consists of a lower sandstone interval called the Tulsa Sandstone, and a basal and upper suite of interbedded, laminated, concretionary, silty clayshales, mudshales and siltstones.

In the Jenks quad, the base of the Tulsa Sandstone occurs between 6 to 15 ft above the base of the formation. The sandstone consists of a pale yellowish orange (10YR6/6) to light brown (5YR5/6), grayish red (5R4/2), very pale orange (10YR8/2), to yellowish gray (5Y7/2), with dark yellowish orange (10YR6/6) spots, is weakly to moderately indurated, thin- to medium-bedded, very fine- to fine-grained argillaceous and micaceous sandstone; sandstone mostly siliceous, but may have a weak calcite cement within some bedding intervals. Unit appears as a series of stacked channel sequences, where an individual sequence may vary between 2 to 4 ft thick, and which are separated by a 6"-12" thick interval of interminated calcareous, silty clayshale and siltstone; bedding at base of each sequence is thicker (varying from 12"-24") and has channel-form lower surfaces, which grade up into a thinner (3"-5" thick), planar bedded sandstone sequences. Horizontal burrows and tool marks common along the base of beds, while tabular cross-bedding evident within bed interiors. Beds often appear pitted due to the weathering out of burrow filling.

A dark yellowish orange (10YR6/6), pale yellowish orange (10YR8/6), to light olive gray (5Y 6/1), laminated, slightly silty, concretionary clayshales interminated with mudshales and siltstones occur below the Tulsa Sandstone. Siltstone intervals are ripple-marked, and also have abundant horizontal trace fossils. Concretionary material occurring as discontinuous lenses and beds within clayshales that vary from 1"-6" thick.

Total thickness of the Seminole Formation about 85 ft.

Plo LOST BRANCH FORMATION (Pennsylvanian, Desmoinesian)—Poorly exposed, except for the Glenpool Limestone bed. Overall, a light brown (5YR6/4) to pale yellowish brown (10YR6/2), locally medium light gray (N6), laminated, slightly calcareous, micaceous, silty clayshale. Basal 3 ft of formation, just above the Dawson Coal, consists of a medium dark gray (N4) to dark gray (N3), well-laminated to fissile, phosphatic mudshale to clayshale called the Nuyaka Creek shale bed. The top of the formation is marked at the top the Glenpool Limestone, which is a dusky yellow (5Y6/4) to pale olive (10Y6/2), 1-1.5 ft thick, laminated, wavy-bedded packstone, grading upward into a whole fossil carbonate mudstone wackestone, brachiopods, gastropods, and crinoid debris the most common fossils.

Thickness of the Lost Branch ranges between 40 and 65 ft.

Pmm MEMORIAL FORMATION (Pennsylvanian, Desmoinesian)—May consist of four members, these are in descending order: 1, the uppermost Dawson Coal; 2, an unnamed upper shale interval; 3, the Jenks Sandstone; and 4, an unnamed lower shale interval of variable thickness. Overall thickness of the formation varies from 60 ft thick east of the Arkansas River, to as much as 110 ft thick west of the Arkansas. Variable thickness dependant on the thickness of the Jenks Sandstone.

Dawson Coal: Unobserved in map area, but has been reported in the area by Bennisson and others (1972), and Oakes (1952). It represents the top of the formation.

unnamed upper shale interval, consists of a light olive brown (5Y5/6), grayish orange pink (5Y7/2), to grayish yellow (5Y5/4), interbedded sandy, weakly calcareous mudstone, and friable, fine-grained sandstone. Sandstones may have light brown (5YR6/4) oxide spots. Mudstone blocky bedded, with numerous concave fractures and slickensides that are indicative of paleosol development. Sandstones generally laminated, occurring as discontinuous beds and lenses within mudstones; sandstone cement most likely clay or a weak iron-oxide. Thickness of interval about 50 ft thick.

