SURFICIAL GEOLOGY OF CRAB ORCHARD QUADRANGLE
WILLIAMSON COUNTY, ILLINOIS

Institute of Natural Resource Sustainability
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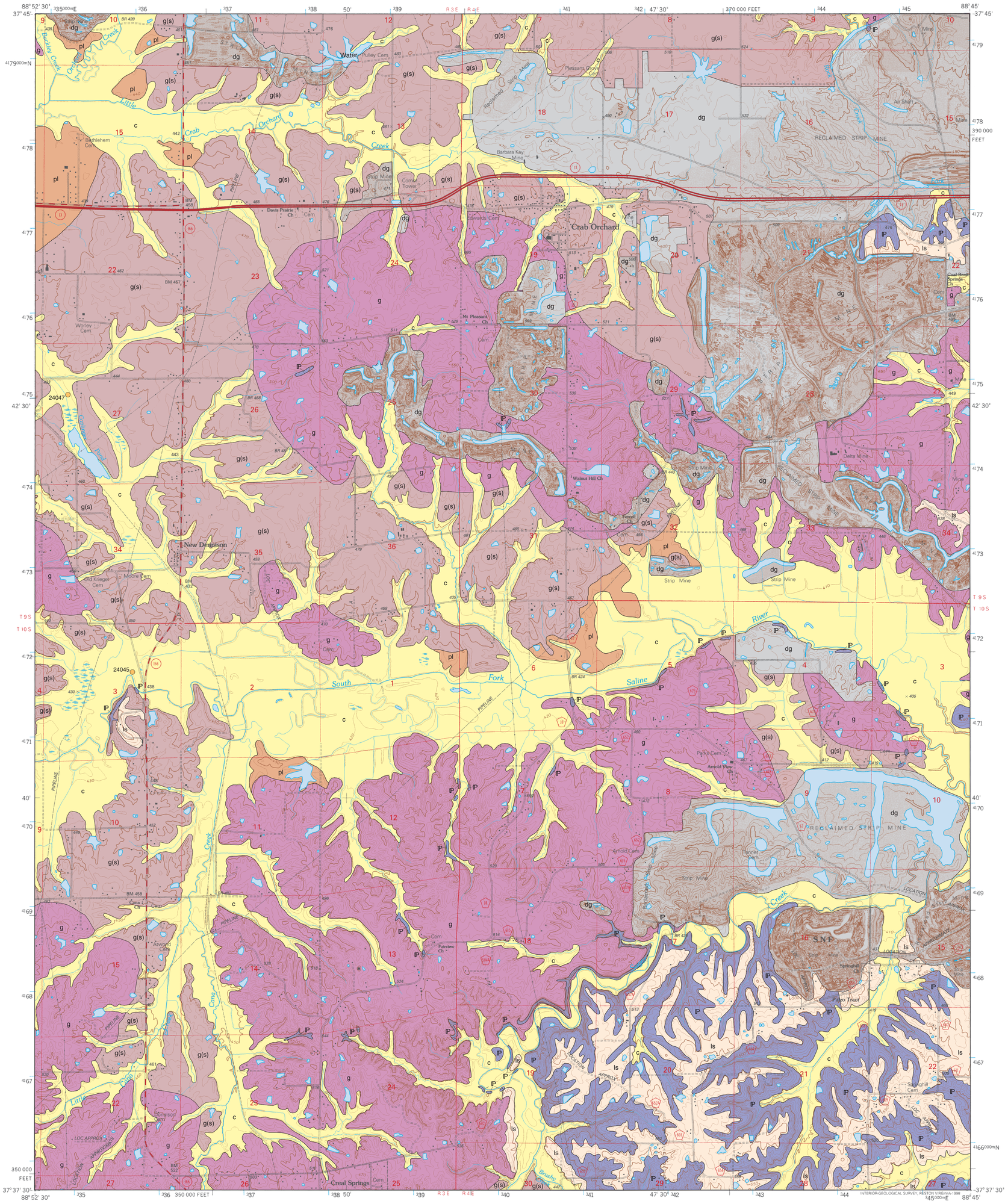
2010

