

**SURFICIAL MATERIAL GEOLOGIC MAP OF THE CREVE COEUR 7.5' QUADRANGLE
ST. LOUIS COUNTY, MISSOURI**

Geology and Digital Compilation by
Bradley A. Mitchell

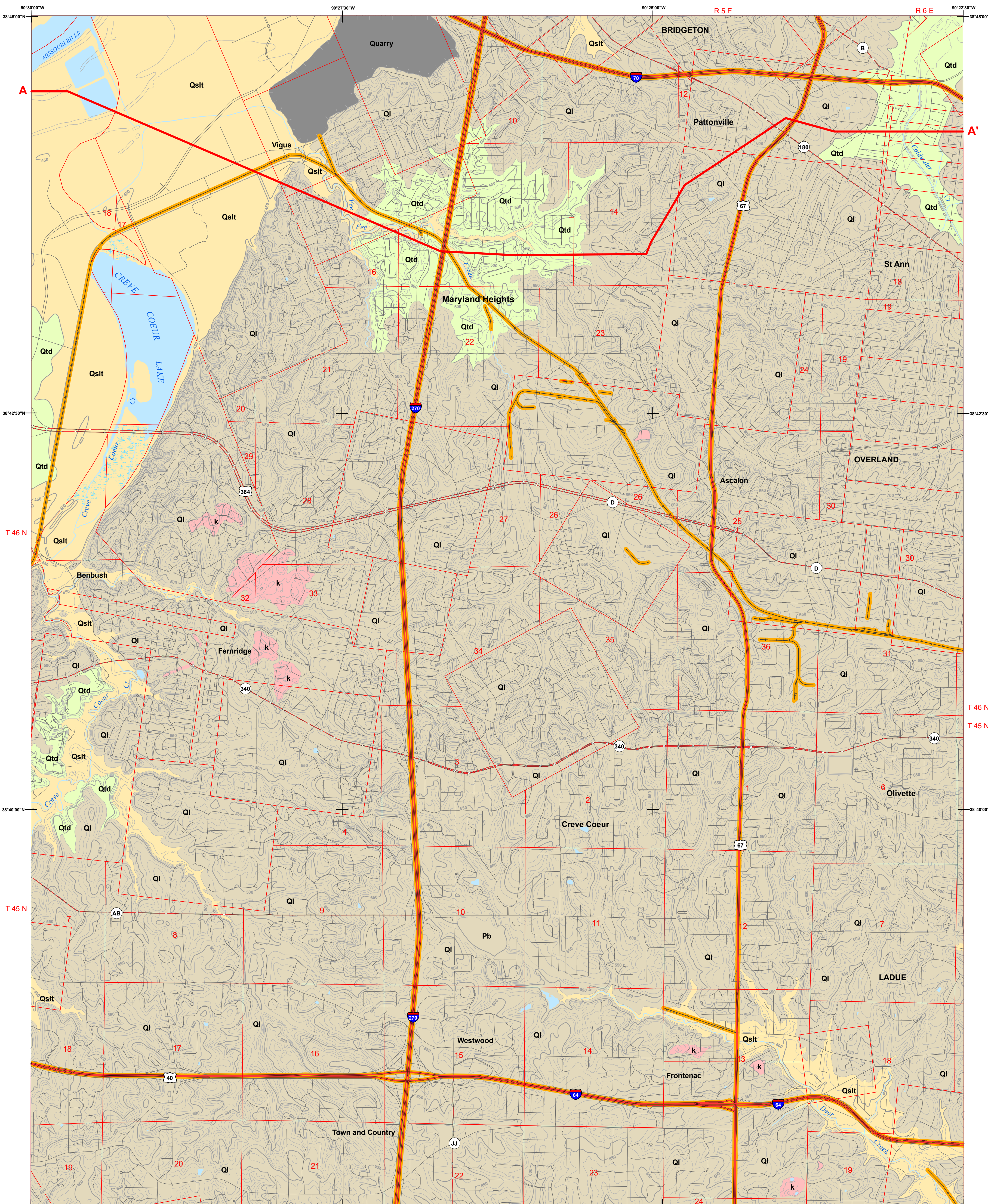
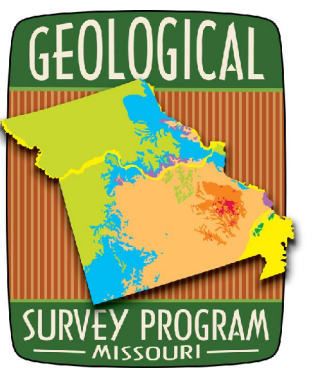
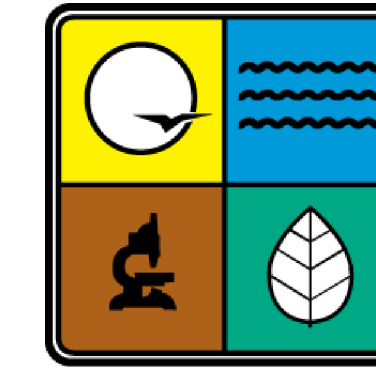
2011 (revised 2012)

