

SYSTEM	SERIES	FORMATION OR GROUP	THICKNESS (IN FEET)	SECTION	LITHOLOGY	TOPOGRAPHY	WATER-BEARING CHARACTER			
QUATERNARY	Recent and Pleistocene	Alluvium	0-120		Silt, clay, sand, and gravel in Ohio River valley. Silt, clay, and minor amounts of sand and gravel in tributary valleys.	Terraces and floodplains. Valley-train deposits in terraces occur along the Ohio River.	Yields several hundred gallons per minute to drilled wells in alluvium in the Ohio River valley. Yields as much as 5,000 gpm (gallons per minute) to compound horizontal wells. Nearly all wells furnish more than 500 gpd (gallons per day), enough water for a domestic supply with a power pump. Alluvium in stream valleys tributary to the Ohio River is fine grained and thin; most wells do not furnish enough for a bailer or bucket (less than 100 gpd).			
		Caseyville sandstone	0-100		Sandstone, yellowish-brown, medium-grained, crossbedded, and poorly cemented lenticular conglomerate. Massive in places.	Underlies dissected uplands and ridgetops in western part of area. Caps isolated hilltops.	Yields enough water for a domestic supply with a power pump (more than 500 gpd) to wells in lowland areas bordering streams. Wells in upland generally are inadequate (yields less than 100 gpd).			
PENNSYLVANIAN	Chester	Leitchfield	0-125		Variegated shale with thin-bedded sandstone and limestone. Thickness varies greatly owing to pre-Pennsylvanian erosion.	Gently rolling uplands and fairly steep slopes adjacent to stream valleys. Sandstone lenses, some massive, form small benches.	Yield little or no water to wells.			
		Burialo Wallow								
		Tar Springs sandstone				Sandstone, gray, fine-grained, locally bituminous, and dark-gray shale. Lithology varies greatly within short distances.				
		Glen Dean limestone	50-70		Limestone, dark- to bluish-gray, fine- to medium-grained, very fossiliferous; black to gray shale near top.	Gently rolling uplands, dissected on perimeter of Dripping Springs escarpment.				
		Hardinsburg sandstone	30		Sandstone, gray, fine- to medium-grained, massive to thin-bedded; contains red or green shale.	Underlies dissected uplands and ridgetops. Forms small benches on hillsides.				
		Haney limestone <sup>2</sup>	35		Limestone, gray, fine- to medium-grained, medium crystalline to oolitic in places, very distinctive light-gray block, chert, and variegated shales.	Gently rolling to fairly flat uplands; moderate bluffs near the heads of valleys.				
		Big Clifty sandstone <sup>2</sup>	75		Sandstone, gray, fine- to coarse-grained, massive, crossbedded; contains green fissile shale.	Forms a major escarpment (Dripping Springs escarpment) of several hundred feet of relief. Underlies gently rolling uplands.				
		Beech Creek ls. <sup>2</sup>	10		Limestone, gray, finely to coarsely crystalline, oolitic to coarsely crinoidal.	Form lower part of Dripping Springs escarpment. Have numerous large sinks into which overlying sandstone has collapsed. Underlie gently rolling upland.				
		Elwren sandstone <sup>2</sup>	30		Shale, soft, gray or green.					
		Reelsville limestone <sup>2</sup>	10		Limestone, white to light-gray, fine- to medium-grained, oolitic to coarsely crinoidal.	Forms a small bench or "double step" in the Dripping Springs escarpment in Meade and Breckinridge Counties. Underlies dissected uplands and ridgetops.				
		Sample sandstone <sup>2</sup>	30		Sandstone, gray, medium-grained, with black and gray shale.	Underlies dissected uplands and ridgetops.				
		Beaver Bend limestone <sup>2</sup>	20		Limestone, light- to dark-gray, fine- to medium-grained, oolitic in places.	Forms small benches on hillsides. Underlies gently rolling upland. Sinkholes are present in upland areas.				
		Mooretown sandstone <sup>2</sup>	15		Sandstone or black clayey shale.	Forms small benches where sandstone is locally massive. Underlies relatively flat upland. Shows collapse structure into sinkholes in underlying Paoli limestone.				
		Paoli limestone <sup>2</sup>	40		Limestone, light- to dark-gray, fine- to medium-grained, argillaceous to oolitic in places.	Underlies rolling karst areas. Forms lower part of the Dripping Springs escarpment in most areas. Contains numerous sinkholes into which the overlying sandstone has collapsed.				
