SURFICIAL GEOLOGY OF SPRING BAY QUADRANGLE
PEORIA AND WOODFORD COUNTIES, ILLINOIS

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

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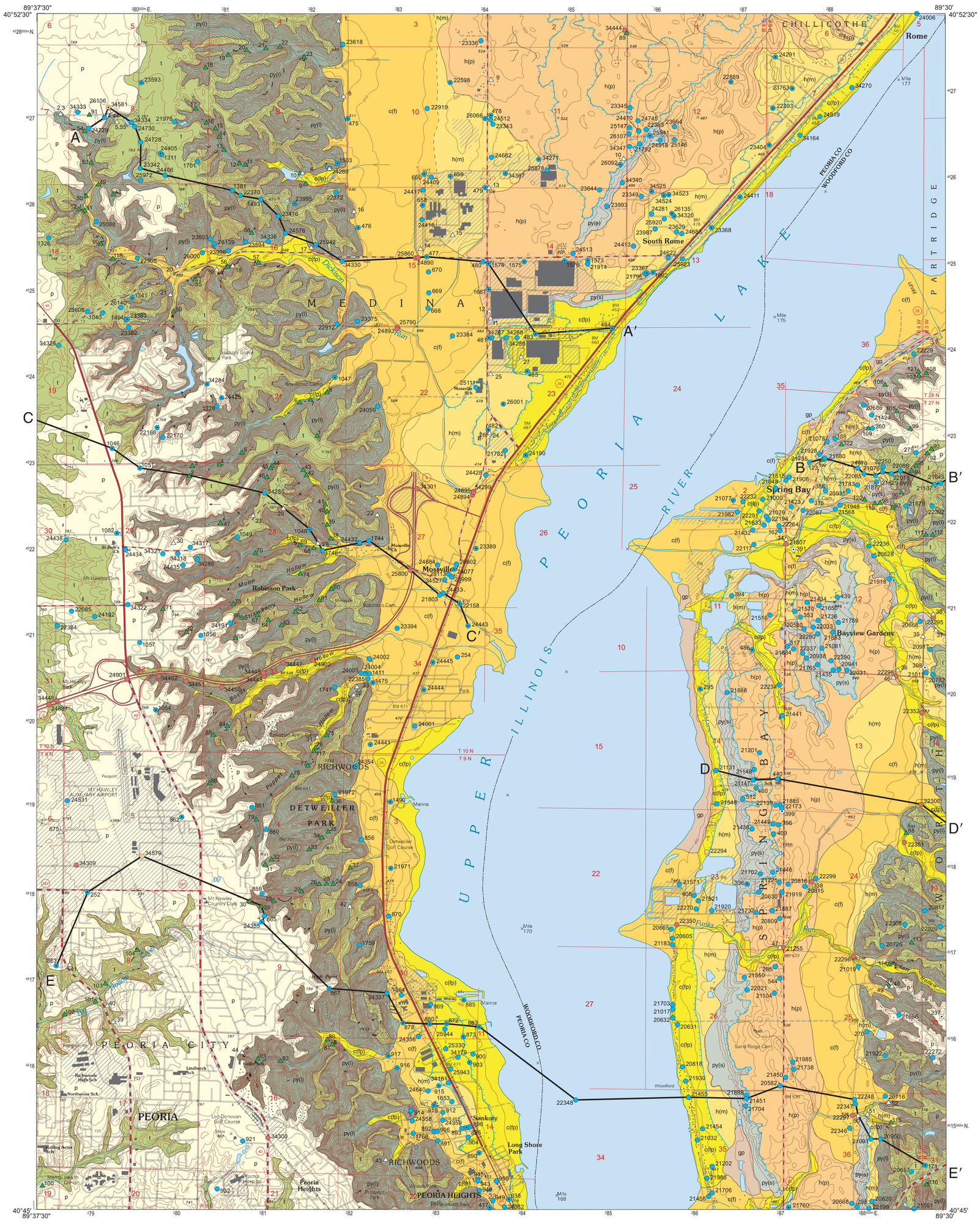
2005

Illinois Geologic Quadrangle Map
IGQ Spring Bay-SG



Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey. Topography compiled from imagery dated 1946. Revised and updated from imagery dated 1995. Field checked 1996.

