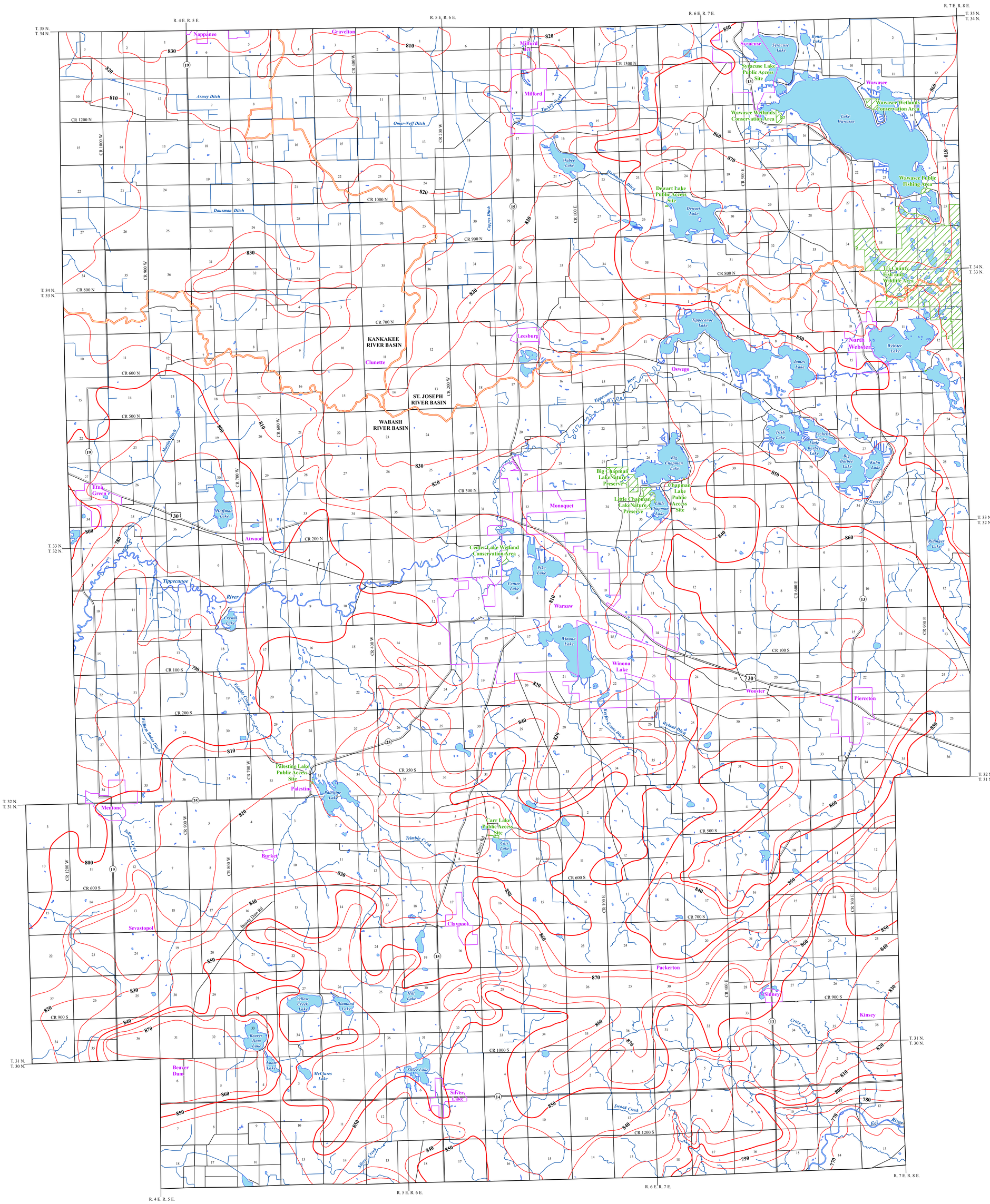
POTENTIOMETRIC SURFACE MAP OF THE UNCONSOLIDATED AQUIFERS OF KOSCIUSKO COUNTY, INDIANA



Kosciusko County, Indiana is located in the north central portion of the state and is bordered by Elkhart, Marshall, Fulton, Wabash, Whitley, and Noble counties. The county is situated in portions of three major drainage basins of which the northwest corner is located within the Kankakee River Basin, the northern mid-central and northeastern areas are in the St. Joseph River Basin, and the remaining sections of the county being situated within the Wabash River Basin in the southern half of the county.

