

Water Resources and Use in Huntington County

Data Sources: U.S. Geological Survey and Indiana Department of Natural Resources

Withdrawal Location	River
WELL INTAKE	7Q2 Flow (MGD)
<ul style="list-style-type: none"> ● Energy/Mining ● Industry ● Irrigation ● Misc. ● Public Supply ● Rural Use 	<ul style="list-style-type: none"> — <10 MGD — 10 - 50 MGD — 50 - 100 MGD — 100 - 500 MGD — > 500 MGD

<ul style="list-style-type: none"> ■ Major Lakes — Interstate County City 	
<p>NORTH 0 1 2 4 Miles</p>	

BEDROCK AQUIFER SYSTEMS OF HUNTINGTON COUNTY, INDIANA

The occurrence of bedrock aquifers depends on the original composition of the rocks and subsequent changes which influence the hydraulic properties. Post-depositional processes, which promote jointing, fracturing, and solution activity of exposed bedrock, generally increase the hydraulic conductivity (permeability) of the upper portion of bedrock aquifer systems. Because permeability in many places is greatest near the bedrock surface, bedrock units within the upper 100 feet are commonly the most productive aquifers. In Huntington County, rock types exposed at the bedrock surface include productive limestones and dolomites with small amounts of interbedded shales.

The Silurian and Devonian Carbonates Aquifer System is the only bedrock aquifer system identified for Huntington County. Unconsolidated deposits of varying thickness overlie the bedrock aquifer system in the county. In many places along the Wabash River and along the Little River, bedrock lies within 30 feet of the surface. Additionally, bedrock lies within 30 feet of the surface in some places along the Salamonie River southeast of Lancaster and in a few places near the Wells County line. However, the bedrock surface is buried beneath more than 250 feet of unconsolidated materials near the county line in the south-central and southwestern part of the county and in the northwest portion of Huntington County. Most of the bedrock aquifers in the county are under confined conditions. In other words, the potentiometric surface (water level) in most wells completed in bedrock rises above the top of the water-bearing zone.

The yield of a bedrock aquifer depends on its hydraulic characteristics and the nature of the overlying deposits. Shale and glacial till act as aquitards, restricting recharge to underlying bedrock aquifers. However, fracturing and/or jointing may occur in aquitards, which can increase recharge to the underlying aquifers. Hydraulic properties of the bedrock aquifers are highly variable. In Huntington County, about 80 percent of the reported water wells are completed in the Silurian and Devonian Carbonates Aquifer System.

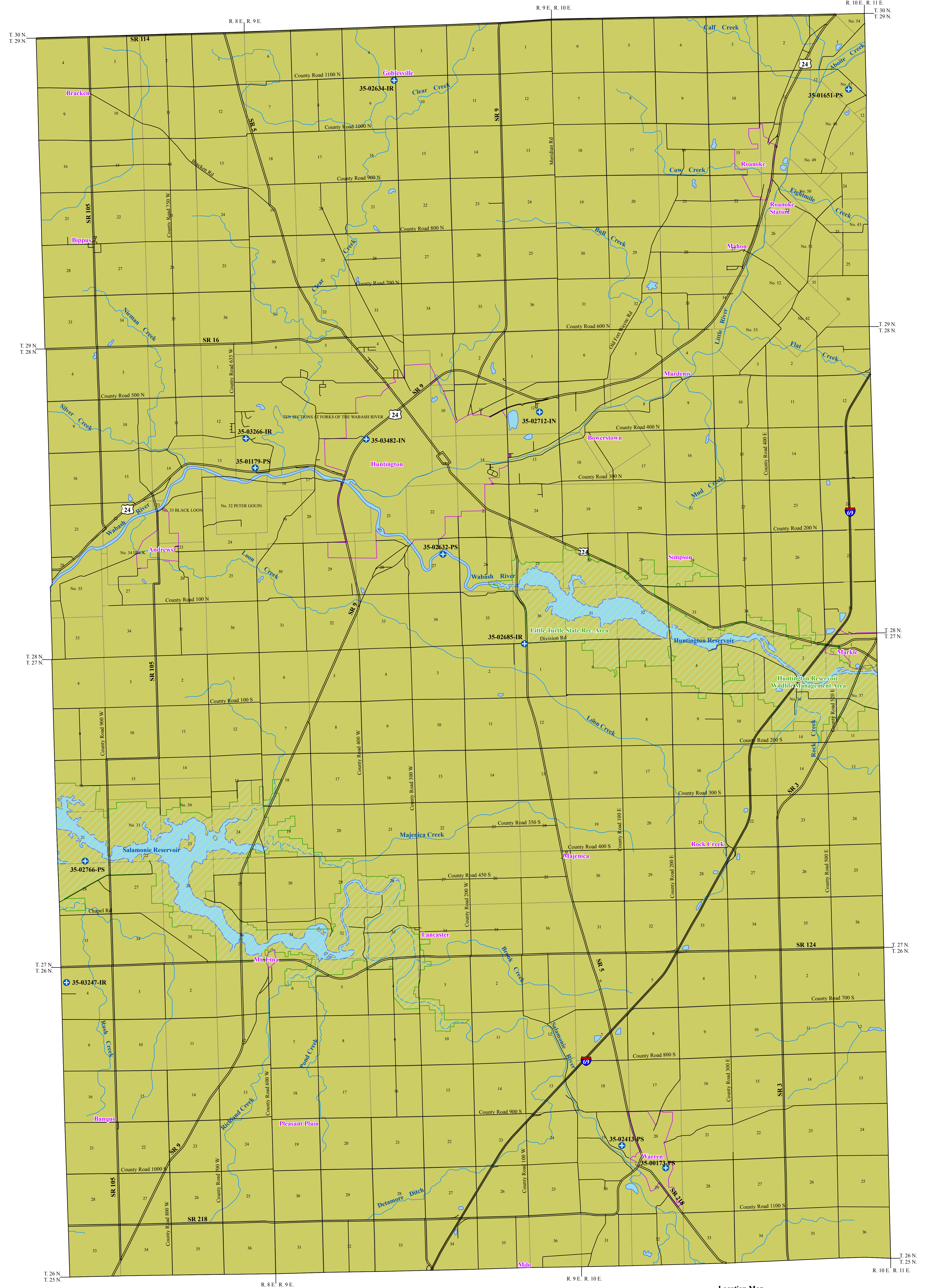
The susceptibility of bedrock aquifer systems to surface contamination is largely dependent on the type and thickness of the overlying sediments. Because the bedrock aquifer systems have complex fracturing systems, once a contaminant has been introduced into a bedrock aquifer system, it will be difficult to track and remediate.