Jenks Sandstone, yellowish gray (5Y7/2), pale yellowish brown (10YR6/2), dark yellowish orange (10YR6/2), locally light brown (5YR5/6) to pale brown (5YR5/2), friable to weakly indurated, thin- to medium-bedded, fine-grained, locally medium-grained at base, micaceous sandstone. Lower third of sandstone thin- to medium-though cross-bedded, with bedding varying from 3"-16" thick; rest of interval thinner bedded (with beds ranging from 0.5" to 4" thick, averaging closer to 2" thick), and having numerous shale partings and interbeds (flaser bedding). Clay-ball clasts, and flute casts common throughout member; some tabular cross-bedding in middle of unit. Thickness of the Jenks Sandstone varies from as little as 8 ft in the middle of the quad to as much as 30 ft thick west of the Arkansas River.

unnamed lower shale interval, consists of a light olive gray (5Y6/1) to greenish gray (5Y6/1), poorly laminated, calcareous slightly silty clayshale, poorly exposed. Thickness of interval varies from 2 to 8 ft.

Pip LENAPAH LIMESTONE (Pennsylvanian, Desmoinesian)—Represented by the Eleventh Street Limestone, and to a dark yellowish brown (10YR6/2) to dark yellowish orange (10YR6/6), skeletal to whole fossil wackestone to packstone, to locally a grainstone texture; crinoid columns and plates are the most dominant fossil, bryozoans, brachiopods, and bivalves also occur.

Thickness of the Eleventh Street Limestone no more than 3 ft.

Pnw NOWATA FORMATION (Pennsylvanian, Desmoinesian)—Can be segregated into two informal units, a lower shale interval, and an upper, interbedded limestone and shale interval termed the Nowata flagstones.

Lower shale interval consists of medium gray (N5), light gray (N7), and light brown (5YR5/6), well laminated to locally fissile, slightly silty concretionary clayshales, with rare siltstone and very fine-grained sandstone; nodular, hematite concretions common.

The Nowata flagstone interval is less than 55 ft of interbedded shale and limestone; the top of which stratigraphically occurs about 15 ft below the top of the formation. Limestones are a light olive gray (5Y5/2 to 5Y6/1) to light brown (5YR6/4), laminated to thin-bedded, argillaceous, carbonate mudstones; bedding is even and planar with most beds having uniform thickness of between 0.5"-3.0"; some limestones beds exhibit internal parallel lamination to possibly a very low-angle cross-lamination. In some exposures, the carbonate mudstones display a prominent rectangular fracture pattern, with fractures sometimes being curved. The interbedded shales are usually a light olive gray (5Y5/2), laminated to well-laminated, calcareous clayshale; shale intervals range between 4"-12" thick, except toward the base of the unit where shale intervals may attain a thickness of 10 ft or more.

Further to the south, the shales of the Nowata Formation grade into shale and sandstone suites of the Wewoka Formation.

Only the uppermost 100 ft of the formation is exposed in the Jenks quad.

Oologah Formation (Pennsylvanian, Desmoinesian)—A thin- to medium-bedded, skeletal carbonate mudstone to wackestone; found only in the subsurface.

Labette Formation (Pennsylvanian, Desmoinesian)—A laminated, very silty to sandy, micaceous, concretionary clayshales, interbedded with fine-grained sandstones near top; found only in the subsurface.

Fort Scott Formation (Pennsylvanian, Desmoinesian)—Thin to medium, wavy bedded whole-fossil wackestones and mudstones, interbedded with fissile, phosphatic clayshale; found only in the subsurface.

