

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

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Johnson County, Indiana is located in the central portion of the state and is situated within two major drainage basins; the White and West Fork White River Basin to the west and the East Fork White River Basin to the east.

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.

Wells producing from bedrock deposits are limited with parts 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 areas of the county.

In Johnson County depth to bedrock varies ranging from less than 5 feet in the southwest up to 250 feet to the northeast. There are 487 located wells that are completed in bedrock and are utilized towards the mapping of the bedrock potentiometric surface. Wells are generally completed in shale and siltstone bedrock deposits of the Mississippian Borden Group or the Devonian and Mississippian New Albany Shale. However, much of the eastern part of Johnson County is lacking in data and/or covered by more prolific unconsolidated deposits that limit the necessity to complete wells in bedrock. Therefore, potentiometric surface elevations contours have not been extended through these areas.

Potentiometric surface elevations range from a high of 900 feet mean sea level (msl) in the south-central region of the county near the basin divide, to a low of 650 feet msl in the southeast part of the county along the Big Blue River.

Generalized groundwater flow direction for Johnson County is towards major drainage relevant to the basin. Therefore, in the White and West Fork White River Basin, groundwater flow is west towards the White River, and to the east-southeast towards Sugar Creek and the Big Blue River for the East Fork White River Basin.