Silurian and Devonian Carbonates Aquifer System

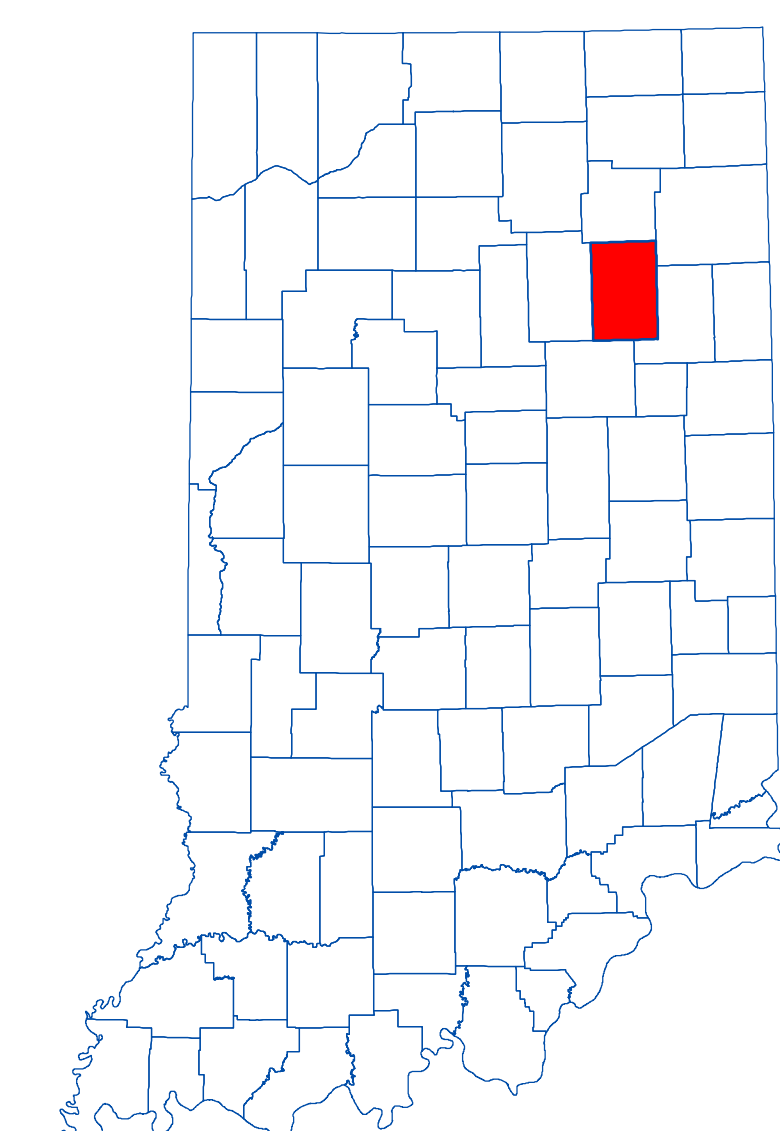
The Silurian and Devonian Carbonates Aquifer System outcrops/subcrops throughout all of Huntington County. This aquifer system consists primarily of Silurian age carbonates and middle Devonian age carbonates of the Mascoutah Group, which subcrops only along the northern county line. Total thickness of this aquifer system ranges from about 150 feet to over 450 feet.

Wells completed in the Silurian and Devonian Carbonates Aquifer System are generally capable of meeting the needs of domestic and high-capacity users in this county. Reported domestic wells utilizing this system in Huntington County have depths ranging from 32 to 42 feet, but are typically 85 to 185 feet deep. The amount of rock penetration in this system commonly ranges from 25 to 75 feet. Solution features (caves) are described on a few well records suggesting minor karst development. Typical yields for domestic wells range from 10 to 25 gallons per minute (gpm) and static water levels are generally 25 to 75 feet below land surface. There are 12 registered significant ground-water withdrawal facilities (25 wells). Reported yields from the individual wells are 15 to 1000 gpm. Uses for these facilities are primarily public supply and irrigation. Refer to the table for details on the wells and to the map for facility locations.

In most of Huntington County the Silurian and Devonian Carbonates Aquifer System has a low susceptibility to surface contamination because thick clay deposits overlie the system. However, areas where overlying clays are thin or absent are at moderate to high risk to contamination.

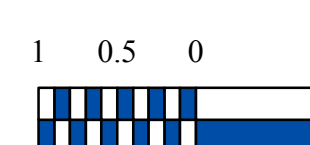
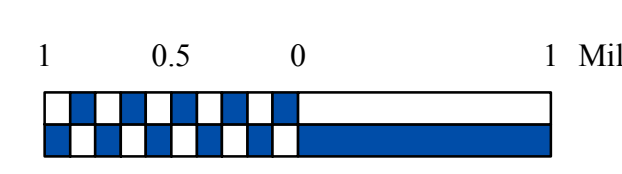
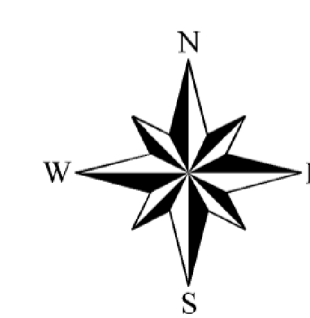


Location Map



EXPLANATION

- Registered Significant Ground-Water Withdrawal Facility
- Stream
- County Road
- State Road & US Highway
- Interstate
- Municipal Boundary
- State Managed Property
- Lake & River



