

A stratigraphic column diagram. At the top is a red box labeled 'af'. Below it is a bracketed section labeled 'HOLOCENE' containing four boxes: 'Qal' (yellow), 'Qao' (yellow), 'Qts' (brown), and 'Qtg' (orange). To the right of this section is a large green box labeled 'Qds'. To the right of 'Qds' is an orange box labeled 'Qcs'. A bracket on the left side of the 'HOLOCENE' section is labeled 'HOLOCENE'.

UNCONFORMITY

Stratigraphic column of the Pangean supercontinent showing major tectonic provinces. The column is divided into three main sections: GONDWANA (top), LAURASIA (middle), and GONDWANA (bottom). The GONDWANA section includes Pdc, Pbl, Pfp, Pdn, and Phyr. The LAURASIA section includes Phy, Pgr, Pwe, and Psw. The GONDWANA section includes Psw, Pcgw, and Pwof. The Pangean supercontinent is shown as a single block with a diagonal hatched pattern.

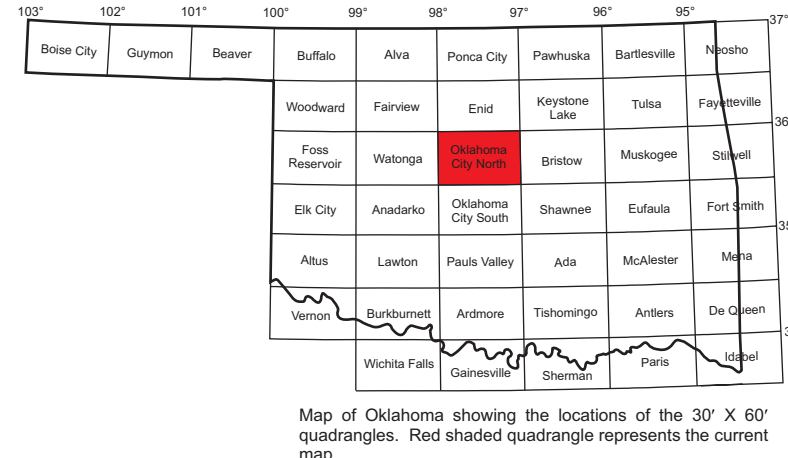
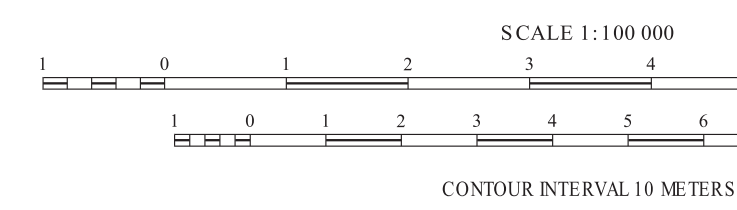
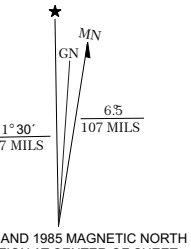
DESCRIPTION OF UNITS