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

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SCALE 1:24 000

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

BASE MAP CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Released by the authority of the State of Illinois: 2005

Geology based on field work by A. Stumpf, 2002–2003. Twenty-five percent of mapped area was field verified.

Accompanying datasets containing project numbers and their corresponding API numbers, along with grain size, geochemistry and field notes will be accessible along with the map on the ISGS website <http://www.isgs.uiuc.edu/online-maps/igq/igq.htm>.

Digital cartography by M. Barrett, Illinois State Geological Survey.

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ILLINOIS DEPARTMENT OF NATURAL RESOURCES

1905-2005 ISGS Illinois State Geological Survey

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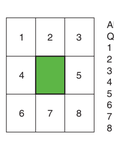

ADJOINING QUADRANGLES
1 Edelstein
2 Rome
3 Chillicothe
4 Dunlap
5 Germantown Hills
6 Peoria West
7 Peoria East
8 Washington

APPROXIMATE MEAN DECLINATION, 2005

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
State Route

QUATERNARY DEPOSITS

Description	Unit	Interpretation
HUDSON EPISODE (~12,000 years before present (B.P.) to today)		
Fill, compacted land, or other disturbed material; highly variable in grain size and could contain construction or mining debris; overlies undisturbed deposits; typical thickness 5–15 feet	Disturbed ground (present over underlying unit)	**Human-disturbed deposits** modified during construction of buildings, roads, dams, levees, and landfills; includes excavations in gravel pits and quarries
Peat, organic silt, and muck; stratified; dark gray to black; soft and compressible; usually water saturated; may be interbedded with fine-grained sediments; typical thickness less than 10 feet	Grayslake Peat: gp	**Organic-rich materials** deposited and preserved in abandoned channels, shallow oxbow lakes, and low-lying depressions on the modern floodplain of the Illinois River
Sand with minor gravel; stratified; yellowish brown to gray; seasonally wet and mottled; includes some fine-grained sediment that commonly contains organic material and shells; typical thickness 5–40 feet	Cahokia Formation (floodplain deposits): c(fp)	**Postglacial (modern) stream sediments** that have been deposited during the past 12,000 years on the floodplains of the Illinois River and its tributaries; subject to frequent flooding
Sand, silt, or clay with gravel; stratified; yellowish brown to gray; calcareous or non-calcareous; soft to moderately stiff; may contain organic material; map unit may include diamicton and human-disturbed deposits; typical thickness 5–30 feet	Cahokia Formation (fan deposits): c(f)	**Postglacial (modern) stream deposits** that were laid down where streams emerge from the uplands onto the lower-gradient valley floors of the Illinois River and its tributaries; form fan-shaped landforms; subject to flooding
Sand and gravel; massive to crudely stratified; fine- to coarse-grained; brown to gray; calcareous or noncalcareous; composed of material derived from sands or gravels lying upslope; typical thickness 5–20 feet	Peyton Formation (sandy facies): py(s)	**Postglacial (modern) sand and gravel slopewash deposits** comprising remobilized floodplain, point bar, and terrace sediments occurring in the Illinois River valley as aprons or fan-shaped deposits at the base of slopes
Diamicton; massive to crudely stratified; sandy loam to loam; yellowish brown to gray; calcareous or non-calcareous; loose to firm, except if cemented; the deposits have a grain size and composition similar to geologic material lying upslope; dip of strata generally parallels the slope; typical thickness 5–30 feet	Peyton Formation (loamy facies): py(l)	**Postglacial (modern) slopewash, landslide and debris flow deposits** that lie on steep slopes of the Illinois River bluffs; composed of remobilized Peoria Silt, Henry Formation, and Tiskilwa Formation; these deposits lie on slopes, typically more than 10 degrees (20%); landslides and debris flows are common on these slopes