Map Use and Disclaimer Statement

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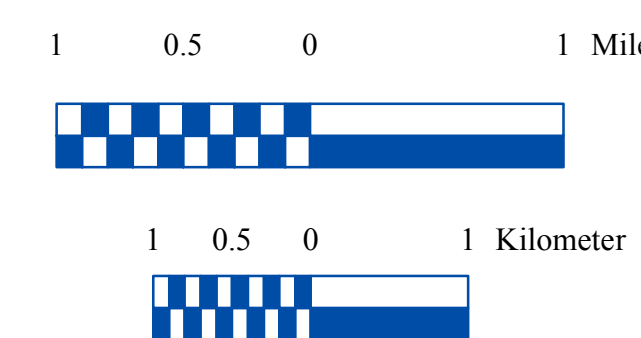
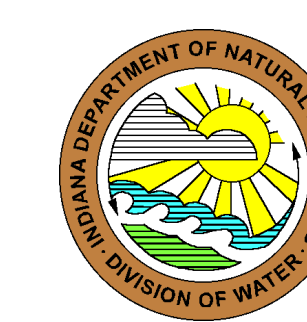
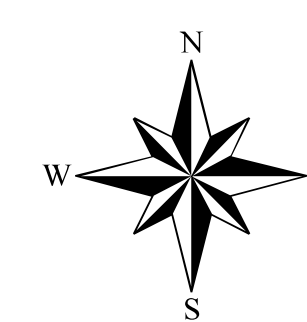
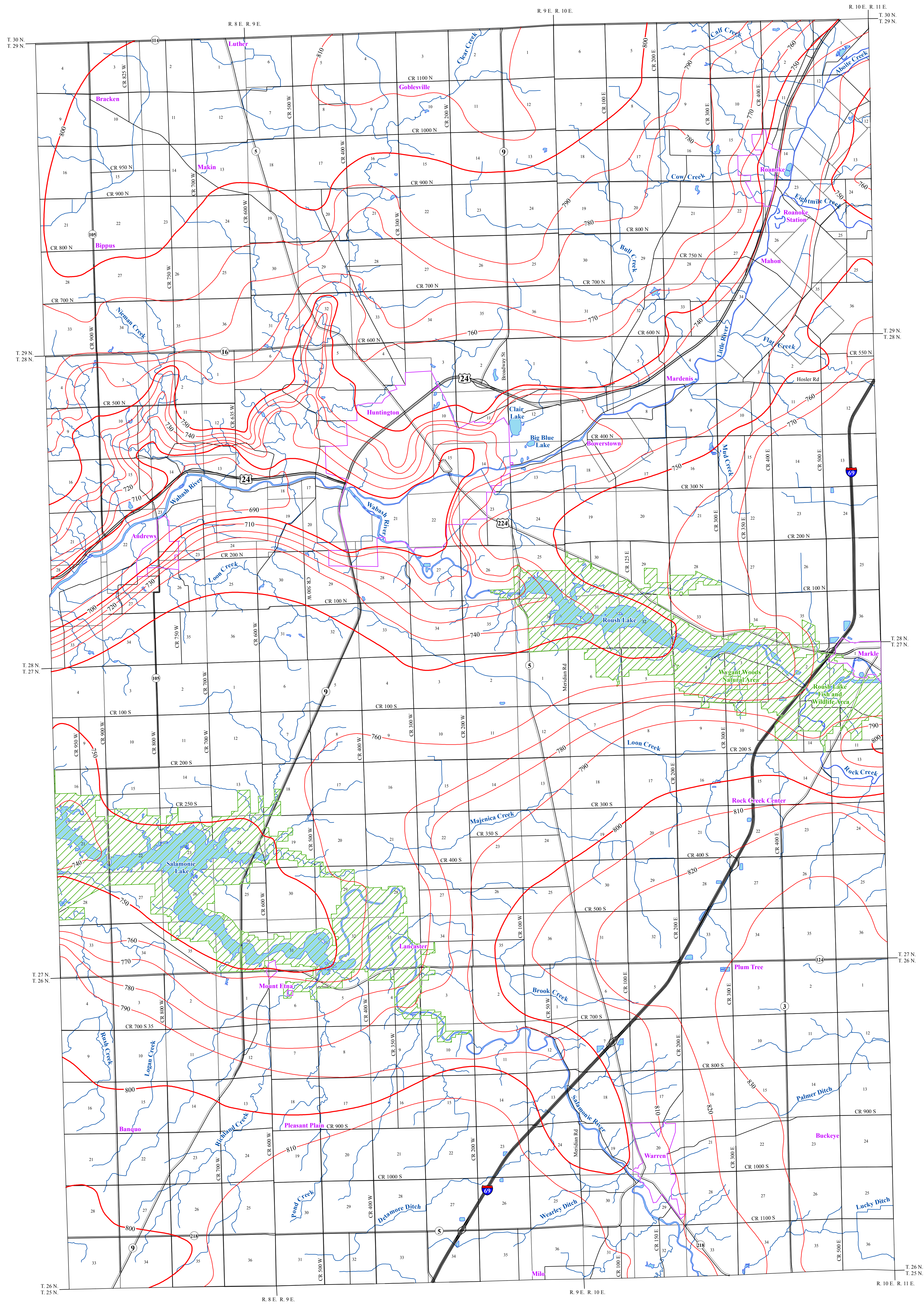
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Bedrock Aquifer Systems of Huntington County, Indiana

by
 Glenn E. Grove
 Division of Water, Resource Assessment Section

May 2007

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



EXPLANATION

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

Huntington County, Indiana is located in the northeastern section of the state and lies within the Upper Wabash River Basin.

