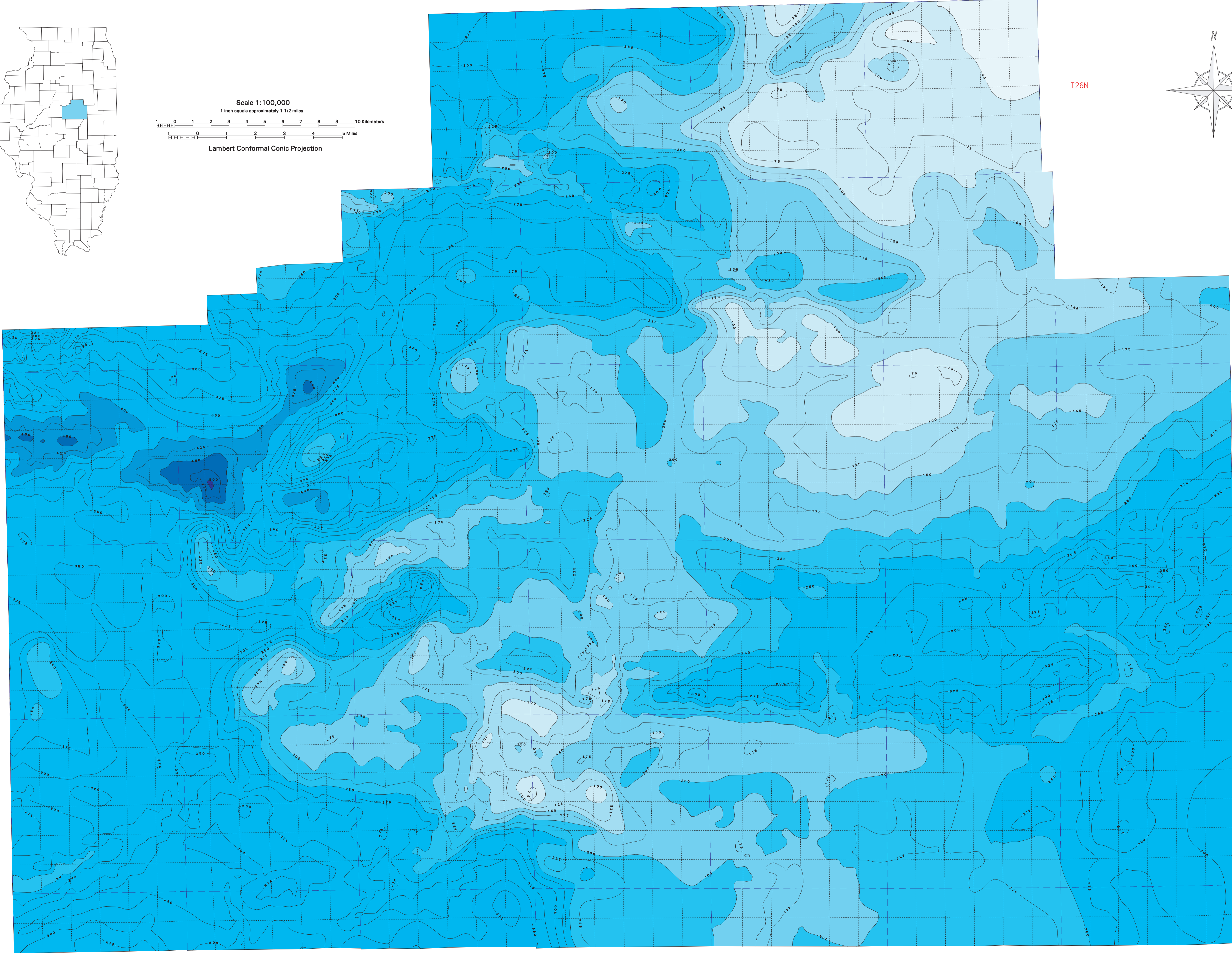
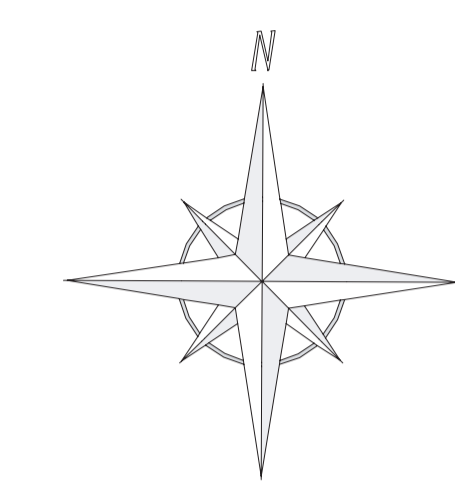
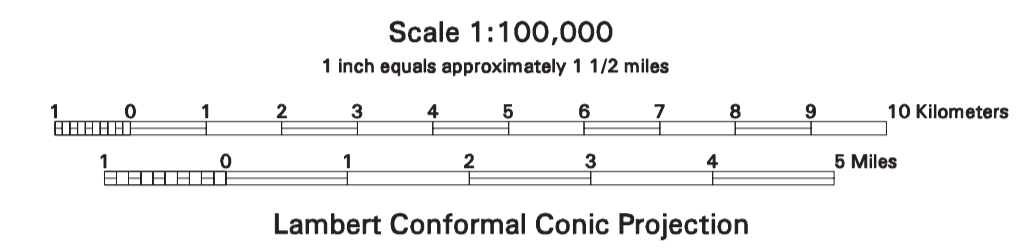
