

POTENTIOMETRIC SURFACE MAP OF THE BEDROCK AQUIFERS OF MADISON COUNTY, INDIANA

Madison County, Indiana is located in the north-central section of the state and lies primarily within the White and West Fork White River Basin; however, the northern portion lies within the Upper Wabash River Basin and the southeast section lies within the East Fork White River Basin.

The Potentiometric Surface Map (PSM) of the bedrock aquifers of Madison County was mapped by contouring the elevations of 2438 static water-levels reported on well records received primarily over a 50 year period. These wells are completed in aquifers at various depths, and typically, under confined conditions (bounded by impermeable layers above and below the water bearing formation). However, some wells were completed under unconfined (not bounded by impermeable layers) settings.

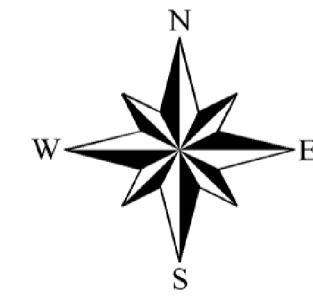
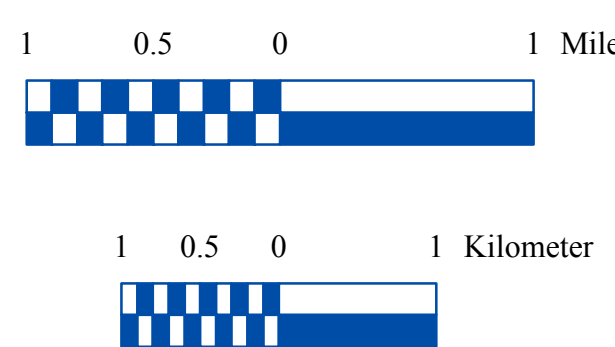
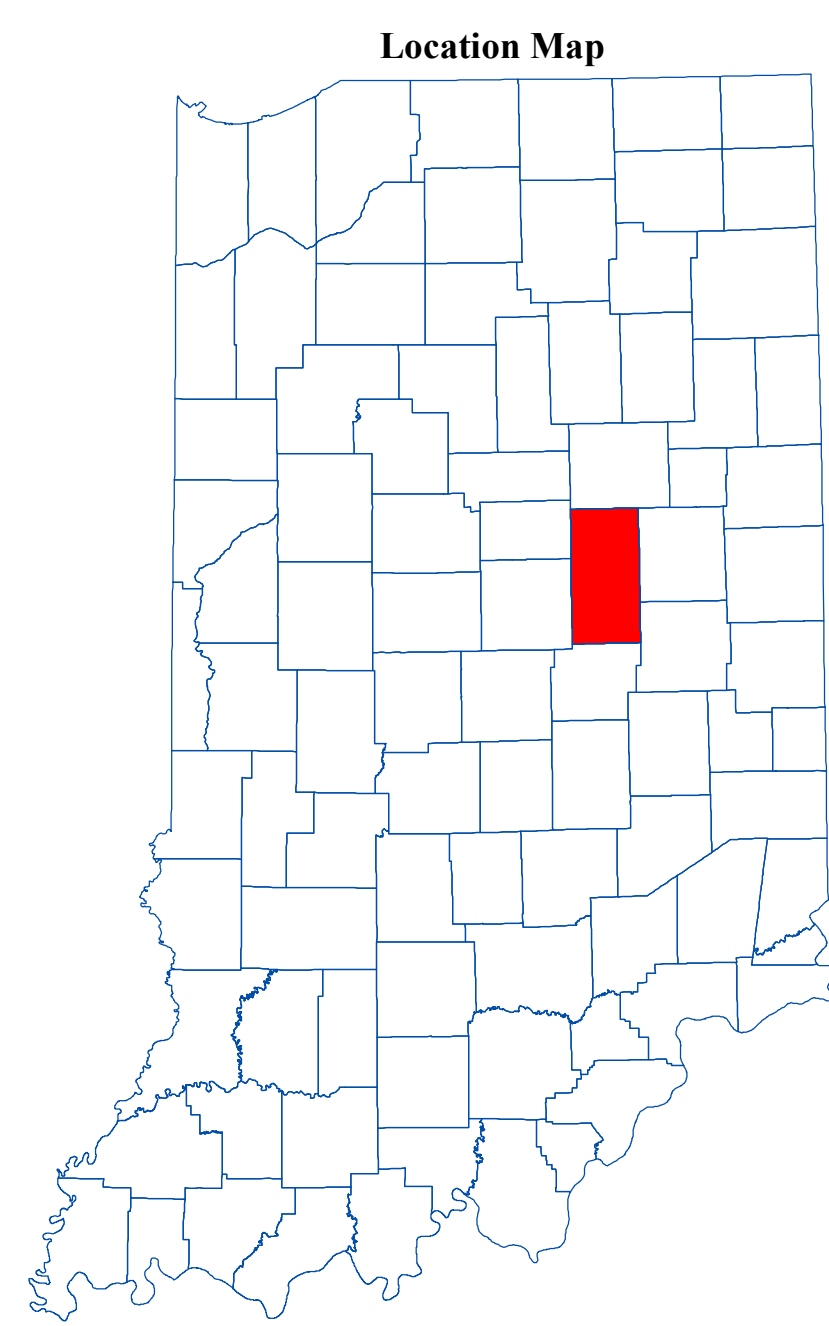
The potentiometric surface is a measure of the pressure on water in a water bearing formation. Water in an unconfined aquifer is at atmospheric pressure and will not rise in a well above the top of the aquifer, in contrast to groundwater in a confined aquifer which is under hydrostatic pressure and will rise in a well above the top of the water bearing formation.