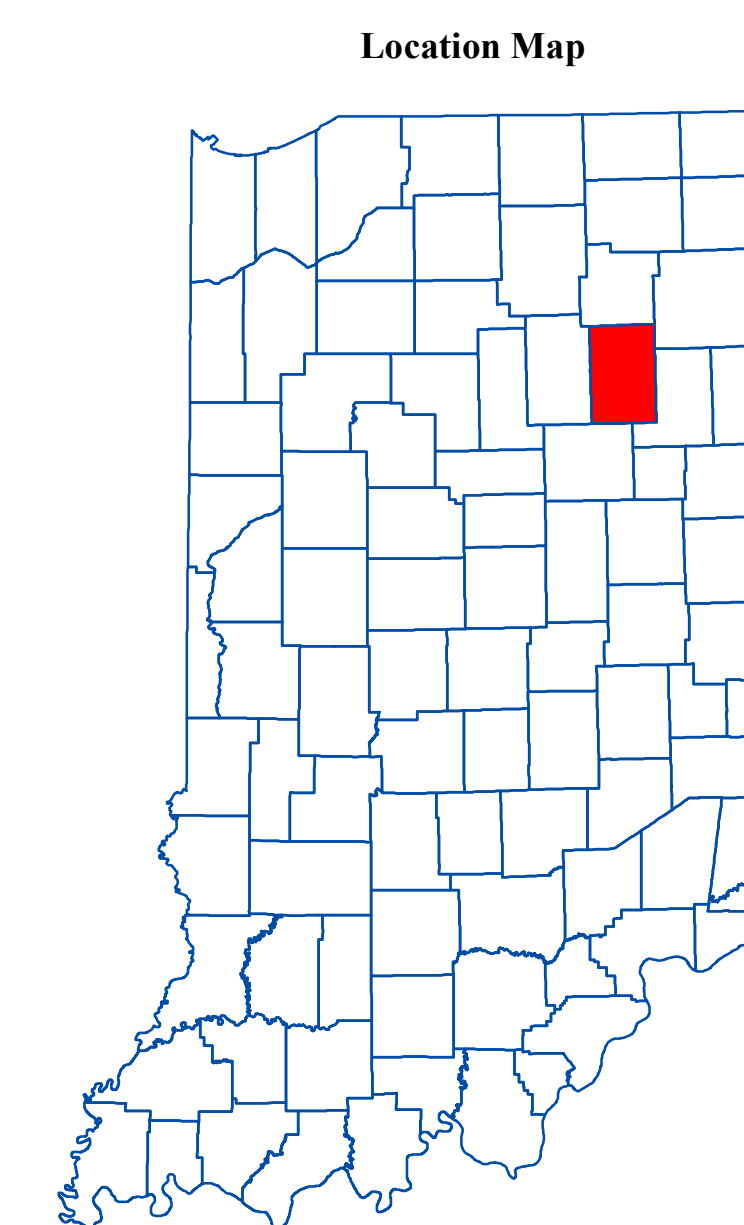
The Potentiometric Surface Map (PSM) of the bedrock aquifers of Huntington County was mapped by contouring the elevations of approximately 1040 static water-levels reported on well records received primarily over a 50 year period. These wells are completed in aquifers at various depths, and typically, 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 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. The potentiometric contour lines crossing through Salamone Lake, and J. Edward Roush Lake, represent the potentiometric surface of the groundwater in the immediate area, not the water level of the reservoirs, which are man-made features.

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 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.

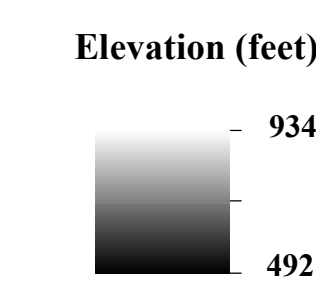
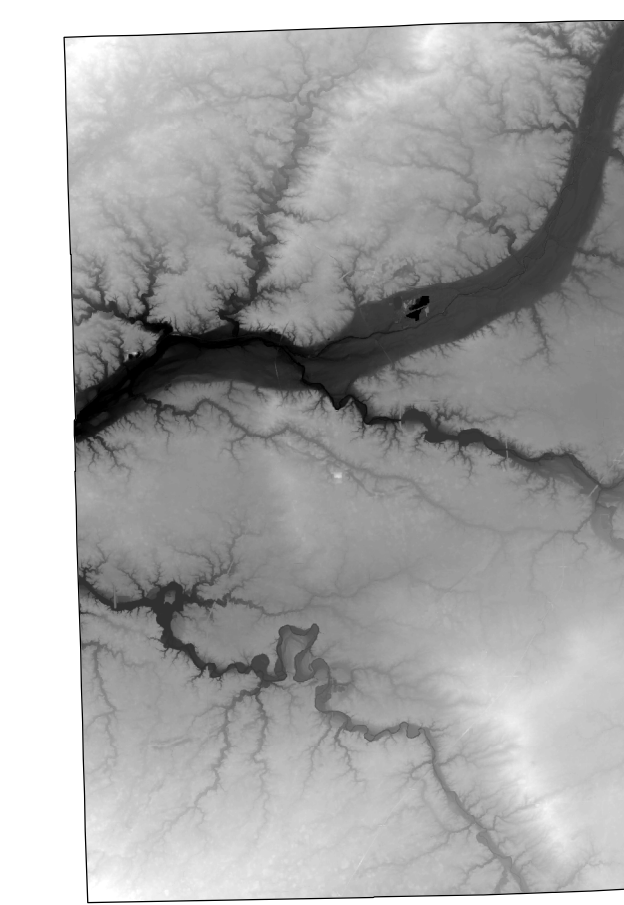
Universal Transverse Mercator (UTM) coordinates for the water wells were either physically obtained in the field, determined through address geocoding, or reported on water well records; however, the location of the majority of the water well records used to make the PSM were not field verified. Elevation 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.

Bedrock static water levels in Huntington County range from a high of 829 feet mean sea level (msl) in the southeastern section of the county, to a low of 640 feet msl in the central portion along the Wabash River. Groundwater flow direction in the northern portion of the county is generally to the south toward the Wabash River, and to the north-northwest toward the Wabash River in the southern portion of the county.

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.



Digital Elevation Model of Huntington County, Indiana



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UNCONSOLIDATED AQUIFER SYSTEMS OF HUNTINGTON COUNTY, INDIANA

Five unconsolidated aquifer systems have been mapped in Huntington County: the Till Veneer, the Bluffton Till, the Bluffton Till Subsystem, the Bluffton Complex, and the Wabash River and Tributaries Outwash Subsystem. Boundaries of these aquifer systems are commonly gradational and individual aquifers may extend across aquifer system boundaries.

