

SURFICIAL MATERIAL GEOLOGIC MAP OF THE GRANITE CITY 7.5' QUADRANGLE ST. LOUIS CITY AND COUNTY, MISSOURI

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2008

OFM-08-532

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PHYSIOGRAPHY

The city of St. Louis covers a large part of the Missouri portion of the Granite City quadrangle. Much of the topography of the city of St. Louis has been strongly modified from its natural state. The Mississippi River floodplain, terraces and the adjacent upland area have been affected. The Granite City quadrangle includes part of a large floodplain to the east of the Mississippi River in Illinois, with only a narrow strip of alluvium on the Missouri side between the bluff and the river. The Missouri portion of the floodplain reaches its greatest width of approximately 4,700 feet near the center of the map and narrows to less than 1,000 feet at the southern border and less than 500 feet near the northern border of the map. During the later part of the Pleistocene Epoch, the gently rolling upland surfaces were blanketed by wind-blown silt (loess). This loess covers pre-glacial topography developed on Pennsylvanian- and Mississippian-age rocks, as well as the large Pleistocene-age lacustrine terrace in the south-central part of the quadrangle. 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 400 feet mean sea level (msl) occurs along the edge of the Mississippi River at St. Louis. Elevations of slightly more than 550 feet msl occur in both the center of the southwest quarter of the quadrangle and near the center of its north edge. Total relief on the Granite City quadrangle is approximately 155 feet.

AF

ARTIFICIAL FILL

This unit is composed of artificially emplaced fill material and is composed of a mixture of heterogeneous clay, silt, sand, gravel and demolition or quarry waste in various quantities. This unit may reach 40 feet in total thickness and comprises the material for levees, road and railroad beds, sanitary landfills and built up industrial areas in the floodplain behind levees. This artificial fill has typically been placed on undisturbed materials.

AC

ABANDONED CHANNEL FILL

This unit is described as a remnant of a former drainage which no longer supports a surface stream. Due to the growth of the city, artificial fill has been emplaced in the valley and overlies alluvial 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 to the top of bedrock. In the southern portion of the map, near the Eads Bridge, the thickness of this unit reaches 80 feet. The water table is approximately 15 feet below ground surface resulting in an interval of saturated sand greater than 65 feet thick. This unit is included in the cross sections as Quaternary alluvium.

Qtrb

QUATERNARY TRIBUTARY ALLUVIUM

This unit has been deposited by smaller tributaries in the uplands. This alluvium consists of clay, silt, sand, gravel and organic material and may reach 20 feet in thickness at the mouth of the tributaries. This unit is included in the cross sections as Quaternary alluvium.

Ql

QUATERNARY LOESS

This unit is a wind-blown deposit of silt and clayey silt. Local pockets of till or alluvium composed of clay, sand and gravel are also included in the unit. The unit is composed of two separate loess layers, the Roxana, below and the Peoria above. 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 bedrock of both Mississippian- and Pennsylvanian-age. The Pennsylvanian units are predominantly shale with additional thin units of limestone and sandstone. Where the loess rests upon shale, the slide potential is increased. The approximate contact between the Mississippian and Pennsylvanian units is defined by a dashed line.

Qter

QUATERNARY ALLUVIAL TERRACE

This unit consists of a sandy alluvial material underlying a thin layer of Peoria/Roxana loess. It is believed that this alluvium represents a terrace deposit resulting from the damming of the Mississippi River by glacial ice sheets (Goodfield, 1965). This unit lies directly on bedrock, reaches a maximum thickness of four feet, and is overlain by up to 20 feet of Peoria/Roxana loess.

Qlt

QUATERNARY LOESS UNDERLAIN BY TILL

Deposits of clayey till are found in the southwest quarter of the quadrangle and are known as the Mill Creek Till (Goodfield, 1965). This till lies directly on bedrock, reaches a maximum thickness of four feet, and is overlain by up to 20 feet of Peoria/Roxana loess.

Pm

PENNSYLVANIAN MARMATON GROUP

On the Granite City 7.5' quadrangle, the Marmaton Group consists of shale and limestone. In the north-central portion of the map, shale of the lower Marmaton was quarried for use at a local cement plant. This plant relied limestone from the Ft. Bellefontaine Quarry on the Columbia Bottom 7.5' quadrangle which was used to manufacture cement.

The pattern of diagonal lines denotes areas where surficial materials have been removed, altered or filled to an unknown depth in residential and commercial developments. These areas are predominantly within the upland loess areas.

The dashed line with tick marks indicates the approximate contact between Mississippian- and Pennsylvanian-age bedrock underlying the Peoria and Roxana loess (Ql) and Quaternary Till (Qlt). Tick marks are on the Pennsylvanian side of the line.