af	ARTIFICIAL FL1 - Natural or artificial built, slumps, and talings covering formerly exposed areas. Most deposits of this type found around mud-made earthen dams and large-scale landfills. This unit is not mapped.	
Qal	ALLUVIUM (Holocene) - Unconsolidated deposits consisting of locally derived clay, silt, sand, and rarely gravel-sized sedimentary material, found in channels and on flood plains of major streams. Includes terrace deposits of similar composition located directly above and adjacent to modern channels and flood plains. Locally, these deposits may be as thick as 10 meters. In the Carson and North Canadian River systems, also represent areas of frequent flooding. Thickness: 0 to about 12 meters.	
Qac	OLDER ALLUVIUM (Holocene) - Unconsolidated deposits consisting of locally derived clay, silt, sand, and rarely gravel-sized sedimentary material, represent slightly older terrace deposits than those described in modern channels and flood plains. These deposits are typically composed of alluvial deposits of major drainage systems. Areas rarely subject to flooding. Thickness: unknown, possibly as much as 15 meters.	
Qds	DUNE SAND (Holocene and Pleistocene) - Fine- to coarse-grained, moderately to poorly-sorted, unconsolidated sand formed inside dune fields and ridges. Consists mainly of rounded to subrounded quartz grains intermixed with silt- and clay-size material. Dune features best found on the eastern side of major drainage systems. Locally, these deposits may be as thick as 10 meters. Pleistocene and younger fluvial terrace deposits. Thickness: typically 0 to 12 meters.	
Qcs	COVER SAND (Holocene and/or Pleistocene) - Unconsolidated, very fine-grained sand to coarse-grained silt and clay, moderately to poorly-sorted. Consists mainly of rounded to subrounded quartz grains, with abundant silt- and clay-size material. Forms extensive nearly flat topographic surfaces as much as 10 ft above modern channels. Locally, these deposits may be as thick as 9 meters, averages closer to 1.5 meters thick.	
Qts	OLDER TERRACE SANDS (Holocene and Pleistocene) - Unconsolidated deposits consisting mainly of locally derived sand, silt- and clay-size sedimentary materials with minor amounts of locally derived sand- and gravel-sized material. Sand commonly medium- to fine-grained, subangular to subrounded, poorly sorted to very poorly sorted, and usually having a light brown to tan to brown color. Dune deposits are typically more massive, better-sorted, and Pleistocene and younger fluvial terrace deposits. Thickness: from thin veneers to as much as 9 meters, averages closer to 1.5 meters thick.	
Qtg	OLDER TERRACE GRAVELS (Pleistocene) - Unconsolidated deposits consisting mostly of distally derived sand and gravel-sized sedimentary materials, with minor quantities of medium- to large- and rarely clay-sized material. Sand commonly medium- to coarse-grained, subangular to subrounded, and very light colored; gravel consists of concentrations of rounded to well-sorted, subangular to subrounded pebbles of quartz, chert, with meta-quartzite, basalt and granite clasts. These deposits typically occur 0 to 12 meters principally above the North Canadian drainage system. Thickness: typically 0 to 11 meters, but some deposits may be as much as 30 meters thick.	
Pdc	DOG CREEK SHALE (Permian, Guadalupian) - Mostly reddish-brown, silty claystones with locally abundant greenish-gray sandstones. Thin stringers of dolomite and gypsum may occur near the base of the formation. Poorly exposed along the far southwestern edge of map, only the basal 50 to 10 meters present.	
Pbl	BLAINE FORMATION (Permian, Guadalupian) - In the map area, unit consists of 2 to 3 beds of very fine-grained, reddish-brown, silty claystone, typically underlain by a thin bed of dolomite that overlying intervals of reddish-brown claystone. Poorly exposed along the far southwestern edge of map, and quickly pinches out to the east. Thickness varies from 0 to 10 meters.	
Pfp	FLOWERPOOT SHALE (Permian, Guadalupian) - Reddish-brown, silty claystone, with locally occurring thin interbeds of greenish-gray shale and several thin stringers of gypsum in the upper part. Unit poorly exposed; maximum thickness ~ 35 meters.	
Pgr	EL RENO GROUP, undifferentiated (Permian, Guadalupian) - Consists of various elements of the Dog Creek and Flowerpoth shales east and south of the Blaine Formation pinch-out. Mostly reddish-brown to orange-brown, silty claystone, with locally abundant greenish-gray sandstones. Stringers of gypsum and very thin limestone beds may occur in upper half of unit. Unit poorly exposed, and only about the basal 60 meters occurs in the map area.	
Pdn	DUNCAN FORMATION (Permian, Guadalupian) - Mostly friable to weakly indurated sandstone, fine- to medium-grained, rounded to subangular orange to light brown, with occasional greenish-gray and thin siltstone interbeds locally. Lower half of section consisting of moderate reddish orange to light red, thin- to medium-bedded, fine-grained sandstone, siltstone, and siltstone-pebble beds. Upper half of section consists of medium- to coarse-grained, massive, reddish-brown, fine-grained sandstone. Though cross-laminations, parting lineations and oscillation ripple marks are common in sandstone. Locally, these deposits may be as thick as 100 meters. Pleistocene and younger fluvial terrace and mudstone clasts, set within a fine-grained, quartz-rich sandstone matrix that is usually cemented with calcite; although, barite cement may occur locally. Upper half of unit consists of interbedded sandstone and siltstone, with occasional thin beds of calcite, dolomite and siltstone-pebble conglomerates, and local occurrences of thin intervals of siltstone and mudstone. Sandstones are fine- to very fine-grained, massive, rarely exhibiting internal bedding, and moderate reddish-brown to orange-brown. Locally, these deposits may be as thick as 100 meters. Clay is predominant cement, although calcite cement does occur in patches. Sandstones may laterally grade into moderately to well-sorted, medium- to coarse-grained, massive, reddish-brown sandstone composition to those in lower half of formation. Interbedded siltstone and mudstone interbeds lenticular shaped, average only 1 meter in thickness and extend only tens of feet along strike; locally, these deposits may be as thick as 100 meters. Locally, these deposits may be as thick as 100 meters as thin partings separating mudstone and sandstone intervals. Locally, greenish gray colored barite beds, and reddish spiculates occur in sandstones, siltstones and shales, burrows and root casts(?) common.	

SYMBOLS

———— Unit contact; dashed were approximate

produced by the Oklahoma Geological Survey. Geology by Thomas M. Stanley, 2020-2021. Base map from USGS topographic map of the Oklahoma City North quadrangle, dated 1900. Universal Transverse Mercator projection 1927 North American Datum. Research supported by the USGS, National Cooperative Geologic Mapping Program, under 20AS00006. The views and conclusions contained in this document are those of the author and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government. Cartography prepared by Thomas M. Stanley, 2021.



