Kentucky Geological Survey
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UNIVERSITY OF KENTUCKY

Generalized Geologic Map for Land-Use Planning: Wayne County, Kentucky

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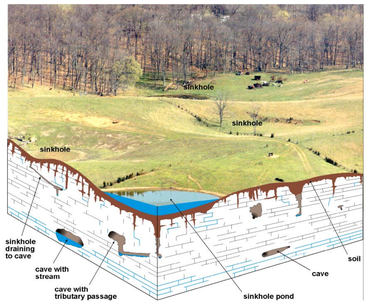
Kentucky Geological Survey

KGS
MAP AND CHART 93
Series XII, 2005

Environmental Protection



Never use sinkholes as dumps. All waste, but especially pesticides, paints, household chemicals, automobile batteries, and used motor oil, should be taken to an appropriate recycling center or landfill.

Make sure runoff from parking lots, streets, and other urban areas is routed through a detention basin and sediment trap to filter it before it flows into a sinkhole.

Make sure your home septic system is working properly and that it's not discharging sewage into a crevice or sinkhole.

Keep cattle and other livestock out of sinkholes and sinking streams. There are other methods of providing water to livestock.

See to it that sinkholes near or in crop fields are bordered with trees, shrubs, or grass buffer strips. This will filter runoff flowing into sinkholes and also keep tilled areas away from sinkholes.

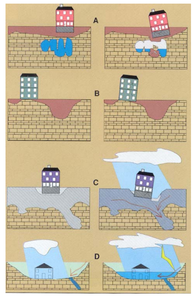
Construct waste-holding lagoons in karst areas carefully, to prevent the bottom of the lagoon from collapsing, which would result in a catastrophic emptying of waste into the groundwater.

If required, develop a groundwater protection plan (410KAR5:037) or an agricultural water-quality plan (KRS224.71) for your land use.

(From Currens, 2001)

This well-house is situated near a pond that is probably a "sinkhole pond", meaning that it is connected to the limestone aquifer by fractures in the bed-rock, but is currently plugged with soil. Cattle feedlots or pastures near this well or pond can cause increased nitrate concentrations in groundwater. Photograph by Bart Davidson, Kentucky Geological Survey.

Residential Construction



Limestone terrain can be subject to subsidence hazards, which usually can be overcome by prior planning and site evaluation. "A" shows construction above an open cavern, which later collapses. This is one of the most difficult situations to detect, and the possibility of this situation beneath a structure warrants insurance protection for homes built on karst terrain. In "B," a heavy structure presumed to lie above solid bedrock actually is partially supported on soft, residual clay soils that subside gradually, resulting in damage to the structure. This occurs where inadequate site evaluation can be traced to lack of geophysical studies and inadequate core sampling. "C" and "D" show the close relationship between hydrology and subsidence hazards in limestone terrain. In "C," the house is situated on porous fill (light shading) at a site where surface and groundwater drainage move supporting soil (darker shading) into voids in limestone (blocks) below. The natural process is then accelerated by infiltration through fill around the home. "D" shows a karst site where normal rainfall is absorbed by subsurface conduits, but water from infrequent heavy storms cannot be carried away quickly enough to prevent flooding of low-lying areas. Adapted from AIPG (1993).

Karst

The term "karst" refers to a landscape characterized by sinkholes, springs, sinking streams (streams that disappear underground), and underground drainage through solution-enlarged conduits or caves. Karst landscapes form when slightly acidic water from rain and snowmelt seeps through soil cover into fractured and soluble bedrock (usually limestone, dolomite, or gypsum).

Sinkholes are depressions on the land surface into which water drains underground. Usually circular and often funnel-shaped, they range in size from a few feet to hundreds of feet in diameter. Springs occur when water emerges from underground to become surface water. Caves are solution-enlarged fractures or conduits large enough for a person to enter.

This sinkhole near the new courthouse in Monticello has been neglected. Sinkholes can be a source of contamination to local aquifers, and should also be carefully considered before building in the area. Photo by Bart Davidson, Kentucky Geological Survey.

Cover-collapse inkholes such as this one may appear overnight when the soil plug at their base collapses into a fracture or cave in the underlying limestone. These are direct conduits to the local aquifer, and as such are susceptible to contamination by garbage dumping and accidental spills. They are also hazards to public safety. Photograph by Bart Davidson, Kentucky Geological Survey.

