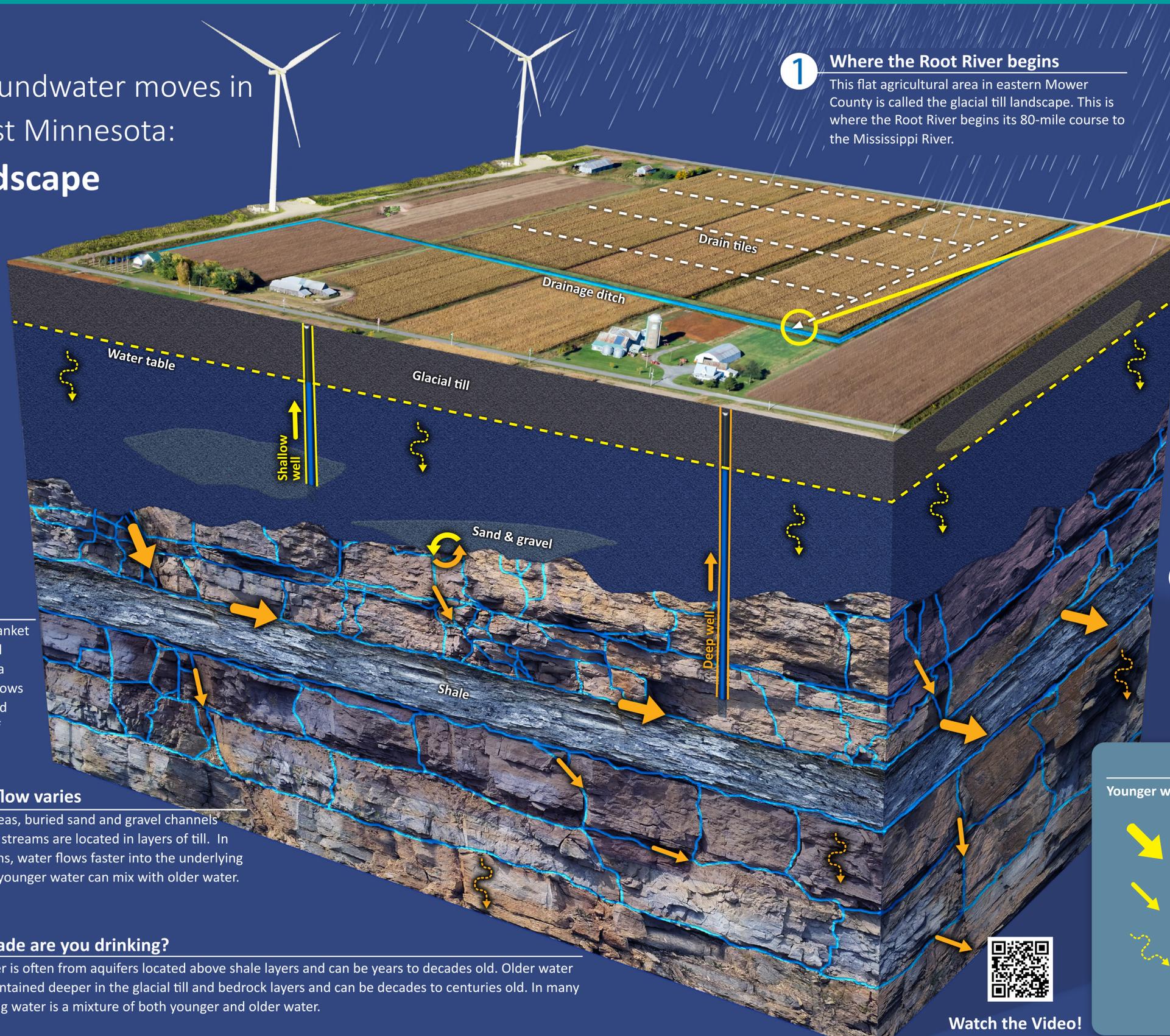


How groundwater moves in southeast Minnesota: Till landscape



Till example



1 Where the Root River begins
This flat agricultural area in eastern Mower County is called the glacial till landscape. This is where the Root River begins its 80-mile course to the Mississippi River.



