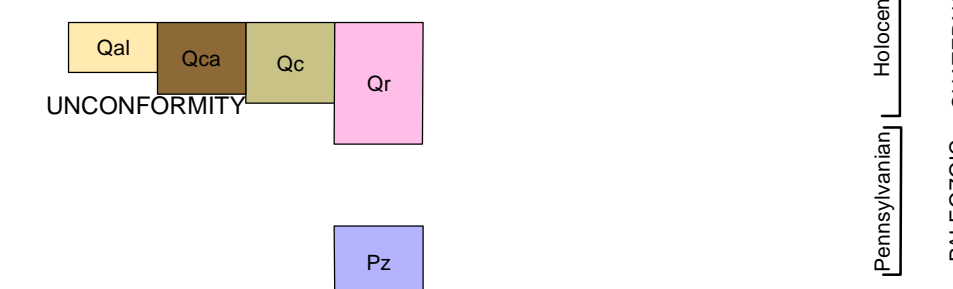


**CORRELATION OF MAP UNITS**



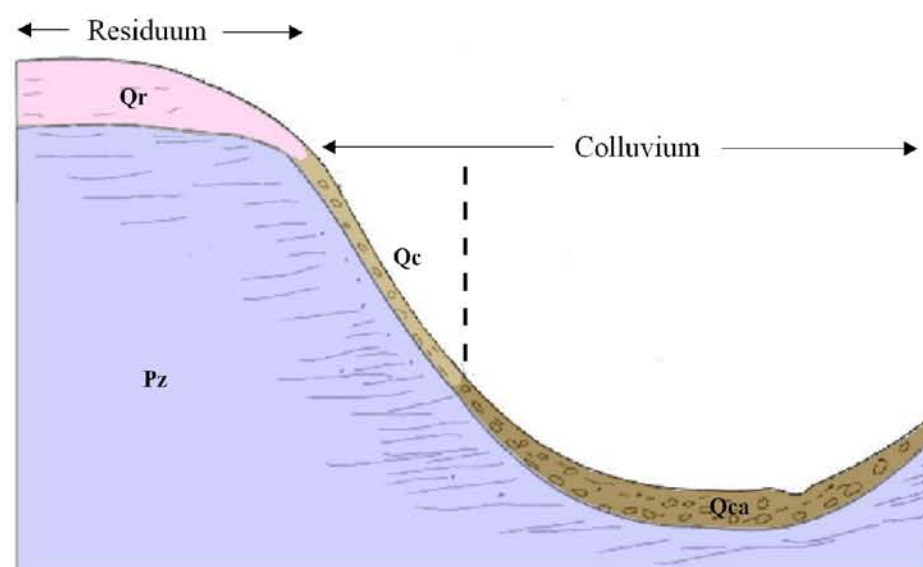
CORRELATION OF MAP UNITS chart and DESCRIPTION OF MAP UNITS  
Includes map units from adjacent quadrangles. Only map units within this quadrangle are shown with color fill.