A small cave is located in Monticello across from the new courthouse. This cave was apparently used by the public in the past, and included a rock stair-case and reflection pool nearby. It is now in a state of disrepair and marred by litter. Caves like this one are very susceptible to contamination from storm sewers, and are likely to be connected to the local aquifer. Photograph by Bart Davidson, Kentucky Geological Survey.

PLANNING DEFINITIONS

FOUNDATION AND EXCAVATION

The terms "earth" and "rock" excavation are used in the engineering sense; earth can be excavated by hand tools, whereas rock requires heavy equipment or blasting to remove.

LIMITATIONS

Slight—A slight limitation is one that commonly requires some corrective measure but can be overcome without a great deal of difficulty or expense.

Moderate—A moderate limitation is one that can normally be overcome but the difficulty and expense are great enough that completing the project is commonly a question of feasibility.

Severe—A severe limitation is one that is difficult to overcome and commonly is not feasible because of the expense involved.

LAND USES

Septic tank disposal system—A septic tank disposal system consists of a septic tank and a filter field. The filter field is a subsurface tile system laid in such a way that effluent from the septic tank is distributed with reasonable uniformity into the soil.

Residences—Ratings are made for residences with and without basements because the degree of limitation is dependent upon ease and required depth of excavation. For example, excavation in limestone has greater limitation than excavation in shale for a house with a basement.

Highways and streets—Refers to paved roads in which cuts and fills are made in hilly topography, and considerable work is done preparing subgrades and bases before the surface is applied.

Access roads—These are low-cost roads, driveways, etc., usually surfaced with crushed stone or a thin layer of blacktop. A minimum of cuts and fills are made, little work is done preparing a subgrade, and generally only a thin base is used. The degree of limitation is based on year-around use and would be less severe if not used during the winter and early spring. Some types of recreation areas would not be used during these seasons.

Light industry and malls—Ratings are based on developments having structures or equivalent load limit requirements of three stories or less, and large paved areas for parking lots. Structures with greater load limit requirements would normally need footings in solid rock, and the rock would need to be core drilled to determine the presence of caverns, cracks, etc.

Intensive recreation—Athletic fields, stadiums, etc.

Extensive recreation—Camp sites, picnic areas, parks, etc.

Reservoir areas—The floor of the area where the water is impounded. Ratings are based on the permeability of the rock.

Reservoir embankments—The rocks are rated on limitations for embankment material.

Underground utilities—Included in this group are sanitary sewers, storm sewers, water mains, and other pipes that require fairly deep trenches.

Karst topography is common in Wayne County, and is seen in this area of residential construction. Weathered limestone must be excavated to build houses, and sinkholes in this neighborhood have been filled with the exca-vated material. Photo by Bart Davidson, Kentucky Geological Survey.

This pond was a sinkhole on dry land in the early 1970's, but filled with water in a few days after the sinkhole became plugged with clayey soil. Photo by Bart Davidson, Kentucky Geological Survey.

A National Historic Site, Mill Springs is the location of one of the first important battles of the Civil War in 1862. It is named after 13 springs that feed a creek which powers the gristmill, constructed in 1839. The mill is still in operation, and is considered one of the largest in the world. Photo by Bart Davidson, Kentucky Geological Survey.

