SURFICIAL MATERIAL GEOLOGIC MAP OF THE OAKVILLE 7.5' QUADRANGLE ST. LOUIS AND JEFFERSON COUNTIES, MISSOURI AND ILLINOIS

Geology and Digital Compilation by
David A. Gaunt andTravis Carr

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
GEOLOGICAL SURVEY PROGRAM
P.O. BOX 250, ROLLA MO 65402-0250
www.dnr.mo.gov/geology
573-368-2100

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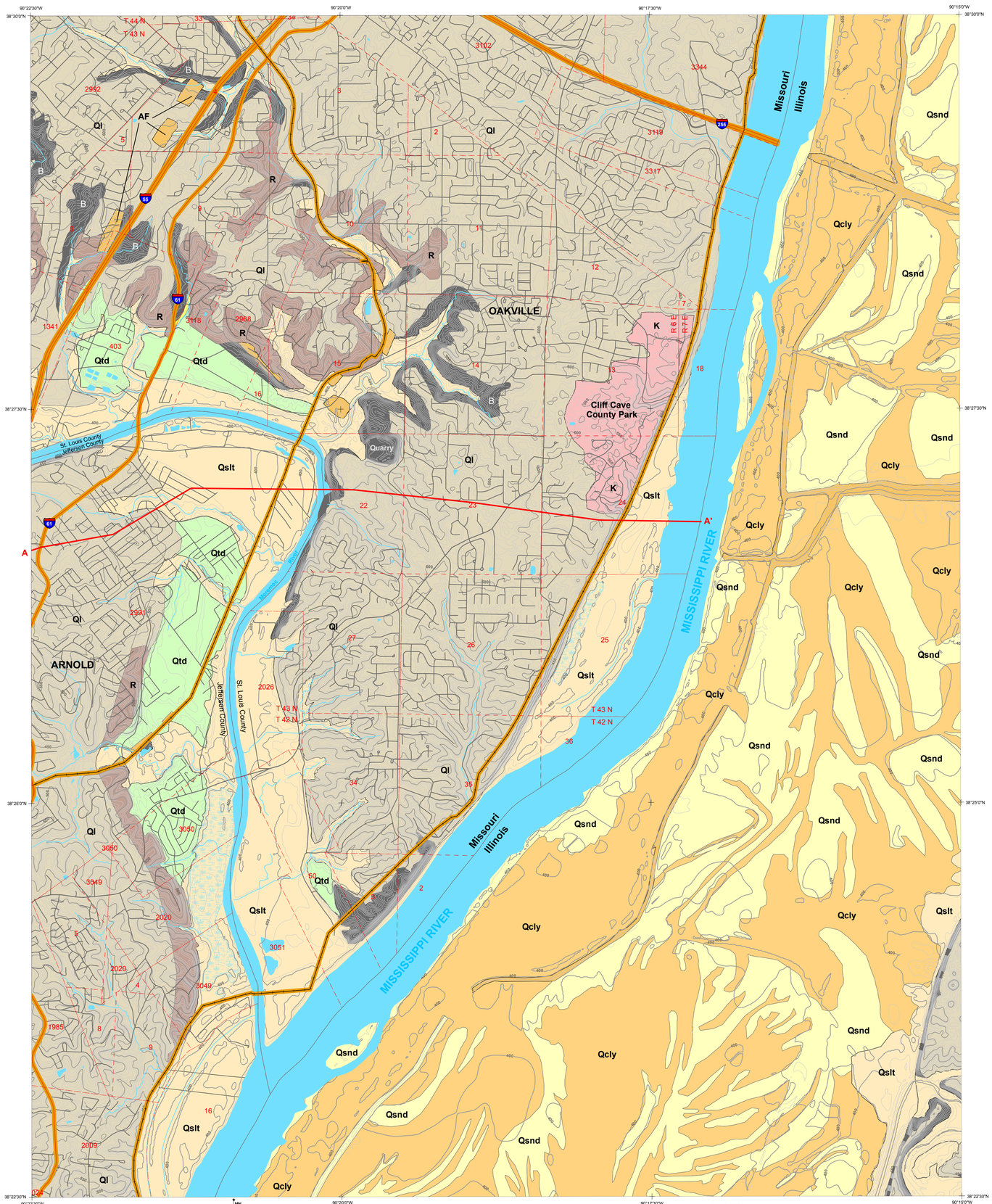


