Introduction

The Sparta-Memphis aquifer is one of the most significant sources of groundwater in the central United States. It is located in the Mississippi Embayment, which is roughly parallel to the Mississippi River at the southern edge of Wisconsin, Illinois, and Indiana. The aquifer is one of the largest and most productive aquifers in the United States, with a mean annual yield of about 1.2 million acre-feet. It is primarily used for irrigation and domestic water supply.

The Sparta-Memphis aquifer is underlain by the Sparta Sand and the Memphis Sand. The Sparta Sand is composed of sand and gravel, while the Memphis Sand is composed of sand and silt. The aquifer is confined by the overlying Tallahatta Formation and the underlying Cane River Formation. The Sparta-Memphis aquifer is about 1,100 feet thick in some areas, making it one of the thickest aquifers in the United States.

The potentiometric surface map shows the location of the water table in the Sparta-Memphis aquifer. The map is based on data collected in 309 wells in Arkansas, 7 wells in Kentucky, 116 wells in Louisiana, and 150 wells in Mississippi. The map is divided into 5-mile squares, and the potentiometric surface is represented by contours drawn on the map. The contours are connected to points of equal potential energy, and the natural direction of ground-water flow is from areas of higher potentiometric surface to areas of lower potentiometric surface.

The potentiometric surface map is useful for understanding the location and extent of the Sparta-Memphis aquifer, and for determining the location of the water table. This information is important for managing the sustainability and availability of water resources in the region.