

Illinois State Geological Survey
William W. Shilts, Chief
Champaign

Thickness of Quaternary Deposits in Lee County, Illinois

Renee J. Nagy

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State of Illinois
Department of Natural Resources

Explanation

This map shows the thickness of un lithified Quaternary deposits in Lee 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 Illinoian and Wisconsin glacial episodes.

The thickest Quaternary deposits are found in the Bloomington Ridged Plain physiographic division, along the southern and eastern portion of the county, beneath broad ridges (Inset A and B). These ridges, called moraines, form when the melting and forward flow rates of glacial ice are equal. Over time, (likely 10⁵ to 10⁶ years) this allows the glacier to transport sufficient sediment to form a ridge (or moraine) at its leading edge. This ridge is the Bloomington Moraine (Inset B) which formed during the last glacial episode (Wisconsin). These deposits are mainly fine-grained (clay and silt) till units of the Wedron Group (Hansel and Johnson, 1996) and range in thickness from 200 to greater than 500 feet. Thicker Quaternary deposits are also located beneath Temperance Hill, a remnant of a north-east south-west trending Illinoian episode moraine (Berg, et al., 1985) located near the center of the county (Inset B), and along the axis of the Rock and Troy bedrock valleys (Inset C).

The thinnest Quaternary deposits are typically found in the north-west part of Lee County in the Rock River Hill Country physiographic division. These deposits are typically loess, windblown silt, over Illinoian till of the Glasford Formation. The Glasford Formation ranges in texture from clay loam to sandy loam diamicton.

The thickness of the Quaternary deposits of Lee County was determined by subtracting the elevation of the bedrock surface from the land surface elevation. The bedrock surface was determined from available data. For data resources see Locations of Data points in Lee County, Illinois by R. Nagy (ISGS OFS 1999-1a). Land surface elevation was compiled from Digital Raster Graphic (DRG) files of 7.5 minute topographic quadrangles from the United States Geological Survey. All unconsolidated deposits (glacial till and outwash, loess, and modern stream sediments) were included in this thickness interval.

References

Berg, R.C., J.P. Kempton, L.R. Follmer, and D.P. McKenna, 1985, Illinoian and Wisconsinan Stratigraphy and Environments in Northern Illinois - The Altonian Revised: Illinois State Geological Survey Guidebook 19, 177 p.

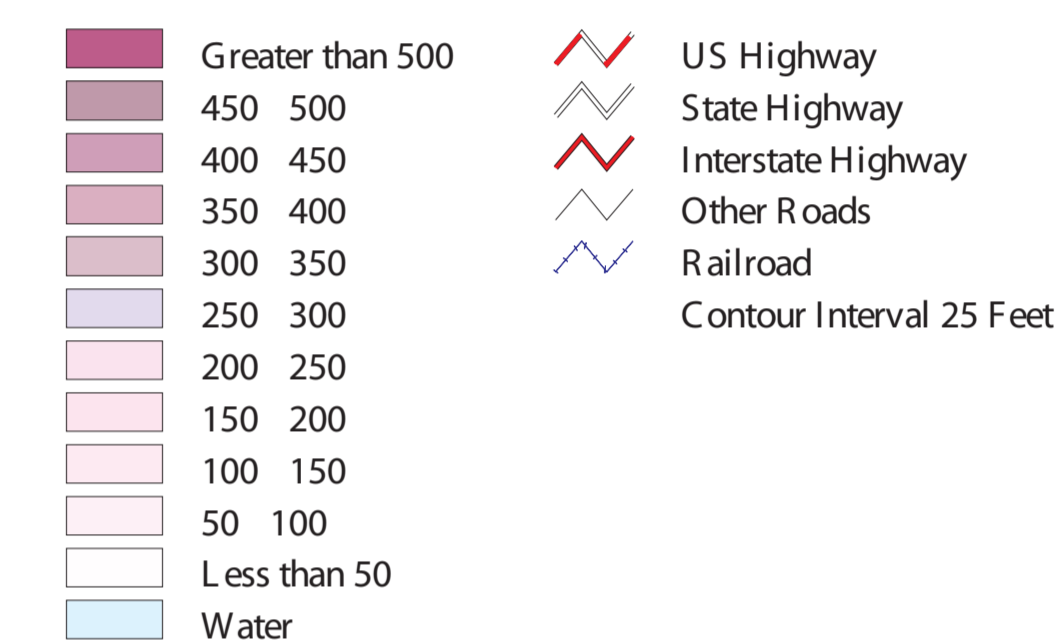
Bristol, H.M. and T.C. Bushbach, 1973, Ordovician Galena Group (Trenton) of Illinois - Structure and OilFields: Illinois State Geological Survey, Illinois Petroleum 99, pl. 1.

