

SYSTEM	SERIES	FORMATION	MEMBER AND BED	GRAPHIC COLUMN	THICKNESS (ft)	DESCRIPTION
QUATERNARY	Pleistocene & Holocene		Alluvium, alluvial fans, and loess (not mapped)		0-80	A Alluvium, loess, talus, and fans. <i>Alluvium</i> is composed of clay, silt, sand, and gravel. Valley fill consists of yellow brown silty clays and gravels of the Cahokia Alluvium, which in places is overlain by yellowish brown to light gray clay-rich silty loess. Bedrock residuum forms <i>talus</i> in the uplands and on steep slopes. Alluvial fans are shaped as low cones, composed of chert and limestone detritus in areas of notable decrease in gradient.
			sandstone and gravel		0-15	B
PENNSYLVANIAN	Morrowan	Caseville	siltstone and shale lentils		0-120	C Sandstone is a weakly lithified to lithified white, fine grained, well sorted quartz arenite. This noncalcareous unit is cemented by silica, and in places, looks like quartzite. No fossils were seen. Gravel is composed of rounded chert fragments cemented by iron oxides and silica. Contact at base is unconformable.
						C Sandstone, siltstone, and shale. Sandstone is a white to gray quartz arenite with pink to brown stains; it is medium to coarse grained, poorly sorted, and contains some rounded quartz pebbles. The unit is crossbedded, generally medium to thick bedded, ripple marked, and in places, flaggy bedded with very little clay. Siltstone is gray to dark gray; it occurs mainly as lenticular beds or lateral to flaggy sandstones; clay drapes or laminae are commonly found with rippled and flaser bedding; mica is commonly present. Ichnofossils in the siltstone are predominantly horizontal tubular burrows, <i>Cochlichnus</i> sp., and <i>Lockeia</i> sp. Load casts are common on the soles of the sandstone beds overlying the shales. Shale, rare in this unit, is dark gray, hard, and fissile; it weathers pily.
MISSISSIPPIAN	Chertian	Kincaid			0-75	D
						E Limestone is a light gray fossiliferous wackestone with crinoid fragments, <i>Pentamerites</i> , <i>Archimedes</i> , and several brachiopod species. Bedding ranges from laminated to thick, but wavy and tabular surfaces are also present. The limestone can be dense; it is rarely oolitic. Dark gray to light gray chert nodules are typically found in the flaggy bedded intervals.
		Dugonia	thin bedded		100	F Sandstone is a white quartz arenite that weathers to tan and olive brown; it is very fine to fine grained and well sorted; sand grains are subangular; little clay is found. The unit is thick to thin bedded and flaggy in places; lateral accretion features are common; oscillatory ripples with ladder-back ripples were observed. Ichnofossils of <i>repichnia</i> (crawling traces) and horizontal tubular burrows were found. Small amounts of siltstone and shale are present in bioturbated zones. This unit generally forms a thick crossbedded bench of sandstone.
			oolite beds		40	F Limestone is a light gray, crinoidal wackestone that weathers light to medium gray. Oolitic grainstone and a yellowish gray marlstone with rugose corals are present. Shaley interbeds occur in places as thin to medium beds.
		Palestine			35-40	G Sandstone is a tan to olive brown quartz arenite that is fine grained and well sorted. Ichnofossils commonly found are <i>Lockeia</i> sp., <i>Cochlichnus</i> sp., and horizontal tubular burrows, as convex hyporelfes. The unit is shaley and silty in the basal portion. Cross laminations and local scouring can be commonly observed.
						H Limestone is a light gray wackestone with lighter packstone facies in the upper portion. The unit is medium to thick bedded, argillaceous, and crinoidal; it is interbedded with thin, dark gray shales. The fossils found are <i>Archimedes</i> sp., <i>Pentamerites</i> sp., <i>Pterotocrinus menardensis</i> , <i>Composita</i> sp., spiriferids, and encrusting bryozoans. Bioclasts are cross laminated in some beds. Lime mudstone alternates with thin beds of packstone; laminated strata are also present.
		Menard	Vienna Limestone		15	I Limestone consists of medium to dark gray packstones that alternate with wackestones; the unit is thin bedded and contains brown nodular chert in places. A break at the top of the unit is composed of calcareous, fissile shale.
						J Sandstone is a white to tan, fine grained, well sorted, pure quartz arenite with cross lamination and tabular bedding. Beds are thick to thin, ripple marked, and contain ichnofossils (<i>repichnia</i> , <i>Lockeia</i> sp., and tubular burrows). A flaggy bedded, silty facies primarily yields the burrowed horizons. Gray shale is also present as thin beds.
