

SURFICIAL GEOLOGY OF CHILLICOTHE QUADRANGLE

PEORIA, MARSHALL, AND WOODFORD COUNTIES, ILLINOIS

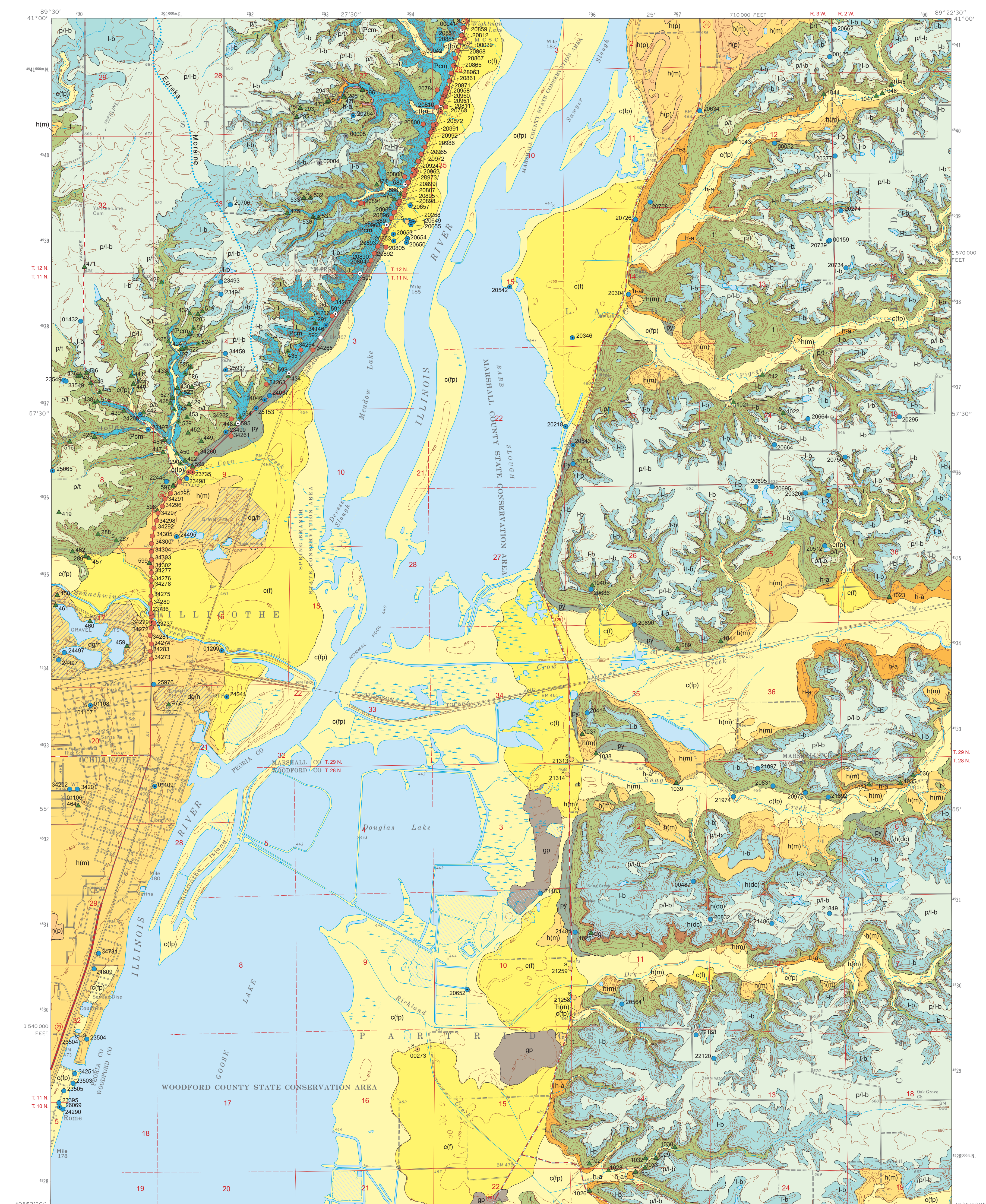
Illinois Department of Natural Resources
ILLINOIS STATE GEOLOGICAL SURVEY
William W. Shilts, Chief