Planning Guidance by Rock Unit Type

Rock Unit	Foundation and Excavation	Septic System	Residence with Basement	Highways and Streets	Access Roads	Light Industry and Malls	Intensive Recreation	Extensive Recreation	Reservoir Areas	Reservoir Embankments	Underground Utilities
1. Alluvium, landslide, and terrace deposits	Fair to good foundation material; easily excavated. Refer to soil report (Fehr, 1990).	Slight limitations. Easy to excavate. Refer to soil report (Fehr, 1990).	Moderate to severe limitations. Check area to determine if flood prone. Base-ments can be wet. Refer to soil report (Fehr, 1990).	Slight to moderate limitations. Refer to soil report (Fehr, 1990).	Slight to moderate limitations. Refer to soil report (Fehr, 1990).	Slight limitations. Refer to soil report (Fehr, 1990).	Check to see if area is flood prone. If not, slight limitations based on type of structures. Refer to soil report (Fehr, 1990).	Check to see if area is flood prone. If not, slight limitations based on type of structures. Refer to soil report (Fehr, 1990).	Severe limitations. Leaky reservoir material. Refer to soil report (Fehr, 1990).	Severe limitations. Leaky reservoir material. Refer to soil report (Fehr, 1990).	High groundwater table possible. Moderate to severe limitations. Refer to soil report (Fehr, 1990).
2. Shale, silt-stone, sand-stone, and coal	Fair to good foun-dation material; diffi-cult to excavate. Possible expan-sive shales.	Severe limitations. Im-permeable rock. Thin soils.	Severe to moder-ate limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes. Possible expansion of shales.	Severe limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes. Possible expansion of shales.	Moderate limitations. Rock excavation; steep slopes.	Severe limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes. Possible expansion of shales.	Severe limitations. Steep slopes.	Slight to moderate limitations.	Slight limitations. Reservoir may leak where rocks are fractured.	Severe limitations. Steep slopes.	Moderate limitations. Highly variable amount of rock and earth excavation.
3. Shale, sand-stone, lime-stone, and siltstone	Fair to good foun-dation material; diffi-cult to excavate. Possible expan-sive shales.	Severe limitations. Im-permeable rock. Thin soils.	Severe to moder-ate limitations. Rock excavation; locally, upper few feet may be rip-pable. Steep slopes. Possible expansion of shales.	Severe limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes. Possible expansion of shales.	Moderate limitations. Rock excavation; steep slopes.	Severe limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes. Possible expansion of shales.	Severe limitations. Steep slopes.	Slight to moderate limitations.	Slight limitations. Reservoir may leak where rocks are fractured.	Severe limitations. Steep slopes.	Moderate limitations. Highly variable amount of rock and earth excavation.
4. Sandstone, conglomerate, and minor shale	Fair to good foun-dation material; diffi-cult to excavate.	Severe limitations. Im-permeable rock. Thin soils.	Severe to moder-ate limitations. Rock excavation; locally, upper few feet may be rip-pable. Steep slopes.	Severe limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes.	Moderate limitations. Rock excavation; steep slopes.	Severe limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes.	Severe limitations. Steep slopes.	Slight to moderate limitations.	Slight limitations. Reservoir may leak where rocks are fractured.	Severe limitations. Steep slopes.	Moderate limitations. Highly variable amount of rock and earth excavation.
5. Limestone, shale, and siltstone	Fair to good foundation material; difficult to excavate. Possible expan-sive shales.	Severe limitations. Thin soils and impermeable rock. Fast drainage through fractures to water table; possible groundwater contamination.	Moderate limitations. Rock excavation; locally, upper few feet may be rip-pable. Steep slopes along major drain-ages. Possible ex-pansion of shales.	Moderate limitations. Rock excavation; locally, upper few feet may be rip-pable. Steep slopes along major drain-ages. Possible ex-pansion of shales.	Slight limitations. Steep slopes along major drain-ages.	Slight limitations. Rock excavation; locally, upper few feet may be rip-pable. Steep slopes along major drain-ages. Possible ex-pansion of shales.	Moderate limitations. Steep slopes.	Slight limitations.	Slight to moderate limitations. Reser-voir may leak where rocks are fractured. Sinks possible.	Slight limitations. Reservoir may leak where rocks are fractured.	Moderate limitations. Possibility of thin soils and rock excavation.
