

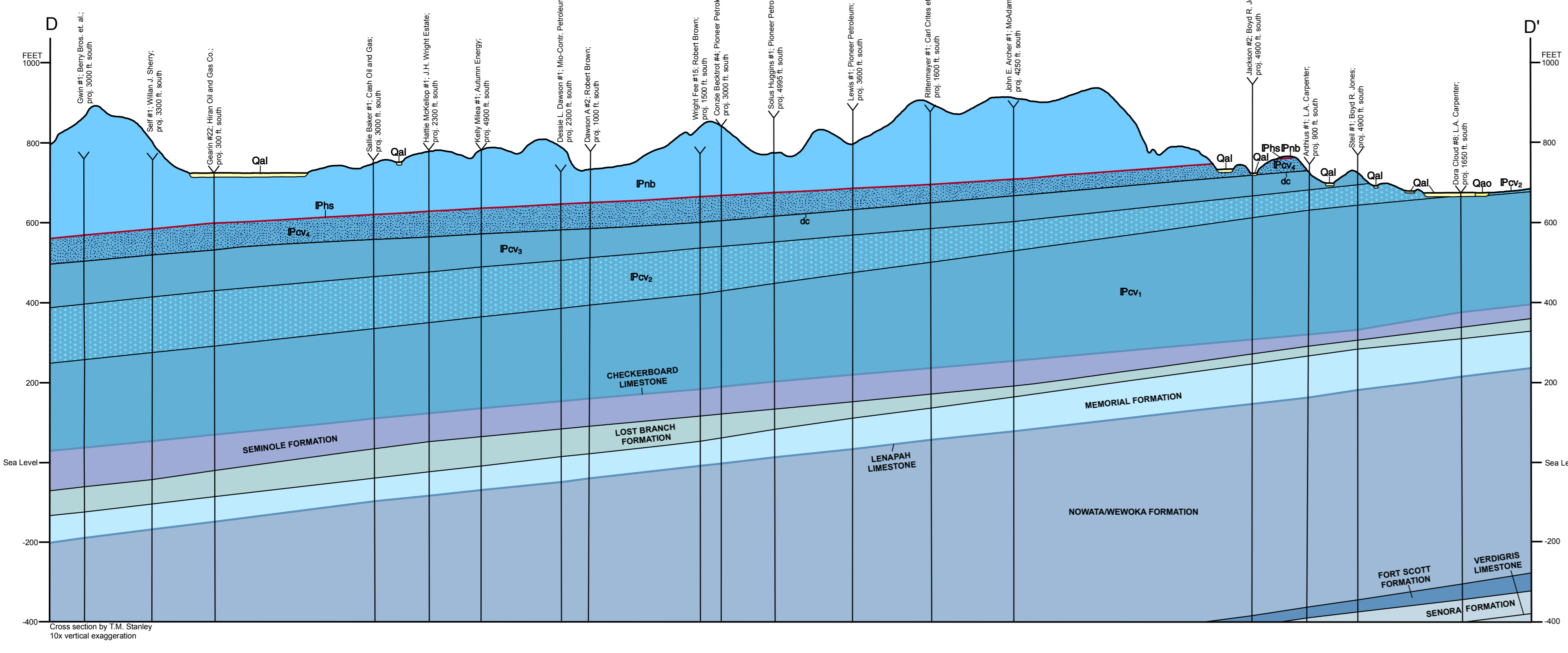
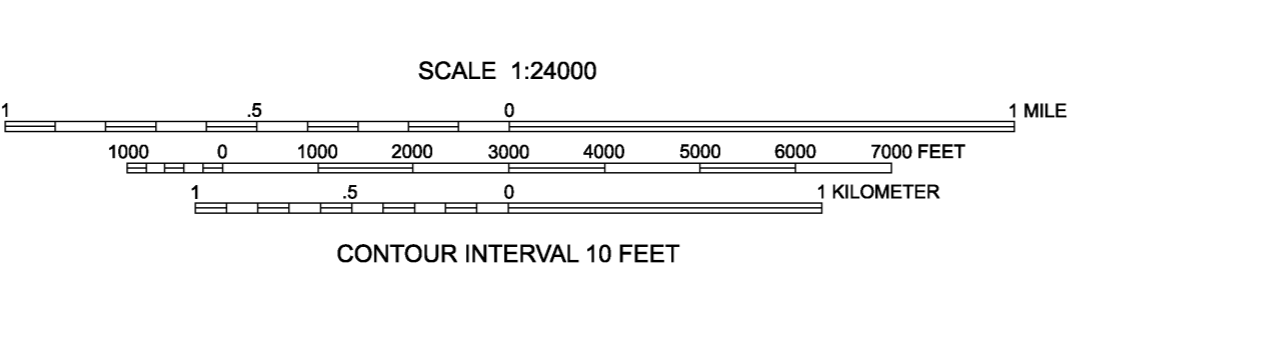
DESCRIPTION OF UNITS\*