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2007

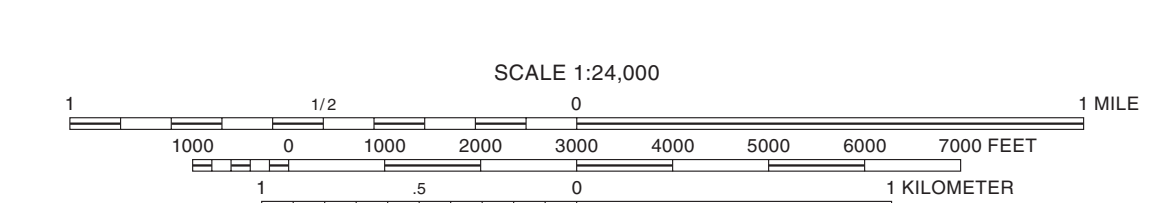
Illinois Preliminary Geologic Map
IPGM Chillicothe-SG

QUATERNARY DEPOSITS

Description ¹	Unit	Interpretation
HUDSON EPISODE (~12,000 years before present (B.P.) to today)		
Areas of disturbed earth and/or removed earth; grain size ranges from clay to gravel, and may include waste or other rubble	Disturbed ground dg	Deposits disturbed or modified by human activity in gravel pits, coal mine spoil banks, earthen dams, other excavations, and landfills
Peat, organic silt, and muck, stratified; dark gray to black, soft and compressible; may be interbedded with silt, fine sand, and clay; overlies Cahokia Formation; less than 5 feet thick	Grayslake Peat gp	Peat; organic-rich deposits in abandoned channels, shallow oxbow lakes and low-lying depressions on modern floodplain of Illinois River; subject to frequent flooding
Silt and clay with local surface occurrences of sand and gravel; typically grades at depth to sand or gravel, which may be indistinguishable from Henry Formation; stratified, brownish gray to gray; 5 to 50 feet thick	Cahokia Formation (floodplain facies) c(fp)	Alluvium (river sediment); post-glacial overbank deposits on floodplains, natural levees, and in backwater lakes; coarse deposits in channels, point bars, and tributary streams
Silt and silty clay, interbedded with fine sand, and locally gravel and redeposited bedrock clasts; brownish soft to moderately stiff gray; calcareous or non-calcareous; typically overlies Cahokia or Henry Formations; interfingers with Cahokia floodplain facies; 5 to 30 feet thick	Cahokia Formation (alluvial fan facies) c(f)	Alluvial fan deposits; post-glacial redeposited loess and fill in fans where streams are avulsed; emerge from uplands onto low-slope valley floors; subject to flooding
Silt, clay, sand, gravel, and diamictic; unstratified; crudely stratified; yellowish brown to brownish gray; may include bedrock clasts; overlies Cahokia, Henry, or older glacial drift or bedrock; interfingers with Cahokia; 5 to 25 feet thick	Peyton Formation py	Stopwash, talus, rock-fall, and slump deposits on or at base of steep slopes in small coalescing fans along bluff of Illinois River valley and its tributaries; post-glacial; may be poorly consolidated and unstable
WISCONSIN EPISODE (~12,000–75,000 years B.P.)		
Sand; very fine to fine, well-sorted, and loose; yellowish brown to grayish brown; calcareous in lower part; conformably overlies Henry Formation; 5 to 15 feet thick	Henry Formation (Parkland facies) h(p)	Sand dunes, dune fields, and sheet deposits of sand eroded from underlying outwash and redeposited locally on Illinois River terraces; proglacial and post-glacial
Sand and gravel with cobbles and boulders; stratified; yellowish brown to grayish brown; calcareous; usually clean and moderately well-sorted; unconformably overlies older sand and gravel deposits, glacial diamictics ³ , or bedrock; 10 to 20 feet thick in tributary valleys and 10 to 80 feet thick in Illinois River valley	Henry Formation (Mackinaw facies) h(m)	Fluvial (riverine) and ice-marginal outwash deposits in Illinois River valley in terraces, former bars and channels and locally in terraces along bluff of Illinois River valley and its tributaries; deposited proglacially by meltwater from distant glaciers; not consistently differentiable from sand and gravel of the underlying Peat Formation or Sankoty Sand Member where intervening tills are absent