A—A'

Lines locate the placement of the cross sections with end line symbols

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ACKNOWLEDGMENTS

The Missouri Department of Transportation (MoDOT), U.S. Army Corps of Engineers, the St. Louis Metropolitan Sewer District (MSD) and Metrolink provided boring data for St. Louis, St. Charles and northern Jefferson counties. This data was used in conjunction with division data to determine surficial material type and to contour surficial material thickness and top of bedrock elevation for a 22 quadrangle area. The contour maps for the Granite City 7.5' Quadrangle were clipped from these maps. The MSD also provided 2005 LIDAR coverage for St. Louis County and the city of St. Louis. These contributions are greatly appreciated. The assistance of Missouri Office of Administration, Information Technology Services Division staff Michael Hill, Elizabeth Retherford and intern Vicki Dove, as well as, Travis Carr, Division of Geology and Land Survey, to produce contour maps from the data was invaluable. Michael Hill also analyzed imagery to delineate disturbed areas. Thanks are also due to Michael Starbuck of the USGS for providing a custom image for the base map.

Produced by the United States Geological Survey

Topography compiled 1952. Planimetry derived from imagery taken 1990 and other sources. Photospectroscopic imagery dated 1998, no major culture or drainage changes observed. PLSS and survey control current as of 1954. Boundaries, other than corporate, verified 1999 North American Datum of 1983 (NAD 83). Projection and 1000-meter grid. Universal Transverse Mercator, zone 15 10 000-foot ticks. Illinois (west zone) and Missouri (east zone) Coordinate Systems of 1983

North American Datum of 1977 (NAD 77) is shown by dashed corner ticks. The values of the shift between NAD 83 and NAD 77 for 7.5-minute intersections are obtainable from National Geodetic Survey NADCON software. Contours that conflict with revised planimetry are dashed. There may be private inholdings within the boundaries of the National or State reservations shown on this map.

UTM GRID AND 1000-METER GRID NORTH (EQUINOXIAL AT CENTER OF SHEET)