WISCONSIN AND SANGAMON EPISODES (~130,000–12,000 years B.P.)		
Silt, fine sand and clay; massive to stratified; silt to silt loam; dark gray to yellowish brown; non-calcareous in upper part; in many places calcareous in lower part; soft; may contain shells; weathered in upper part (modern soil), but weathering extends throughout the unit where thin; typical thickness 6–20 feet	Peoria Silt: p	**Proglacial eolian (wind-deposited) silt (loess)** derived by wind erosion of silt in outwash deposited in the Illinois River valley as glacial floodwaters receded; blankets upland areas; generally absent or very thin in the Illinois River valley and tributaries; conformably lies on deposits of the Henry and Tiskilwa Formations
Silt and clay; stratified to massive; gray to olive-green; calcareous; contains beds of diamicton, sand, or gravel; contains wood fragments, shells, and humus; typical thickness 5–40 feet	Equality Formation (cross sections only): e	**Proglacial postglacial and glacial lake deposits** infilling channels or depressions on the outwash plains; may interfinger or be overlain by alluvial and slopewash deposits
Sand; stratified to massive; very fine- to medium-grained; yellowish brown to grayish brown; non-calcareous in upper part, calcareous in lower part; loose; well-sorted; typical thickness 5–40 feet	Henry Formation (Parkland facies): h(p)	**Proglacial and postglacial wind-deposited sand** composing dunes and low-relief sheet deposits in the Illinois River valley and in isolated areas on uplands; conformably overlies sand of the Mackinaw facies on terraces
Sand with gravel; stratified; medium- to very coarse-grained with scattered cobbles and boulders; yellowish brown to grayish brown; in many places calcareous; mostly clean and well sorted; clasts mainly composed of carbonates, igneous, metamorphic, and quartz-rich rocks; may compose beds in the underlying diamicton; typical thickness 10–120 feet	Henry Formation (Mackinaw facies): h(m)	**Proglacial fluvial (outwash) sediments** composing a series of terraces in former channels and tributaries of the Illinois River; some lie above present stream levels and were formed by meltwater from distant glaciers; difficult to differentiate from older fluvial deposits unless intervening glacial deposits and interstadial soils are present
Diamicton; massive; loam-textured; brown (oxidized) to dark grayish brown with a distinctive reddish cast; calcareous; firm to hard; locally highly jointed; may contain beds of sand, silt, or clay; lower part of the unit is more silty, darker gray, and contains wood fragments and shells; typical thickness 50–200 feet	Tiskilwa Formation (undivided): t	**Subglacial and ice-marginal sediments (till)** deposited directly from Tiskilwa glacial ice; exposed in gullies and on steep slopes, along channels and in excavations; locally overlies cemented sand and gravel of unknown age; map unit may include loess or slopewash in areas too small to be mapped
Sand and gravel; stratified; fine- to coarse-grained with scattered cobbles and boulders; light yellowish brown to grayish brown; calcareous; water saturated; calcite-cemented in places; typical thickness 10–150 feet	Ashmore Tongue, Henry Formation (cross sections only): h-a	**Proglacial fluvial (outwash) sediments** deposited by meltwater from advancing Wisconsin Episode glaciers; occurs as channel fills beneath Tiskilwa diamicton; widespread in subsurface, but difficult to differentiate from Henry Formation or older fluvial deposits, if intervening diamictons and interstadial soils are absent
Silt and sand; massive to stratified; silt loam to silty clay; yellowish brown (oxidized) to dark grayish brown (unoxidized); calcareous; stiff; may contain shells and wood fragments; typical thickness 3–10 feet	Morton Tongue, Peoria Silt (cross sections only): p-m	**Proglacial eolian (wind-deposited) silt** deposited on a former land surface beyond Wisconsin Episode glaciers that crossed the Illinois River valley; may include peat deposited in poorly drained, low-lying areas
