

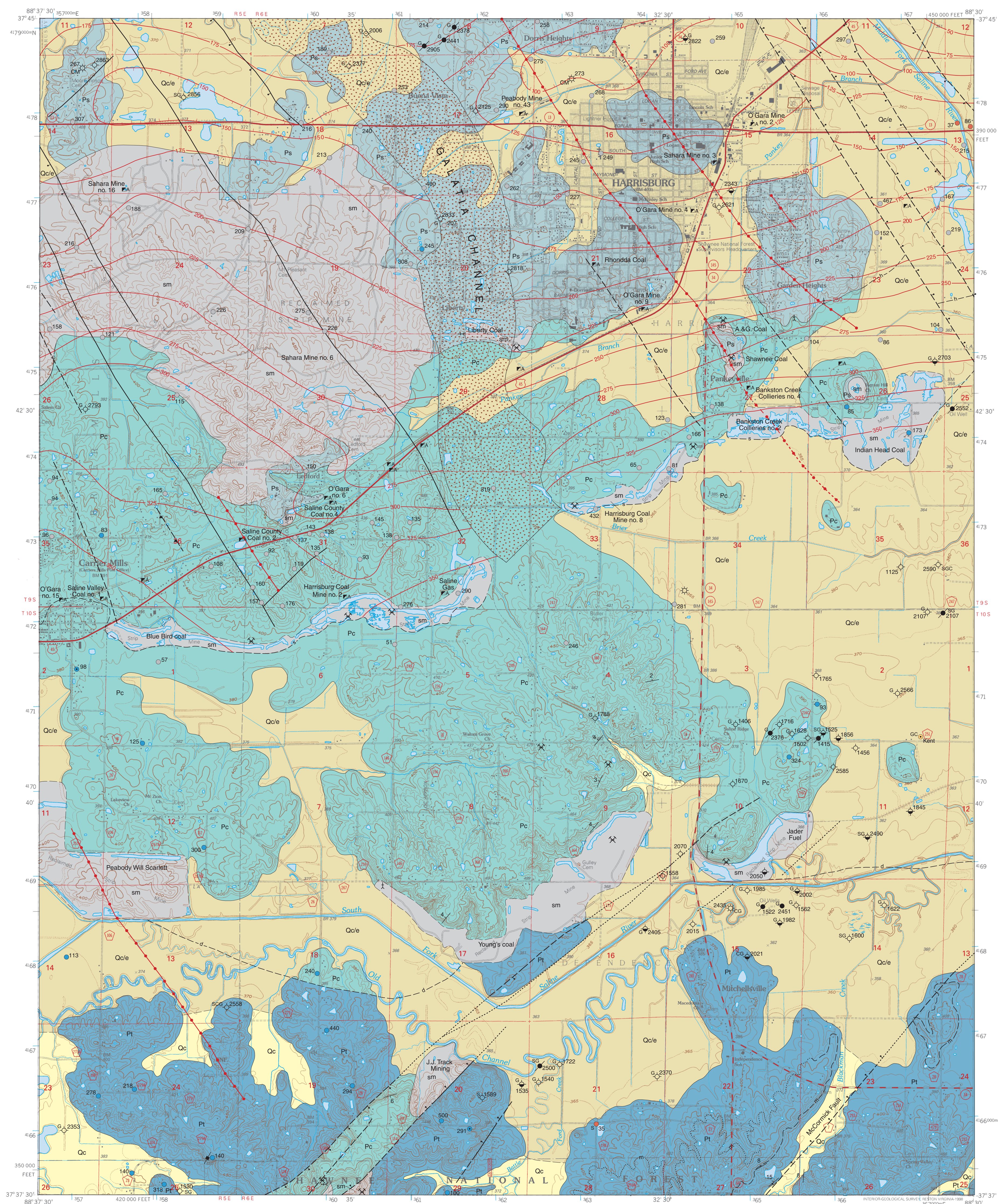
# BEDROCK GEOLOGY OF HARRISBURG QUADRANGLE

## SALINE COUNTY, ILLINOIS

Illinois Department of Natural Resources  
ILLINOIS STATE GEOLOGICAL SURVEY  
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2007

Illinois Preliminary Geologic Map  
IPGM Harrisburg-BG



### EXPLANATION

sm	Surface mined area		
Qc	Cahokia Formation	Quaternary	Holocene
Qc/e	Cahokia over Equality Formation		
Ps	Shelburn Formation	Pennsylvanian	Desmoinesian
Pc	Carbondale Formation		
Pt	Tradewater Formation m. Mitchellville Limestone		