6. Limestone, dolomite, and shale	Fair to very good foundation material; difficult to excavate.	Severe limitations. Thin soils and impermeable rock. Fast drainage through fractures to water table; possible groundwater contamination.	Severe limitations. Rock excavation may be required. Steep slopes along major drain-ages.	Moderate limitations. Rock excavation; local drainage problems. Sinks common.	Moderate limitations. Rock excavation; local drainage problems. Sinks common.	Severe to slight lim-itations, depending on topography. Rock excavation. Local drainage problems. Sinks common. Groundwater con-tamination possible.	Severe to slight lim-itations, depending on activity and topography. Possible steep wooded slopes.	Severe to slight lim-itations, depending on activity and topogra-phy. Possible steep wooded slopes.	Moderate to severe limitations. Reser-voir may leak where rocks are fractured. Sinks possible.	Moderate to severe limitations. Reser-voir may leak where rocks are fractured. Sinks possible.	Severe limitations. Possible rock excavation.
7. Dolomite and lime-stone/silt-stone	Very good foundation material; difficult to excavate.	Severe limitations. Thin soils and impermeable rock. Fast drainage through fractures to water table; possible groundwater contamination.	Severe limitations. Rock excavation may be required. Steep slopes along major drain-ages.	Severe limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes.	Severe to moder-ate limitations. Rock excavation. Possible steep slopes and narrow ravines.	Moderate to slight limitations, depend-ing on topography. Rock excavation; local drainage prob-lems. Sinks common.	Severe to slight lim-itations, depending on activity and topography. Possible steep wooded slopes.	Severe to slight lim-itations, depending on activity and topogra-phy. Possible steep wooded slopes.	Slight to moderate limitations. Reser-voir may leak where rocks are fractured. Sinks possible.	Slight to moderate limitations. Reser-voir may leak where rocks are fractured. Sinks possible.	Severe limitations. Possible rock excavation.
8. Shale and dolomite	Fair to good foundation material; difficult excavation. Possible expan-sion of shales.	Severe limitations. Thin soils and impermeable rock. Fast drainage through fractures to water table; possible groundwater contamination.	Severe to moder-ate limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes. Possible ex-pansion of shales.	Severe limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes. Possible expansion of shales.	Moderate limitations. Rock excavation. Steep slopes.	Severe limitations. Rock excavation; locally, upper few feet may be rippable. Steep slopes. Possible expansion of shales.	Severe to slight lim-itations, depending on activity and topography. Possible steep wooded slopes.	Severe to slight lim-itations, depending on activity and topogra-phy. Possible steep wooded slopes.	Slight to moderate limitations. Reser-voir may leak where rocks are fractured.	Slight to moderate limitations. Reser-voir may leak where rocks are fractured.	Severe to moderate limitations. Possible rock excavation.
9. Siltstone, dolomite, and chert	Fair to good foundation material; difficult to excavate.	Severe limitations. Thin soils and impermeable rock. Fast drainage through fractures to water table; possible groundwater contamination.	Severe to moder-ate limitations. Rock excavation may be required. Possible steep slopes.	Severe to moder-ate limitations. Rock excavation may be required. Possible steep slopes.	Severe to moder-ate limitations. Rock excavation may be required. Possible steep slopes.	Severe to moder-ate limitations. Rock excavation may be required. Possible steep slopes.	Severe to moder-ate limitations. Rock excavation may be required.	Severe to moder-ate limitations. Rock excavation may be required.	Slight limitations. Reservoir may leak where rocks are fractured. Sinks possible.	Severe limitations. Reservoir may leak where rocks are fractured. Sinks possible.	Severe to moderate limitations. Possible rock excavation.