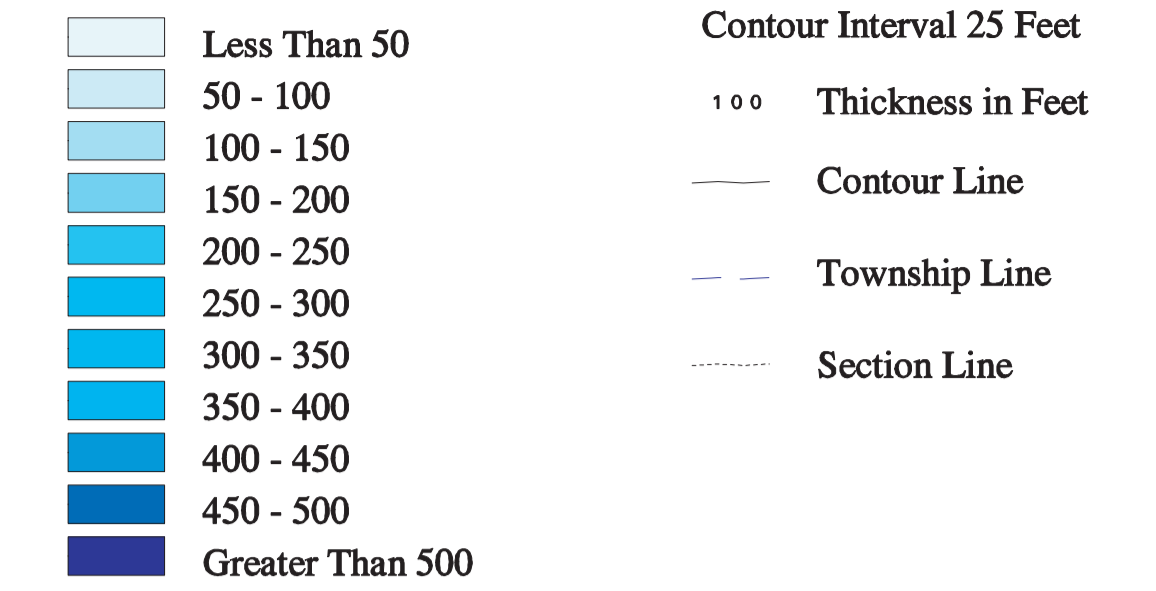
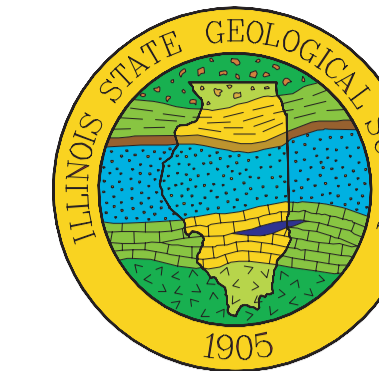