PHYSIOGRAPHY

The Oakville quadrangle includes part of the large floodplain of the Mississippi River and loess covered uplands. The floodplain is greater than four miles wide in Illinois with only a small portion residing on this quadrangle in Missouri. The quadrangle lies within the Dissected Till Plains Section of the Central Lowland Province of the Interior Plains Physiographic Division. The lowest recorded elevation of slightly less than 410 feet mean sea level (msl) occurs along the edge of the Mississippi River. The highest elevation on the quadrangle occurs on the loess covered uplands and is greater than 621 feet msl in the center the quadrangle. Total relief on the O'Fallon quadrangle is approximately 211 feet.

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.

Qcly – **QUATERNARY CLAY-CAPPED ALLUVIUM –** This unit has been deposited by the Mississippi 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 and can be up to130 feet thick near the large river. The water table is approximately five to 15 feet below ground surface here resulting in an interval of saturated sand and gravel greater than 100 feet thick.

Qslt – **QUATERNARY SILT-CAPPED ALLUVIUM –** This unit has been deposited by the Mississippi River and its tributaries. The approximate upper 15 feet of these deposits are composed predominantly of silt with variable amounts of clay and organic material. The material residing below the clay is predominantly sand and gravel to the top of bedrock and can reach 120 feet thick. The water table is approximately five to 15 feet below ground surface resulting in an interval of saturated sand and gravel greater than 100 feet thick.

Qsnd – **QUATERNARY SAND-CAPPED ALLUVIUM –** This unit has been deposited by the Mississippi River and its tributaries. The composition of this unit is predominantly sand with variable amounts of clay, silt and organic material in the upper 15 feet. In the eastern portion of the map in Illinois, thickness of this unit reaches 120 feet along the large rivers. The water table is approximately 15 feet below ground surface here resulting in an interval of saturated sand greater than 100 feet thick.

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 70 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 higher slope. The loess overlies Mississippian-age bedrock. The Mississippian units are limestone and shale creating 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.

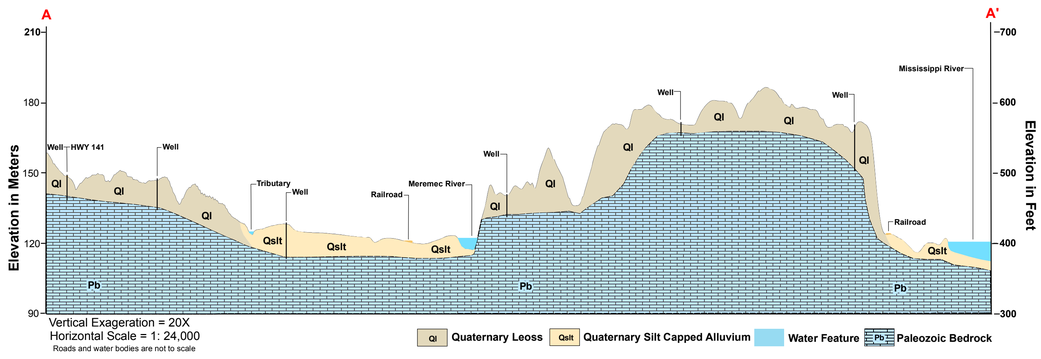
Qtd – **QUATERNARY TERRACE DEPOSIT –** The terrace deposits in the quadrangle are slightly different than previously mapped terrace deposits. All were deposited during fluvial events leaving the terrace above low flow stage of the river. However, the terrace deposits in this quadrangle have a lacustrian signature of sensitive organic clays approximately 20 feet below the surface. After high stage flow dropped 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 infrastructure in various locations.

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.

B – **BEDROCK –** The exposures in this quadrangle are typically found in areas of high topographic relief, near tributaries or in quarries.

R – **RESIDUUM –** The areas of residual material are found on the slope and toe slope of high relief areas. The content is dependent on the bedrock parent material but typically has a high clay content with fragments of parent material.

A——A' Line locates the placement of the cross section with end line symbols.



