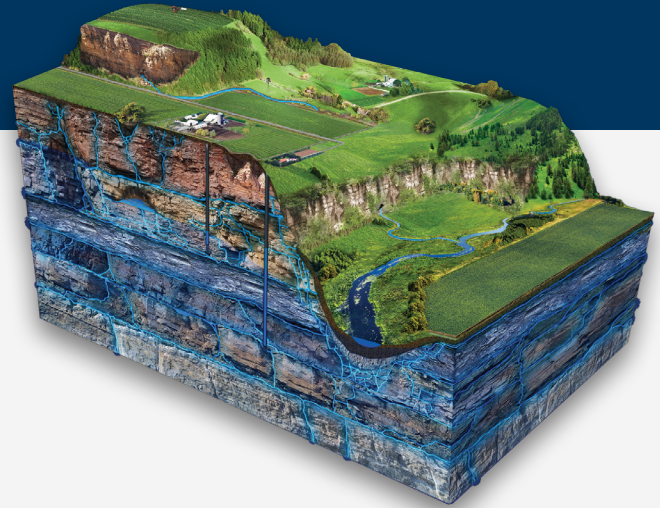


How groundwater moves in southeast Minnesota: Karst landscape



See page 2 for a larger image

The flow of groundwater in southeast Minnesota is fascinating and complex and because of the unique geology, it is like no other area in the state. The karst landscape is one of three distinct geologic landscapes in this region. It is located throughout southeast Minnesota and the lower two thirds of the Root River Watershed. Listed below are seven key points to consider when thinking about water movement in the karst landscape.

ERODED ROCK: Over thousands of years carbonate bedrock, also called limestone, is eroded away by slightly acidic water in rain and soil, creating karst features. Karst features include enlarged fractures, sinkholes, caves, springs, and disappearing streams.

THIN SOILS: A thin layer of topsoil allows water to easily soak into the underlying bedrock. Once in bedrock water moves quickly to shallow drinking water wells, springs, and streams.

NOT JUST SINKHOLES: Although some rain and melting snow moves from the surface to groundwater through sinkholes, most soaks into the ground across the entire land surface.

GROUNDWATER OR SURFACE WATER? The distinction between groundwater and surface water is not always clear. Groundwater may emerge as a spring, flow a short distance in a stream, and then disappear. This same water could then re-emerge within hours or days farther downstream again as surface water.

SHALE LAYER: Layers of shale are less permeable than limestone and hinder the downward movement of water. Instead, water travels sideways, following the easiest path across the shale.

WHAT DECADE ARE YOU DRINKING? Younger water is often from aquifers located above the shale layers and can be just days to decades old. Older water is typically from aquifers below protective shale layers and can be decades to centuries old. In many cases, drinking water is a mixture of both younger and older water.

GROUNDWATER MIXING: In areas of the landscape where the shale has been removed by streams or erosion, younger, local groundwater from above the shale mixes with older and deeper regionally sourced groundwater.

Root River Field to Stream Partnership



Minnesota Department of Agriculture
Minnesota Agricultural Water Resource Center
The Nature Conservancy