### Symbols

- Strike and dip of bedding, number signifies degree of dip
- Coal drift mine (abandoned)
- Mine shaft (abandoned)
- Surface coal mine (abandoned)
- Joint

### Drill holes

from which subsurface data were obtained

- Water well
- Engineering boring
- Stratigraphic boring (ISGS)
- Coal test
- Oil dry hole
- Dry hole - show of oil
- Gas well
- Oil well producing
- Oil well producing now plugged
- Coal mine methane well

Labels indicate samples (c), geophysical log (c), or core (c).  
Numeric label indicates total depth of boring in feet.  
Dot indicates location accurate within 100 feet

### Line Symbols

dashed where inferred, dotted where concealed

- Contact
- Coal subcrop boundary, s = Springfield, h = Herrin, d = Davis
- Normal fault: bar and ball on downthrown side
- Fault, type unknown
- Thrust fault, sawteeth on upthrown side
- Elevation of top of Springfield Coal, contour interval 25 feet
- Igneous dike

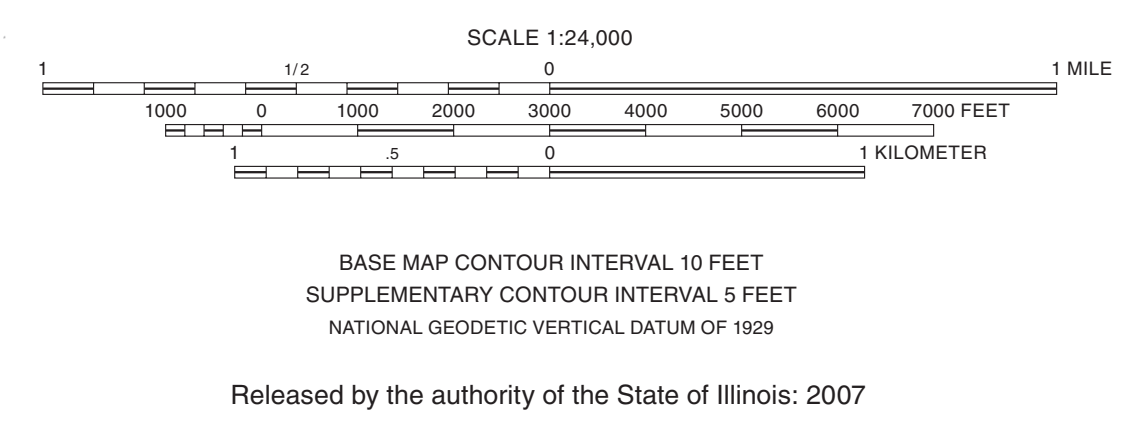
Galatia Channel

Note: Well and boring records are on file at the ISGS Geological Records Unit and are available at the ISGS Web site.

Base map compiled by Illinois State Geological Survey from digital data provided by the United States Geological Survey. Topography compiled 1959. Planimetry derived from imagery taken 1993. PLSS and survey control current as of 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 13

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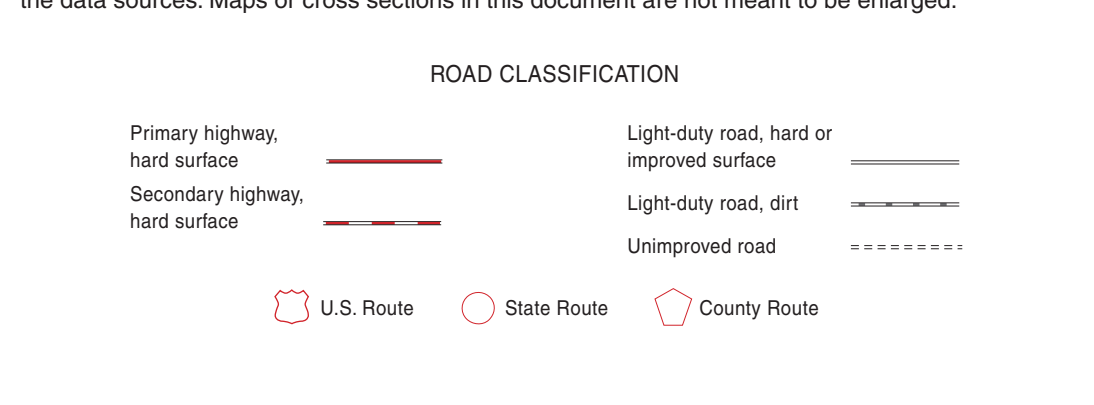
Geology based on field work by B. Denny and R. Jacobson, 2005-2006 and W.J. Nelson 1984-1985.