**DESCRIPTION OF MAP UNITS**

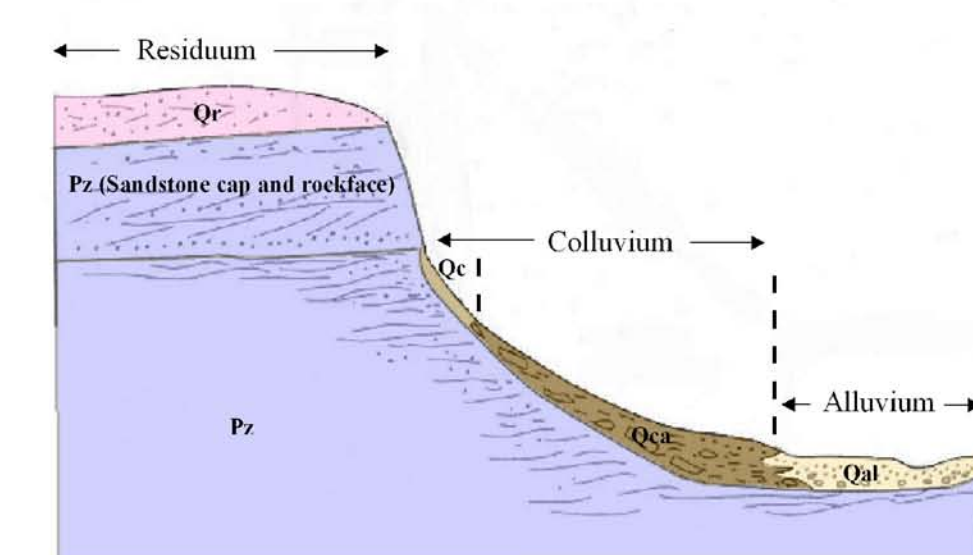
- Qal Alluvium modern (Holocene)**  
Unconsolidated sand, silt, gravel, and clay. Mainly occupies modern river channels, narrow stream valley bottoms, and floodplains. Local sand and gravel bars containing cobbles and boulders present. Unit typically generated from weathered colluvium and debris flows near valley bottoms and often flooded, eroded, and re-deposited. Contact between adjacent colluvium and alluvial fans varies from sharp to poorly defined. Thickness ranges from 0 to 30 feet.
- Qaf Alluvium, alluvial fans (Holocene)**  
Broad, fan-shaped deposits of unconsolidated material at the mouths of small valleys and ravines. Confined to coalescing tributary valleys, unit probably contains a mixture of flood-plain alluvium and hill slope colluvium. Fluvial origin varies from recent to old.
- Qat Alluvium, low terrace (Holocene)**  
Silt, sand, and clay deposited by rivers; forms terrace above adjacent floodplain; contact with adjacent units varies from sharp to poorly defined; locally inferred on the basis of topographic expression, distinguished by topographic expression from lower floodplain.
- Qc Colluvium, modern (Holocene)**  
Unconsolidated sand, gravel, silt, clay, cobbles, and boulders; gravity driven material mantling steep slopes, generated from weathering of underlying bedrock. Thickness ranges from 0 to 40(?) feet and varies depending on landscape position and underlying bedrock lithology. Typically colluvial slopes are thickest at the base (toe slopes) and thin and discontinuous toward the shoulder (side slopes). Thick colluvium troughs or wedges often surround bedrock outcrops or ledges on steep slopes.
- Qcb Colluvial accumulation zones (Holocene)**  
Thick accumulation zones of colluvial material generally deposited on steep stepping toe slopes. Unit also may be small, fan-shaped deposits near base of steep slopes or occur downslope of gaps in bedrock ledges, on concave slopes, and in toe slopes. Gravity driven.
- Qcf Colluvium alluvial fans (Holocene)**  
Thick accumulation zones of colluvial material. Small, fan-shaped deposits near base of steep slopes. Gravity driven.
- Qr Residuum (Holocene)**  
Highly weathered bedrock regolith found along ridge tops, gently sloping hills, and convex upward slopes. Unit is typically interbedded fine-grained rock and silty soil, few large angular rock pieces, maintains sedimentary rock structure. Underlain by interbedded sandstone, shale, siltstone, and coal which determines rate of weathering and residual accumulation.
- Pz Bedrock and residuum (Paleozoic)**  
Consolidated layers of sandstone, shale, siltstone, and coal, minor amounts of limestone. Except where exposed as a roadcut or natural rock face, unit is primarily underlying the surficial geology and comprises the core of the steep hills.
- af1 Landslide deposits, modern (Holocene)**  
Complex accumulations of slumps, earthflows, debris flows, and hummocky ground within colluvial slopes. Unit derived from thick colluvial slopes or boulder dominated areas. Commonly consists of cobbles and boulders with sand, silt, and clay matrix. Slides range from active to historic non-active slides. Widespread in steep narrow gullies. Generally small in size, most too small to map at this scale, and difficult to delineate contacts with other units.
- af1 Artificial fill, engineered fill (Modern)**  
Unconsolidated material used as fill for the construction of roads, railroads, buildings, floodwalls, and other engineered structures.
- af2 Artificial fill, mine spoil (Modern)**  
Unconsolidated overburden and fill material generated from surface and underground coal mining processes. This includes material mined and restored from contour mining, excess mine spoil placed in hollow fills, dry refuse, slurry ponds, and mountain top removal sites. Unit delineated by soil map analysis, modern aerial photography, current mine maps, and historical topographic maps.
- af3 Artificial fill, other fill (Modern)**  
Chaotic, unconsolidated fill material; includes materials cleared during maintenance of roads and water ways and graded recreational areas.
- af4 Artificial fill, hollow fill (Modern)**  
Excess overburden replaced in narrow valleys after coal removal. Volume of material swells by approximately 20%-25% as unconsolidated spoil after bedrock is broken up. Material is typically graded and bench.
- rw New water**  
Areas of former land which have been removed by active erosion or dredging since the completion of original topographic mapping.