SCALE 1:24,000

CONTOUR INTERVAL 10 FEET

QUADRANGLE LOCATION

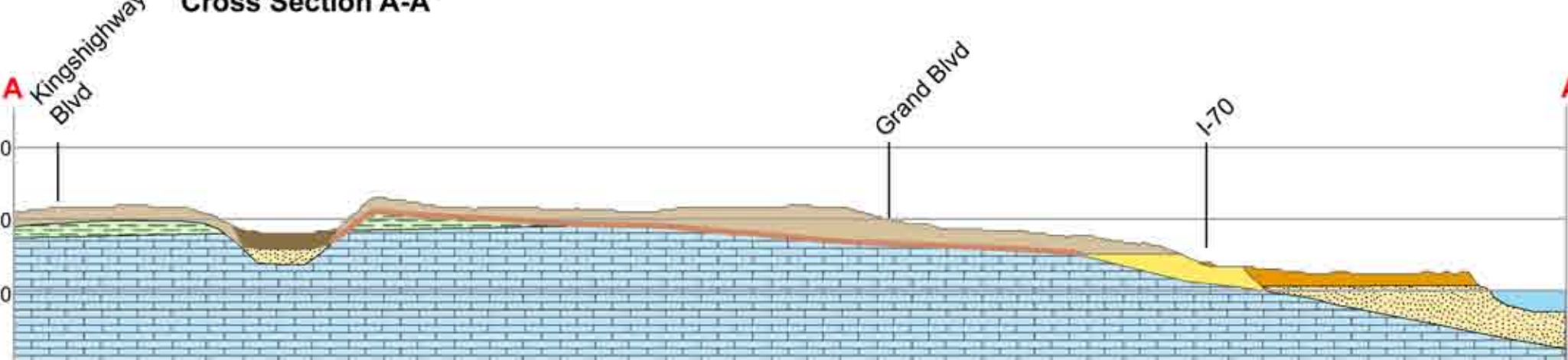
ADJOINING 7.5 QUADRANGLE NAMES

ROAD CLASSIFICATION

GRANITE CITY, IL-MO 1996

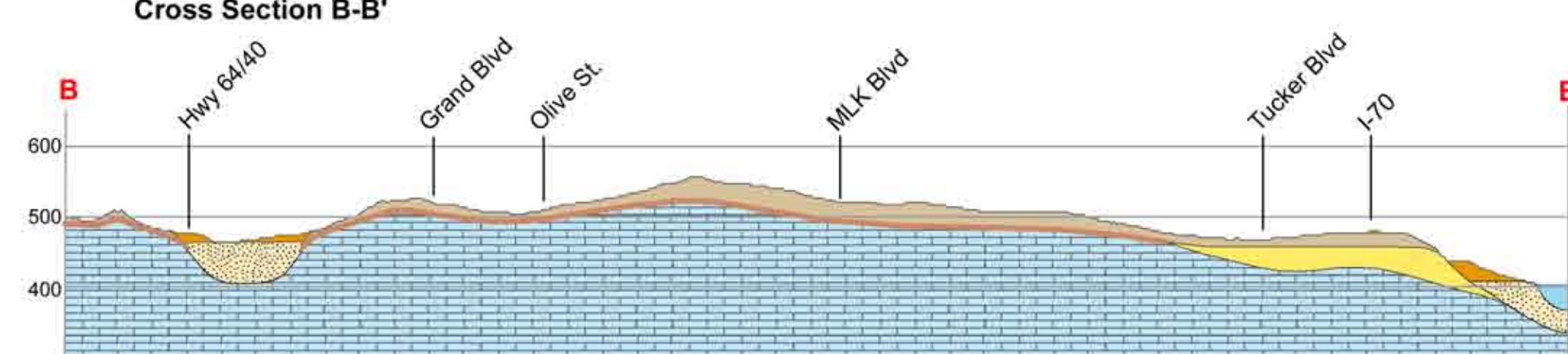
NADA 2562 is NAD SERIES 1563

Cross Section A-A'



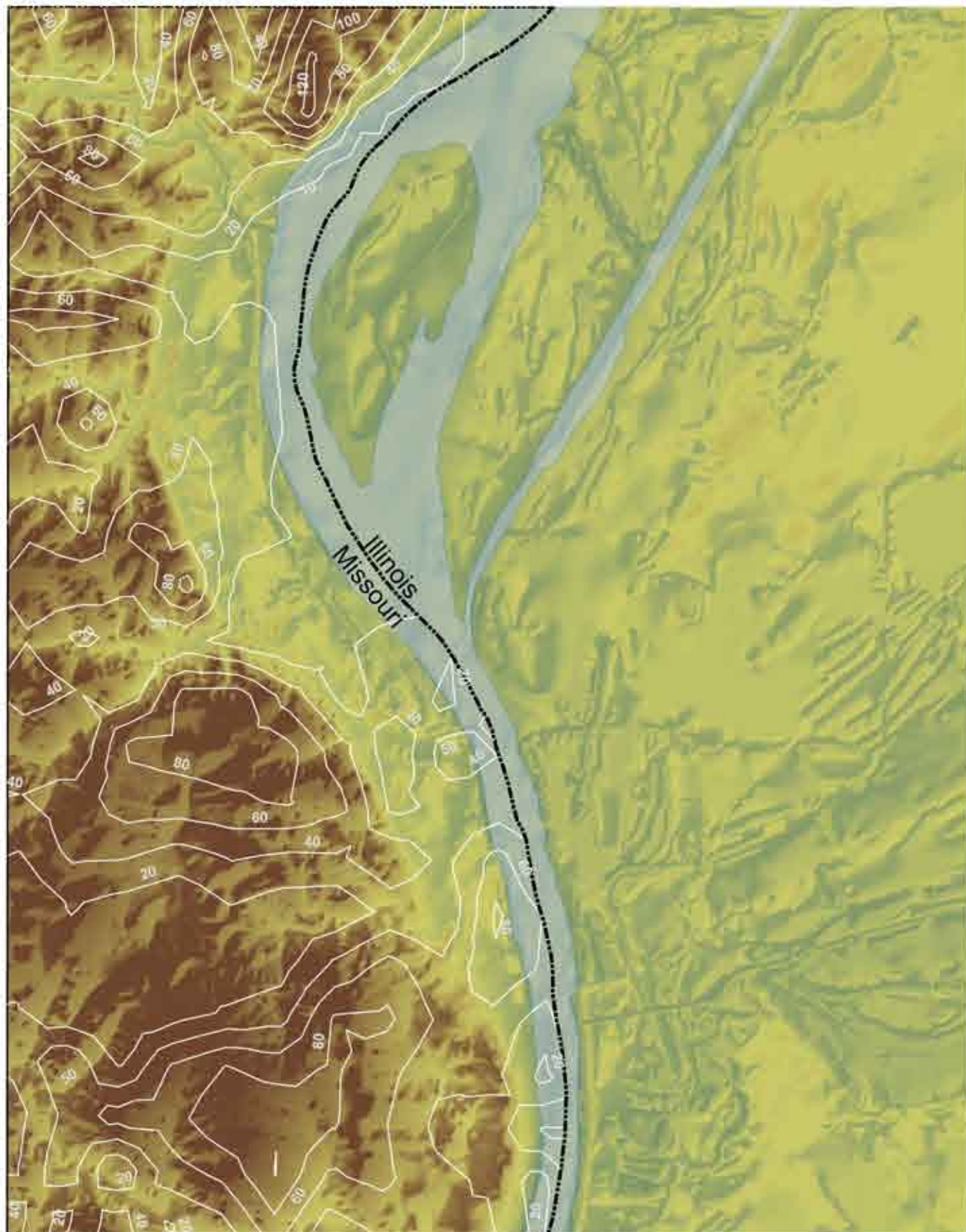
Vertical scale 1 inch = 200 feet
Horizontal scale 1 inch = 2000 feet

