

SYSTEM	SERIES	GROUP	FORMATION	THICKNESS, IN FEET	SECTION	LITHOLOGY	TOPOGRAPHY	HYDROLOGY		
QUATERNARY	PLEISTOCENE AND RECENT		ALLUVIUM	0-130		Soil, clay, silt, and fine sand, 5 to 40 feet thick, overlying sand and gravel with clay lenses in the Ohio River valley. Thin deposits of clay, silt, and fine sand with scattered deposits of gravel in tributary-stream valleys.	Flood plains and terraces, as much as 6 miles wide, in the Ohio River valley; broad flat areas in the valleys of the Salt River and large tributaries.	Yields 200 to 500 gpm (gallons per minute) to most wells that penetrate the full thickness of alluvium in the Ohio Valley; yields more than 1,000 gpm to large-diameter wells; yields 100 to 500 gpd to wells in tributary-stream valleys, and may yield more than 500 gpd where gravel is present. Water is hard.		
			UPPER MISSISSIPPIAN	SALEM LIMESTONE	50±		Fine-grained siliceous and argillaceous limestone and shale with geodes and chert.	Tops of some of the high ridges and knobs in western Bullitt and southwestern Jefferson Counties, and broad, flat valleys in some places.	Yield 100 to 500 gpd to drilled wells on broad uplands, but almost no water on narrow ridges; yield water to small springs in edges of escarpment. Water is hard but otherwise of good quality.	
				WARSAW LIMESTONE	40±					
			MISSISSIPPIAN	BORDEAN ¹	MULDRAUGH FORMATION ²	75-95		Hard bedded fine-grained siliceous limestone; argillaceous and crinoidal limestone; and calcareous and argillaceous siltstone with drab to black shale, small geodes, and bands and lenses of chert.		
					FLOYDS KNOB FORMATION ¹	1-9		Brown siliceous, oolitic, or crinoidal limestone capped by streak or layer of greenish-black glauconitic silt or clay.		
					BRODHEAD FORMATION ²	200-220		Argillaceous silty shale with calcium carbonate concretions, grading upward to massive argillaceous shaly siltstone and occasional beds of limestone. Siliceous to crinoidal limestone at top in southern Bullitt County.	Main part of the Mississippian escarpment and many outlying knobs. Resistant rocks of the Muldraugh formation cap the escarpment and larger knobs. The Brodhead formation caps and forms cliffs in the upper part of many knobs in Bullitt County. The New Providence formation underlies the lower dissected slopes of the knobs and escarpment.	Yields 100 to 500 gpd to wells in valley bottoms; may yield more than 300 gpd where thick siltstone beds occur at and below stream level; yields almost no water to wells on hills; yields water to small springs in the limestone and siltstone beds. Water from the shale is soft; from the siltstone, hard; and from the limestone, very hard. At shallow depths below stream level, water may contain salt, sulfate, or iron. The silty shale and siltstone are favorable for dug wells, common in this area. Most dug wells yield less than 500 gpd and many yield very little or go dry in late summer and early fall.
					NEW PROVIDENCE FORMATION ¹	175-205		Argillaceous shale or claystone with ferruginous calcareous concretions and lenses and ferruginous limestone patches and lenses. Fine-grained sandstone layers with interbedded shale at the top.		
					NEW ALBANY SHALE	100±		Black fissile slightly calcareous carbonaceous shale, pyrite scattered throughout and in a layer at the base, and several thin sandstone and shale layers.	Broad, flat areas in southwest-central Jefferson and central Bullitt Counties; gentle lower slopes of much of the Mississippian escarpment and the knobs.	Yields 100 to 500 gpd to shallow drilled wells in broad, flat areas, but almost no water to drilled wells on hillsides; yields water to small springs and dug wells. Water is hard and from depths greater than about 50 feet may contain hydrogen sulfide and iron.