Digital cartography by J. Domier, M. Widener, and M. Turino, Illinois State Geological Survey.

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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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SYSTEM	SERIES	FORMATION	MEMBERS	GRAPHIC COLUMN	THICKNESS (FEET)	UNIT
QUATERNARY	PLEISTOCENE	Cahokia & Equality			(0-20)	A
					(0-70)	B
PENNSYLVANIAN	DESMONESIAN	Shelburn	Piasa Limestone		0-5	C
			Danville coal		2	
			Allenby coal		0-3	
			Bankston Fork Limestone		0-9	
			Anvil Rock Sandstone & Lawson shale		0-2.5	
			Jamestown coal		2-7	
			Brereton Limestone		1-3	
			Energy shale & Anna shale		2-7	
			Herrin coal		50-65	
			Briar Hill coal		1-2	
PENNSYLVANIAN	DESMONESIAN	Carbondale	St. David Limestone		0-3	D
			Turner Mine shale		0-10	
			Dykersburg shale		0-40	
			Springfield coal		0-9	
			Galatia (0-40)		50-70	
			Excello shale		2-3	
			Houchin Creek coal		1-3	
			Survant split "Shawnetown"		0-1	
			Survant coal		0-1	
			Oak Grove Limestone		0-2	
PENNSYLVANIAN	DESMONESIAN	Tradewater	Mecca Quarry Shale		0-1	E
			Colchester coal		45-55	
			Dekoven coal		2-5	
			Davis coal		10-25	
			Sub-Davis Sandstone		2-5	
			Carrier Mills Shale		0-50	
			Stonfort Limestone		0-2	
			Wise Ridge coal		0-1	
			Mt. Rorah coal		0-2	
			Mitchellsville Limestone		2-5	
PENNSYLVANIAN	ATOKAN	Caseyville	Golden Sandstone		2-5	F
			New Burnside & Delwood coals		0-5	
			Oldtown coal		0-3	
			Murray Bluff Sandstone		50-110	
			Reynoldsburg coal		90-150	
			Caseyville		300+	

**A Cahokia Sand** Clay, silt, and gravel. White, tan, brown, fine to coarse quartz sand. Gray to tan clay and silty clay. Gravels are tan-brown, gray and dark brown.

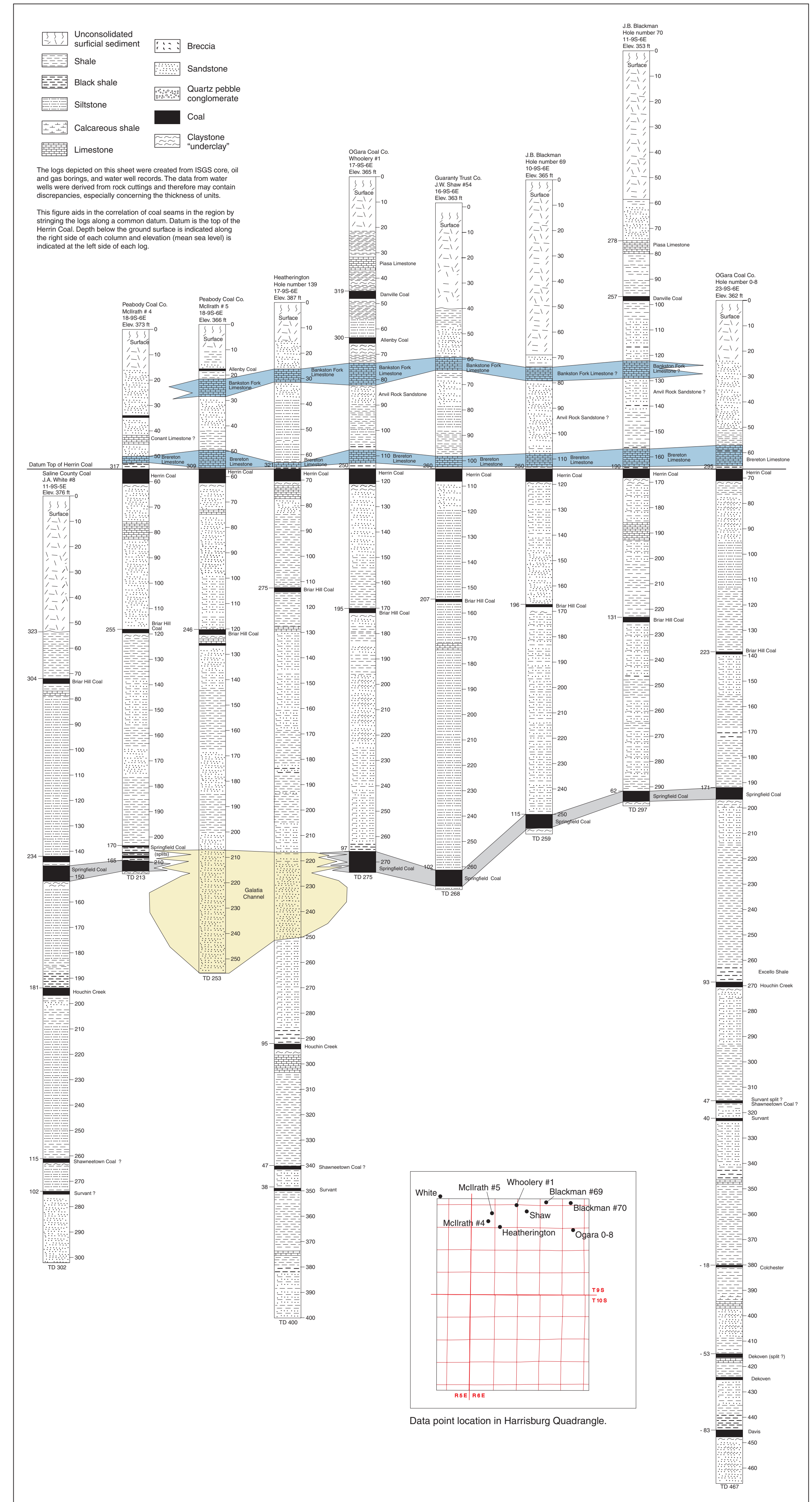
**B Equality** Clay, silt, and minor sand and gravel. Gray clay and laminated silt with lens of sand and gravel.