Static water-level measurements in individual wells used to construct county PSM's are indicative of the water-level at the time of well completion. The groundwater level within an aquifer constantly fluctuates in response to rainfall, evapotranspiration, groundwater movement and pumping. Therefore, measured static water-levels in an area may differ due to local or seasonal variations. Because fluctuations in groundwater are typically small, static water-levels can be used to construct a generalized PSM. As a general rule, but certainly not always, groundwater flow approximates the overlying topography and intersects the land surface at major streams.

Universal Transverse Mercator (UTM) coordinates for the water wells were either physically obtained in the field, determined through address geocoding, or reported on water well records. The location of the majority of the water well records used to make the PSM were field verified. Elevation data were obtained from a digital elevation model. Quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

Potentiometric surface elevations range from a high of 970 feet mean sea level (msl) in the southeastern corner of the county, to a low of 790 feet msl in the west-central section. Groundwater flow direction throughout the majority of the county is generally to the west-southwest towards Pipe Creek and the White River, with a subcomponent flowing to the southwest toward Fall Creek. However, in the northeastern portion of the county, approximately north of the boundary between the White and West Fork White River, and Upper Wabash River Basins, groundwater flow is to the north. Bedrock potentiometric surface elevation contours have not been extended through portions of the county. These areas are lacking in data and/or covered by more prolific unconsolidated deposits that limit the necessity to complete wells in bedrock.

The county PSM can be used to define the regional groundwater flow path and to identify significant areas of groundwater recharge and discharge. County PSM's represent overall regional characteristics and are not intended to be a substitute for site-specific studies.

