

New 1:100,000-scale map series

Kentucky is the only state of significant size to be completely mapped geologically at a scale of 1:24,000 (1 inch on the map corresponds to 2,000 feet on the ground). The availability of geologic maps in Kentucky has been a great benefit for economic development, environmental protection, and hazard mitigation. Geologic map data are essential in order to address problems such as landslides, flooding, groundwater supply and protection, and locating waste-disposal and septic systems. There is now a great need for these maps to be made available in digital form for use in computer programs.

The Kentucky Geological Survey (KGS) is responding to this need. During the past 5 years, KGS has undertaken an ambitious project to convert all 707 geologic quadrangle maps (7.5-minute, 1:24,000 scale) into digital data sets that can be used in geographic information systems (GIS) and other software to address problems experienced in everyday life. As of November 2001, more than 500 of the

707 maps have been digitized. Thirty-two of the digital data sets are publicly available, and many more will be available in the near future.

After the 1:24,000-scale geologic quadrangle maps are digitized, they are digitally compiled to create new 1:100,000-scale geologic maps that will offer an unprecedented regional perspective and fidelity of detail. (A scale of 1:100,000 means that 1 inch on the map represents 100,000 inches, or 1.6 miles, on the ground.) The 1:100,000-scale maps present an intermediate scale, compared to previously published geologic maps, which preserves detail and provides a regional view of trends in geology. These maps will enable geologists to understand structural trends such as the extent of a fault system and its effect on the distribution of rock units, the location of mineral and other resources, and changes in the thickness of rock units across a large region.

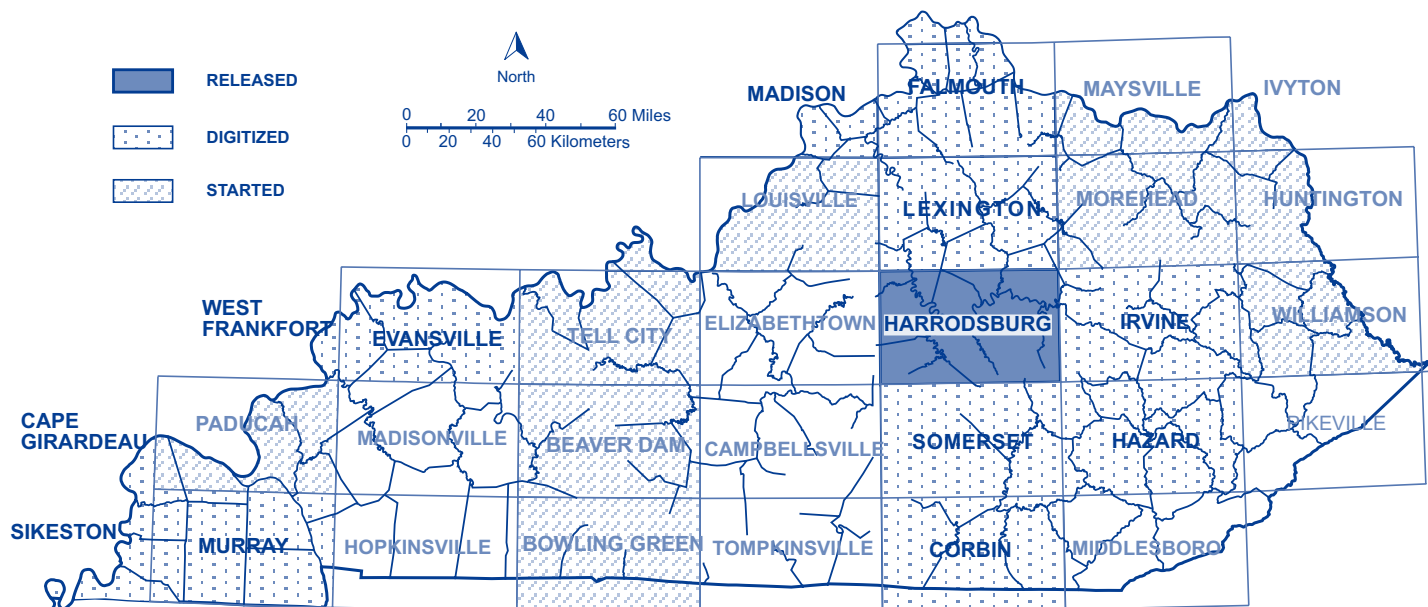
As each new 1:100,000-scale map is published, there is tremendous potential for exciting discoveries about the geology of Kentucky to be revealed. The maps will also be ideal for regional and county-level planning. Priority is