- 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.
- Qao** OLDER ALLUVIUM (Holocene)—Mostly sand, with variable amounts of clay and silt-sized material, and little to no gravel-sized material; situated from 10 to 20 ft above modern flood plain terraces. Thickness between 20 to 30 ft.
- Pwn** WANN FORMATION (Pennsylvanian, Missourian)—The lower part of the Wann Formation is observed in a small area in the northwest part of the Kellyville quadrangle. The lower Wann is a non-calcareous sandstone that is sometimes nondescript and homogeneous. This sandstone is fine-grained, quartz-rich, with mottled, orange or maroon weathering patterns. Other sandstones in the lower Wann are fine- to medium-grained and contain abundant impressions of fusulinitids and crinoid ossicles, as well as horizontal burrows. Tabular cross-bedding is present in these more fossiliferous sandstones. Only about 60 to 80 feet of the Wann Formation is exposed in the Kellyville quadrangle.
- Pia** IOLA FORMATION (Pennsylvanian, Missourian)—Poorly exposed in quad. Consists of three members, which are, in descending order: 1) Avant Limestone; 2) Muncie Creek Shale; and 3) Paola Limestone. Total thickness of the formation varies from 45 to 60 ft, depending on the thickness of the middle clastic unit within the Avant Limestone.
  - Avant Limestone:** Consists of an upper and lower limestone, separated by an intervening interbedded sandstone and shale interval. The Avant Limestones are typically medium gray (N5) to medium light gray (N6), medium to locally thick bedded, algal wackestone and carbonate mudstone; bedding is regular, and varies from 3' to as much as 4' in thickness; the upper Avant Limestone is the thicker of the two limestones, attaining a thickness between 10' to 20'; the lower Avant Limestone is usually 3' thick or a little less. The intervening clastic interval is about 10' to 15' of yellow (5Y6/4) to dark yellowish orange (10YR6/6), fine-grained to very fine-grained, calcareous sandstone that locally contains molds of fusulinitids and crinoid stems interbedded with slightly silty clay shale and siltstone; shale is more common in the lower half of this interval.
  - Muncie Creek Shale:** Predominantly a medium gray (N5) to olive gray (5Y4/1), laminated to blocky-bedded, slightly silty, fossiliferous clay shale to claystone; base 2' to 3' dark gray (5Y4/3), gray to black (N2), fossiliferous clay shale; fossils mostly include chonetid brachiopods, ramose and fenestrate bryozoans, and crinoid debris. Thickness of the Muncie Creek about 25 ft.
  - Paola Limestone:** In the Kellyville quad, the Paola varies from a single bed of medium light gray (N6) or olive gray (5Y4/1), sandy, skeletal carbonate mudstone to wackestone, or locally is a well-indurated, laminated, very fine-grained, calcareous sandstone, with local interbeds of fine-crystalline limestone. Thickness averages 1 ft or less.
- Pch** CHANUTE FORMATION (Pennsylvanian, Missourian)—Mostly a grayish orange (10YR7/4), grayish orange pink (5YR7/2), pale yellowish brown (10YR6/2), to medium light gray (N6), laminated to blocky-bedded, weakly calcareous, very silty clay shale to mudstone; silt content and blocky nature of bedding increases toward top of formation. Locally, an 8' to 10' thick, grayish orange (10YR7/4) and dark yellowish orange (10YR6/6), indurated, laminated to thin-bedded, rarely thick bedded, fine- to very fine-grained sandstone, which may correlate to the Cottage Grove Sandstone, occurs near the top of the formation. The local, thicker bedded parts of the sandstone appear discontinuous. The laminated and thinner bedded intervals are planar to slightly wavy and commonly show current lineations on bedding surfaces. Irregular ripple marks, swirl-patterned lineations, rills, and pits occur locally. The Thayer Coal also occurs within this unit but was not observed in the field area. Total thickness of the formation varies from 75 to 80 ft thick.
- Pdw** DEWEY FORMATION (Pennsylvanian, Missourian)—Consists predominantly of tan-colored, well-indurated to friable, laminated to thick-bedded, fine- to very fine-grained (rarely medium-grained), non-calcareous sandstone; although the sandstone is mostly a quartz-rich arenite, more arkosic sandstones with argillaceous fossils are sometimes observed in this unit; other sandstone components include muscovite and glauconite as well. Sedimentary structures include: ripple marks, cross beds, flute casts, load casts and other soft sediment deformation features on the bottom of beds, and trace fossils (burrows). Small mud clasts are observed in some sandstone, which weather readily leaving a distinct pitted surface.
  - Calcareous sandstone appears to be less common than non-calcareous sandstone in the Dewey Formation and is often interbedded with calcareous to non-calcareous siltstone and shale. The sandstone is mostly thin-bedded to laminated, but medium-bedded (up to ~6 inches) is also observed; bedding is slightly wavy to wavy.