Silt and peat; organic-rich; silty clay to silt loam; woody; dark gray to black; non-calcareous (leached); contains >15% humus, wood, and/or peat; weathered in the profile of the Farmdale Geosol; lower part is crudely stratified and bioturbated; typical thickness 3–10 feet	Robein Member, Roxana Silt (cross sections only): r-r	**Interstadial (warm climate) soil and peat** deposited on a former land surface that was poorly drained; includes silty slopewash; widespread and distinctive stratigraphic marker unit in the region, but only locally preserved in the subsurface; conformably overlies the Sangamon Geosol
ILLINOIS EPISODE (~200,000–130,000 years B.P.)		
Diamicton; massive; sandy loam to silty clay loam; yellowish brown to dark brownish gray; calcareous; firm to hard; contains interbeds of sand, silt, or clay; in upper part weathered in profile of Sangamon Geosol; typical thickness 5–15 feet	Glasford Formation (till) undivided (cross sections only): g	**Subglacial and ice-marginal sediments (till)** deposited directly from Illinois Episode glacial ice; discontinuous in the subsurface, having been largely removed by subsequent river and glacier erosion
Sand and gravel; stratified; quartz-rich, fine- to coarse-grained with cobbles and boulders; yellowish brown to dark grayish brown; calcareous; moist; in many places loose when saturated, but calcite-cemented in some places; contains quartz grains and clasts of dolomite, limestone, and igneous and metamorphic rocks; in upper part, weathered in profile of Sangamon Geosol; typical thickness 5–60 feet	Pearl Formation (outwash) (cross sections only): pl	**Proglacial fluvial (outwash) sediments** laid down in valleys and on upland areas by meltwater from the retreating Illinois Episode glaciers; underlies the Glasford diamicton and overlies older valley-fill sands of the Banner Formation, or bedrock; widespread in the subsurface, but differentiated from deposits of the Henry Formation and Banner Formation only by stratigraphic position
Silt and clay; stratified; silt loam to clay; olive-gray to dark grayish brown; calcareous; firm to stiff; contains interbeds of fine-grained sand, shells, and fossilized aquatic plant material; laminae well formed and locally deformed; typical thickness 2–40 feet	Glasford Formation (lacustrine) undivided (cross sections only): g(l)	**Proglacial lacustrine sediments** deposited in lakes ponded in some tributary valleys beyond the Illinois Episode glaciers; the lakes likely formed when coarse-grained sediment deposited in the main valley dammed the mouths of some tributary valleys
PRE-ILLINOIS EPISODE (prior to ~200,000 years B.P.)		
Sand; stratified; quartz-rich; fine- to coarse-grained, contains interbeds of gravel with pebbles and cobbles; map unit also includes discontinuous diamicton and silt deposits; sand and gravel is reddish brown (oxidized) to gray; calcareous; the reddish color comes from mineral (hematite) coatings on quartz sand grains or the high proportion of red-colored volcanic and quartzite rock fragments; also contains many black volcanic and metamorphic rock fragments; the diamicton and silt are brown to gray; the silt contains shells; typical thickness 50–150 feet	Banner Formation undivided (cross sections only): b	**Proglacial fluvial (outwash) sediments** deposited as thick channel sands by glacial meltwater from Illinois and pre-Illinois Episode glaciers in a drainage system whose course defined the Ancient Mississippi River; widespread in the subsurface and consistently able to be differentiated from the Henry and Glasford Formations by stratigraphic position and, in many areas by color; includes discontinuous deposits of subglacial and ice-marginal sediments (till) or proglacial lacustrine sediments that are likely remnants of pre-Illinois glacial or nonglacial episodes