		Tar Springs			75	K Limestone is made up of dark gray, shaley, oolitic packstone and crinoidal wackestones that are typically thin bedded. Shale partings are greenish gray, calcareous, and platy; in places, they are poorly fossiliferous.
			oolite beds		40	L Limestone and sandstone. Limestone is a light gray to tan wackestone that contains some purple fossils. It is interbedded with green shales, oolitic grainstones, and crinoidal brachiopod packstones that contain a few red silicified crinoids and brachiopods. Sandstone is a tan to light gray, fine grained, and well sorted quartz arenite that occurs as interbeds in the limestone. It is associated with some red and green shales.
DEVONIAN	Lower Devonian	Grassy Knob			0-100	M Limestone is composed primarily of light gray, oolitic grainstones and packstones with crossbedded bioclasts near the top of the unit. <i>Platycrinites</i> columnals are common. In its lower part, the unit is composed of lime mudstones and chert nodules, along with brachiopod wackestones.
						N Limestone is a light to tan brownish gray marlstone to fossiliferous wackestone. Fossils commonly found are <i>Phacops</i> sp., rugose corals, <i>Microcyclus discus</i> (near the base), and chonetid brachiopods. In places, the unit is medium bedded, soft, and shaly to dense.
		Backbone			0-100	O Limestone consists of a medium gray, hard or dense grainstone to lime mudstone that becomes finer grained toward the top of the unit; bedding is medium to thick. Fine to medium sized grains of quartz sand were observed "floating" in lower and middle parts. Fossils found in a crinoidal grainstone are fenestrate bryozoans, <i>Autopora</i> sp., <i>Brevispirifer gregarius</i> , chonetids, and stromatopore heads.
						P Sandstone is a white, pure quartz arenite with red stains; it is medium grained, well rounded, and well sorted. This sandstone is cemented with calcite in places, but is friable in others. Fossils present are <i>Olenotrochilus</i> sp., spiriferids, <i>Tentaculites</i> sp., <i>Amphigenia curta</i> , <i>Pleurodictyum problematicum</i> , and rugose corals.
		Clear Creek			200	Q Dense, white chert has red clay partings; some chert is stained red. Bedding in the upper part of the unit is tabular to wavy and ranges from thin to thick. Microcrystalline silica is locally present. In the upper part, fossils are common, preserved mainly as internal and external molds; fossils consist of <i>Amphigenia curta</i> , <i>Eodona</i> sp., strophomnids, spiriferids, <i>Dalmanites prateri</i> , <i>Acidaspis tuberculata</i> , <i>Coronula</i> sp., <i>Olenotrochilus asperus</i> , <i>Codonotrochilus prateri</i> , <i>Pachyopora cristata</i> , and graptolids. Burrows are preserved in the chert, and borings are seen on large brachiopod shells. Burrows, which are mainly vertical, have large cavities.
						R Limestone is a white to light gray crinoidal grainstone to spiriferid wackestone that weathers to bluish gray. It is medium to thick bedded and densely crystalline due to the crinoids. White to light gray chert nodules were found in the middle part of the unit.
		Bailey			300	S Chert is an off-white to yellow, dense, thick bedded chert; it contains less triopli, less clay, and fewer fossils than unit Q. Fossils of trilobites are rare. Horizontal burrows are common; bedding is tabular. Some porous zones have a "popcorn" appearance. The unit is wavy bedded and becomes nodular at the base where it grades into the unit below.
			Zoophycos beds			T Limestone is a light gray to yellowish gray lime mudstone that is argillaceous, thin bedded, and cherty. The thin wavy beds contain clay-rich partings and dark gray nodular cherts. Dolostones and dark purple gray shales are only locally present. Fossils are sparse, although an acme zone of <i>Zoophycos</i> sp. occurs in the upper part of the unit. Other fossils found are conularids, crinoids, brachiopods, and the trilobite <i>Hunania</i> place. This unit becomes shaller and greener toward the base.
		Dutch Creek			40	
			Dutch Creek Sandstone		10	
MIDDLE DEVONIAN	Grand Ledge				35-40	
UPPER DEVONIAN	Valmeyeran and Kinderhookian					
MIDDLE DEVONIAN	Clear Creek					
LOWER DEVONIAN	Backbone					
UPPER DEVONIAN	Valmeyeran and Kinderhookian					
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