Illinois Geologic Quadrangle Map
IGQ Crab Orchard-SG



QUATERNARY DEPOSITS

Material	Unit	Interpretation
HOLOCENE STAGE (Present to 10,000 years B.P.)		
Man-made deposits; mixtures of loess, glacial deposits, shale, and coal mine wastes	Disturbed ground: dg	**Made land;** mostly strip mines, includes disturbed land and reclaimed land
Silt-rich deposits ranging from silt loam to silty clay; dark gray to brown, mottled below 3 feet, totally gray below 10 feet; weakly bedded in lower part; gravel lenses in lower parts of thick intervals; noncalcareous matrix but contains secondary calcite nodules below solum of soil in places; ranges up to 30 feet thick	Cahokia Formation: c	**Alluvium;** mostly formed during post-glacial times (Holocene); largely derived from eroded Peoria loess; mildly weathered and leached; weakly developed soil profile in the upper 5 feet; underlain by Equality clay or fine sand at lower elevations and by bedrock at higher elevations
WISCONSINAN STAGE (10,000 to 75,000 years B.P.)		
Silt loam to silty clay loam, up to 10 feet thick, overlying bedrock, typically sandstone or shale; yellowish and reddish brown to gray; strong pedogenic features, structure, coatings, biopores, stains, and concretions	Loess over bedrock: ls	**Weathered loess,** 4 to10 feet thick containing well-developed modern soil (Alfisol) overlying Pennsylvanian bedrock; contains three loess units distinguishable where thick: upper–Peoria Silt, yellowish brown to gray with strong pedologic structure (modern soil); middle-Roxana Silt, reddish brown to reddish gray with weak pedologic structure, (Farmdale Geosol); lower–Loveland Silt, pale brown to dark gray with strong pedologic structure (Sangamon Geosol); Peoria and Roxana occur at most locations; Loveland is often absent; loess units largely distinguished by pedogenic features and cover most upland areas of county; bedrock exposure up to 20% of map unit
ILLINOIAN STAGE (128,000 to 180,000 years B.P.)		
Fine sand to clay loam covered by weathered silt loam to silty clay loam; yellowish brown to mottled brown to gray; strong pedogenic features and clay-rich in upper 10 feet; leached to a depth of about 20 feet below the ground surface; calcareous and bedded in lower part; commonly thin-bedded very fine sand, well sorted with a few thin lenses of silty clay; secondary calcite common in the upper part of the calcareous zone; thickness uncertain, may range up to 50 feet thick; beds of coarser sand and gravel are expected near base of unit	Pearl Formation: pl	**Glacial fluvial and lacustrine deposits** of Illinoian age covered by 4 to 10 feet of loess; upper part contains Sangamon Geosol; forms several undifferentiated terrace levels, producing a stepped geomorphic surface; a facies member with Glasford stratified deposits (g(s)); formed during the next to the last glaciation (Illinoian) as the result of meltwater accumulation
General features: Silty diamicton dominated by silt loam and silty clay loam with variable amounts of clay, sand, and pebbles; covered by 5 to 10 feet of weathered silty clay loam at most locations; brown to gray colors with common yellowish and dark mottles; strong pedogenic features and more sand or clay in upper 5 feet; leached to a depth of about 20 feet below the ground surface; stratified in places; dark gray, compact, and unoxidized in lower part, which commonly contains detrital wood, pyrite, and other oxidizable minerals; average thickness 20 to 30 feet and can exceed 100 feet thick in places; pebble content from <1 to 5%, dominated by Pennsylvanian lithologies, mostly sandstone, quartz, chert, and an assortment of crystalline rocks	Glasford Formation (divided into two units)	**General characteristics:** Glacial till and associated water-laid and mass wasted deposits of Illinoian age covered by 5 to 10 feet of loess; largely derived from Pennsylvanian shale; forms a veneer of glacial drift deposits across the uplands of most of Williamson County and fills in preglacial valleys; loess cover thins on sloping land along the southern border of Williamson County; upper part contains Sangamon Geosol; divisible into two map units: Glasford stratified deposits (g(s)) and Glasford till (g); upland end member facies of Illinoian glacial sequence
Stratified clay loam, silt loam to silty clay loam with lenses of sand and loamy diamicton; deformed structures and variable fabric and textures; few fining-upward trends in places overlying sparse pebble bands	Glasford stratified deposits: g(s)	**Ablation deposits; water transported and glacial debris-flow deposits** with soft-sediment deformation features; likely contains gravel at the base and overlies dense basal till where glacial deposits are thick; missing in places where loess overlies eroded bedrock (bench); laterally grades into till (g) or Pearl Formation sand (pl); largely restricted to discontinuous terrace levels (localized level areas) across the uplands at elevations from 420 up to 550 feet; formed on the Illinoian glacier after stagnation; temporary ice-walled lakes accumulated sediments that formed terraces now buried by loess; erosional benches common in some areas that form a continuous geomorphic surface with terraces
Silty clay loam diamicton that varies from pebbly silty clay to silt loam diamicton; very few pebbles in places; typical till fabric, compact and uniform	Glasford till: g	**Till;** more dense and uniform than diamicton in g(s); underlies most of the gently rolling hills of the county; variable thickness ranging from a veneer of a few feet to over 100 feet thick in buried valleys; upland facies end member of Illinoian glacial sequence, made up of map units g, g(s), pl, and tr; discontinuous in places because of fluvial erosion or a nondepositional mode of the glacier (glacial erosion)