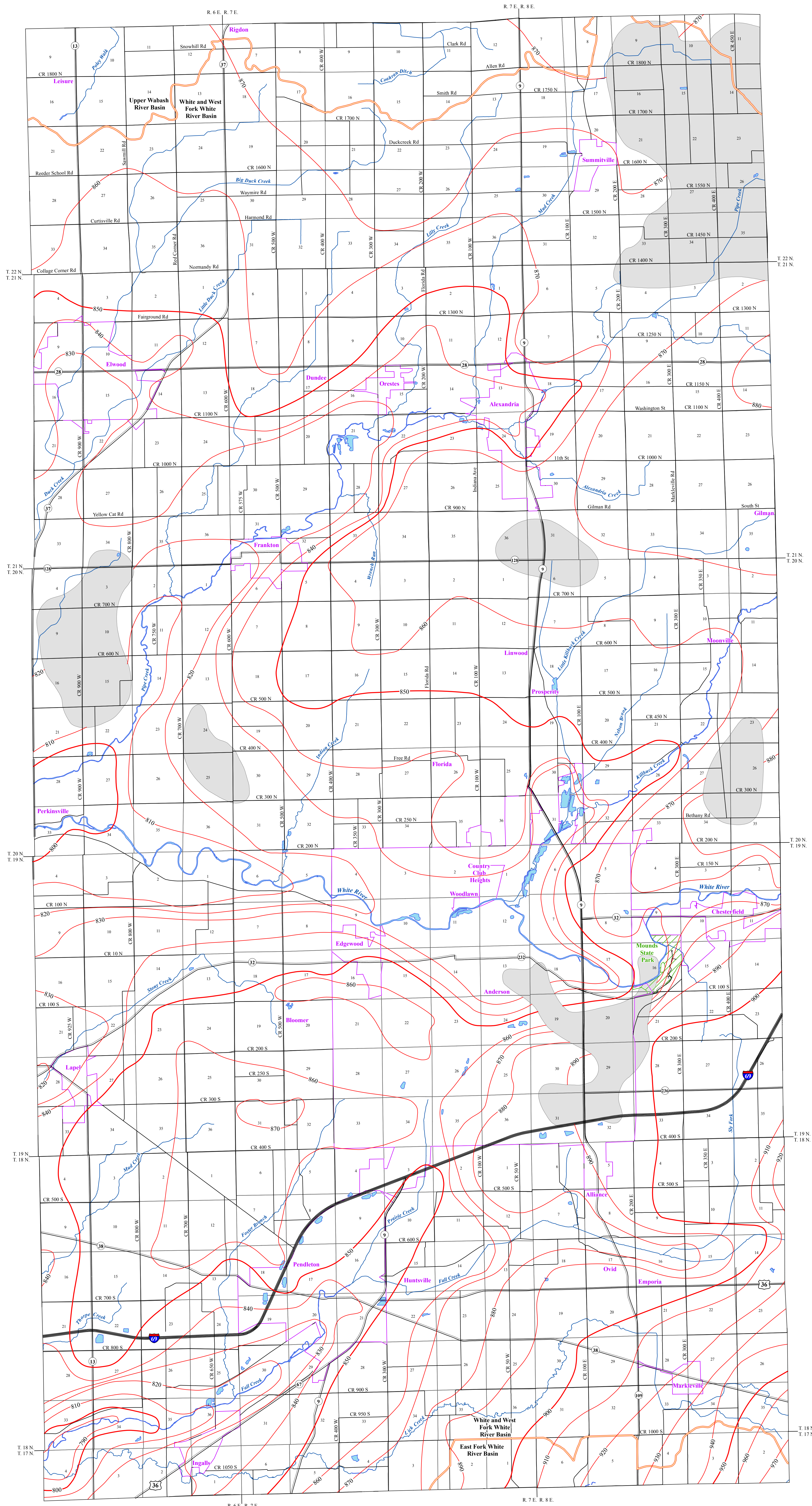
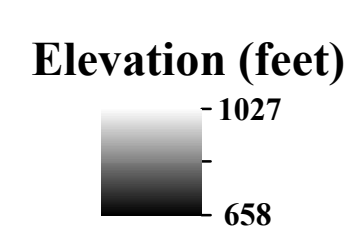
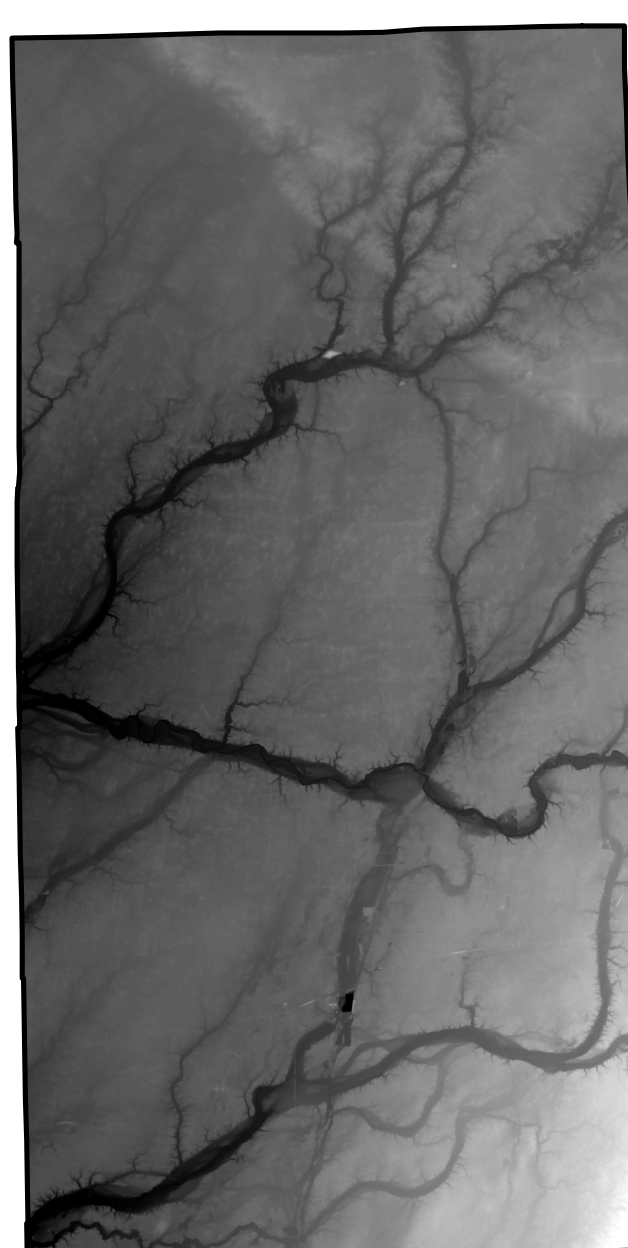