Cross Section B-B'



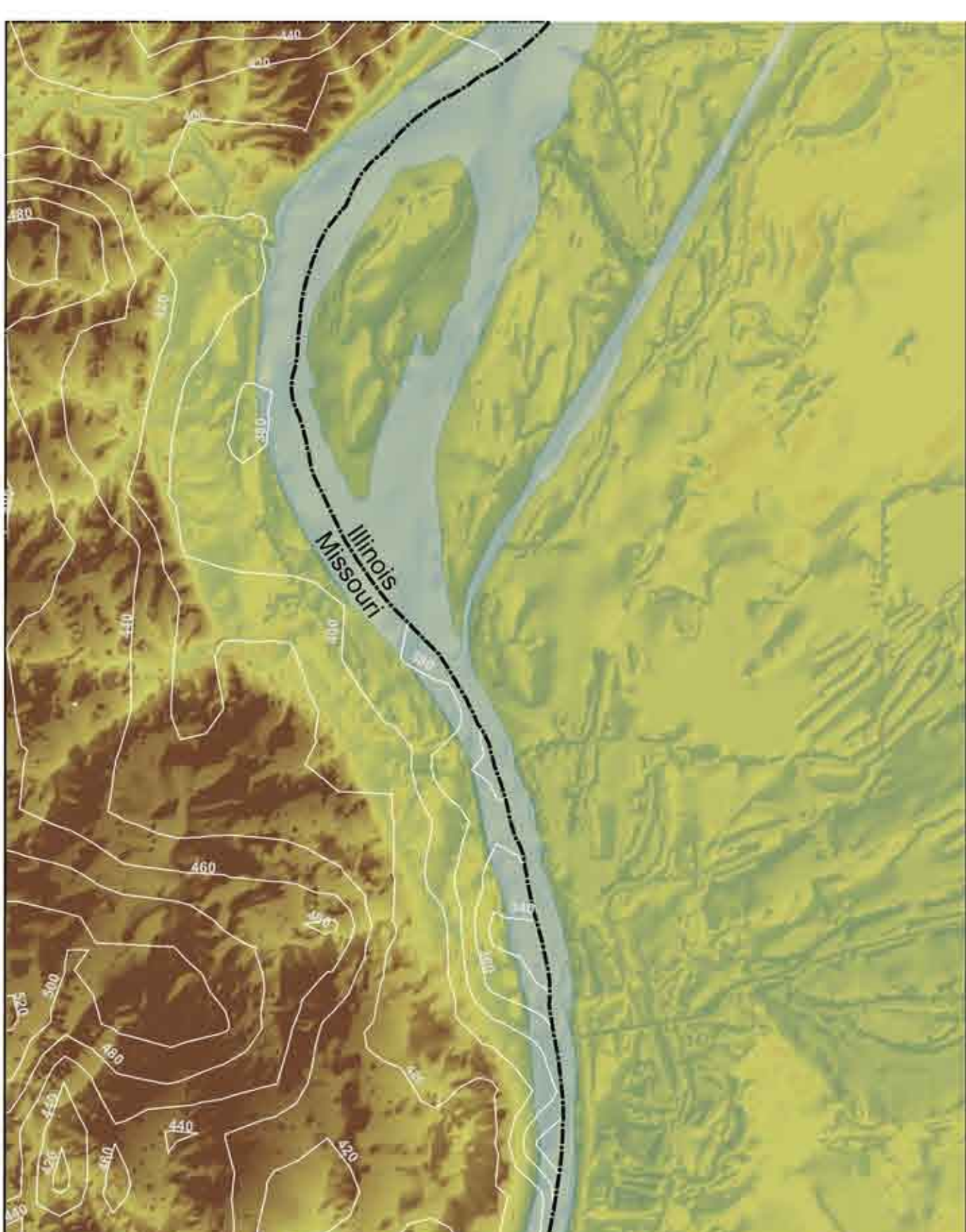
Mississippian bedrock, Pennsylvanian bedrock, Quaternary till, Quaternary alluvial terrace, Quaternary loess, Quaternary alluvium, Abandoned channel fill, Artificial fill

