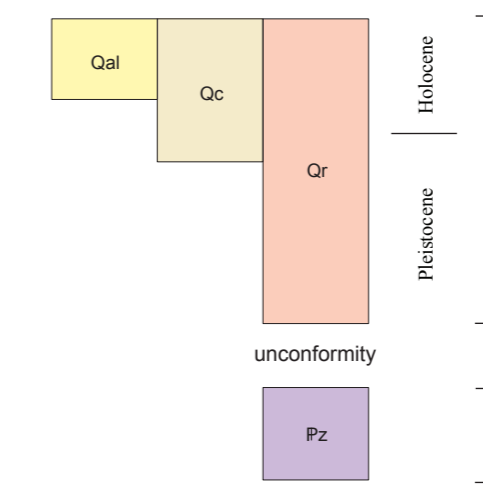


CORRELATION OF MAP UNITS



Map Unit Descriptions

- Qal Alluvium, small creek floodplains**
Silt and silty clay, brown to dark brown; found along stream bottoms in the map area; as much as 15 feet thick in North Elkhorn Creek valley, but typically thinner along smaller streams; contacts are presumed to be erosional, but are locally difficult to discern lithologically, especially on slip-off slopes on the insides of meander bends; consists primarily of locally derived material eroded from residuum on uplands and colluvium reworked from stream banks, locally contains bedrock cobbles and boulders. Jilison (1963) reported rounded quartz gravel in the quadrangle, which were inferred to be remnants of high-level fluvial deposits; general locations shown by symbol.
- Qc Colluvium, undifferentiated**
Silt and limestone gravel and cobbles, brown to gray; found on steep slopes, primarily along cut banks in stream valleys; as much as 10 feet thick; contacts erosional and approximately located; consists primarily of mobilized residuum and bedrock fragments; can be complex hillslope deposits, with exposed bedrock ledges and localized accumulations of colluvium.
- Qr Residuum**
Silt, clay, and limonite sand, reddish brown; found mantling uplands throughout the map area; typically less than 5 feet thick, but as much as 20 feet or more thick in karst features dissolved into top of bedrock; consists of pedogenic soils developed in-situ over long periods of time, with minimal down-slope movement; silt and clay derived from weathering of underlying Lexington Limestone, especially as the insoluble residual material remaining after carbonate dissolution; limonite sand possibly derived from oxidation of insoluble bedrock material or developed through pedogenic processes.
- Pz Bedrock, exposed**
Limestone and shale; gray; underlies unconsolidated deposits throughout map area. Locally naturally exposed in the bed and stream banks of North Elkhorn Creek and Cane Run, outcrops generally too small to map. Small outcrops interspersed with colluvium on steep stream banks not differentiated.
- af1 Fill, engineered**
Engineered fill including golf courses, quarry spoil, and areas of urban development. Areas of fill along railroads and highways not differentiated.

Geologic Summary

Geologic Setting
The Georgetown 7.5-minute quadrangle is located in Scott and Fayette Counties, Kentucky, in the Inner Bluegrass Region (McFarlan, 1943). Cressman (1967) mapped the bedrock geology of this quadrangle, and Nelson (2001) digitized the geologic map. The Ordovician Lexington Limestone is comprised of limestone and shale, and underlies the entire quadrangle. The Lexington Limestone is subdivided into numerous lithostratigraphic members, differentiated by variations in limestone versus shale content and bedding characteristics. The landscape in this area is predominantly gently rolling hills, with relatively low relief and numerous karst features (Figure 1).

Geomorphology and Surficial Deposits
The map units described on this map reflect natural processes operating as an integrated dynamic geomorphic system (Newell, 1978). The primary mechanisms of sediment transport and deposition in this area are flowing water (alluvial processes), and gravity/mass-movement (colluvial processes), which are complexly interrelated. Most of the uplands in the area are mantled by residuum, developed from in-place weathering and dissolution of the bedrock (Figure 2). This map shows the distribution of alluvium, colluvium, residual soil, and artificial fill. The map units in this area have been delineated based on the primary process generating the deposit or material. Soil survey maps (Weisenberger and Isgrig, 1977) and the geologic quadrangle map (Cressman, 1967) provided a preliminary basis for geologic field reconnaissance; field observation, landform interpretation, and examination of data from water well logs, and geotechnical reports were the basis for final map unit delineation. Identification of all map units is restricted by the map scale of 1:24,000.

Alluvial deposits occupy the valleys of North Elkhorn Creek, Cane Run, and small upland tributaries of those streams. Some sinkholes function as local isolated depocenters with associated alluvial deposits. Jilison (1963) reported deposits of quartz gravel in this quadrangle and elsewhere across central Kentucky, and inferred them to represent Mesozoic deposits of the Kentucky River; this study interprets them as younger (Pliocene or Early Pleistocene) deposits. Colluvium has developed on stream cut-banks (the outside bends of creeks); colluvium is typically thin and discontinuous with interspersed outcrops of bedrock. Residuum mantles most of the uplands in the quadrangle, and is derived from weathering and dissolution of the underlying bedrock. A minor amount of loess is interpreted to contribute to the silt content of the area soils (Weisenberger and Isgrig, 1977).

