

# WHAT IS THE MISSISSIPPI EMBAYMENT?

The Mississippi embayment is an extensive sediment-filled geologic structure underlying parts of eight states in the south-central U.S. that provides large quantities of groundwater from numerous aquifers to cities, towns, agriculture, and industry.

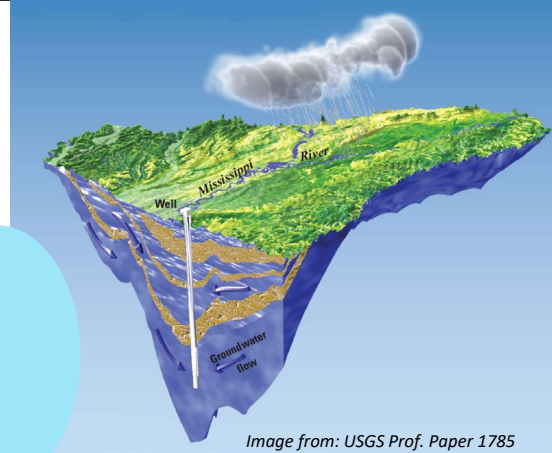


Image from: USGS Prof. Paper 1785

This geologic formation was the result of tectonic activity nearly 65 million years ago when a shallow magma plume caused the region to uplift then subside. The result was a basin that allowed the ocean to flow inward and reoriented the Mississippi River to flow south, depositing layers of sediment to produce **aquifers** and intervening **confining beds**.

- Two of the most well-known aquifers are the **Mississippi River Valley Alluvial (MRVA)** aquifer and the **Memphis aquifer** (also called the Sparta aquifer). Both underlie multiple states and offer huge amounts of groundwater. The MRVA is used primarily by agriculture (largely rice farming) where the Memphis aquifer is used more by cities & towns and industry.



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■ Memphis aquifer  
■ Mississippi Embayment



Because the embayment is so large and its aquifers and confining beds cross political boundaries, the names given to the many geologic units can be very confusing. It is common to call a unit by the name given by the local area. In west Tennessee, what we term the Memphis aquifer becomes separated into two aquifers: the Sparta and Carrizo Sand aquifers.

The Mississippi embayment is not only host to vast water resources, but also the New Madrid Seismic Zone. Geologic faults extend throughout the embayment and may locally direct groundwater flow and impact the purity of water.”