SURFICIAL MATERIAL THICKNESS



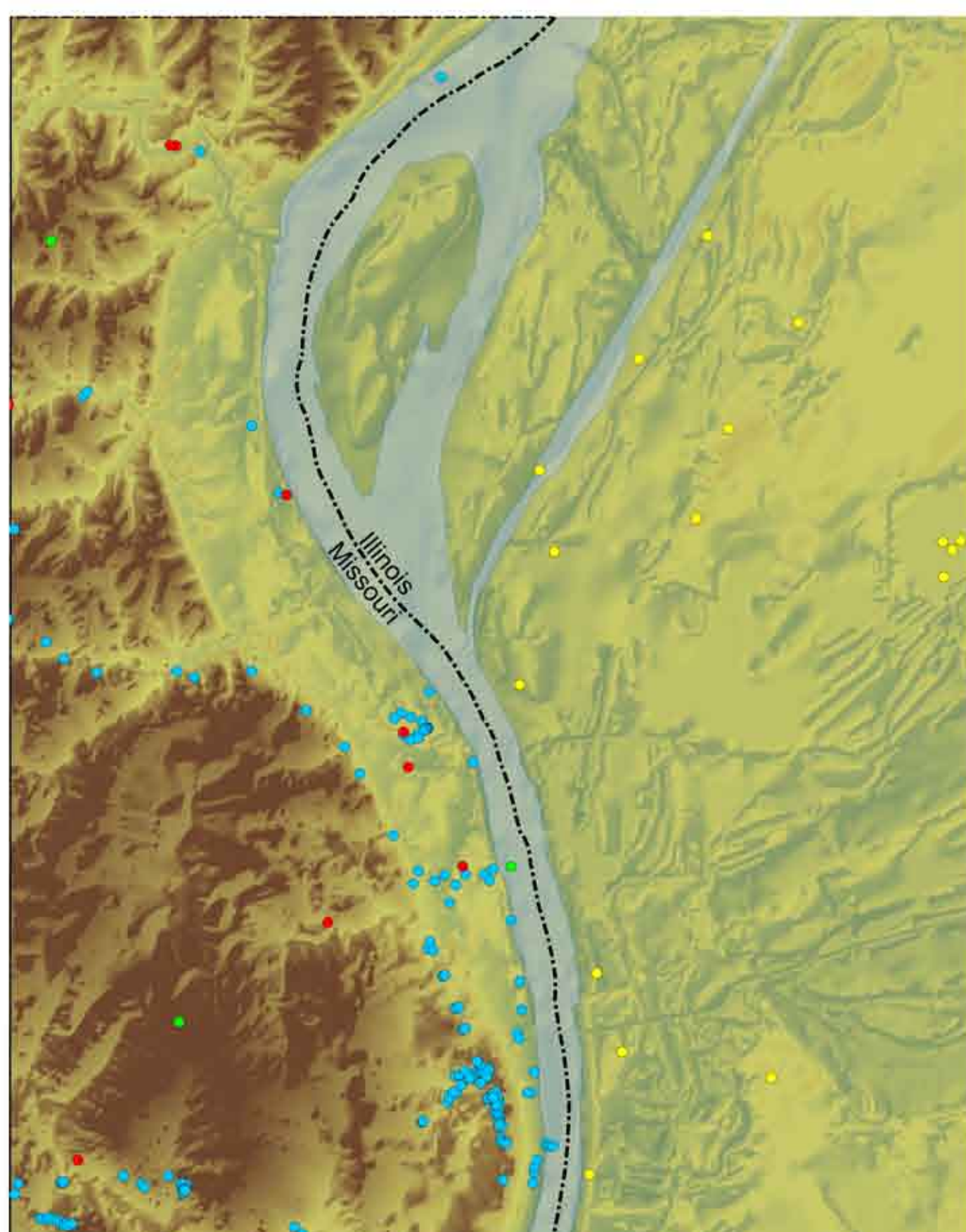
Scale 1:60,000
Contour Interval = 20 feet

TOP OF BEDROCK ELEVATION



Scale 1:60,000
Contour Interval = 20 feet

SUBSURFACE DATA POINTS



Scale 1:60,000
Data Source: MEGA Well Logs, MEGA Wells Certified, Geotechnical Borings, Illinois Geological Survey Logs