In Huntington County, the thickness of unconsolidated sediments is quite variable. Bedrock is at or near the surface in places along the Wabash River and some tributaries. However, the thickness of unconsolidated sediments exceeds 250 feet in places near the Grant County line and is also over 250 feet thick in the northwest corner of Huntington County. Elsewhere in the county, the unconsolidated deposits are commonly 75 to 125 feet thick. In Huntington County only about 20 percent of the reported wells are finished in the unconsolidated deposits.

Regional estimates of aquifer susceptibility to contamination from the surface can differ considerably from local reality. Variations within geologic environments can cause variation in susceptibility to surface contamination. In addition, man-made structures such as poorly constructed water wells, unplugged or improperly abandoned wells, and open excavations can provide contaminant pathways that bypass the naturally protective clays.

Till Veneer Aquifer System

In Huntington County, the Till Veneer Aquifer System encompasses areas where the unconsolidated material is predominantly thin till overlying bedrock. This system is mapped primarily in the southeastern quarter of the county, along the Wabash River, and along the Little River. In these areas, this thin till is chiefly the product of the deposition of Wisconsin glacial till over an eroded bedrock surface. This system has the most limited ground-water resources of the unconsolidated aquifer systems in the county. Total thickness of the Till Veneer Aquifer System generally ranges from about 25 to 50 feet.

There is little potential for ground-water production in this system in Huntington County. Potential aquifers within this system include thin isolated sand and/or gravel layers. Therefore, very few of the reported wells penetrating this aquifer system in the county are completed in unconsolidated materials, which are bypassed in favor of the more productive underlying bedrock.

This system is not very susceptible to contamination from surface sources because the near-surface materials generally have low permeability. However, there are areas where unconsolidated deposits are extremely thin or absent. These areas are very susceptible to contamination.

Bluffton Till Aquifer System

The Bluffton Till Aquifer System primarily consists of thick clay with thin intratill sand and gravel layers. In Huntington County, this system ranges in thickness from about 50 feet to more than 180 feet, but is typically 75 to 125 feet thick. Saturated aquifer materials include sands and/or gravels that commonly range from 5 to 15 feet thick and are generally overlain by 40 to 100 feet of till.

This aquifer system is capable of meeting the needs of domestic and some high-capacity users; however, most wells are completed in the underlying bedrock aquifer in Huntington County. Wells producing from the Bluffton Till Aquifer System are generally 75 to 125 feet deep. Domestic well capacities are typically 10 to 40 gallons per minute (gpm) and static water levels are commonly 30 to 50 feet below surface.

The Bluffton Till Aquifer System has a low susceptibility to surface contamination because intratill sand and gravel units are generally separated from the surface by till layers within the system.

Bluffton Till Aquifer Subsystem

Areas where unconsolidated materials are generally greater than 50 feet in thickness, yet have little aquifer potential, are mapped as Bluffton Till Aquifer Subsystem. This system is typically less than 80 feet thick in Huntington County. Potential aquifer materials include thin, intratill sand and gravel deposits that are commonly less than 5 feet thick. Where present, aquifer materials are overlain by that is generally 30 to 70 feet thick.

This system is capable of meeting the needs of some domestic users. However, about 95 percent of wells constructed in the area mapped as Bluffton Till Aquifer Subsystem in this county bypass the unconsolidated materials and use the underlying bedrock aquifer. The few wells utilizing this unconsolidated aquifer system in Huntington County are completed at depths of 52 to 139 feet. The Bluffton Till Aquifer Subsystem is generally not very susceptible to surface contamination because its intratill sand and gravel units are overlain by thick till deposits.