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Acknowledgments

This map was generated using new field mapping and compilation of unpublished data available at the Kentucky Geological Survey. Data from previously published reports by Cressman (1967), Nelson (2001), and Weisenberger and Isgrig (1977) were also incorporated into this map. The mapping was funded in part by the U.S. Geological Survey National Cooperative Geologic Mapping Program under the STATEMAP Program authorized by the National Geologic Mapping Act of 1992, Grant No. G13AC00170 and by the Kentucky Geological Survey. Field mapping was completed by William Andrews between October 2013 and June 2014. Steve Martin conducted field work along Elkhorn Creek during July and August of 2013. Cartography and map layout were completed by Terry Houmsell.

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Figure 1. Roadcut exposing the Ordovician Lexington Limestone overlain by Quaternary residuum. Note the prominent karst development along the top of bedrock.

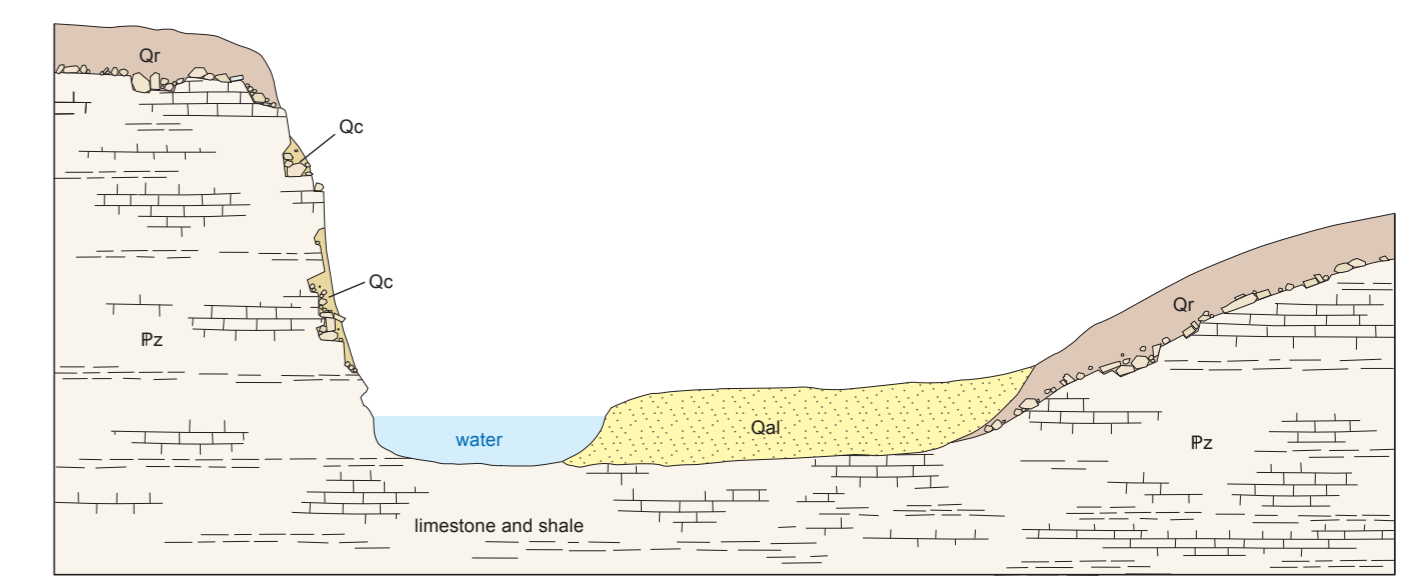


Figure 2. Generalized diagram showing relationships of residuum with alluvium in stream valleys and colluvium on stream cut banks. Not to scale.

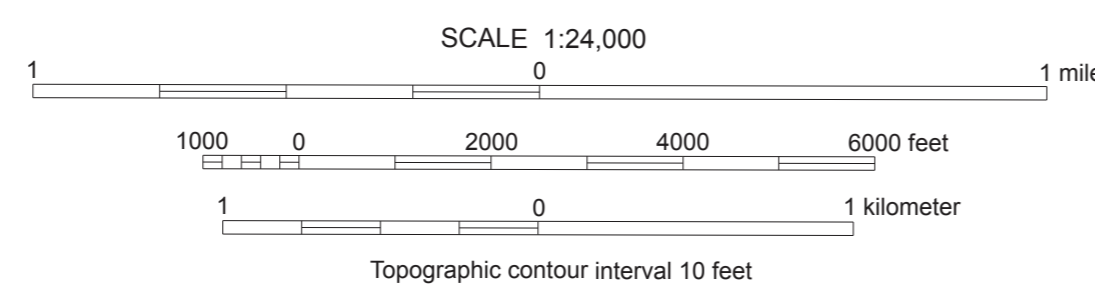
Highway, roads, and streets from Kentucky Transportation Cabinet.
Hydrography from Hi-Res National Hydrography Data.
Hill shading derived from 1:24,000-scale USGS Digital Elevation Model.
Topography from 1:24,000-scale USGS Tagged Vector Contour data.
Lambert conformal projection, North American 1983 datum Kentucky Single Zone State Plane Coordinate System.
Topographic contours and hill shading may not be current within areas of artificial fill.

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SURFICIAL GEOLOGIC MAP OF THE GEORGETOWN 7.5-MINUTE QUADRANGLE, NORTH-CENTRAL KENTUCKY

William Andrews Jr.



- EXPLANATION**
- 75 Interstate highway
 - 25 U.S. Highway
 - 227 Kentucky state highway
 - 1973 County road
 - Other county road, local street or road
 - Railroad
 - Municipal boundary
 - Creek
 - Water body, pond or lake
 - Contact
 - Sinkhole
 - Gravel location
 - Fault
 - Concealed fault
 - Landform observation