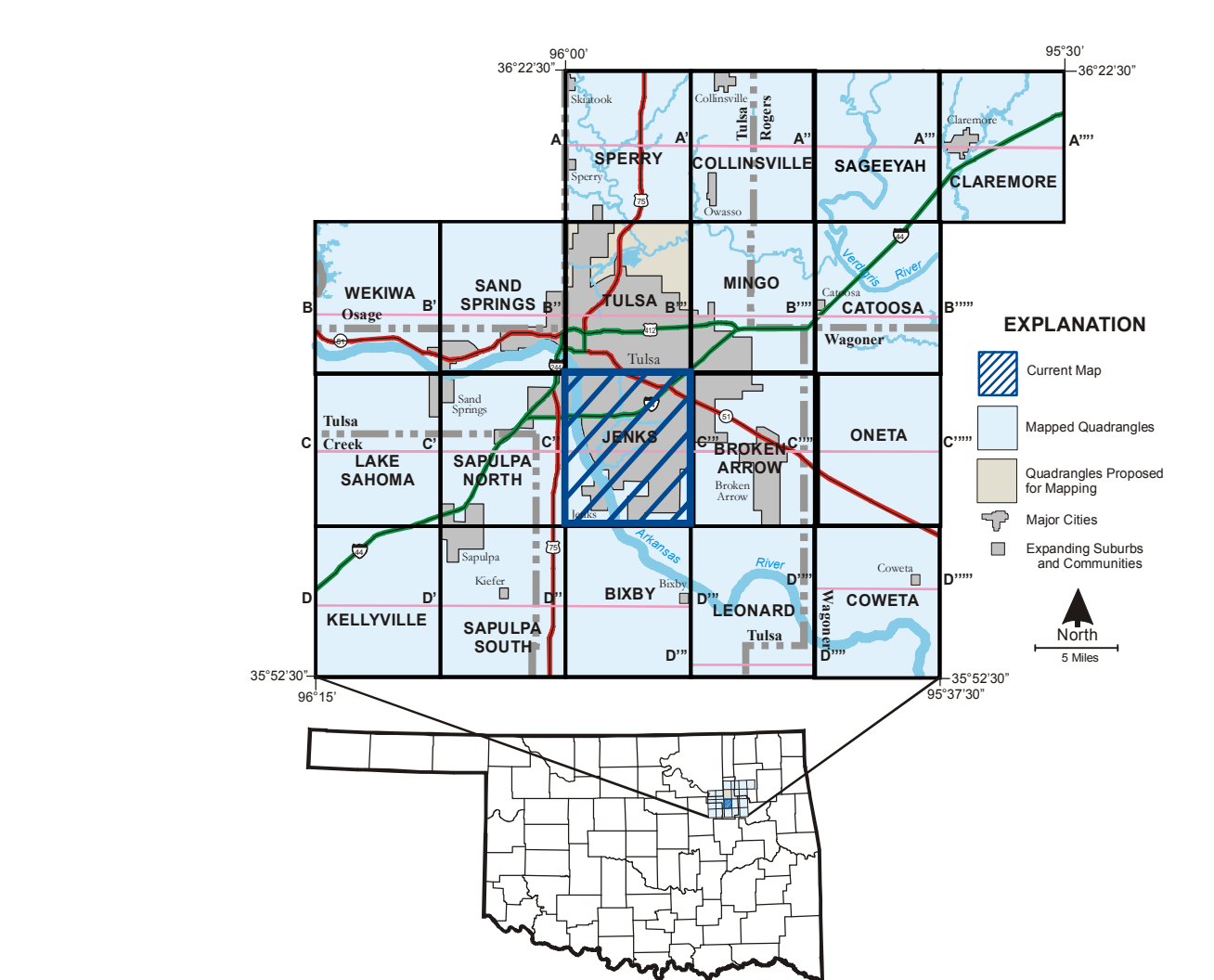
Senora Formation (Pennsylvanian, Desmoinesian)—Complex sequence of silty and concretionary clayshale, interbedded with very fine-grained sandstones and siltstones; includes the Verdigris Limestone; found only in the subsurface.

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Oakes, M.C., 1952, Geology and mineral resources of Tulsa County, Oklahoma (includes parts of adjacent counties): Oklahoma Geological Survey Bulletin, 69, 234 p.

*Detailed descriptions only include mappable units observed in the field. Formal member and bed names are indicated by capitalization (i.e., Glenpool Limestone), while informal names are given in lowercase (i.e., Nowata flagstone). Color of units based on fresh surfaces, unless stated otherwise.



GEOLOGIC MAP OF THE JENKS 7.5' QUADRANGLE, TULSA COUNTY, OKLAHOMA

Thomas M. Stanley and Julie M. Chang
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