OFM-11-598-GS

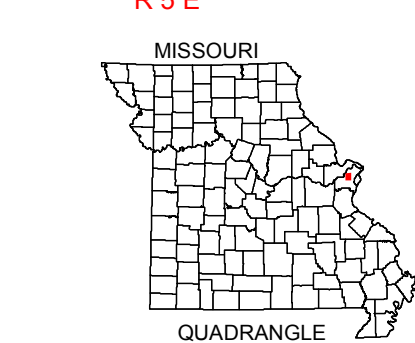
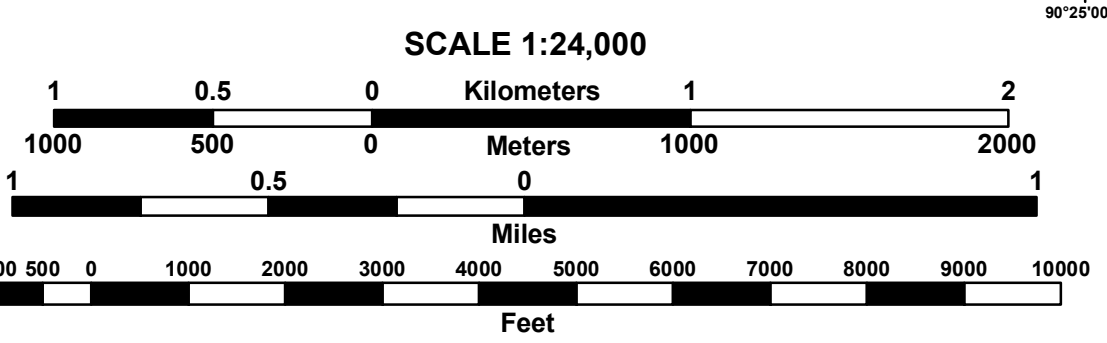
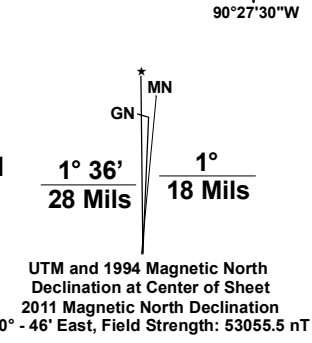
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Produced by the Missouri Department of Natural Resources, Division of Geology and Land Survey, Geological Survey Program. Funded by the United States Geological Survey, National Earthquake Hazards Reduction Program, Award # G11AF0174, 2011. Topography was derived from a USGS 10 meter Digital Elevation Model using contouring software. Features were added to the USGS 38095-F4-TF-024, 1993, Creve Coeur 7.5' quadrangle and digital aerial photography from 2007 and 2009. Field checked in 2011. Universal Transverse Mercator (UTM), Zone 15, North American Datum 1983 (NAD 83).



Road and Contour Symbolology
 Interstate Highways
 Missouri Highways
 Light Duty Roads
 Railroad
 Elevation Contour
 Index Contour
 Contour Interval 10 Feet