PRE-QUATERNARY (PENNSYLVANIAN) DEPOSITS

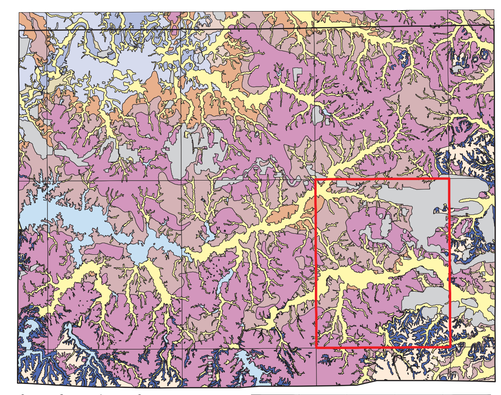
Material	Unit	Interpretation
Dominantly sandstone with lesser amounts of siltstone, shale, mudstone, limestone, and coal; covered by yellowish brown to gray, weathered, silt loam to silty clay loam up to 4 feet thick	bedrock: IP	**Pennsylvanian sedimentary rock** with less than 4 feet of weathered loess cover, mostly Peoria loess containing well-developed modern soil (Alfisol); discontinuous patches of glacial deposits are common

Data Type

35547 — Stratigraphic boring with continuous samples of surficial sediments examined by the authors

Contact

Note: Numeric labels indicate the county number, 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.



Williamson County surficial geology and 7.5-minute quadrangles.

Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey. Topography compiled in 1963. Planimetry derived from imagery taken in 1993. PLSS and survey control current as of 1996. Partial field check by U.S. Forest Service in 1996.

North American Datum of 1927 (NAD 27)
Projection: Transverse Mercator
10,000-foot ticks: Illinois State Plane Coordinate system, east zone (Transverse Mercator)
1,000-meter ticks: Universal Transverse Mercator grid system, zone 16

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SCALE 1:24,000

1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

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

Geology based on field work and data analysis by Leon R. Follmer and W. John Nelson, 2001–2004.

Natural Resource Conservation Service staff, Carbondale office, assisted with field work and the drilling of stratigraphic test borings.

Digital cartography by Jane E. J. Domier, Jennifer E. Carrell, Amanda Tovey, Joeseph B. Magnotta, and Daniel R. Stevenson, Illinois State Geological Survey.

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ADJOINING QUADRANGLES
1 Johnston City
2 Pittsburg
3 Harco
4 Marion
5 Carrier Mills
6 Goreville
7 Creal Springs
8 Stonefort

2° TRUE NORTH MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 2010

ROAD CLASSIFICATION
Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Light-duty road, dirt
Unimproved road
State Route
County Route