

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

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Acknowledgments
Geology adapted from Crawford (2003, 2004), Johnson (2002a-c), Nelson (2001a-d, 2002a, 2003a, b), and Zhang (2002a-c). Sinkhole illustration from Currans (2001). Sinkhole data from Paylor and others (2004).

Water Resources

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 the Kentucky Geological Survey, 859.257.5500. 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/web/site/kyplan/viewer.htm.

Pond Construction
Water treatment facility and impoundment (foreground) reservoir west of Bardstown. Large and growing populations require water for many uses. Photo by Stephen Greb, Kentucky Geological Survey.

Groundwater
In the larger valley bottoms of the Rolling Fork and Beech Fork of the Salt River, most drilled wells will produce enough water for a domestic supply at depths less than 100 feet. Wells located in the rest of the larger valleys throughout the county will produce enough water for a domestic supply, except during dry weather. In upland areas (about 70 percent of the county), most drilled wells will not produce enough water for a dependable domestic supply, except for those along drainage lines, which may produce enough except during dry weather. Throughout the county, groundwater is hard, very hard, and may contain salt or hydrogen sulfide, especially at depths greater than 100 feet. For more information on groundwater in the county, see Carey and Stickney (2005).

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Gettysman
Shale is generally impermeable, and areas where it forms the bedrock may be favorable for ponds. In areas underlain by limestone, successful pond construction must prevent water from seeping through structured soils into limestone solution channels below. A compacted clay liner, or artificial liner, may prevent pond leakage. Settling basins filled with water as soon as possible after construction prevents drying and cracking, and possible leakage, of the clayey soil liner. Ponds constructed in dry weather are more apt to leak than ponds constructed in wet weather. The U.S. Department of Agriculture—Natural Resources Conservation Service can provide guidance on leak prevention measures. Ponds with dam heights exceeding 25 feet, or pond volumes exceeding 50 acre-feet, require permits. Contact the Kentucky Division of Water, 14 Reilly Rd., Frankfort, KY 40601, telephone: 502.564.3410. Photo by Stephen Greb, Kentucky Geological Survey.

Our Lady of Gettysman Abbey in the southern part of the county, the abbey is located along Monte Creek. The monastery has its own water-treatment plant. Photo by Stephen Greb, Kentucky Geological Survey.

Residential Construction
Listed below are Web sites for several agencies and organizations that may be of assistance with land-use planning issues in Nelson County. www.kinectnet.net/kyrd/kh.htm, Kentucky Resource Conservation and Agriculture; www.fadd.org/, Lincoln Trail Area Development District; www.kentucky.com/eds/cmm/county/index.htm, Detailed County Statistics; www.uky.edu/KentuckyArea2/1215.htm, Kentucky Atlas and Gazetteer; [www.quickfacts.census.gov/qfacts/2121215.htm](http://quickfacts.census.gov/qfacts/2121215.htm), U.S. Census data; www.bardstowntourism.com/main.htm, General county information; kgsmap.uky.edu/download/misc/landuse/mainkyplan.htm, More county information; www.kfwr.state.ky.us, Kentucky Department of Fish and Wildlife.

Additional Planning Resources
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Population growth leads to residential construction, new roads, and water and sewer infrastructure. Depth and type of bedrock influence the cost of constructing water and sewer lines, road beds, basements and recreation facilities. Increasingly, mixed land uses are juxtaposed, as in the case of this residential neighborhood next to a golf course, with industrial construction nearby. Photos by Stephen Greb, Kentucky Geological Survey.

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 filled areas away from sinkholes. Construct waste-holding lagoons in sinkholes as 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 (410KARS-037) or an agricultural water-quality plan (KR5224-71) for your land use.

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