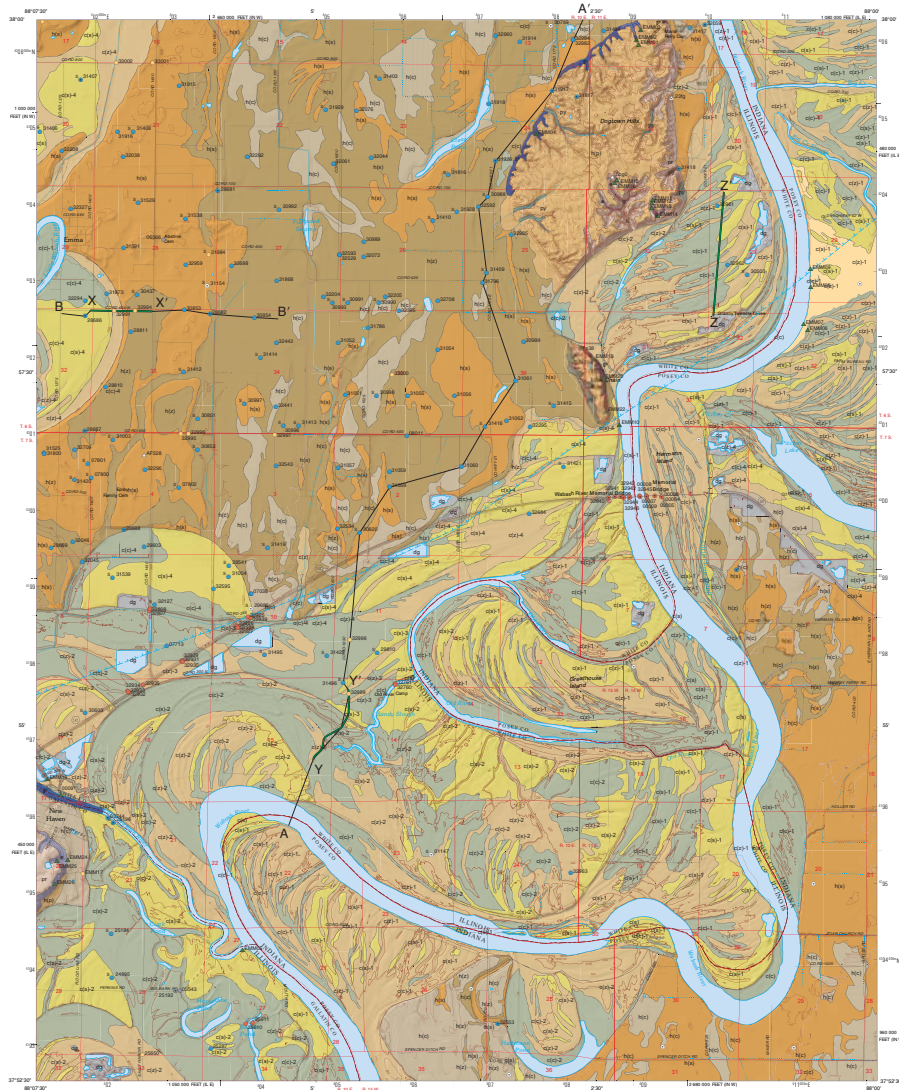


# SURFICIAL GEOLOGY OF EMMA QUADRANGLE

## GALLATIN AND WHITE COUNTIES, ILLINOIS, AND POSEY COUNTY, INDIANA

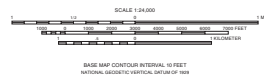
STATEMAP Emma-SG

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2013



Base map compiled by Illinois State Geological Survey from digital data (2012 US Topo) provided by the United States Geological Survey. Shaded relief and contours derived from 2010 LIDAR elevation data.  
North American Datum of 1983 (NAD 83)  
Projection: Transverse Mercator  
10,000-foot false. Illinois Coordinate System of 1983, west zone  
1:250,000 scale. Universal Transverse Mercator grid system, zone 16

**Recommended citation:**  
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ALONGING QUADRANGLES	
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9	10