**GEOLOGIC MAP OF THE OKLAHOMA CITY NORTH 30X60-MINUTE QUADRANGLE,
CANADIAN, KINGFISHER, LINCOLN, LOGAN, OKLAHOMA, AND PAYNE COUNTIES, OKLAHOMA**

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2021

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WELLINGTON FORMATION (Permian, Leonardian) - Formation mostly an interbedded sandstone, claystone and concretionary clay shale, with minor siltstone and sandstone breccias locally. The sandstones similar to those of the upper Permian, but they are more friable and tend to be slightly finer grained, and exhibit fewer channel-form lower contacts; most are friable, fine- to very fine-grained, slightly argillaceous and calcareous; color a moderate orange gray to moderate reddish brown. The large and small-scale channel-form lower contacts are common, but they are not as well developed as those of the upper Permian. The claystones are generally more friable than the sandstones, although some outcrops do show scoured and channel-form lower contacts; cement generally an iron-oxide, with some local patches of calcite cement. Basal third of formation consists of thicker beds of friable, medium to coarse grained, orange to reddish brown sandstone, similar to the Falls Sandstone Member; texturally, Falls sandstones are somewhat coarser grained than those sandstone intervals of upper Wellington, and they are slightly more friable due to lack of calcite cement.

The base of the Wellington Formation coincides in most places with a 5 to 7 centimeter thick claystone conglomerate bed (Patterson, 1933). Close to the top of the Wellington Formation is marked by a 5 to 10 meter thick concretionary shale interval that has a well-developed palaeo channel horizon. Total thickness of the formation about 75 to 260 meters, and generally thins to the south.

STILLWATER FORMATION (Permian, Leonardian and Wolfcampian?) - Consists of a series of moderate red to moderate reddish brown, silty, non-carcaeous claystones interbedded with orangeish brown to moderate reddish brown, silty, coarse-grained sandstones and very thin discontinuous beds of fine-crystalline limestones and nodular dolostones. Claystones non-laminated, massive to blocky in appearance; sandstones commonly tough-cross-bedded.

The Stillwater formation, as named after Gellatens (type locality) by Patterson (1933), takes the name of the prehistoric people who lived in the geologic interval between the Osgood Group and Sheltou and others (1985). As per Patterson (1933), the top of the Stillwater formation is defined as the base of the Falls Member of the Wellington Formation. Originally, the base of the Stillwater was defined at the top of the Pennsylvania, which, in 1928, was changed to the base of the Stillwater, which, over the years, has varied considerably. Currently, the top of the Pennsylvania is placed at the base of the Glenrock Limestone of the Red Eagle Formation (Nestell and Nestell, 1998). Due to the absence of the Glenrock Limestone in Oklahoma, the base of Red Eagle Formation proper represents the top of the Pennsylvania in the state; consequently, the base of the Red Eagle represents the base of the Stillwater formation in this map area.

Only the upper 60 meters is present.

Pcg CHASE GROUP (Permian, Wolfcampian) - In the current map area, the Chase Group is represented only by the Fort Riley Member at the base of the unit, and probably the lower part of the Doyle Shale. The Fort Riley is a very thin (less than 1/2 meter thick) light gray, fine-crystalline, dolomitic limestone. The group pinches out just north of the Cimarron River where it interfingers with lithologic elements of the Stillwater Formation.

Only the basal 12 meters of the Chase Group is present in the far northeast corner of the map area.

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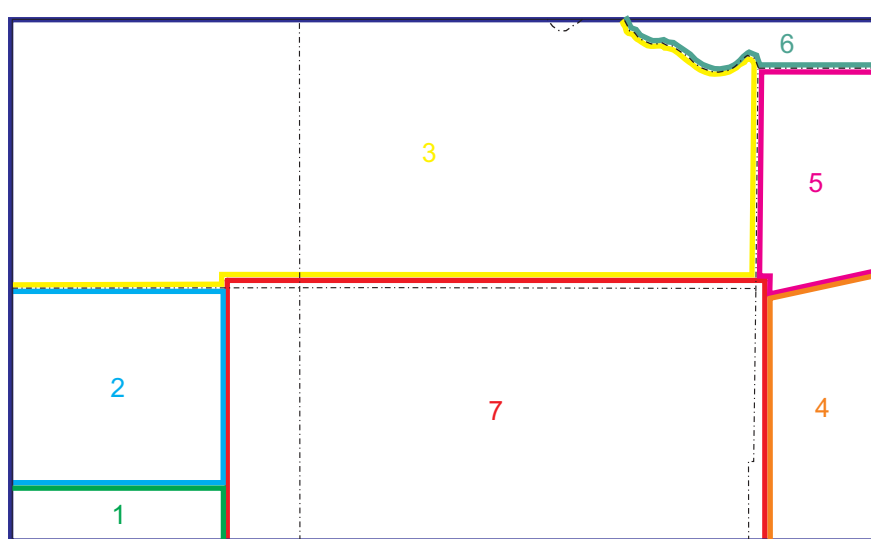
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