

**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** Alluvial Terrace (Holocene)  
Higher level deposits representing higher level flooding event deposits features large enough for mapping.
- 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).
- Qca** Colluvial accumulation zone (Holocene)  
Unconsolidated colluvium, deposited by gravity forming a gentler slope than adjacent colluvium. Unit may be fan-shaped deposits near base of steep slopes or within concave slopes.
- 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 the Farmers sandstone, Bedford, Sunbury, and Ohio shale which determines rate of weathering, accumulation of colluvium in the Farmers.
- Pz** Bedrock  
Consolidated layers of siltstone, shale, and sandstone. 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.
- Qls** 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 consist of a combination Ohio Shale, and Crab Orchard material in the Farmers. Slides range from active to historic non-active slides.
- 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)  
Quarried rock faces overburden and fill material generated from surface rock quarries. This unit delineated by soil map analysis, modern aerial photography, and historical topographic maps.
- af4** Artificial fill, hollow fill (Modern)  
Unconsolidated and Consolidated material generated from surface rock quarries during mining and placed in narrow valleys. This unit delineated by soil map analysis, modern aerial photography, and historical topographic maps.
- nw** New water  
Areas of former land which have been removed by active erosion or dredging since the completion of original topographic mapping.
- Qld** High Level Fluvial Deposits  
Deposits of well rounded poorly sorted pebbles associated with fluvial deposits found in higher elevation than the modern stream or river channels.

\*Map unit **Qc**, **Qr**, and **Qal** are primarily derived from the parent materials of the USDA soil series units. Delineation of these units was completed by field observations, slope percentage analysis, and mining data.  
\*Map units **Qca**, **Qcc**, **Qcqr**, **Qccc**, **Qca**, and **Qls** are derived from field observation.  
\*Map unit **af2** were derived from soil series maps, known mined areas, mine permit maps, and aerial photography.

**EXPLANATION**

- Contact
- Approximate contact
- Inferred contact
- Concealed contact
- Fault
- Approximate fault
- Inferred fault
- Terrace scarp
- Contour strip
- KGS database, number indicates depth to bedrock in feet
- KGS drilling
- Landform observation and soil probe
- Landform observation

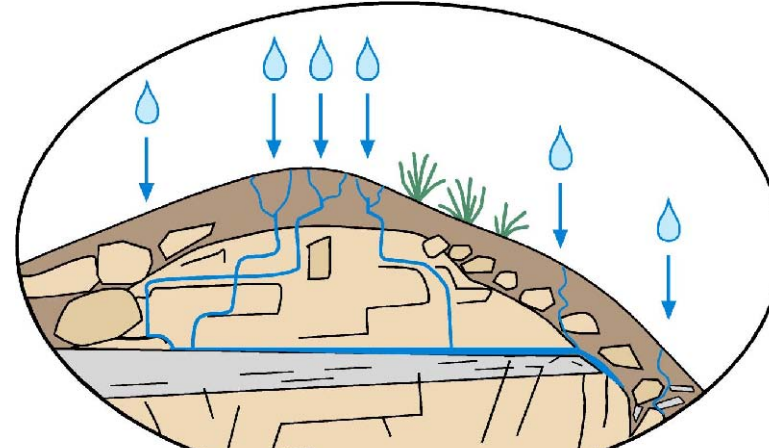


Figure 1A. Development of the Residual soil (Qr). Influence of water on weathering of Bedrock, soil development, and transport of Colluvium (Qc) by infiltration.

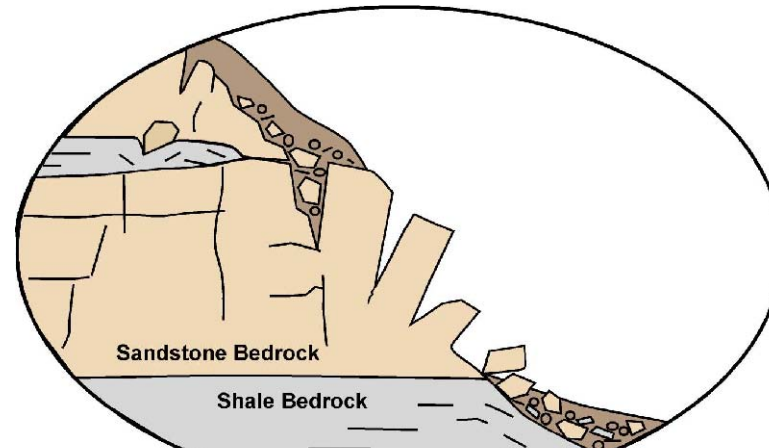


Figure 1B. Different types of Bedrock (Pz) exposed on a hillside.