Mower SWCD
Fillmore SWCD
Root River SWCD



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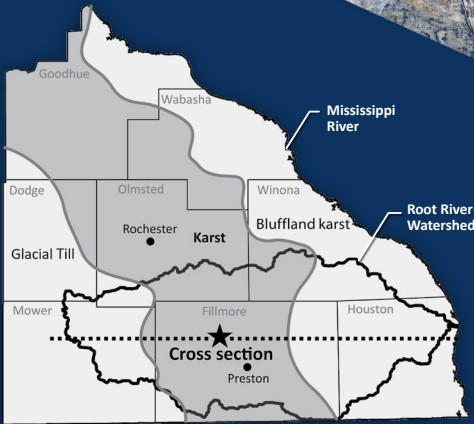
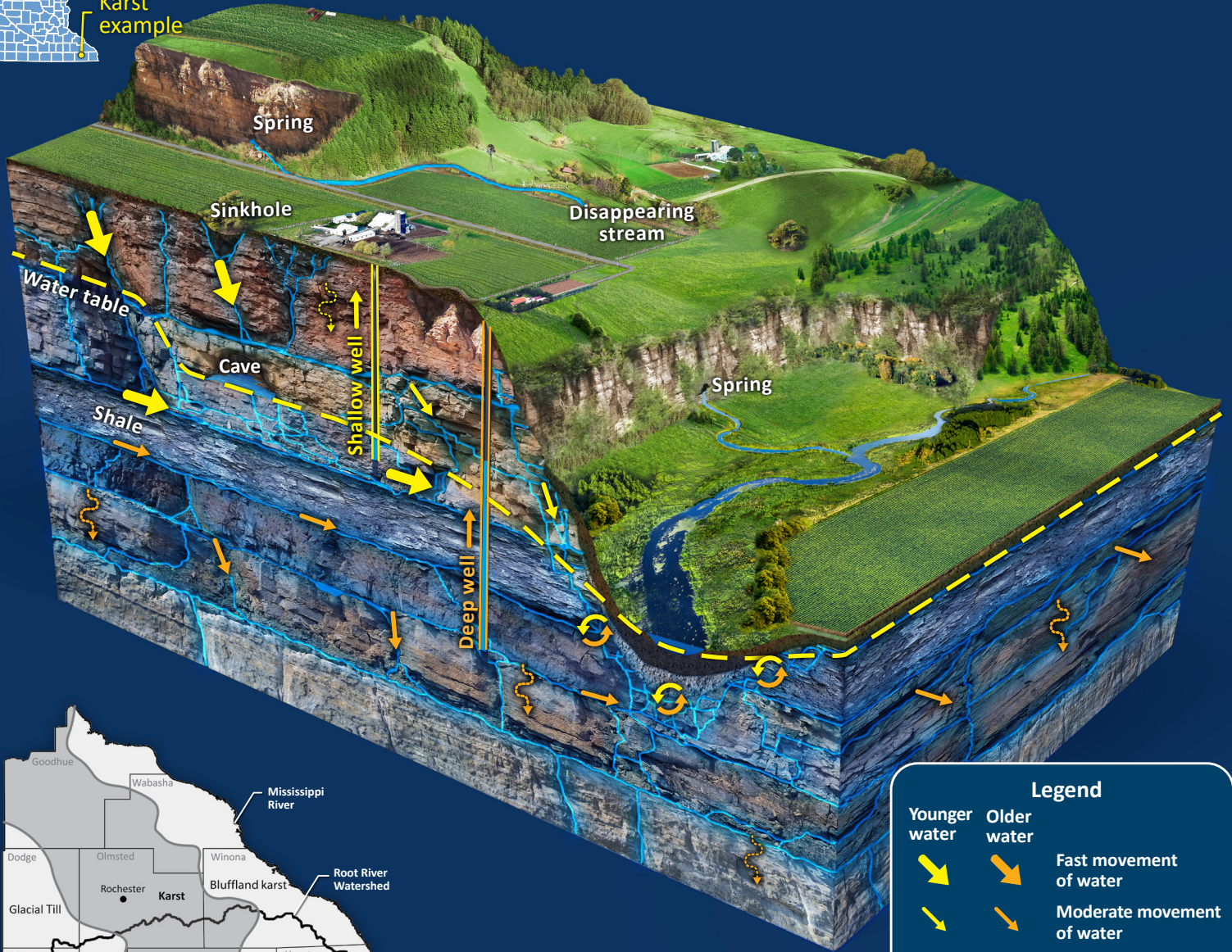
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Karst example



Legend

Younger water	Older water	Fast movement of water	
			Moderate movement of water
			Slow movement of water
			Mixing of younger and older water