  - The non-calcareous siltstone is dusky yellow (5Y6/4) and blocky, with rounded weathering. Calcareous siltstone is red to pink in color or bluish-gray and orange in color, indurated, with laminated bedding and parting lineations. Shale texture is usually a silty claystone, and dusky yellow (5Y6/4) to pale olive (10Y6/2) in color. Thickness of the Dewey about 25 to 30 ft thick.
- Pnb** NELLIE BLY FORMATION (Pennsylvanian, Missourian)—Consists mostly of clay shale and mudstone; prominent sandstone, none of which can be easily separated into mappable units. Sandstones vary from yellowish gray (5Y7/2), dusky yellow (5Y6/4) (when moist), pale yellowish orange (10YR6/6), grayish orange (10YR7/4), and pale greenish yellow (10Y8/2) when fresh; commonly dark yellowish orange (10YR6/6), although it may be moderate yellowish brown (10YR 5/4) or light brown (5Y5/6) when weathered; all exhibit moderate induration, rarely friable, are quartz-rich, fine- to very fine-grained, and non-calcareous, although some bedding surfaces may be calcareous due to the precipitation of calcite. Fo-oxide spots, trace fossils, laminations and cross-laminations, ripple marks, and tool marks are common along bedding surfaces; mud clasts and pitting from weathering of mud clasts are sometimes observed, and soft-sediment deformation is rare. Some prominent sandstones do occur locally; an unnamed, 8-10 ft thick interval of thin- to medium-bedded bedding 1-3 ft thick, calcareous sandstone occurs between 15 to 25 ft above the Hogshooter Formation. Another prominent sandstone, called the Shell Creek Sandstone occurs between 75 to 125 ft above the base. Good exposures of the Shell Creek Sandstone indicate a wide variety of lithologic textures, ranging from a thick bedded sandstone with thin clay shale partings to a thin bedded sandstone interval with appreciably more clay shale content. Other sandstones of even more local significance vary from laminated to medium-bedded, with planar to wavy bedding contacts. Interbedded shales are a light olive gray (5Y5/2, 5Y4/1) to olive gray (5Y4/1) and consist predominantly of slightly silty claystones to mudstones, bedding usually blocky to structureless, although laminated bedding is not uncommon; paleosol development characterized by curved slickenside fractures is common in mudstone and claystone lithologies. Ironstone concretary layers may be present within shales; concretions commonly moderate yellowish brown (10YR5/4) to moderate brown (5YR4/4) in color. Total thickness of formation varies between 350 ft in the northern half of quad to about 415 ft in the southern half.
- Pps** HOGSHOOTER FORMATION (Pennsylvanian, Missourian)—Formation most likely represented by the Winterat Member in the Kellyville quad, consisting of a single, dense bed of light olive gray (5Y6/1) to moderate yellowish brown (10YR5/4) wackestone to packstone textured limestone; fossils dominated by crinoid ossicles and brachiopods, with minor bryozoan skeletal fragments; mottled texture common suggestive of extensive burrowing occurred at the time of deposition. Thickness of the unit is no more than 3 ft thick at maximum extent and averaging closer to 1 ft.
- Pcv** COFFEYVILLE FORMATION (Pennsylvanian, Missourian)—Mapped as four informal units in the Kellyville quadrangle. The exposed thickness of the formation about 150 ft; formation base not observed. The individual units are described in descending order:
  - unit 4 (Pcv4): Base of unit marked by the base of the Dodds Creek Sandstone, a grayish orange (10YR7/4), dark yellowish orange (10YR6/6), to a very pale orange (10YR8/2), but locally weathers to a distinct moderate yellowish brown (10YR5/4), weakly to moderately indurated, thin wavy-bedded to locally wavy-laminated, weakly calcareous, micaceous, fine-grained sandstone; bedding from 0.5'-4' thick, but basal beds may be 12' thick; typically, tops of beds ripple-marked, while base of beds are planar, and each bed is separated by a shale parting. The upper 5 to 10 ft of unit characterized by a poorly exposed shale of undetermined textural composition. Thickness of unit about 40 to 50 ft.
  - unit 3 (Pcv3): A light olive gray (5Y6/1), dusky yellow (5Y6/4), to medium gray (N5), well-laminated to fissile, slightly silty, concretary clay shale; minor siltstone and very fine-grained sandstone interlaminae occur in the upper half of unit. Concretions occur as discontinuous beds, and elongated nodules of no more than 2'-3' thick, typically pale yellowish orange (10YR6/6) to dark yellowish orange (10YR6/6) in color. Unit is between 50 to 60 ft thick.
  - unit 2 (Pcv2): This unit 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), 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 Calanites fossil was also observed. Mudstones within Unit 2 are light olive gray (5Y6/1), weakly laminated to blocky bedded, and non-calcareous, and may contain grayish red purple (5R4/2) 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 only about 50 ft.
  - unit 1 (Pcv1): Primarily a shale dominated unit. Poorly exposed in quad, consists of yellowish gray (5Y7/2) to light olive gray, blocky bedded, concretary, silty claystone to mudstone. Only the uppermost 15 to 20 ft exposed in quad.