**EXPLANATION**

- Contact
- Approximate contact
- Inferred contact
- Landform observation

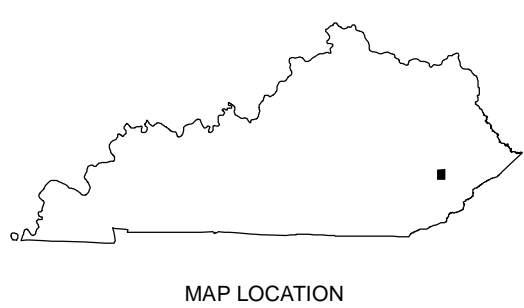
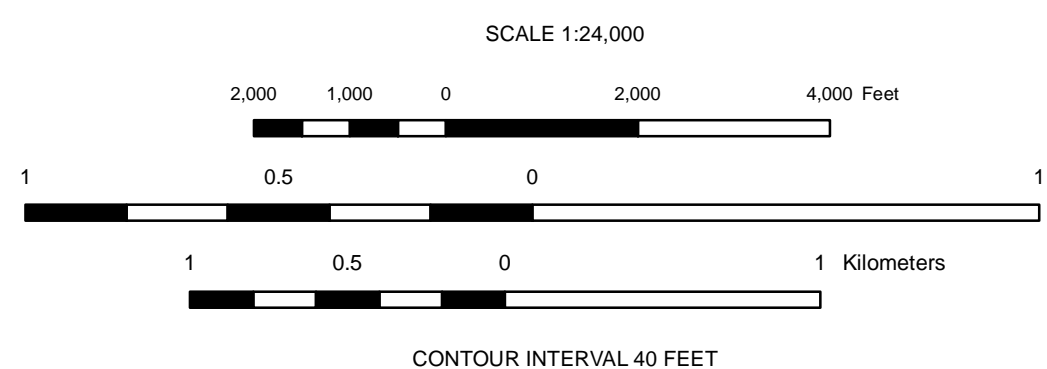


**Figure A.** Idealized cross-section of hillside and surficial units formed on siltstone and shale. Note difference in thickness between colluvium (Qc) and the colluvial accumulation zones (Qca). The absence of Alluvium (Qal) is common as there are places where the steep colluvial slopes dominate and intersect the valley bottom without Qal depositional influence. (Modified from Newell, 1978).



**Figure B.** Idealized cross-section of hillside and surficial units formed on bedrock with a sandstone cap and vertical sandstone rock face. Note the difference in colluvium (Qc) and the colluvial accumulation zones (Qca). Here the Qca intersects a broader channel occupied by Qal. (Modified from Newell, 1978).

Kentucky Single Zone State Plane projection  
Topographic base and cultural features are from Kentucky Raster Graphics from Kymartian.ky.gov/krmaps/p52\_krg.tif



Haddon	Noble	West
Wayton	Hazard North	Carrie
High West	Hazard South	Waco

7.5 MIN QUADRANGLE INDEX

**QUATERNARY GEOLOGIC MAP OF THE HAZARD NORTH 7.5-MINUTE QUADRANGLE, EASTERN KENTUCKY**  
By William M. Andrews Jr.  
2008