The Potentiometric Surface Map (PSM) of Kosciusko County was mapped by contouring the elevations of approximately 5100 static water-levels reported on well records received 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 water table is at atmospheric pressure and will not rise in a well above the top of the water bearing formation, in contrast to water 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 groundwater pumpage. Therefore, current site specific conditions may differ due to local or seasonal variations in measured static water-levels. Because fluctuations in groundwater are typically small, static water-levels can be used to construct a generalized PSM. Groundwater flow is naturally from areas of recharge toward areas of discharge. As a general rule, but certainly not always, groundwater flow approximates the overlying topography and intersects the land surface at major streams.

The objective in creating county PSM's is to map static water-levels in the upper 100 feet of unconsolidated materials. If a section of a county has few located wells in the zero to 100 feet interval, then the static water-levels in wells completed between 100 to 200 feet, if available, are used to complement the area.

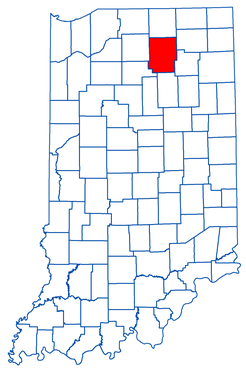
Locational Universal Transverse Mercator (UTM) coordinates for the water wells were either physically obtained in the field, determined through address geocoding, or reported on water well records; however, the location of the majority of the water well records used to make the PSM were not verified. Elevation data were either obtained from topographic maps or a digital elevation model. Quality control/quality assurance procedures were utilized to refine or remove data where errors were readily apparent.

Potentiometric surface elevations in Kosciusko County range from a high of approximately 880 feet mean sea level (msl) in the southwest portion of the county, to a low of about 770 feet msl in the southeastern corner. Generalized groundwater flow direction appears to be to the west-southwest in the northwestern and mid-western portions of the county, from the east to the northwest for the northeastern section of the county, and to the southeast in the southeastern corner of the county.

Saturated thickness of the water bearing formations in Kosciusko County average about 23 feet, and are composed predominantly of sand and or gravel. About 85 percent of all wells in Kosciusko County are under confined or semi-confined conditions with the rest being unconfined.

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.

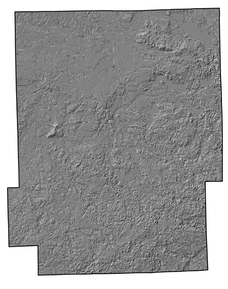
Location Map



EXPLANATION

- 800 — Line of equal elevation, in feet above mean sea level Potentiometric Contour interval 10 feet
- Stream
- County Road
- 15 — State Road
- 30 — US Highway
- Basin Boundary
- Municipal Boundary
- State Managed Property
- Lake & River

Hillshade Map of Kosciusko County, Indiana



INDIANA DEPARTMENT OF NATURAL RESOURCES

N W E S

1 0.5 0 1 Mile

1 0.5 0 1 Kilometer

Map generated by Scott H. Dean
IDNR, Division of Water, Resource Assessment Section

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 was 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), were all from the Indiana Geological Survey and based on a 1:24,000 scale. Draft road shapefiles, System1 and System2 (line shapefiles, 2003), were from the Indiana Department of Transportation and based on a 1:24,000 scale. Populated Areas in Indiana 2000 (polygon shapefile, 20021000) was from the U.S. Census Bureau and based on a 1:100,000 scale. Hydrography, Streams (NHD) (line shapefile, 20081218), Rivers (NHD) (polygon shapefile, 20081218), Lakes (NHD) (polygon shapefile, 20081218) was from the U.S. Geological Survey and the U.S. Environmental Protection Agency and based on a 1:24,000 scale. Managed Lands IDNR IN (polygon shapefile, 20100920) was from IDNR and based on a 1:24,000 scale. County Hillshade image was from the U.S. Geological Survey National Elevation Dataset (raster image, 20100324). Potentiometric Surface Map of the Unconsolidated Aquifers of Kosciusko County, Indiana (line shapefiles, Schmidt, 2011) was based on a 1:24,000 scale.

Potentiometric Surface Map of the Unconsolidated Aquifer Systems of Kosciusko County, Indiana

by
Robert K. Schmidt
Division of Water, Resource Assessment Section

December 2011