being placed on preparing the 1:100,000-scale maps for the major population centers in the state.

Harrodsburg map of central Kentucky

The first map to be published in the new 1:100,000-scale series is the “Geologic Map of the Harrodsburg 30 x 60 Minute Quadrangle, Central Kentucky,” by **Thomas Sparks, Garland Dever, and Warren Anderson**. This map of a 1,885-square-mile area encompasses all or parts of 15 counties, which together have more than half a million people.

The Harrodsburg map has the appearance of a traditional geologic map, but its creation and other aspects are not traditional. Because the Harrodsburg map was digitally compiled from 32 separate 1:24,000-scale 7.5-minute maps, the newly created 1:100,000-scale, 30 x 60 minute map has a similarly high level of accuracy and detail. With regional perspective and fidelity of detail, the Harrodsburg map and other maps published in the future in this series will provide the best of both worlds. Copies of the



Status of Kentucky Geological Survey digital mapping program, November 2001. Check the KGS Web site at www.uky.edu/KGS/statusmap for current status information.

Harrodsburg map may be purchased at KGS Publication Sales for \$15 each. The next map to be published will be for the Lexington 30 x 60 minute quadrangle.

Geologic map data sets

The digital data sets used to create the Harrodsburg map are now available, individually or in groups, on CD-ROM for \$10 per quadrangle. Each 7.5-minute quadrangle data set includes vectorized geologic map information in ESRI (Environmental Systems Research Institute Inc.) shapefile format and FGDC-compliant metadata. The data derived from the original geologic quadrangle maps include formation rock units, geologic contacts, structure contours, faults, fossil locations, and economic features. The shapefiles are prepared in latitude/longitude coordinates; both NAD27 and NAD83 datum versions are supplied for ease in creating projected views of the maps. All data sets have been edge matched to permit seamless alignment of adjoining map areas. A tutorial is provided that explains the format of the data and other necessary information for its use. Lithologic descriptions of map units are included in an easily searchable “help” file.

KGS’s innovative geologic map products will aid development, design, and planning decisions in Kentucky.

The digital geologic data sets allow persons to use geologic information from the GQ’s together with other kinds of data—agricultural, archeological, biological, engineering, geographical, and medical—in GIS and other software. The GIS format allows persons to visualize and measure relationships among different data to prepare custom-designed maps to meet company or project requirements. The digitally vectorized geologic quadrangles (DVGQ’s) are ideal for regional and county-level planning:

- ◆ land-use planning and development
- ◆ planning and constructing roads and highways
- ◆ managing watersheds
- ◆ restoring wetlands
- ◆ mitigating geologic hazards (for example, landslides, flooding, sinkhole collapse, subsidence)
- ◆ developing oil, natural gas, coal, and mineral resources

A sample data set from the KGS digital mapping database is available to download at no charge from the KGS Web site at www.uky.edu/kgs/sampledvgq. For information about the digital mapping program, visit the KGS Web site at www.uky.edu/kgs/digitalmapping. To order the digital data sets on CD-ROM, contact **Bart Davidson** at 859.257.5500 ext. 122 (bdavidson@kgs.mm.uky.edu) or **Richard Smath** at 859.257.5500 ext. 119 (rsmath@kgs.mm.uky.edu).

Acknowledgments

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Digital geologic map data sets were used to prepare the Harrodsburg 30 x 60 minute map. This is a portion of the map, shown here in black and white (the published map is in color).