Description	Unit	Interpretation
<b>HUDSON EPISODE (-12,000 years before present (B.P.) to today)</b>		
Removed earth, originally sand and gravel, now filled with water; low depth of excavation unknown	Disturbed ground (cross-section only)	Borrow pits for local aggregates and fill for State Rt. 141
Brown to yellow-brown loam, silt loam, and gravelly loam; massive to irregularly bedded; less than 10 ft thick	Peoria Formation	Alluvial fans at the base of slopes and gullies, mostly derived from loess, channels, and eroded bedrock
Overlain by yellow-brown loam, silt loam, and gravelly loam; fine sand and pebbly silt; fine to medium gradation; massive to irregularly bedded; less than 10 ft thick	Calhoun Formation	Alluvium, mapped only in riparian-valley stream channel bedrock outcrops
Gray to gray silty clay loam to silty clay; interbedded with silt loam; massive to stratified; up to 10 ft thick	Calhoun Formation (stone lenses)	Overbank, lake, and interstratified stream deposits; contains occasional pebbles, gravel, and rounded sandstone pebbles; and isolated foundation pits and depressions; most terraces numbered (pencil) (1) to reflect (1) each post-glacial deposits stage over and are correlated with Henry Formation
Gray brown silt loam to loess silt; massive; may include comp interbeds; up to 10 ft thick	Calhoun Formation (silty facies)	Scroll bar, channel, and near-channel deposits; most terraces numbered (pencil) (1) to reflect (1) each post-glacial deposits stage over and are correlated with Henry Formation
Yellow brown to brown very fine to coarse sand with fine gravel lenses, heavy sand, and sandy loam; laminated to fine bedded or massive; up to 30 ft thick	Calhoun Formation	Channel, point bar, and crevasse silt deposits, containing the cores of meander scrolls or the common portion of the early complete; most terraces numbered (pencil) (1) to reflect (1) each post-glacial deposits stage over and are correlated with Henry Formation, where they do not exceed 1 ft thick
<b>WISCONSIN EPISODE (-55,000-12,000 years B.P.)</b>		
Gray to gray brown silty clay loam to clay; laminated to massive; bedrock zone, generally calcareous; up to at least 20 ft thick	Equality Formation	Stackwater lake deposits from slanting of upper glacial during full glacial valley fill; traps and isobars of fine sand and silt and of Dogden Hill; upper elevations to 400 ft
Yellow brown to brown very fine sand, sandy silt, and silt loam; upper portion bedded of carbonates; up to 10 ft thick	Henry Formation (physical facies)	Roller sand dunes reworked from natural dunes; mapped on Illinois where it intertongues with the Peoria and Riparian Silt. Base of high in outcrop dated by OSL to 20,000 ± 10 ka to 21 ± 2 ka (OSL 196, 197) also occurs on Riparian Silt. Fine sand is a characteristic from sandy and silty facies of the Henry Formation
Brown to olive silty clay to silty clay loam; massive to laminated; grades down to medium sand; upper portion bedded of carbonates; up to 10 ft thick	Henry Formation (layer facies)	Complex with veneer of post-glacial alluvium covering northeast quadrant and southeast margin of area; and an olive tan complex grading into high lacustrine terraces in extreme northwest corner of map
Dark brown to brown silt loam to silty clay loam; grades down to massive; coarse sand bedded to massive; upper portion bedded of carbonates; up to 8 ft thick	Henry Formation (silty facies)	Complex with veneer of post-glacial alluvium covering northeast quadrant and southeast margin of area; and an olive tan complex grading into high lacustrine terraces in extreme northwest corner of map; includes high-glacial dunes and other features only by location
Brown to light brown sand to sand loam; laminated to massive; upper portion bedded of carbonates; up to 10 ft thick	Henry Formation (sandy facies)	Complex with veneer of post-glacial alluvium covering northeast quadrant and southeast margin of area; and an olive tan complex grading into high lacustrine terraces in extreme northwest corner of map; includes high-glacial dunes and other features only by location
Brown to gray fine gravel to sandy gravel; bedded to massive; upper portion bedded of carbonates; up to 30 ft thick	Henry Formation (gravelly facies, cross-section only)	Outwash, forming the highest portion of the valley fill and generally mapped as a map unit where earth electrical resistivity and closely spaced well log data are available
Light brown to gray pebbly sand to fine sand; bedded gravel zones; bedded to massive; lateral thickness up to 2 ft thick, total thickness up to 30 ft thick	Henry Formation (pebbly facies, cross-section only)	Outwash; the entire Wabash bedrock valley bedded by the main and secondary channels; includes Illinois Episode outwash in lower part
Brown to yellow-brown silt loam, massive; up to 10 ft thick	Peoria and Riparian Silt	Loess; mapped on top of bedrock hills at New Haven on old Dogden Hill and Little Chain Hill in Washington with and mapped as NGI; may include Tanyale Silt in lower part
<b>ILLINOIS EPISODE (-190,000 to 130,000 years B.P.)</b>		
Brown to yellow-brown loam to clay loam; silty clay loam; massive to stratified; calcareous; up to 10 ft thick	Glauber Formation	(B) Hard to outcrop and core on Dogden and Little Chain Hills; where it represents the southern limit of the Illinois Episode ice margin

Description	Unit	Interpretation
Shale, sandstone, limestone, coal	Pennsylvanian bedrock	Shale and sandstone are common locally and locally. Coal is a less common substrate. Limestone crops out in portions of Little Wabash and Wabash River channels

Data Type	Symbol
Outcrop	▲
Outcrop from field notes (USGS archives)	△
Stratigraphic boring	●
Water well boring	○
Engineering boring	⊙
Civil boring	⊖
Oil or gas boring	⊕

Label	Symbol
Labels indicate sample ID	▲, ●, ○, ⊙, ⊖, ⊕
Boring and outcrop labels indicate the county number	▲, ●, ○, ⊙, ⊖, ⊕
Outcrops belong to the bedrock	▲

Line of cross section	Symbol
Illinois Episode glacial limit	—▲—▲—▲—
Electrical resistivity profile line	—●—●—●—
Line of cross section	A—A'

Note: The county number is a portion of the 12-digit APP number on file at the USGS Geologic Record file. Most well and boring records are available online from the USGS Web site. Wells and borings in Indiana are labeled with the Indiana Geological Survey's record number.

