

Blue River Valley					
Geologic Period	Phase	Stratigraphic Unit		Hydrogeologic Unit	
Quaternary	Modern	Alluvium and outwash deposits		Alluvial Aquifer	
	Glaciation	Glacial deposits		Glacial deposits	
		Older stream and outwash terrace deposits		Local perched aquifer	
Neogene	Extension	Troublesome Formation		Local aquifer	
Paleogene		Volcanic rocks		Volcanics	
		Transition	Paleogene and Cretaceous intrusive rocks		Crystalline bedrock
Cretaceous	Laramide				
	Interior Seaway	Pierre Shale		Pierre confining unit	
		Niobrara Formation	Smoky Hill Member		
			Fort Hayes Limestone		
		Benton Group	Carlile Shale		
			Greenhorn Limestone		
	Graneros Shale				
Dakota Sandstone		Dakota Aquifer			
Jurassic	Mesozoic Sandstones	Morrison Formation		Morrison Aquifer	
		Entrada Sandstone		Entrada Aquifer	
Triassic		Chinle Formation		Chinle confining unit	
Permian	Ancestral Rocky Mountains	Maroon Formation		Maroon-Minturn Aquifer	
Pennsylvanian		Minturn Formation			
Mississippian	Paleozoic Carbonates	No strata			
Devonian		Chaffee Group		Mississippian-Cambrian carbonate aquifer	
Silurian					
Ordovician		Manitou Formation			
Cambrian		Dotsero Formation and Sawatch Sandstone			
Precambrian	Precambrian	Crystalline rocks of igneous and metamorphic origin in mountainous region		Crystalline bedrock	

Table 12a-05-01. Blue River Valley stratigraphic chart.

Blue River Valley							
Geologic Period	Phase	Stratigraphic Unit	Unit Thickness (ft)	Physical Characteristics	Hydrogeologic Unit	Hydrologic Characteristics	
Quaternary	Modern	Alluvium and outwash deposits	>35	Well to poorly-sorted, uncemented sands, silts and gravels along modern streams and as valley-fill	Alluvial Aquifer		
	Glaciation	Glacial deposits	0-440	Unstratified sand, gravel, and silt within, and at the mouths of, mountain valleys of the Mosquito and Continental Divide ranges	Glacial deposits		
		Older stream and outwash terrace deposits	0-50	Well to poorly-sorted, uncemented sands, silts and gravels on bedrock-cored terraces above modern streams	Local perched aquifer		
Neogene	Extension	Troublesome Formation	0-930	Clay, sand, and gravel	Local aquifer		
		Volcanic rocks		Flows of vesicular basalt near Green Mountain Reservoir	Volcanics		
Paleogene	Transition	Paleogene and Cretaceous intrusive rocks		Intermediate to felsic bodies intruded between 56 and 70 million years ago	Crystalline bedrock		
Cretaceous	Laramide	Pierre Shale	up to 5,200	Shale, siltstone with interbedded sandstone	Pierre confining unit	Marine sandstone members and limestone beds may supply water	
	Interior Seaway	Niobrara Formation	Smoky Hill Member	~540			Chalk interbedded with chalky shale, gray shale, and limestone
			Fort Hayes Limestone				Chalky limestone and marl interbedded with thin shale
	Benton Group	Carlile Shale	~440	Shale, limestone and beds of bentonite			
		Greenhorn Limestone					
		Graneros Shale					
	Dakota Sandstone	170-225	Fine-grained, thin bedded to massive sandstone, interbedded with shale	Dakota Aquifer			
Jurassic	Mesozoic Sandstones	Morrison Formation	180-260	Gray to greenish-gray and maroon with beds of sandstone, limestone, siltstone and conglomerate	Morrison Aquifer		
		Entrada Sandstone	36-164	Fine- to medium-grained light gray to pale yellow-gray and white sandstone with shaley lenses and local basal conglomerate	Entrada Aquifer		
		Chinle Formation	131-164	Gray-orange and reddish-orange to dark-red to pale-pink and greenish-gray silty shale, siltstone, and fine-grained silty sandstone	Chinle confining unit		
Permian	Ancestral Rocky Mountains	Maroon Formation	up to 3,800	Light reddish-gray, dark red, and grayish-purple calcareous arkosic sandstone, conglomerate, micaceous siltstone and shale, and limestone	Maroon-Minturn Aquifer		
Pennsylvanian		Minturn Formation	up to 6,000	Greelight gray-pink, olive drab, grayish green, light gray to reddish-gray sandstone and conglomerate interbedded with gray, black and grayish tan siltstone and shale and gray fine-grained fossiliferous limestone and dolomite			
Mississippian	Paleozoic Carbonates	No strata				Mississippian-Cambrian carbonate aquifer	
Devonian		Chaffee Group	~66	Quartz sandstone with conglomerate in lower part, laminated dolomite in upper part			
Silurian							
Ordovician		Manitou Formation	~89	Dark- to light-gray bedded dolomite with grayish- pink to grayish-red dolomite beds near top			
Cambrian		Dotsero Formation and Sawatch Sandstone	~180	Quartz sandstone and dolomitic sandstone with shale partings, arkosic conglomerate at base			
Precambrian	Precambrian	Crystalline rocks of igneous and metamorphic origin in mountainous region			Crystalline bedrock		

Table 12a-05-01. Blue River Valley stratigraphic chart, detailed. Colorado Geological Survey ON-010 Colorado Groundwater Atlas.

Sources: Kellogg and others (2002); Wallace and others (2003); Kellogg and others (2011); Raynolds and Hagadorn (2017)