2 Drainage tile
A network of sub-surface pipes, called drainage tile, are placed four to five feet below the ground so crops can be grown. This tile directs about 20-30% of the annual precipitation to drainage ditches and streams. A small amount of precipitation slowly travels to deeper groundwater or runs off the surface, while most is evaporated and used by plants.

3 Thick glacial till
Till is a dense mixture of clay to boulder size material that was laid down directly by glacial ice. Up to 200 feet of till covers the underlying bedrock. The thickness and amount of clay within this till affects the movement of groundwater.

4 Clay-rich sediment
The dense blanket of compacted clay acts like a barrier and slows the downward movement of groundwater.

5 Speed of flow varies
In isolated areas, buried sand and gravel channels left by glacial streams are located in layers of till. In these locations, water flows faster into the underlying aquifers and younger water can mix with older water.

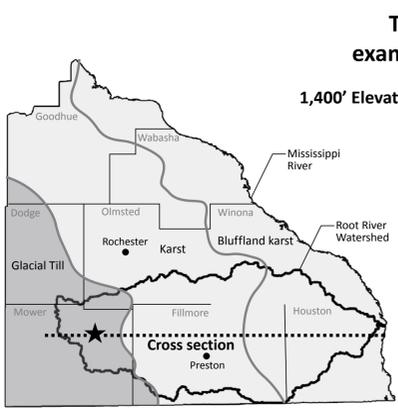
6 What decade are you drinking?
Younger water is often from aquifers located above shale layers and can be years to decades old. Older water is typically contained deeper in the glacial till and bedrock layers and can be decades to centuries old. In many cases, drinking water is a mixture of both younger and older water.

Legend

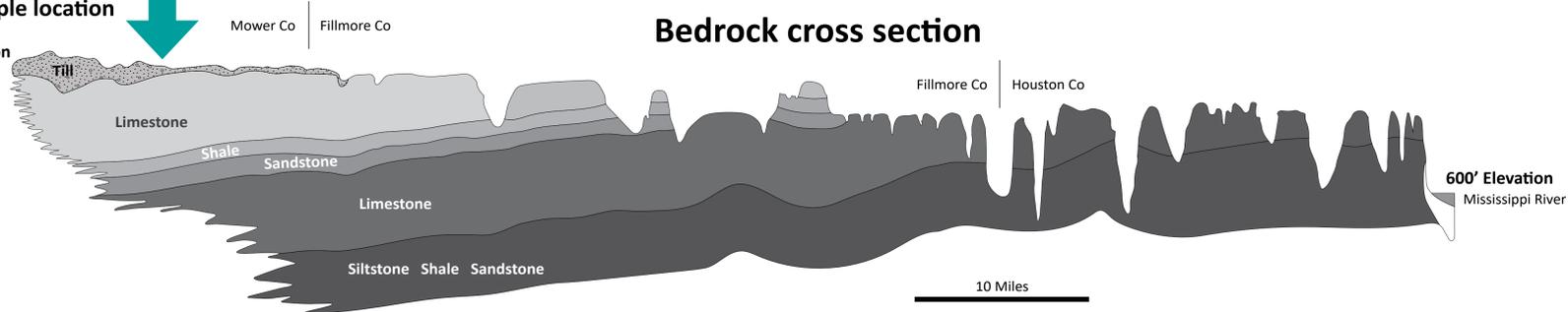
Younger water	Older water	
		Fast movement of water
		Moderate movement of water
		Slow movement of water
		Mixing of younger and older water



Watch the Video!



Till landscape example location



Bedrock cross section



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

In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711. The MDA is an equal opportunity employer and provider.