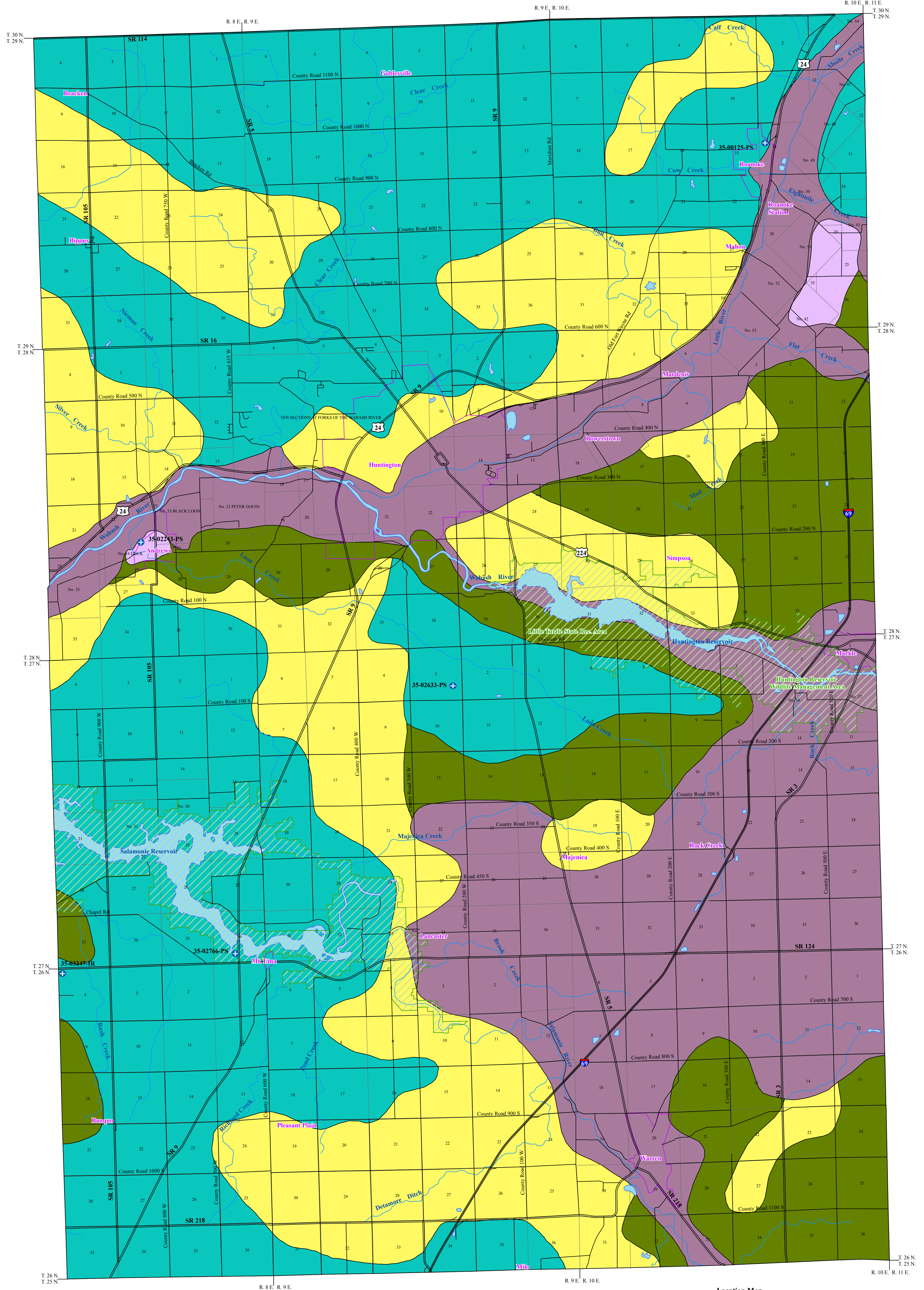
Bluffton Complex Aquifer System

The Bluffton Complex Aquifer System is mapped over a large portion of northern and southwestern Huntington County. This aquifer system is characterized by deposits that are quite variable in materials, thickness, and aerial extent. Sand and gravel aquifer deposits are commonly overlain by a thick till. This system exhibits alternating layers of outwash and till of variable thickness above the main aquifer. In Huntington County, the Bluffton Complex Aquifer System is generally 100 to 225 feet thick.

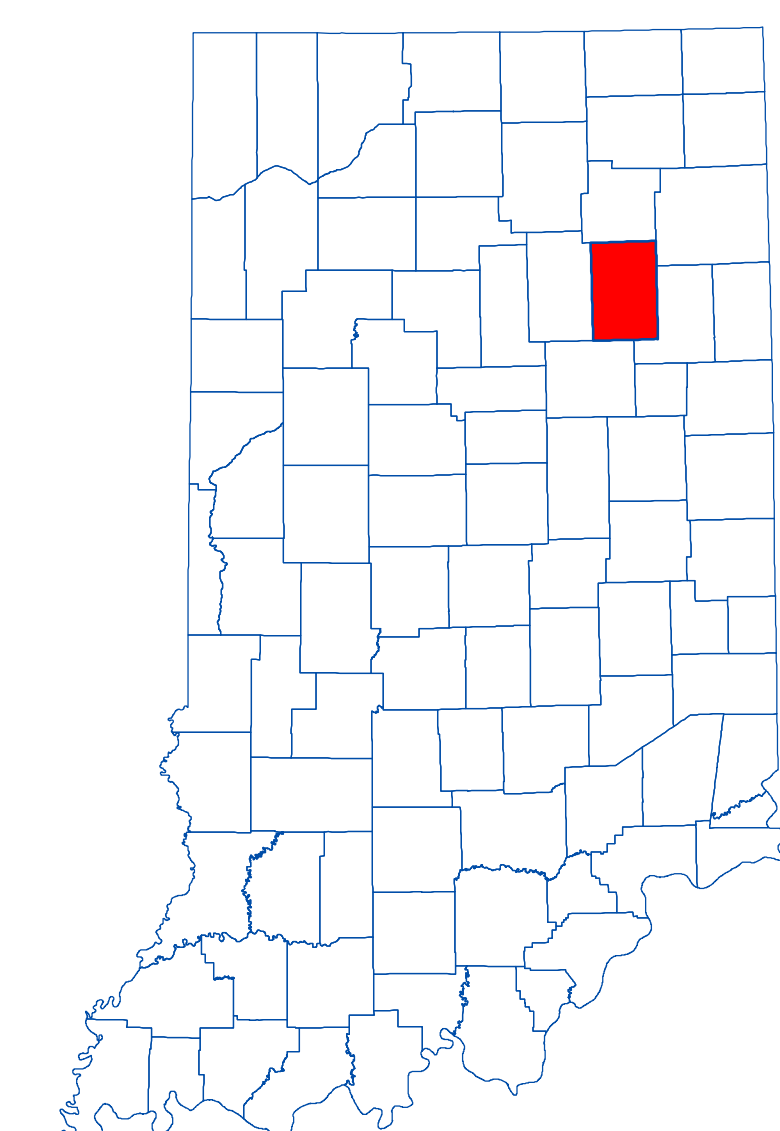
This system is capable of meeting the needs of domestic and some high-capacity users in the county. Aquifer materials in the Bluffton Complex Aquifer System are generally 10 to 25 feet thick and are overlain by a till commonly 40 to 110 feet thick. Wells in this system are typically completed at depths of 70 to 140 feet. Domestic well yields are commonly 10 to 50 gpm and static water levels are generally 35 to 60 feet below the surface. There are 4 registered significant ground-water withdrawal facilities (17 wells) utilizing this system and individual wells produce 25 to 600 gpm. The Bluffton Complex Aquifer System is not very susceptible to contamination because thick clay materials overlie the aquifer materials.

Wabash River and Tributaries Outwash Aquifer Subsystem

This system is mapped along part of the Little River in northeast Huntington County and in the vicinity of Andrews along the Wabash River. The Wabash River and Tributaries Outwash Aquifer Subsystem has the potential to meet the needs of domestic and some high-capacity users. However, only a few wells utilize this system in Huntington County. Saturated sand and gravel layers are generally 10 to 35 feet thick and are commonly overlain by silt, sandy clay, or clay ranging from 10 to 40 feet thick. There is only 1 registered high-capacity facility (3 wells) with reported yields ranging from 150 to 400 gpm. Areas within this aquifer system that have overlying clay or silt deposits are moderately susceptible to surface contamination, whereas, areas that lack overlying clay or silt deposits are highly susceptible to contamination.