Although located primarily in the Mississippian Plateau, Wayne County also has foothills of the Eastern Kentucky Coal Field, as seen in this photo. Land-use practices differ significantly in the more mountainous parts of the county. View looking south. Photo by Bart Davidson, Kentucky Geological Survey.

The lumber industry is a common land-use feature of Wayne County. View looking north. Photo by Jeff Adams, Don Molden Multiple Services Inc.

The majority of Wayne County's land use is agricultural, exemplified by this soybean crop. Best management practices are recommended to ensure that pesticide and fertilizer applications do not pose problems to the groundwater supply. Photo by Bart Davidson, Kentucky Geological Survey.

Acknowledgments

Geology adapted from Duncan (2004), Johnson (2004a-c), Murphy (2004), Murphy and Stidham (2004), Zhang (2004a-g), and Zhang and Stidham (2004). Sinkhole data from Paylor and others (2004). Thanks to Jim Currens, Kentucky Geological Survey, for karst illustrations.

For Planning Use Only

This map is not intended to be used for selecting individual sites. Its purpose is to inform land-use planners, government officials, and the public in a general way about geologic bedrock conditions that affect the selection of sites for various purposes. The properties of thick soils may supercede those of the underlying bedrock and should be considered on a site-to-site basis. At any site, it is important to understand both the soils and the underlying rock. For further assistance, contact Bart Davidson, Kentucky Geological Survey, 859-257-5500 x162. For more information, and to make custom maps of your local area, visit our Land-Use Planning Internet Mapping Web Site at kgsmap.uky.edu/website/kyluplan/viewer.htm.

Radon

Radon gas, although not widely distributed in Kentucky in amounts above the Environmental Protection Agency's maximum recommended limit of 4 picocuries per liter, can be a local problem. Unit 6 on the map may contain high levels of uranium or radium, parent materials for radon gas. This unit and several other limestones in the state locally contain the phosphate mineral apatite. Uranium is sometimes part of the apatite structure, and when the limestone weathers away the phosphates containing uranium become concentrated in the soil and ultimately can give rise to high levels of radon. Homes in these areas should be tested for radon, but the homeowner should keep in mind that the health threat results from relatively high levels of exposure over long periods, and the remedy may simply be additional ventilation of the home.

COMPARATIVE RISK CHART for RADON LEVELS

Radon Level pCi/L	Estimated Fatal Lung Cancers/1000	Comparable Exposure Levels	Comparable Risk Estimate
		1,000 times average outdoor level	More than 60 times non-smoker risk
200	440 - 770	100 times average outdoor level	Four pack/day smoker or 20,000 chest X-rays/yr
100	270 - 630	100 times average outdoor level	Two-pack/day smoker
40	120 - 380		
20	60 - 210		
		10 times average indoor level	One pack/day smoker
10	30 - 120	10 times average outdoor level	Five times non-smoker risk
4	13 - 50		
2	7 - 30		
			Non-smoker risk of fatal lung cancer
1	3 - 13	Average indoor level	20 chest X-rays/yr
0.2	1 - 3	Average outdoor level	

EPA recommends action be taken if indoor levels exceed 4 picocuries per liter (pCi/L), which is 10 times the average outdoor level. Some EPA representatives believe the action level should be lowered to 2 picocuries per liter; other scientists dissent and claim the risks estimated in this chart are already much too high for low levels of radon. The action level in European countries is set at 10 picocuries per liter. Note that this chart is only one estimate; it is not based upon any scientific result from a study of a large population meeting the listed criteria (from the U.S. Environmental Protection Agency, 1986).

Groundwater Availability

In the eastern half of Wayne County, most of the wells drilled in the valley bottoms are adequate for a domestic supply. Less than half the wells drilled on hillsides or hilltops are adequate for domestic needs.

In the western half of the county, about three-quarters of the drilled wells in the uplands yield enough water for domestic use. In low-lying areas, very few wells yield adequate amounts of water for a domestic supply. Some wells close to Lake Cumberland provide an adequate domestic supply, however, especially those that penetrate small solution openings within the limestone bedrock.

For more information on the groundwater resources of the county, see Carey and Stickney (2004).

WAYNE COUNTY

Scale 1:63,360
1 inch equals 1 mile
2 0 2 4 Miles
3 0 3 6 Kilometers
N

Source-Water Protection Areas

In source-water protection areas, activities are likely to affect the quality of the drinking-water source. For more information, see kgsweb.uky.edu/download/water/swapp/swapp.htm.

EXPLANATION

- School
- Oil and Gas Wells
  - Gas well
  - Oil and gas well
  - Oil well
  - Enhanced recovery well
- Spring
- Water Wells
  - Domestic
  - Industrial
  - Monitoring
  - Public
- Soil Survey Points
  - Erosion
  - Rock outcrop
  - Sinkhole
  - Wet area
- Sinkholes topographically mapped
- Incorporated city
- Wetlands > 1 acre (U.S. Fish & Wildlife Service, 2003)
- Wildlife management area
- Source-water protection area, zone 1
- Artificial fill
- Watershed divide
- Faults
  - Concealed fault
  - Fault
- 3 Photo location
- 50-foot contour interval

