

Potentiometric Surface Map of the Bedrock Aquifers of Benton County, Indiana

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Benton County, Indiana is located in the northwest part of the state and is within the boundaries of three river basins. The county is generally split along a northeast-southwest trending boundary with the northwestern area within the Kankakee River Basin and the southeastern portion within the Middle Wabash River Basin. However, the northeastern area of the county is located in the Upper Wabash River Basin.

The potentiometric surface mapped (PSM) contour elevations represent lines of equal elevation relative to the measured groundwater levels in wells. In general, wells completed in a confined aquifer system are bound by impermeable layers and will have static water levels under hydrostatic pressure causing the water level to rise above the elevation of the aquifer resource. In contrast, an unconfined aquifer system is not bound by impermeable layers; therefore, the water level will not be under hydrostatic pressure and will not rise above the aquifer resource.

Static water level measurements in individual wells used to construct the potentiometric surface map are indicative of the water level at the time of well completion. Therefore, current site specific conditions may differ due to local or seasonal variations in measured static water levels.

Coordinate locations of water well records were physically obtained in the field, determined through address geocoding, or reported on water well records. Elevation data were obtained from a digital elevation model (DEM). Elevation and location quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

In Benton County, wells producing from bedrock deposits are extremely limited with much of the county lacking in data. This is primarily due to bedrock as a limited aquifer resource, and/or available overlying unconsolidated materials. Therefore, potentiometric surface elevation contours have not been extended throughout much of the county.

Bedrock for the majority of the county includes siltstone and shale associated with the Mississippian Borden Group. Along the eastern edge of the county, bedrock includes the Devonian and Mississippian New Albany Shale. A small area along the north-central county boundary is sandstone and shale of the Pennsylvanian Raccoon Creek Group and another small area along the northeastern county boundary includes Silurian and Devonian carbonates. There are 168 located wells that are completed in bedrock and are utilized towards the mapping of the

bedrock potentiometric surface. Total well depths generally range from 31 to 435 feet with depths to the bedrock surface at 8 to 303 feet.

Potentiometric surface elevations range from a high of 780 feet mean sea level (msl) in the central part of the county, to a low of 680 feet msl in the northwest corner of the county and to the southeast part of the county along a portion of Big Pine Creek.

Generalized groundwater flow direction for the county is towards major drainage relevant to the basin. Therefore, in the Kankakee River Basin groundwater flow is generally to the northwest; and in the Middle Wabash River Basin groundwater flow is to the south-southeast. Although no contours are represented for the Upper Wabash River Basin in Benton County, groundwater flow is towards the east.