Hansel, A.K. and W.H. Johnson, 1996, Wedron and Mason Groups: Lithostratigraphic Reclassification of Deposits of the Wisconsin Episode, Lake Michigan Lobe Area, Illinois State Geological Survey Bulletin 104, 116p.

Leighton, M.M., G.E. Elklaw, and C.L. Holberg, 1948, Physiographic Divisions of Illinois: Illinois State Geological Survey Report of Investigations 129, 33p.

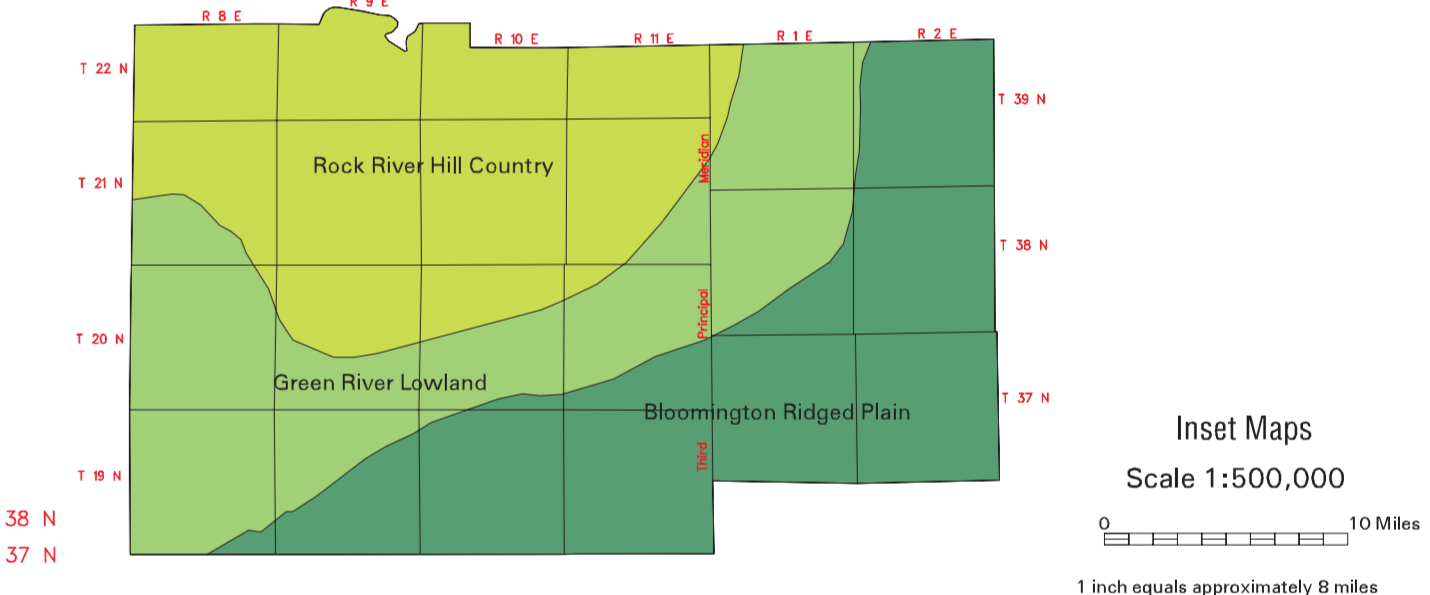
Willman, H.B. and J.C. Frye, 1970, Woodfordian Moraines of Illinois. Illinois State Geological Survey Bulletin 94, Plate 1.