Pebbly silty clay loam diamictic; unstratified; olive (oxidized) to grayish brown (unoxidized); firm to hard; compact; calcareous; massive to jointed; some cobbles, few boulders; discontinuous beds of sand, gravel, silt, or clay; overlies in places by wind-blown silt (loess) of the Peoria Silt; unconformably overlies Dry Creek tongue, Tiskliwa Formation, or older units; 5 to 35 feet thick	Batestown Member, Lemont Formation lb	Till and associated sediment derived directly from glacial ice; overlain by thin covering of loess; occurs east of the western edge of the Eureka Moraine; absent in the Illinois River valley and tributary valleys, where removed by post-glacial erosion
Sand and gravel with cobbles; poorly sorted; yellowish brown to grayish brown; calcareous; cemented in places with calcite; grades laterally into fine-grained stratified sediments; underlies Batestown Member; unconformably overlies Tiskliwa Formation; 5 to 30 feet thick	Dry Creek tongue, (internal) Henry Formation h(dc)	Fluvial (river-deposited) and ice-marginal outwash deposits in channel fills and along former glacial margins; exposed on steep slopes, in excavations, and in the abandoned gravel pits along Dry Creek, SW NW Sec. 11, T28N, R3W, Woodford County
Pebbly loam diamictic; unstratified, reddish brown (oxidized) to dark brownish gray with distinctive reddish cast (unoxidized); firm to hard, calcareous; some cobbles; few boulders; includes discontinuous beds of stratified sand, silt, or clay; lower 5 to 30 feet commonly more silty than upper part, usually lacks reddish cast, and may contain dispersed wood fragments and gastropod shells; unconformably overlies Ashmore Tongue, Morton Tongue silt, Foxiana Silt, or older deposits; 25 to 120 feet thick	Tiskliwa Formation t	Till and associated sediment derived directly from glacial ice; exposed in gullies, excavations and along steep slopes where overlying Peoria Silt and the Batestown Member have been eroded; occurs throughout the uplands; absent in the Illinois River valley and tributary valleys where removed by post-glacial erosion; where lower part of the unit is gray, the Delavan Member can be differentiated, and where it contains common wood fragments, the Oakland Member can be differentiated.
Fine to coarse sand, sand and gravel; occasional cobbles; yellowish brown to grayish brown; calcareous; few boulders; water saturated; occasional armored "till balls" in the upper part; calcite cemented in places; overlies older sand and gravel and diamictic deposits or bedrock; 5 to 70 feet thick	Ashmore Tongue, Henry Formation ha	Fluvial and ice-marginal outwash deposits in former bars and channels of Ancient Mississippi River; deposited by meltwater from advancing Wisconsin Episode glacier; also sheets and channels fills beneath Tiskliwa diamictic; widespread in subsurface; underlies but not differentiated from rest of Henry Formation in Illinois River valley; not consistently differentiable from underlying sand and gravel of the Peat Formation or Sankoty Sand Member where intervening diamictics are absent
ILLINOIS EPISODE (~130,000–200,000 years B.P.)		
Pebbly loam to silty clay loam diamictic; some cobbles; few boulders; unstratified; yellowish brown (oxidized) to dark brownish gray (unoxidized); calcareous; firm to hard; discontinuous beds of sand, silt, or clay; conspicuous coal clasts; includes Radnor, Hulick and Kellerville members (diamictics) and tongues of the Pearl Formation sand and gravel; unconformably overlies bedrock; upper part weathered in profile of Sangamon Geosol ⁴ ; 5 to 15 feet thick	Glasford Formation g	Till and associated subglacially and ice-marginally deposited sediment derived directly from glacial ice; widespread, but discontinuous, having been largely removed by subsequent fluvial and glacial erosion; only exposed along Rattlesnake Hollow, Sec. 27, T12N, R9E
PRE-QUATERNARY		
Shale, clay, sandstone, limestone,	Carbonate and Modesto Formations Pcm	Lithified marine, estuarine, deltaic, fluvial, and swamp deposits



Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey, Digital Line Graph data from 1994.
North American Datum of 1983 (NAD 83)
Projection: Transverse Mercator
10,000-foot ticks: Illinois State Plane Coordinate system, west zone (Transverse Mercator)
1,000-meter ticks: Universal Transverse Mercator grid system, zone 16



BASE MAP CONTOUR INTERVAL 20 FEET
SUPPLEMENTARY CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
Released by the authority of the State of Illinois: 2007

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Digital cartography by J. Carrell, J. Domier, and Z. Golshani, Illinois State Geological Survey. GIS support by P. Johnson, L. Smith, and B. Siff, Illinois State Geological Survey.

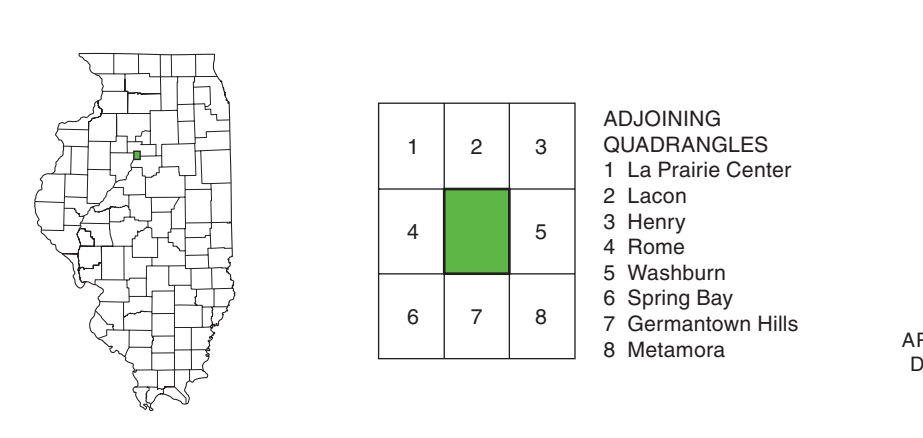
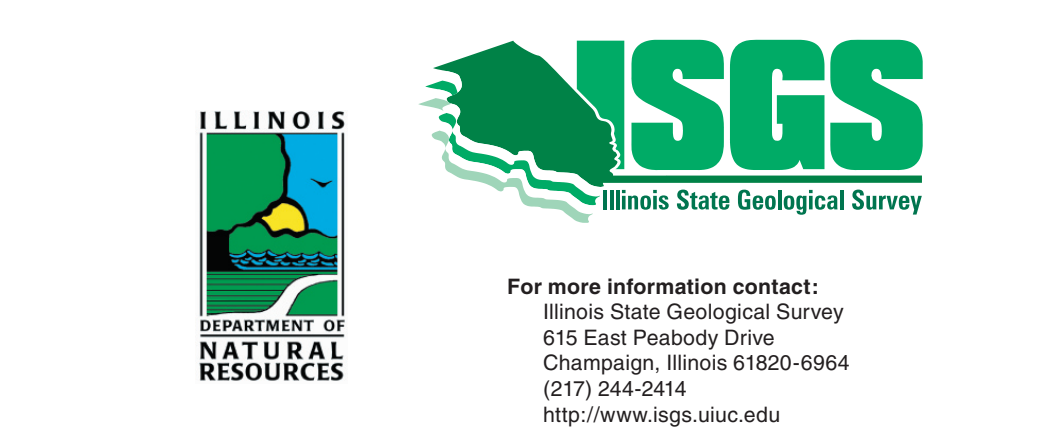
This Illinois Preliminary Geologic Map (IPGM) is a lightly edited product, subject to less scientific and cartographic review than our Illinois Geological Quadrangle (IGQ) series. It will not necessarily correspond to the format of IGQ series maps, or to those of other IPGM series maps. Whether or when this map will be upgraded depends on the resources and priorities of the ISGS.

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¹ Stratigraphic nomenclature follows that of Hansel and Johnson (1996) for Wisconsin and younger deposits and Willman et al. (1975) for deposits older than Wisconsin Episode; within each unit, the components are listed in order of decreasing abundance.
² Stratified deposits are those formed, arranged, or laid down in layers or strata.
³ Diamictic is a name for a unsorted or poorly sorted, sedimentary deposit that contains a wide range of particle sizes, such as a till that contains clay, silt, sand, gravel, cobbles and boulders.
⁴ Geosol is a formal term for an ancient soil profile, which consists of one or more soil horizons, usually buried, that developed through weathering of deposits when they were exposed at a former land surface.

References
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, 116 p.
Willman, H.B., E. Atherton, T.C. Buschbach, C. Collinson, J.C. Frye, M.E. Hopkins, J.A. Lineback, and J.A. Simon, 1975. Handbook of Illinois stratigraphy: Illinois State Geological Survey, Bulletin 95, 281 p.

- Data Type**
- ▲ Outcrop
 - Stratigraphic boring
 - Water boring
 - Engineering boring
 - Coal boring
 - Hand-auger boring
- Labels indicate samples (s).
Numeric labels indicate the county number. Some county numbers are not shown in areas of closely spaced boreholes.
Outcrop and hand-auger boring labels indicate geologist's field number.
Dot indicates boring is to bedrock.
- Note: The county number is a portion of the 12-digit API number on file at the ISGS Geological Records Unit. Online well and boring records are available from the ISGS Web site.



ADJOINING QUADRANGLES
1 La Prairie Center
2 Lecon
3 Henry
4 Rome
5 Washburn
6 Spring Bay
7 Germantown Hills
8 Metamora