Additional Planning Resources

Listed below are Web sites for several agencies and organizations that may be of assistance with land-use planning issues in Wayne County:

http://www.monticellokychamber.com—Monticello/Wayne County Chamber of Commerce
ces.ca.uky.edu/wayne/—University of Kentucky Cooperative Extension Service
www.kcadd.org/—Lake Cumberland Area Development District
www.thinkkentucky.com/edis/cmnty/cw076/—Kentucky Economic Development Information System
www.uky.edu/KentuckyAtlas/21051.html—Kentucky Atlas and Gazetteer, Wayne County
quickfacts.census.gov/qfd/states/21/21231.html—U.S. Census data
kgsweb.uky.edu/download/kgsplanning.htm—Planning information from the Kentucky Geological Survey

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Currens, J.C., 2001, Protecting Kentucky's karst aquifers from nonpoint-source pollution: Kentucky Geological Survey, ser. 12, Map and Chart 27, 1 sheet.
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Johnson, T.L., 2004a, Spatial database of the Cumberland City quadrangle, southern Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-475. Adapted from Lewis, R.Q., Sr., and Thaden, R.E., 1965, Geologic map of the Cumberland City quadrangle, southern Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-475, scale 1:24,000.
Johnson, T.L., 2004b, Spatial database of the Jamestown quadrangle, Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-182. Adapted from Thaden, R.E., and Lewis, R.Q., Sr., 1962, Geology of the Jamestown quadrangle, Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-182, scale 1:24,000.
Johnson, T.L., 2004c, Spatial database of the Savage quadrangle and part of the Moodyville, Clinton and Wayne Counties, Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-1318. Adapted from Lewis, R.Q., Sr., 1976, Geologic map of the Savage quadrangle and part of the Moodyville quadrangle, Clinton and Wayne Counties, Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-1318, scale 1:24,000.
Murphy, M.L., 2004, Spatial database of the Mill Springs quadrangle, south-central Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-1057. Adapted from Lewis, R.Q., Sr., 1972, Geologic map of the Mill Springs quadrangle, south-central Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-1057, scale 1:24,000.
Murphy, M.L., and Stidham, M., 2004, Spatial database of the Burnside quadrangle, south-central Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-1253. Adapted from Taylor, A.R., Lewis, R.Q., Sr., and Smith, J.H., 1975, Geologic map of the Burnside quadrangle, south-central Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-1253, scale 1:24,000.
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Zhang, Q., 2004d, Spatial database of the Monticello quadrangle, Wayne County, Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-1319. Adapted from Taylor, A.R., 1976, Geologic map of the Monticello quadrangle, Wayne County, Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-1319, scale 1:24,000.
Zhang, Q., 2004e, Spatial database of the Parmleysville quadrangle, and part of the Sharp Place quadrangle, Wayne and McCreary Counties, Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-1405. Adapted from Taylor, A.R., 1977, Geologic map of the Parmleysville quadrangle, and part of the Sharp Place quadrangle, Wayne and McCreary Counties, Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-1405, scale 1:24,000.
Zhang, Q., 2004f, Spatial database of the Parnell quadrangle, Wayne County, Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-861. Adapted from Lewis, R.Q., Sr., and Luft, S.J., 1970, Geologic map of the Parnell quadrangle, Wayne County, Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-861, scale 1:24,000.
Zhang, Q., 2004g, Spatial database of the Powersburg quadrangle, and part of the Pall Mall quadrangle, Wayne and Clinton Counties, Kentucky: Kentucky Geological Survey, ser. 12, Digitally Vectorized Geologic Quadrangle Data DVGQ-1377. Adapted from Lewis, R.Q., Sr., 1977, Geologic map of the Powersburg quadrangle, and part of the Pall Mall quadrangle, Wayne and Clinton Counties, Kentucky: U.S. Geological Survey Geologic Quadrangle Map GQ-1377, scale 1:24,000.
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Mapped Surface Faults

Faults are common geologic structures across Kentucky, and have been mapped in many of the Commonwealth's counties. The faults shown on this map represent seismic activity that occurred several million years ago at the latest. There has been no activity along these faults in recorded history. Seismic risk associated with these faults is very low. Faults may be associated with increased fracturing of bed-rock in the immediately adjacent area. This fracturing may influence slope stability and groundwater flow in these limited areas.

7.5-Minute Map Index

Geology of Kentucky

Learn more about Kentucky geology at www.uky.edu/kgs/geoky