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Thickness of Quaternary Deposits in McLean County, Illinois

Melisa M. McLean, Maureen D. Kelly and Matthew H. Riggs

1997



R1W R1E R2E R3E R4E R5E R6E

T26N

T25N

T24N

T23N

T22N

T21N

Quaternary Deposits Thickness

This map shows the thickness of un lithified Quaternary deposits in McLean County, Illinois. Quaternary materials were deposited by glacial ice as well as glacial meltwaters and wind and include till, sand, gravel and loess of the pre-Illinois, Illinois and Wisconsin glacial episodes. The thinnest deposits, less than 50 feet thick, are found in the northeast corner of the county. Thick deposits are found within large bedrock valleys in the northwest, southwest and southeast portions of the county (see inset map). These bedrock valleys were filled with sand, gravel and till of the pre-Illinois and Illinois glacial episodes and were subsequently overlain by deposits of the Wisconsin glacial episode. The pre-Illinois and Illinois sand and gravel within the bedrock valleys are fairly thick away from the edges of the valleys, and have a high potential for development as groundwater resources.

Thick Quaternary deposits are also located in the central portion of the county beneath broad east-west trending ridges. These ridges, called moraines, form when the melting and forward flow rates of glacial ice are equal. This allows the glacier to transport sufficient sediment to form a ridge (or moraine) at its leading edge. This ridge is the Bloomington Moraine which formed during the last glacial episode (Wisconsin). These deposits are mainly fine-grained (clay and silt) till units of the Wedron Group.

Methodology

This map was based on the surface topography and bedrock elevation data. Contouring software, EarthVision, version 2.0, (Dynamic Graphics, Inc., 1994) was used to determine the difference between the ground surface topography and the bedrock surface topography and to create a preliminary isopach map. The preliminary contour lines were edited to produce a map that best represents the thickness of Quaternary deposits in the county.

Public Land Survey boundaries were digitized from U.S. Geological Survey 7.5-minute topographic maps. The slight skewness in the orientation of the map is due to the map projection (Lambert conformal conic). Public Land Survey lines in this part of the state do not run true north-south or east-west.

This map is one of several developed to assist McLean County in establishing a geologically based process for landfill site screening. The thickness of Quaternary deposits was one component used to create an aquifer sensitivity model for the county.

References Cited

- Dynamic Graphics, Inc., 1994. EarthVision User's Guide 2.0 Volume 1. Dynamic Graphics, Inc., Alameda, CA, 747 p.
- Kempton, J.P., W.H. Johnson, P.C. Heigold, and K. Cartwright, 1991. Mahomet Bedrock Valley in East-central Illinois; Topography, Glacial Drift Stratigraphy, and Hydrogeology. In W. N. Melhorn and J.P. Kempton, editors, Geology and Hydrogeology of the Teays-Mahomet Bedrock Valley System. Geological Society of America, Special Paper 258, p. 100.