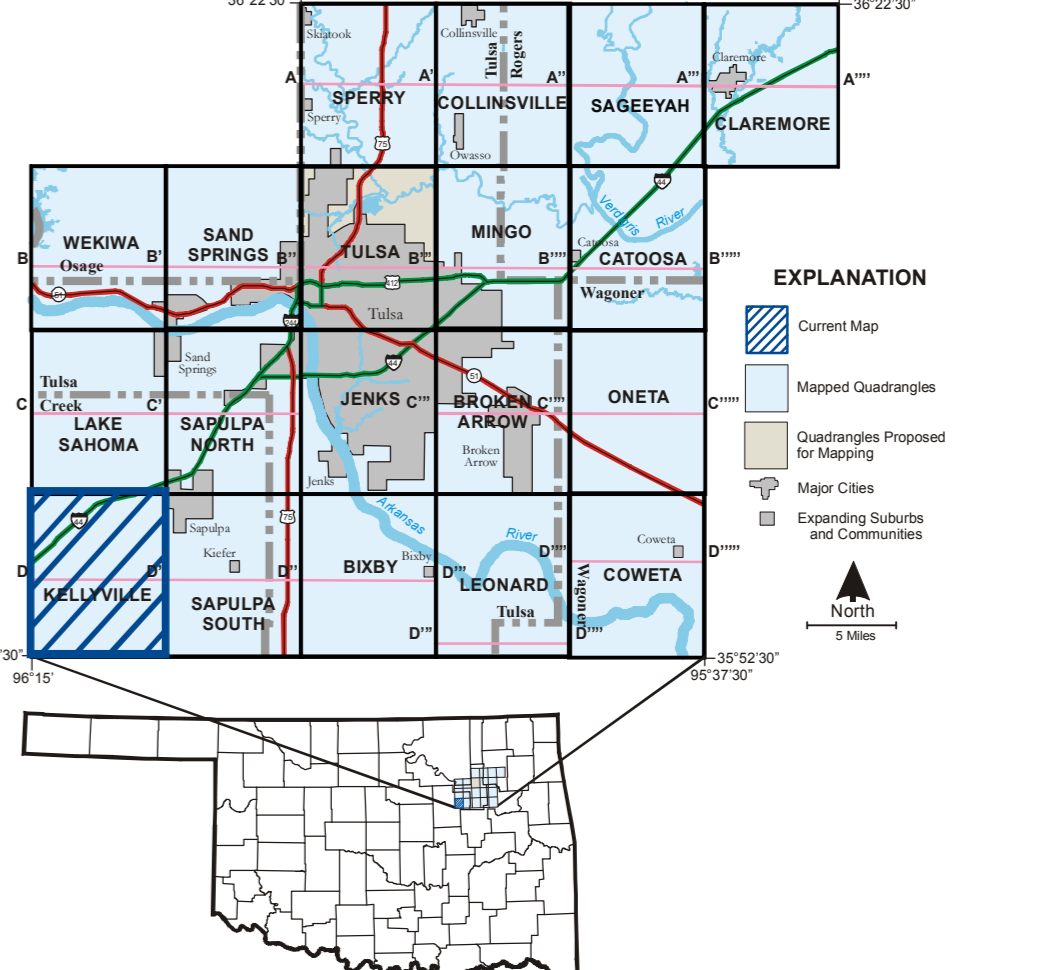
SYMBOLS

- Unit contact; dashed where approximate
- × 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
- I Drill hole with well number, lessee, and projection (cross section only)

Produced by the Oklahoma Geological Survey. Geology by Julie M. Chang and Thomas M. Stanley, 2011-2012. Base map from USGS topographic map of the Kellyville quadrangle, dated 1972 and photorevised 1981. Universal Transverse Mercator projection, 1927 North American Datum. Research supported by the USGS, National Cooperative Geologic Mapping Program, under G11AC20440. 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 Emma M. Baker, 2012.



**GEOLOGIC MAP OF THE KELLYVILLE 7.5' QUADRANGLE, CREEK COUNTY, OKLAHOMA**  
Julie M. Chang and Thomas M. Stanley  
2012



**EXPLANATION**

- Current Map
- Mapped Quadrangles
- Quadrangle Proposed for Mapping
- Higher Class
- Engineering Subdivisions and Counties