PHYSIOGRAPHY

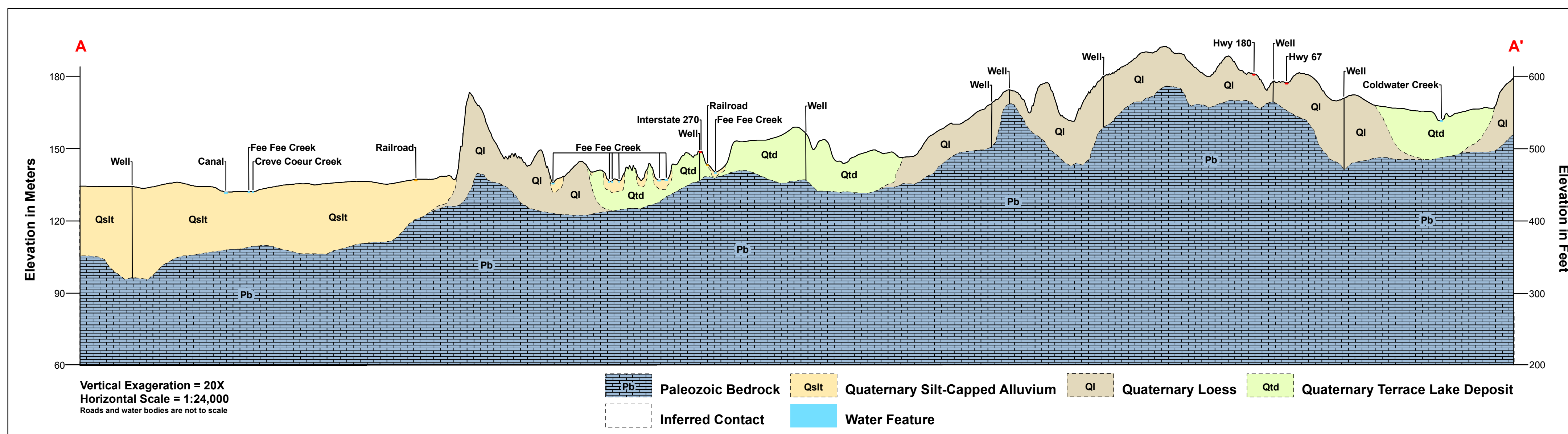
The Creve Coeur quadrangle includes part of the large floodplain of the Missouri River and loess covered uplands. The floodplain is greater than two miles wide in this area. The quadrangle lies within the Dissected Till Plains Section of the Central Lowland Province of the Interior Plains Physiographic Division. The lowest recorded elevation is 425 feet mean sea level (msl) and occurs along the edge of the Missouri River at the northeast corner of the quadrangle. The highest elevation on the quadrangle occurs on the loess covered uplands and is greater than 720 feet msl near the eastern boundary of the quadrangle. Total relief on the Creve Coeur quadrangle is approximately 300 feet.

GEOLOGICAL OVERVIEW

The Creve Coeur quadrangle is underlain primarily by deposits of Paleozoic limestone and shale. The majority of the quadrangle is underlain by the Pennsylvanian-age Cherokee and Marmaton Groups which are cyclic Desmoinesian Series deposits of shale, limestone, sandstone, clay and coal. The upland area in the east of the Creve Coeur quadrangle contains the Pennsylvanian-age Pleasanton Group which are Missourian Series deposits of shale and sandstone. The Mississippian-age St. Louis, Salem and Warsaw Formations underlie the southwest of the quadrangle and in areas where tributaries have incised the younger Pennsylvanian-age formations.

DESCRIPTION OF MAP UNITS

- AF** **ARTIFICIAL FILL** – This unit comprises artificially emplaced fill material and is composed of a mixture of heterogeneous clay, silt, sand and gravel in various quantities. This unit may reach 40 feet in total thickness and comprises the material for highway and railroad beds and waste water treatment facility fill. This artificial fill has typically been placed on undisturbed materials.
- Qst** **QUATERNARY SILT-CAPPED ALLUVIUM** – This unit has been deposited by the Missouri River. The approximate upper 15 feet of these deposits are composed predominantly of clay with variable amounts of silt and organic material. The material residing below the clay is predominantly sand and gravel to the top of bedrock. The thickness of this unit ranges from approximately 60 feet where the floodplain transitions to uplands to more than 100 feet where the Missouri River has incised the Paleozoic bedrock. The water table is approximately five to 15 feet below ground surface resulting in an interval of saturated sand and gravel more than 80 feet thick. This unit is included in the cross sections as Quaternary silt-capped alluvium.
- Ql** **QUATERNARY LOESS** – This unit is a wind-blown deposit of silt and clayey silt with occasional pockets of clay, sand and gravel. The unit is composed of two separate loess layers, the Roxana below and the Peoria above (Goodfield, 1965). The total thickness of the two units may reach 100 feet. The Roxana is higher in clay content and may have a paleosol developed in the upper few feet. The contact between the two units forms a potential slide plane in areas of high topographic relief. The loess overlies Mississippian-age bedrock comprised of limestone and shale creating two unique environments. Where the loess is thin, the limestone may be karstic. Where the underlying unit is predominantly shale, water will perch, destabilizing the contact zone. Where the loess rests upon shale, the slide potential is increased.
- Qtd** **QUATERNARY TERRACE DEPOSIT** – The terrace deposits in the quadrangle are slightly different than previously mapped terrace deposits (Brill, 1991; Harrison, 1997; and Goodfield, 1965). All were deposited during fluvial events, leaving the terrace above low flow stage of the river. However, the terrace deposits in this quadrangle have a lacustrine signature of sensitive organic clays approximately 20 feet below the surface. After high stage flow returned to normal, low lying areas within the terrace were filled with organic clay material. This zone has a very low shear wave velocity and underlies many types of infrastructure.
- k** **KARST** – These areas have high concentrations of sinkholes, caves and other karstic features due to the solutional weathering of the Mississippian-age limestone underlying this area. These areas are typically found in the upland regions of the quadrangle.
- A—A'** Line locates the placement of the cross section with end line symbols.
- Public Land Survey System including Spanish land grants.



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