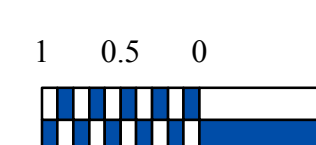
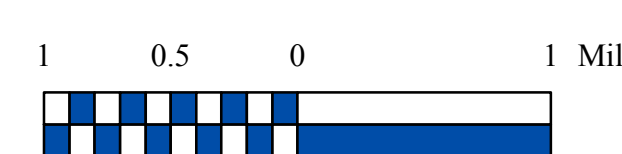
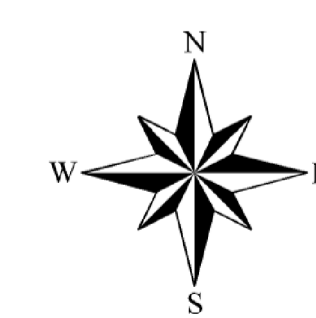


Location Map



EXPLANATION

- Registered Significant Ground-Water Withdrawal Facility
- Stream
- County Road
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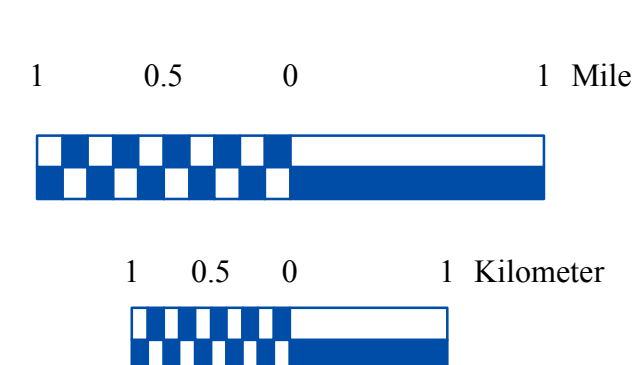
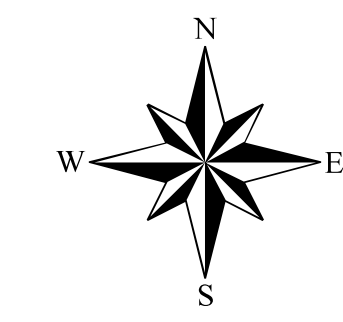
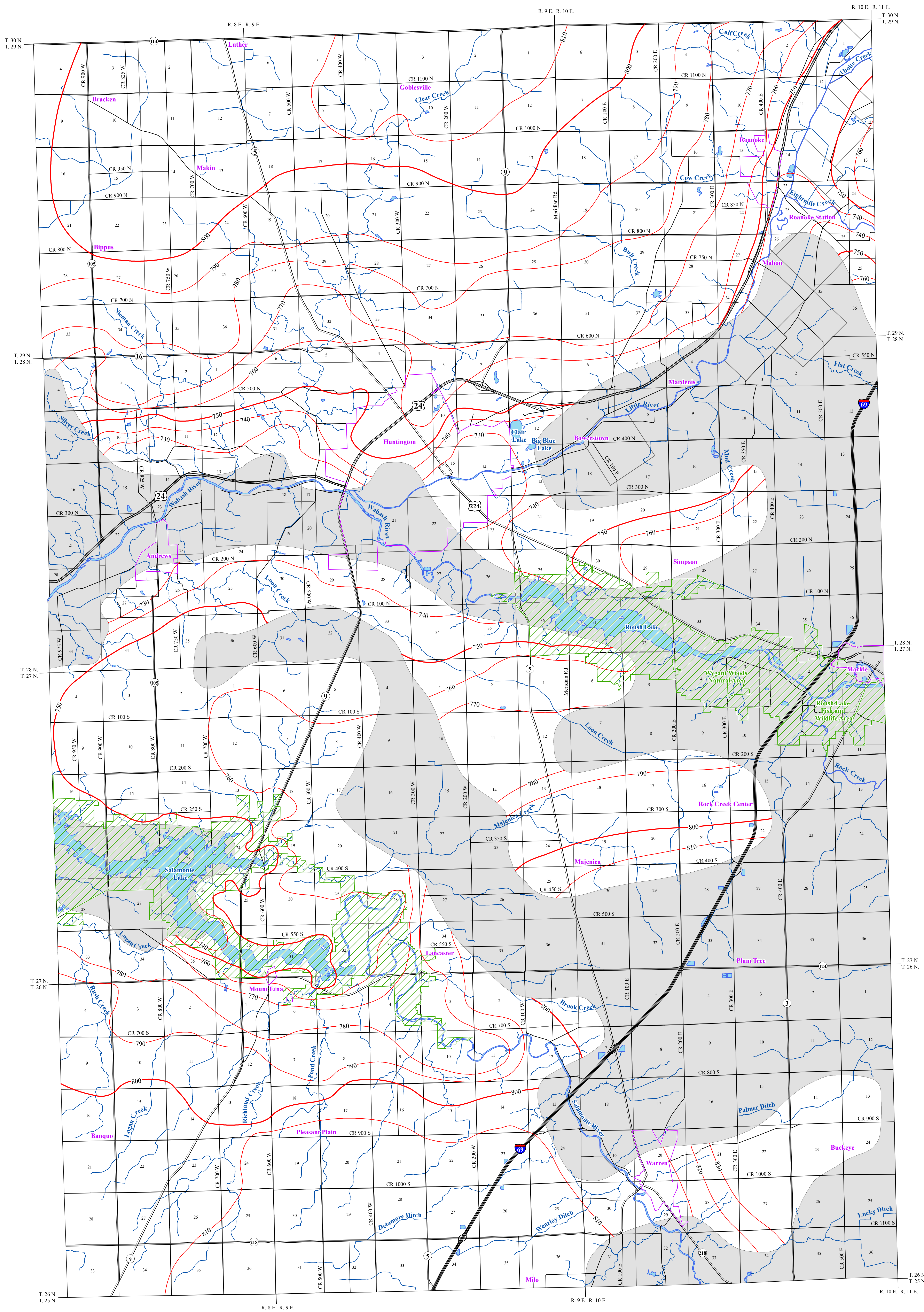
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Unconsolidated Aquifer Systems of Huntington County, Indiana