PRE-QUATERNARY

Description	Unit	Interpretation
Rock; shale, clay, sandstone, limestone, and coal; includes a variably thick weathered profile on the bedrock surface	Carbondale Formation (cross sections only): Pc	**Bedrock** comprising lithified marine, estuarine, deltaic, fluvial, and swamp deposits; forms undulating surface that has been shaped by multiple cycles of fluvial and glacial erosion

Data Type

- Outcrop
- Outcrop in field notes (ISGS archives)
- Stratigraphic boring
- Water well
- Engineering boring
- Other boring
- Dot indicates boring to bedrock
- Contact
- Inferred contact
- Fluvial terrace scarp
- Dune
- Landslide scarp
- Landslide runout track
- A—A′ Cross section
- Water

Note: Data symbol labels for borings are the county number, a portion of the 12-digit API number on file at the ISGS Geological Records Unit. Outcrop labels indicate numbers assigned for this project.

Surficial Geology

The surficial geology map of Spring Bay Quadrangle, Peoria and Woodford Counties, was developed for the Illinois Geologic Mapping Program (IGMaP) to provide information for Illinois land use development and management. The Spring Bay Quadrangle is located in west-central Illinois and encompasses parts of northeastern Peoria County and western Woodford County, including the City of Peoria and bluff areas and floodplain along the Illinois River (fig. 1).

This surficial geology map and its accompanying cross sections delineate geologic materials, classified by their lithology (sediment type or rock type) and stratigraphy (relative position and age). The stratigraphic nomenclature used here is from Willman and Frye (1970) and Hansel and Johnson (1996). Geologic materials in the Illinois River valley have a complex but mappable pattern of occurrence. These materials are the source of important earth and water resources and can present hazards to property owners and those constructing and maintaining transportation systems.

This map is based in part upon the mapping of sediments and landforms from 1:20,000-scale aerial photographs. Map unit boundaries were verified from U.S. Department of Agriculture soil maps (Stumpf and Weibel 2004), Federal Emergency Management Agency Insurance Rate Maps, field observations, water-well logs, and engineering reports.

Five northwest–southeast cross sections, labeled A–A′, B–B′, C–C′, D–D′, and E–E′, were constructed to portray the sequence of Quaternary deposits present in the subsurface above bedrock. The cross sections were constructed using data located in the quadrangle, and additional data within a 1-mile buffer zone west and east of quadrangle boundary. Accompanying data sets containing project numbers and their corresponding API numbers, along with grain size, geochemistry, and field notes will be accessible along with the map on the ISGS Web site (http://www.isgs.uiuc.edu/online-maps/igq/igq.htm).

References

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Luman, D.E., L.R. Smith, and C.C. Goldsmith, 2003, Illinois surface topography: Illinois State Geological Survey, Illinois Map 11, 1:500,000.

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Willman, H.B., and J.C. Frye, 1970, Pleistocene stratigraphy of Illinois: Illinois State Geological Survey, Bulletin 94, 204 p.

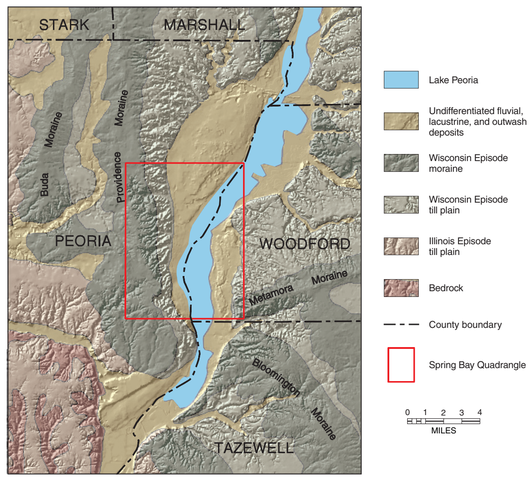


Figure 1 Surficial geology and shaded relief map (derived from a digital elevation model) of the modern land surface of the Spring Bay Quadrangle area (Illinois State Geological Survey 2000, Luman et al. 2003). The quadrangle lies near the edge of Wisconsin Episode glacial deposits. The Providence and Buda Moraines converge along the western edge of the quadrangle, and the west end of the Metamora Moraine overlaps the southeastern corner. Modified from Illinois State Geological Survey (2000) and Luman et al. (2003).