		CARBONIFEROUS	MISSISSIPPIAN	Meramec	Ste. Genevieve limestone	150-200		Limestone, light-gray to white, oolitic, crossbedded, fine-grained in places; contains a minor amount of chert. Limestone breccia is usually present at the top of the formation.	Underlies rolling karst areas. Greatly dissected in places. Forms steep bluffs along the Ohio River.	Yields more than 50 gpm to wells from large solution openings in karst areas. Most wells encounter solution openings, but in areas high above perennial streams these solution openings are dry in late summer and fall and many wells are inadequate. Contains major caverns of Mammoth Cave area which have large, connected, subsurface streams. Springs having low flows ranging from less than 10 to about 1,500 gpm occur at or near stream level. Smaller springs discharge from perched water bodies in upland areas but many go dry during late summer and fall.
St. Louis limestone	300					Limestone, gray to tan, fine-grained, coarsely crystalline, dolomitic, argillaceous, cherty. Gypsum present locally.	Underlies rolling karst areas. Has less relief than karst on Ste. Genevieve limestone, but sinkholes are steeper. Forms steep bluffs along the Ohio River.	Yields more than 50 gpm to wells from large solution openings in karst areas. Most wells penetrate solution openings and are inadequate for a domestic supply with a power pump. Major spring horizon; many springs have low flows of several hundred to several thousands of gallons per minute. Many springs are used for public and industrial water supplies.		
Spergen <sup>3</sup> and Warsaw limestones	70					Limestone, brown to gray, very crystalline, dolomitic, argillaceous, fossiliferous; contains chert and some shale. Limestone, gray, granular to fine-grained, argillaceous, crinoidal, crossbedded, with small gypsum geodes and chert. Siltstone near base.	Underlie gently rolling uplands. Karst in upper part. Form cap of Muldraugh escarpment in Hardin and Larue Counties. Form steep bluffs above exposures of Borden group.	Yields enough water for a domestic supply with a power pump where solution openings are encountered close to perennial stream level. Minor spring horizon in upper part. Yields enough water for a domestic supply with bailer or bucket (100 gpd). Wells that encounter large solution openings produce more than 5 gpm. Minor spring horizon near base at contact zone of limestone and underlying siltstone.		
Osage	Borden group <sup>4</sup>				Muldraugh <sup>5</sup>	50		Limestone, gray to yellow, granular to fine-grained, siliceous, crinoidal, silty, geodiferous; contains chert beds. Gray calcareous geodiferous siltstone. Unit grades laterally from one lithology to another.	Underlies rolling dissected uplands. Forms steep bluffs near the Muldraugh escarpment. Small valleys are steep and V-shaped.	Yields enough water for a domestic supply with bailer or bucket (more than 100 gpd). Wells in lowland areas close to streams produce more than 5 gpm from solution openings. Most wells obtain water from perched water bodies supported by discontinuous shale layers, and many are dry during late summer and fall. Minor spring horizons occur throughout the formation. Flows are as much as 30 gpm, but most are seasonal. Where the formation consists predominantly of siltstone, most wells are inadequate for domestic use (less than 100 gpd).
					Floyd Knob <sup>4</sup>	10		Limestone, yellow to brown, impure, siliceous, crinoidal, with chert, and greenish-black glauconitic siltstone.		
		Brodhead <sup>5</sup>	100		Limestone, white to gray, siliceous, crinoidal, and a few small geodes. Gray locally calcareous and locally massive siltstone; contains chert beds. Gray to green silty siliceous locally fossiliferous shale; contains calcium carbonate concretions. Unit grades laterally from one lithology to another.					
		New Providence shale <sup>4</sup>	150		Shale, green to gray, clayey; contains iron oxide concretions and small phosphatic nodules at base.	Forms lower part of "knobs" near base of Muldraugh escarpment.	Yields little or no water to wells.			
DEVONIAN		New Albany shale	40		Shale, black, fissile.	Forms lower part of "knobs" near base of Muldraugh escarpment. Caps small round hills away from the base of the escarpment.	Yields little or no water to wells. Seepage springs are present at numerous horizons, but most of them go dry during late summer and fall.			

See list of references in Water-Supply Paper 1603.  
1 As used by Waller (1927).  
2 As used by McFarlan, Swann, Walker, and Nosow (1955).  
3 As used by Stockdale (1939)=Salem limestone of Cummings (1901)=Somerset shale member of Warsaw limestone.  
4 As used by Stockdale (1939).  
5 Of Stockdale (1939).

## GENERALIZED COLUMNAR SECTION OF BRECKINRIDGE, GRAYSON, HARDIN, LARUE, AND MEADE COUNTIES, KENTUCKY

By

R. F. Brown and T. W. Lambert