**C Shelburn Formation** Shale, sandstone, limestone, claystone, and coal. The Piasa Limestone is a light-gray fine-grained limestone containing an open marine fauna mostly crinoidal debris. It is dolomitic in places and a gray-green shale is present usually separating two limestone benches. The Danville Coal, where present, is a black bituminous coal that is less than 2 feet thick. The Allenby Coal, where present, is a thin coal zone that occurs a few feet above the Bankston Fork Limestone. The Bankston Fork Limestone is a gray, fine-grained, in part dolomitic limestone. This limestone contains an open marine fauna consisting of brachiopods, crinoids, and fusulinids. An impure quartz-rich silty carbonaceous sandstone is present below the Bankston Fork which is called the Anvil Rock Sandstone. The Lawson shale is a lateral equivalent to the Anvil Rock and together these units probably represent an inter-distributive bay unit or possibly a prograding delta front. The Brereton Limestone is dark gray, fine-grained and argillaceous marine limestone. Fossils make up as much as 50 percent of the rock and include brachiopods, bryozoans, corals, and fusulinid foraminifera. The Brereton Limestone is not laterally continuous and grades laterally into either the Energy Shale or the underlying Anna Shale. The Anna Shale is not present in some places and the Brereton lies directly on the Herrin Coal. The Shelburn/Carbondale Formation boundary is placed at the base of the Brereton Limestone, and where the Brereton is not present the boundary is placed at the top of the Anna Shale or the top of the Energy Shale where the Brereton Limestone and the Anna Shale are both absent<sup>1</sup>.

**D Carbondale Formation** Shale, sandstone, limestone, claystone, and coal. The Energy Shale is a gray shale that contains plant fragments and bivalves. The unit occurs as discontinuous lens and the paleoecology suggests a mixing of fresh and marine water. It is a "possible estuarine channel". The Anna Shale is a black fissile marine shale. It contains marine fossils that are typically small inarticulate brachiopods which may be pyritized. The Herrin Coal is a black bituminous coal that is very well developed in this region. The coal commonly has a 2-inch thick clay parting. The Briar Hill Coal is a thin but fairly laterally consistent coal that is less than 2 feet thick in the area. The St. David Limestone is a light gray open marine limestone that is dominated by brachiopods. The Turner Mine Shale is a black fissile shale. The Dykersburg Shale is a gray silty freshwater shale and in places a very fine sandstone where it lies adjacent to the Galatia Channel. The Galatia Channel is a fluvial sandstone which along its margins splits the Springfield Coal into several thin coal and interbedded siltstone-coal layers. The Springfield Coal is bituminous with well developed cleats, calcite, and pyrite along bedding. The coal is usually less than 6 feet thick in this region and is underlain by a gray claystone or underclay. The Excello Shale is a thin black fissile shale. The Houchin Creek Coal is bituminous, black, and typically less than 2 feet thick. It is underlain by a gray claystone or underclay. The Survant Coal is usually a thin coal that is commonly split by a shale. It correlates with the Shawnetown Coal which reportedly attains as thickness of 8 feet in places. The Oak Grove Limestone is interbedded with black calcareous shale. The Mecca Quarry Shale is a black fissile shale that is 1 to 2 feet thick directly overlying the Colchester Coal. The Colchester is bituminous, black, and typically less than 1 foot thick. In places it is represented by a carbonaceous black smut. It is underlain by a thin gray claystone or underclay. The Dekoven Coal is 2 to 5 feet thick in this region and may contain a 2 or 3 foot thick shale parting. The Davis Coal is a black bituminous coal that is 2 to 5 feet thick. The base of the Davis Coal represents the base of the Carbondale Formation.