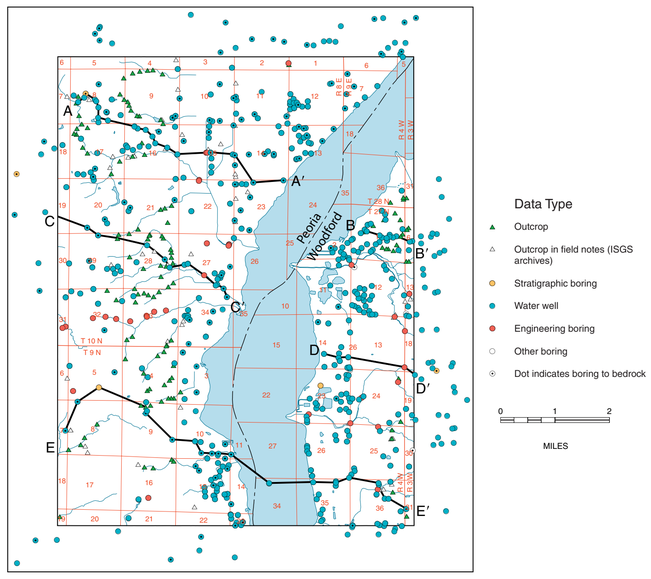
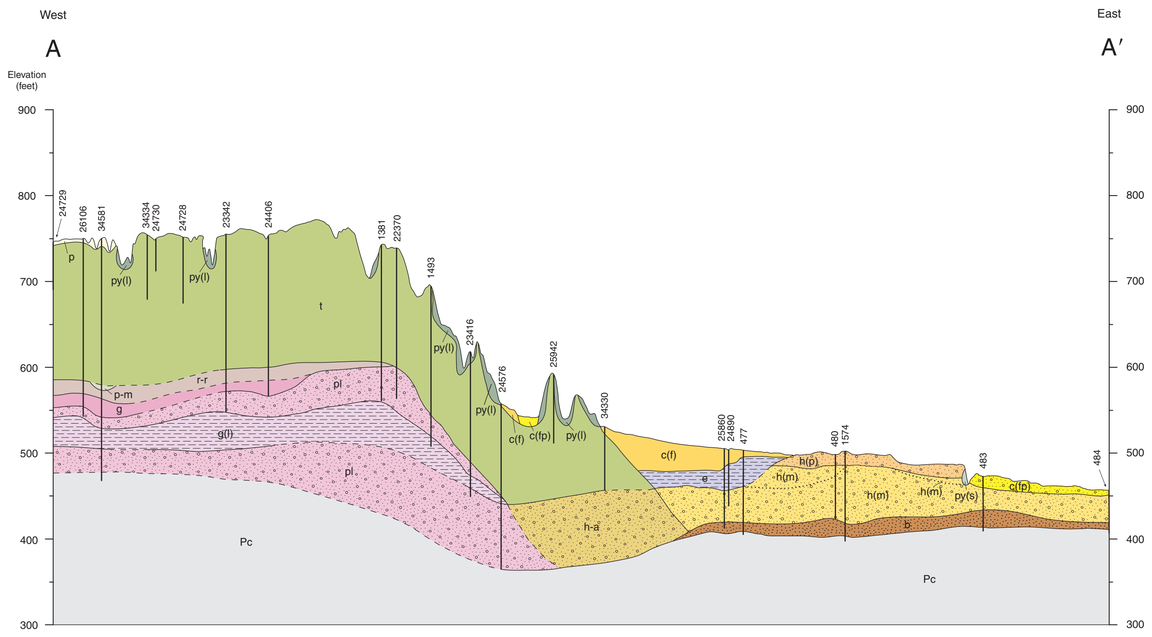
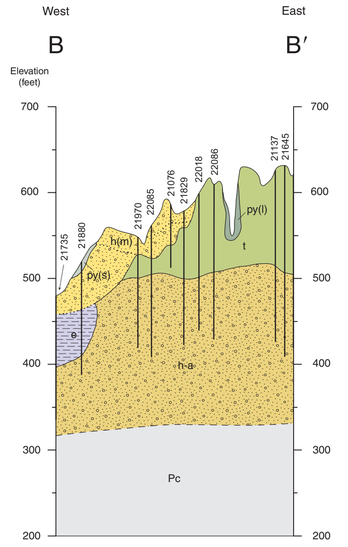
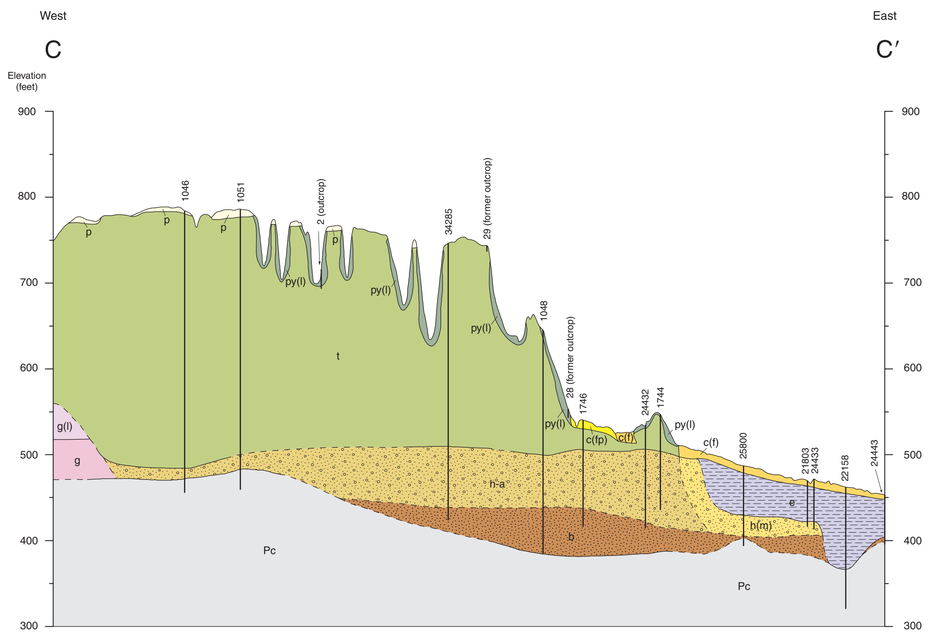
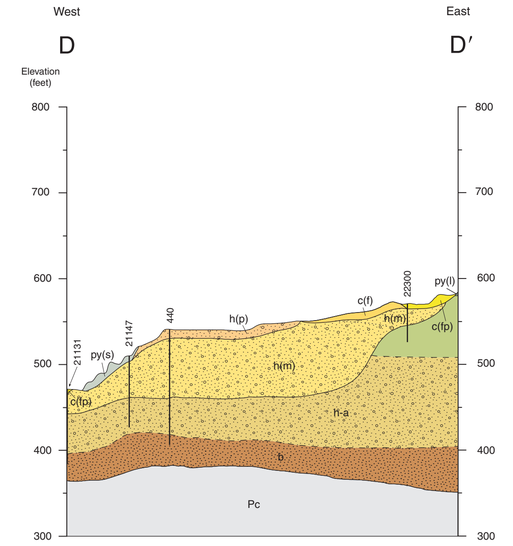


Figure 2 Map showing the location of borings in the Spring Bay Quadrangle and a 1-mile buffer outside the quadrangle. The cross sections were projected beyond the quadrangle to include borings with higher-quality data.









Cross Sections

- Sand with gravel
- Medium sand
- Laminated silt and clay
- Diamicton, massive silt, or other fine-grained sediment
- Contact
- Contact (inferred)
- Channel cut (inferred)

Note: Labels above logs indicate the abbreviated API number. Outcrop labels indicate project number.

Horizontal scale: 1 inch = 2000 feet
Vertical scale: 1 inch = 100 feet
Vertical exaggeration: 20×