Elevations in feet above mean sea level



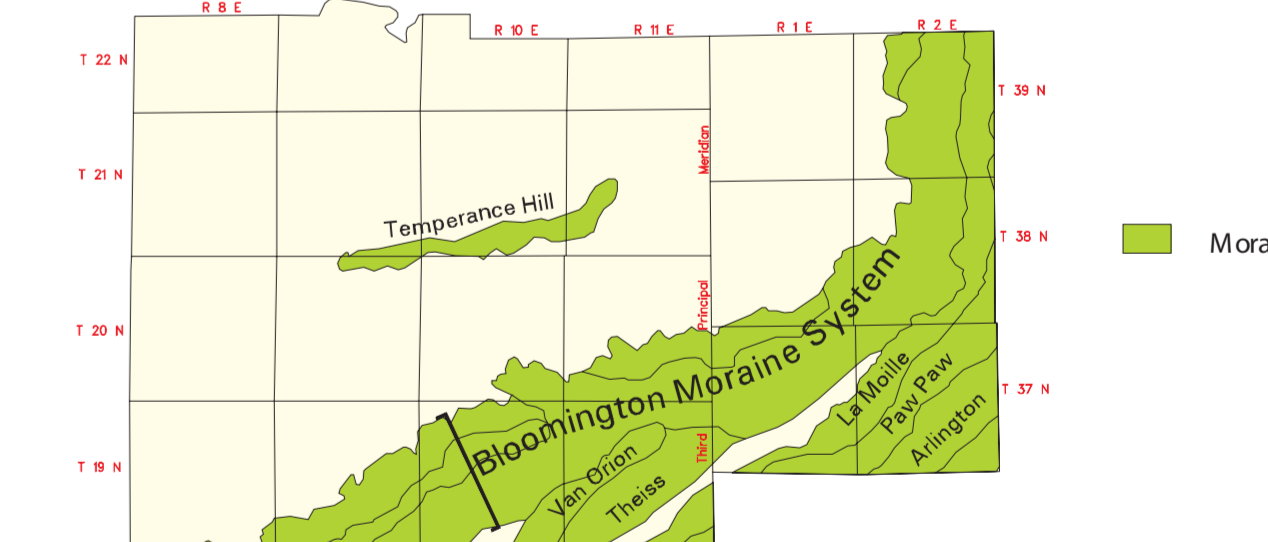
Inset A. Physiographic Divisions of Lee County, Illinois

modified from Leighton et al., (1948)