**E Tradewater Formation** Sandstone, shale, limestone, and coal. The Sub-Davis Sandstone is a light-gray fine to very-fine micaceous sandstone that grades into a black fissile shale at the base. The Carrier Mills Shale is a fissile black shale that contains pyritized brachiopods. The Stonfort Limestone is a medium-gray ferruginous fine grained marine limestone. It is typically less than 2 feet thick. The Wise Ridge Coal is a bright to dull black coal that is thin and laminated. The Mt. Rorah Coal is a few inches to 2 feet thick. The Mitchellsville is a fine-grained, open marine and cherty limestone. It is a distinctive outcrop marker due to the cherty residuum that is present as the unit weathers. The Mitchellsville Limestone was previously called the Cutlaw Limestone<sup>2</sup>. The Golden Sandstone is light gray to buff and weathers to a golden brown. The Golden Sandstone is composed of quartz sand and feldspar grains with abundant clay and mica. There are several coals below the Golden Sandstone which may be equivalent to the New Burnside and Delwood Coals. These coals are present in a fluvial setting where sandstone units create a complex sequence. At the base of this sequence is a thick fine grained quartz sandstone. This unit contains only a few percent of clay and mica and is transitional between the Lower Tradewater and the Caseyville Formation below. The unit grades laterally into shale and siltstone. The Murray Bluff Sandstone is fine to coarse grained quartz sandstone which is thick to massively bedded. It may contain quartz granules and mica and feldspar grains are occasional observed. Where the unit is exposed at the surface, the outcrops contain abundant iron oxide in the form of Liesegang bands. The shales are gray and may split the massive sandstone into two benches in places. The Oldtown Coal<sup>3</sup> is less than 3 feet thick and has been mined at several places to the south of the Harrisburg Quadrangle in the Stonfort Limestone.

**F Caseyville Formation** Shale, sandstone, conglomerate, claystone. The sandstone is medium to coarse-grained quartz sand with well rounded quartz pebbles (conglomerate) separated by gray shale. Shales are medium gray and are usually less than 20 feet thick containing clays and minor amounts of mica (less than 2-3 percent). The sandstone beds are medium to coarse-grained quartz arenites. The conglomerate is composed of white quartz pebbles up to ½ inch in diameter set in a medium to coarse quartz sand. Claystone is a minor component.



<sup>1</sup>Tri-State Committee on correlation of the Pennsylvanian System in the Illinois Basin, (R.J. Jacobson, W.J. Nelson, H.H. Damberger, C.P. Weibel and R.A. Peppers of the Illinois State Geological Survey; W.A. Hasenmueller, N.R. Hasenmueller, D.L. Eggert, and C.H. Ault of the Indiana Geological Survey; S.F. Greb and D.A. Williams of the Kentucky Geological Survey; M.E. Hopkins, H. Lamkin, Jr. and R.L. Langenheim of the University of Illinois), 2001, Toward A More Uniform Stratigraphic Nomenclature For Rock Units (Formations and Groups) of The Pennsylvanian System in The Illinois Basin, Illinois Basin Consortium Study 5, Joint publication of the Illinois State Geological Survey, Indiana Geological Survey and Kentucky Geological Survey, 26 p., 1 plate.

<sup>2</sup>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, 261 p.

<sup>3</sup>Nelson W.J., J.A. Devera, R.J. Jacobson, D.K. Lumm, R.A. Peppers, B. Trask, C.P. Weibel, L.R. Follmer, M.H. Riggs, S.P. Esling, E.D. Henderson, and M.S. Lannon, 1991, Geology of the Eddyville, Stonefort, and Creal Springs Quadrangles Southern Illinois, Illinois State Geological Survey, Bulletin 96, 58 figures, 7 tables, 1 plate, 85 p.