by
Glenn E. Grove
Division of Water, Resource Assessment Section

May 2007

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



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

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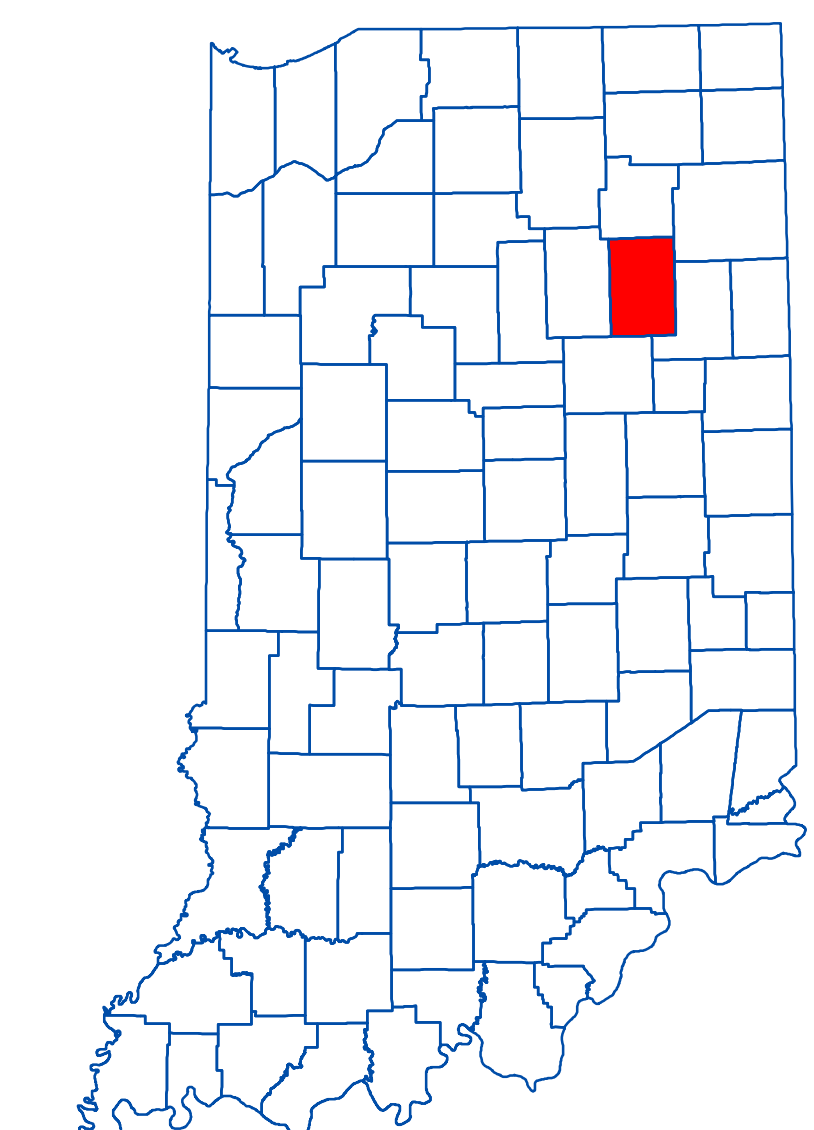
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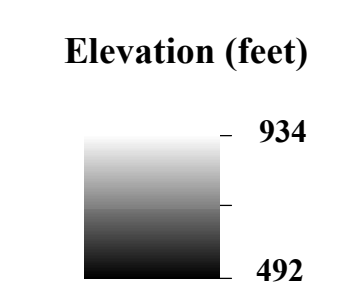
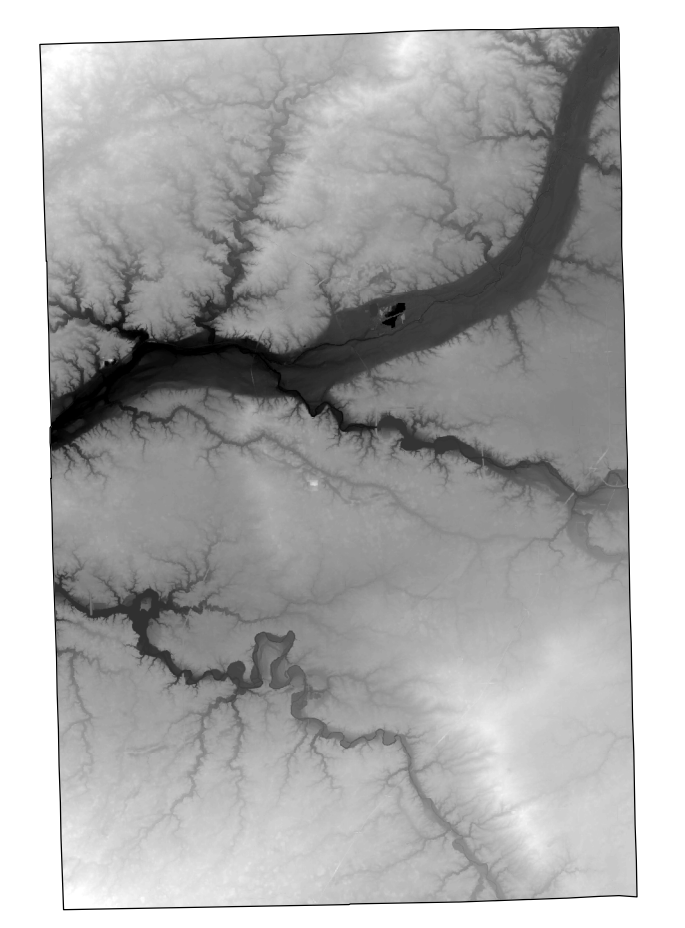
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Location Map



Digital Elevation Model of Huntington County, Indiana



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Potentiometric Surface Map of the Unconsolidated Aquifers of Huntington County, Indiana

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

May 2013

Huntington County