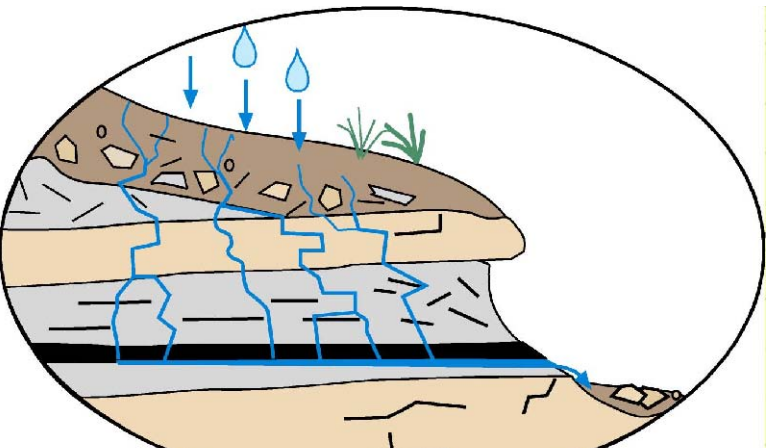


Figure 1C. Bedrock (Pz) outcrop and location of hillslope Colluvium Accumulation (Qca). Note infiltration of water with seep at impervious coal seam

**QUATERNARY GEOLOGIC MAP OF THE MOREHEAD 7.5-MINUTE QUADRANGLE, EASTERN KENTUCKY**  
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Compiled by Scott Waninger  
2011

**7.5 MIN QUADRANGLE INDEX**

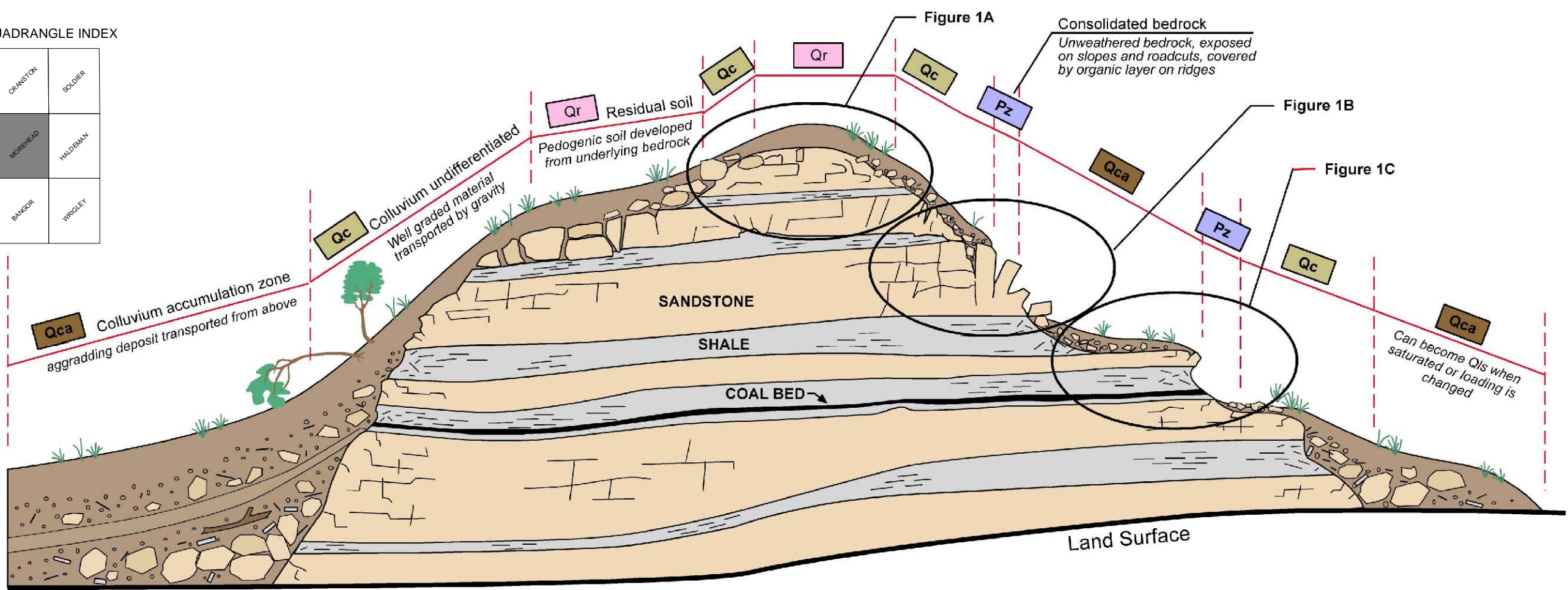
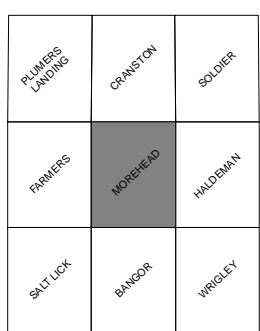


Figure 1. Conceptual model of the geomorphic processes in the Morehead 7.5-minute quadrangle