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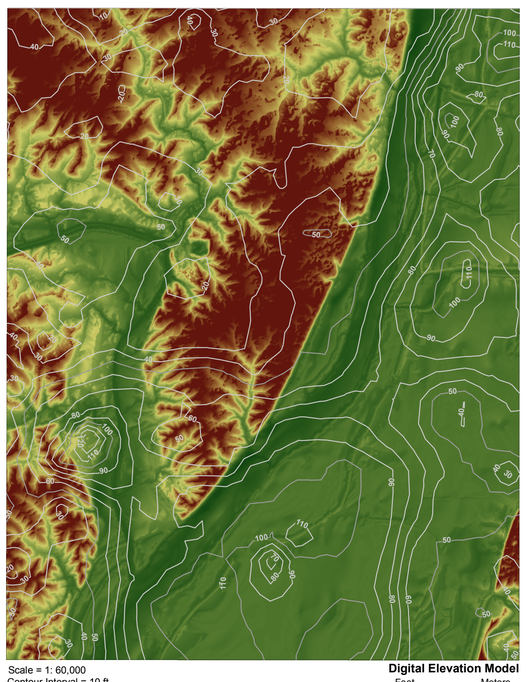
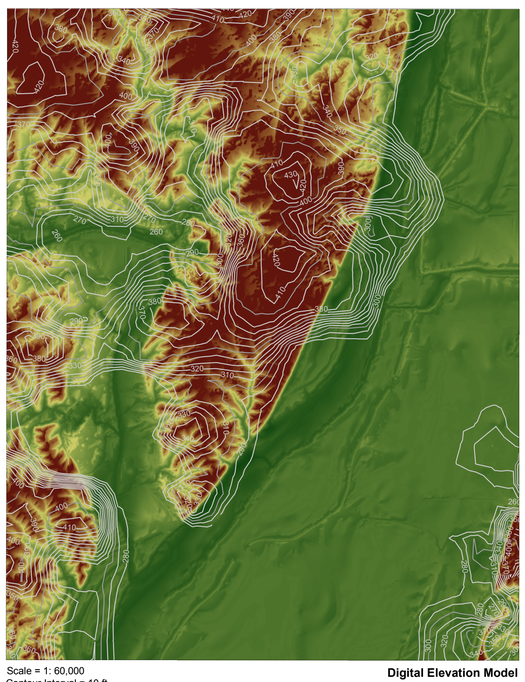
SURFICIAL MATERIAL THICKNESS



Scale = 1: 60,000
Contour Interval = 10 ft.
Index Contours = 50 ft.

Digital Elevation Model
Feet: High: 610, Low: 410
Meters: High: 203, Low: 136

TOP OF BEDROCK



Scale = 1: 60,000
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Digital Elevation Model
Feet: High: 610, Low: 410
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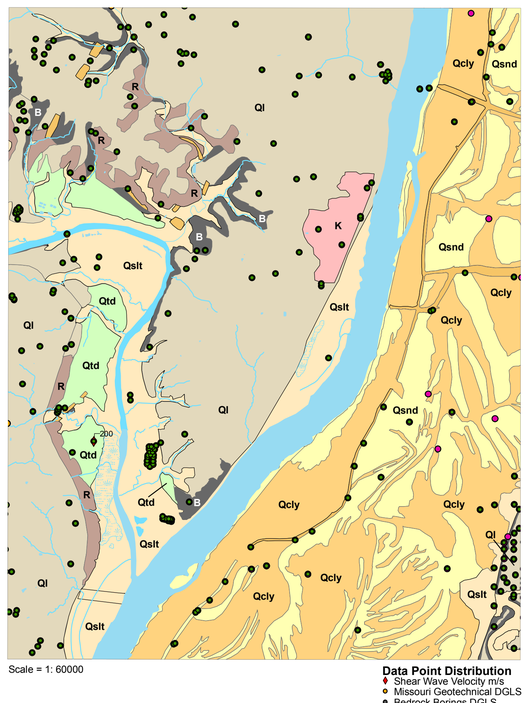
DATA POINT LOCATION



Scale = 1: 60000

Data Point Distribution
- Shear Wave Velocity m/s
- Missouri Geotechnical DGLS
- Bedrock Borings DGLS
- Illinois Geotechnical