Appropriate Use of Map

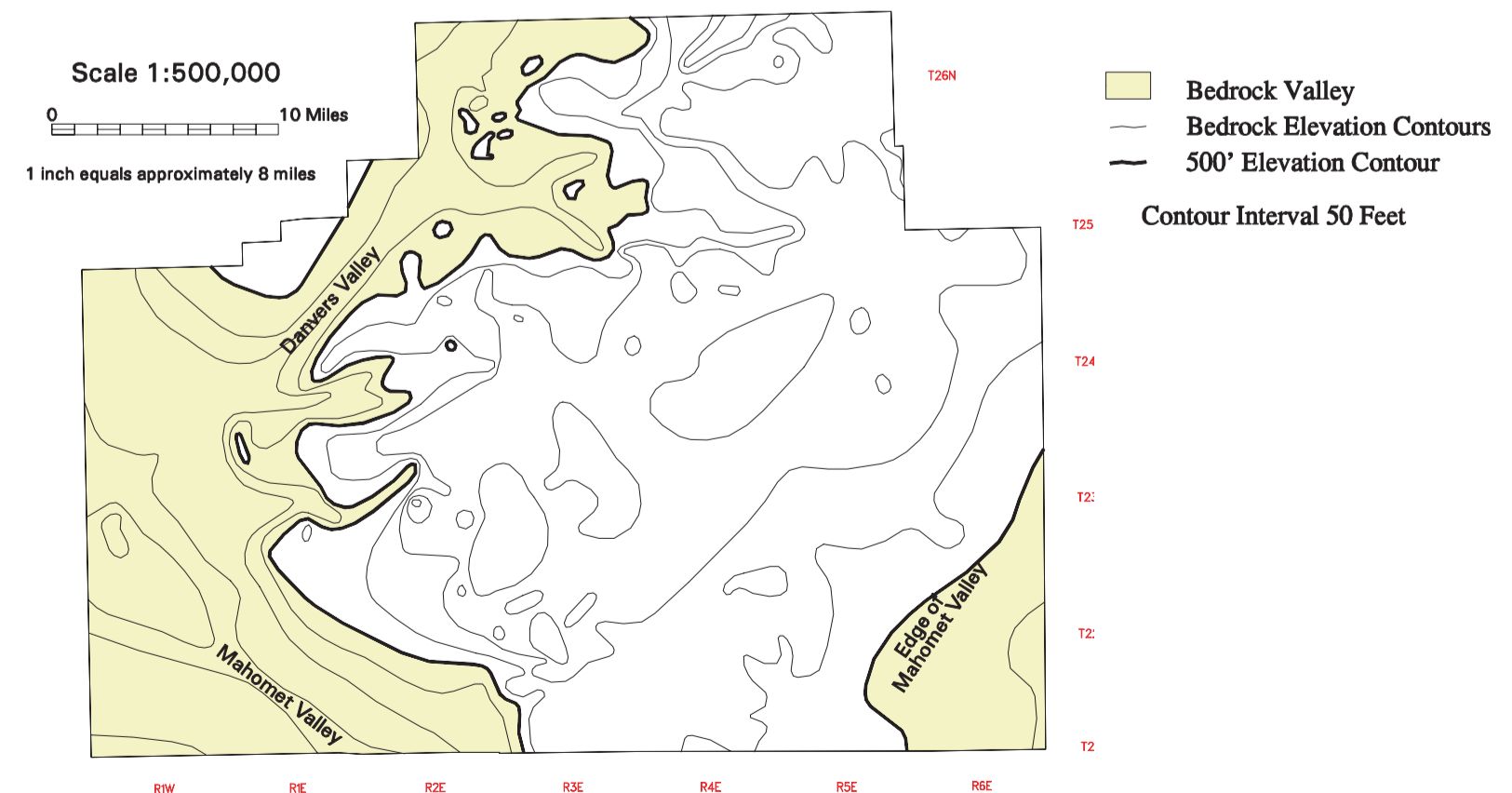
This map is based on interpretations of available data obtained from a variety of sources. Most locations of data are not verified and interpretations based upon them are not guaranteed by the ISGS. This map provides a regional thickness of Quaternary deposits for regional resource evaluation and planning. Due to the 25 foot contour interval, it should not be used for site specific study.

Acknowledgments

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EarthVision is a trademark of Dynamic Graphics, Inc. The use of a trade name does not constitute an endorsement of this product by the ISGS.

Bedrock Valleys in McLean County, Illinois after Kempton, J.P., et al, 1991



R1W R1E R2E R3E R4E R5E R6E