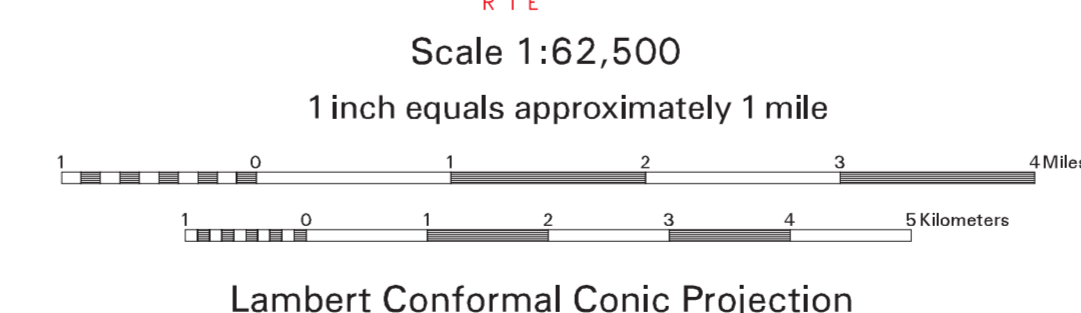
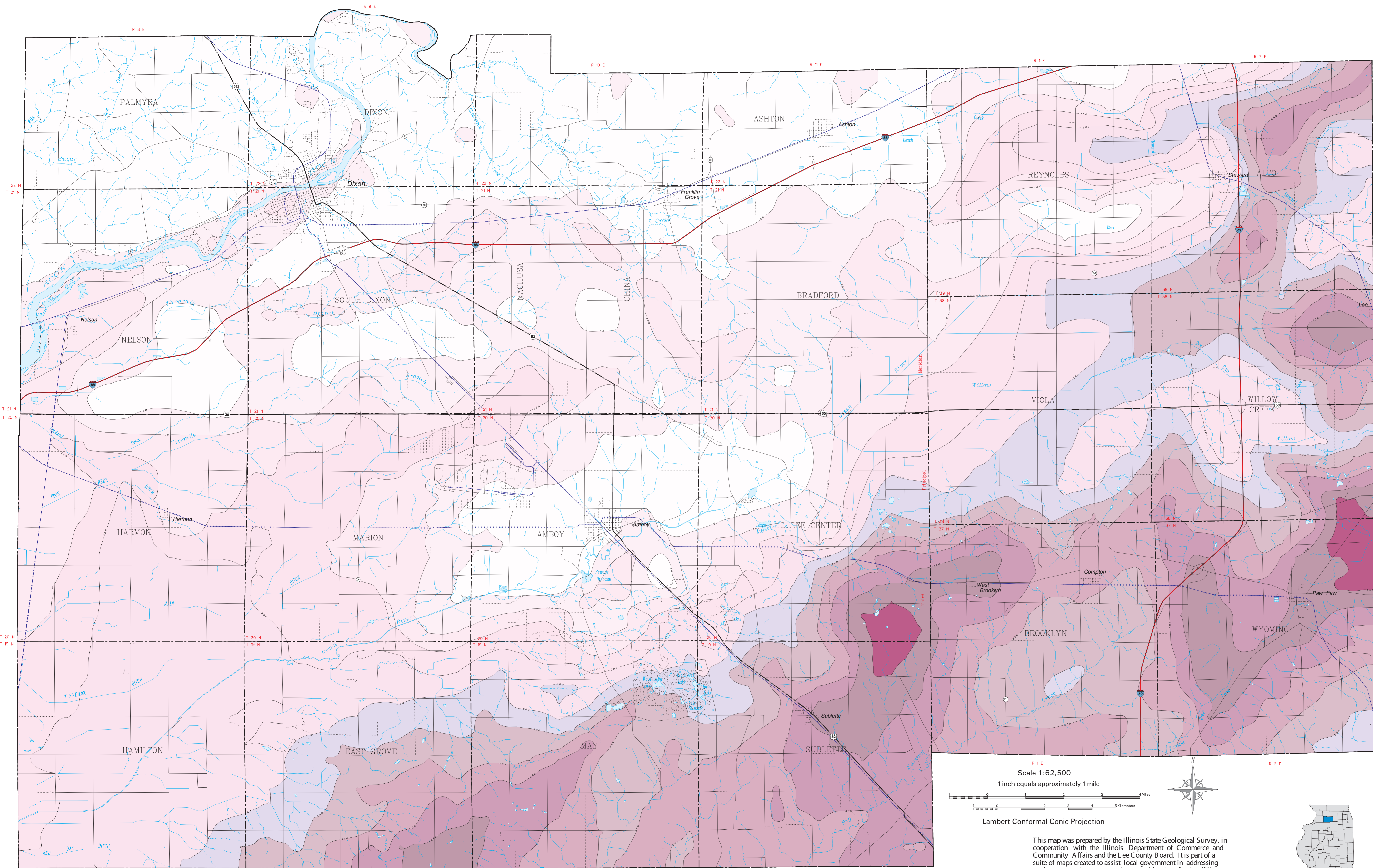
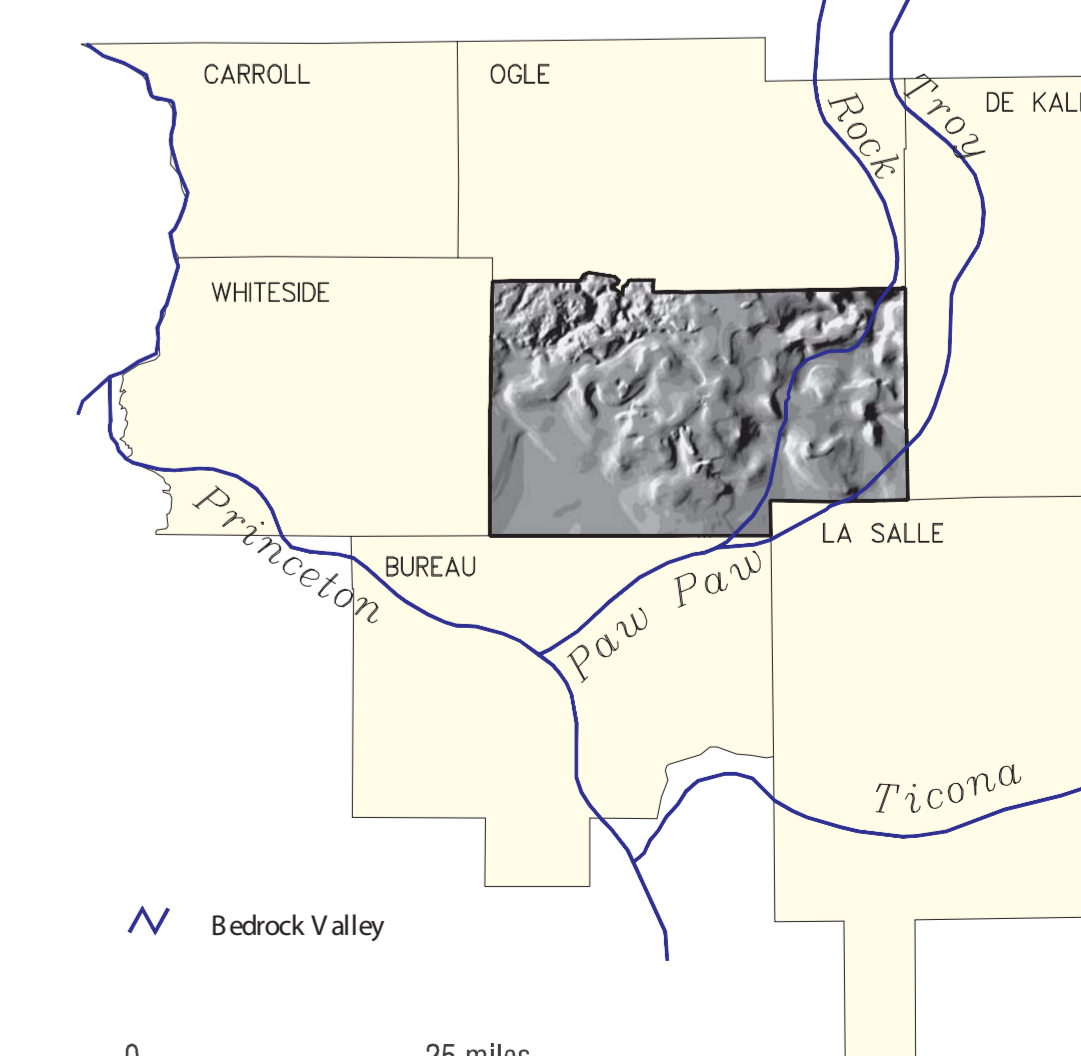
Inset B. Glacial Moraines of Lee County, Illinois

modified from Willman and Frye, (1970)



Inset C: Buried Bedrock Valleys in North-Central Illinois

modified from Bristol and Bushbach, (1973)



This map was prepared by the Illinois State Geological Survey, in cooperation with the Illinois Department of Commerce and Community Affairs and the Lee County Board. It is part of a suite of maps created to assist local government in addressing geologic questions concerning capable sites for landfill development. Maps produced for this study are intended for regional land use planning purposes. More detailed mapping is needed for site specific considerations. This map has been reviewed for scientific accuracy and has been edited to meet the quality standards of maps in the ISGS Map Series.