EXPLANATION

- 810 Line of equal elevation, in feet above mean sea level
- Potentiometric Contour interval 10 feet
- Stream
- County Road
- State Road
- US Highway
- Interstate
- Basin Boundary
- Municipal Boundary
- State Managed Property
- Lake & River
- No Aquifer Material or Limited Data



Digital Elevation Model of Madison County, Indiana



Map Use and Disclaimer Statement

We request that the following agency be acknowledged in products derived from this map: Indiana Department of Natural Resources, Division of Water. This map was compiled by staff of the Indiana Department of Natural Resources, Division of Water using data believed to be reasonably accurate. However, a degree of error is inherent in all maps. This product is distributed "as is" without warranties of any kind, either expressed or implied. This map is intended for use only at the published scale.

This map is created from several existing shapefiles. Township and Range Lines of Indiana (line shapefile, 20020621), Land Survey Lines of Indiana (polygon shapefile, 20020621), and County Boundaries of Indiana (polygon shapefile, 20020621), are all from the Indiana Geological Survey and based on a 1:24,000 scale. Roads (TIGER and INDOFI) (line shapefile, 2005) is from the Indiana Department of Transportation and based on a 1:100,000 scale. System (line shapefile, 2003) is from the Indiana Department of Transportation and based on a 1:24,000 scale. Incorporated Boundaries in Indiana (polygon shapefile, 20060501) is from the Graphics and Engineering Section, Indiana Department of Transportation. Hydrography, Streams (NH) (line shapefile, 20081218), Rivers (NH) (line shapefile, 20081218), and Lakes (NH) (polygon shapefile, 20081218) are from the U.S. Geological Survey and based on a 1:24,000 scale. Basin boundaries are modified from Watershed Boundary Dataset (polygon shapefile, 2008) from the Natural Resource Conservation Service and based on a 1:24,000 scale. Managed Lands-DNR (polygon shapefile, 20100920) is from the Indiana Department of Natural Resources and based on a 1:24,000 scale. Digital Elevation Model (Hillshade Image is derived from the Indiana DNR Statewide Collection Program (2012). Madison County Bedrock No Aquifer Material or Limited Data (polygon shapefile, Schmidt, 2014) and Potentiometric Surface Contours of the Bedrock Aquifers of Madison County, Indiana (line shapefile, Schmidt, 2014) are based on a 1:24,000 scale.

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

by
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