			DEVONIAN	UPPER DEVONIAN	SELLERSBURG LIMESTONE	0-22		Thick-bedded finely to coarsely crystalline argillaceous magnesian limestone, small black phosphatic nodules in upper part.	Rolling upland with sinkholes and underground drainage in northern Jefferson County and broad ridges in western Oldham County. The Jeffersonville thins toward the south and is not present in Bullitt County.	Yield more than 500 gpd to drilled wells in broad, flat valleys or along streams on the upland; yield water to springs. Water is hard.
					JEFFERSONVILLE LIMESTONE	0-30		Medium- to thick-bedded medium-crystalline to coarsely crystalline limestone, siliceous and cherty in part.		
SILURIAN		LOUISVILLE LIMESTONE	45-100		Thick-bedded fine-grained limestone, magnesian or siliceous in part.	Moderately rolling upland with some sinkholes and underground drainage in south-central Jefferson and north-central Bullitt Counties; broad ridges in south-central Oldham and northeastern Bullitt Counties. Cliffs and ledges in valley sides.	Yields more than 500 gpd to wells drilled in valley bottoms or along streams on broad uplands; yields as much as 50 gpm in places; yields water to springs at contact with underlying Waldron shale. Water is hard and may contain salt or hydrogen sulfide below stream level.			
		WALDRON SHALE	10±		Green-gray nonfissile calcareous magnesian siliceous shale.	Slopes between limestone ledges on hillsides; erosion undermines overlying Louisville limestone.	Yields almost no water to wells or springs. Holds up water in the overlying Louisville limestone and prevents recharge to the underlying Laurel dolomite.			
		LAUREL DOLOMITE	40±		Thin- to medium-bedded fine- to medium-grained dolomitic limestone.	Ledges and cliffs along streams.	Yields 100 to 500 gpd to wells where it occurs along streams, but almost no water to wells on hillsides; yields water to springs. Water is hard.			
		OSGOOD FORMATION	30		Coarse lumpy or fissile calcareous and magnesian shale with prominent fine-grained limestone beds at base and about 3 feet below top.	Slopes between limestone ledges.	Yields water to small springs from limestone beds.			
		BRASSFIELD LIMESTONE	4±		Medium-bedded pink to brown coarsely crystalline limestone.	Ledges on slopes and tops of small cliffs of underlying Saluda limestone.	Yields water to springs. Water is hard.			
		SALUDA LIMESTONE	30-40		Thick-bedded sandy magnesian limestone in upper part, and coarse lumpy mudstone with thin beds of bluish-gray fine-grained limestone at base.	Cliffs along streams and ledges in hillsides; tops of some low, flat ridges.	Yields 100 to 500 gpd to wells in valley bottoms and on broad ridges, but almost no water to wells on hillsides; yields water to small springs. Water is hard.			
ORDOVICIAN	UPPER ORDOVICIAN	RICHMOND	LIBERTY FORMATION	35-50		Coarse bluish-gray shale with thin layers of bluish-gray fine-grained limestone.				
			WAYNESVILLE LIMESTONE	40±		Thick-bedded green nongranular argillaceous limestone with shale partings, and 10-foot bed of green shale in lower part.	Moderately dissected upland areas; moderately steep slopes where shale predominates and less steep slopes where limestone predominates. Steep slopes along large streams and cliffs, in places. Solutional features evident where thick limestone beds underlie streams.	Yield 100 to 500 gpd to wells in large stream valleys, and more where thick limestone is present; yield almost no water to wells on hillsides and ridges; yield water to small springs. Water is hard.		
			ARNHEIM FORMATION	80-100		Thin alternating layers of blue lumpy or rubby, locally crossbedded, argillaceous limestone and clay shale.				
			MC MILLAN FORMATION	20 EXP.		Argillaceous limestone and shale.	Stream valleys on east edge of area.	Yields 100 to 500 gpd. Water is hard.		

¹ As used by Stockdale (1939). ² Of Stockdale (1939).

GENERALIZED COLUMNAR SECTION AND WATER-BEARING CHARACTER OF THE ROCKS IN BULLITT, JEFFERSON, AND OLDHAM COUNTIES, KENTUCKY (COUNTY GROUP 22)

By
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