Geohazards in the Kope Formation, Northern Ky

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Dealing with development issues in a rural landslide-prone area of Kentucky…
Ordovician Kope Formation

Shale and subordinate limestone and siltstone.

Shale, 70 percent or more of formation; weathers, slakes, and slumps readily.
Falmouth Landslides
Location-Northern Kentucky

Gallatin County
Ohio River
Falmouth Landslides

Gallatin County
Gallatin County Subdivision
New construction
Road Foundation Failure
Masonry damage
Wall Cracks
Limestone Mine
DOQQ of Mine and Subdivision
Inadequate drainage
Septic system in front yard
Spring beneath home
Why was problem overlooked?

• No requirement/code to consider geology
• Rural area; limited planning/zoning
• “Acts of God” vs. foreseeable events
• Business as usual?
• Conflict of interest
KGS Activities

• Digital geology, website
• Generalized geology for landuse planning
• Workshops, training
• New field mapping
• Future: geotechnical maps
DVGQ’s

• Digitally Vectorized Geologic Quadrangles
• Digital GQ data for the entire state
• Useful in Planning, Design, Construction and Remediation
• EDUCATION
Digital Geologic Mapping Project

DIGITAL GEOLOGIC MAPPING PROJECT
1:24000 Digitally Vectorized Geologic Quadrangles (DVGQ)
completion date April, 2004
Maps, Publications, and Databases

Interactive Map Services:

Enter the KGSGeoPortal
Gateway to Online Maps, Databases, and Publications for Kentucky
more information

Enter Geologic Map Service
Interactive and customizable geologic maps with links to related data
more information

Criteria-Based Search:

Use these services to search for tabular geologic data by entering data criteria and geographic information:

- Search for Publications & Maps
- Search for KGS Photos and Images
- Search for Oil & Gas Well Records
- Search for Groundwater Information
- Search for Coal Information
- Search Well Sample & Core Holdings
- Convert A Single Coordinate Value
- Convert Multiple Coordinates

News and Updates (click title to expand):

2/6/2007
+ JUST ADDED! Groundwater-Quality Data Search (link)

1/31/2007
+ Oil and Gas Data Search Updates (link)

1/25/2007
+ JUST ADDED! Oil and Gas Production Data (link)

1/22/2007
+ KGSGeoPortal Tools Suite (link)

1/19/2007
+ Welcome and about this blog (link)

read more

XML
**Colluvium** (Quaternary - Quaternary)

*Mapped or described as these unit(s) on the original GQ:

**COLLUVIUM**

Primary Lithology: Unit not described south of Pine Mountain.

Colluvium consists of poorly sorted to unsorted angular to rounded pebbles, cobbles, and boulders in a clay, silt, and sand matrix. Occurs as debris fans (including some alluvium) and landslides at mouths of hollows and on concave slopes; as talus below sandstone ledges and escarpments. Although present on most slopes, mapped only where generally thicker than 5 feet and greater in extent than 1 acre; mapped by interpretation of hummocky topography and fan-shaped lobes on aerial photographs. Contact with alluvium is interfingering and gradational.

**Alluvium** (Quaternary - Quaternary)

*Mapped or described as these unit(s) on the original GQ:

**ALLUVIUM**

Primary Lithology: Silt, clay, sand, and gravel

Alluvium is composed of silt, clay, sand, and gravel. Silt and clay, light-gray to dark-brown, thin-bedded to laminated, rich in organic matter. Sand, white to light-gray to light-yellowish-brown; composed of grains of quartz, mica, and coal and rock fragments; in well-sorted, graded beds or distinctive partings between silt and clay. Silt, clay, and sand occur as thick deposits along stream banks, thinning across flood plains and interfingering with colluvium along valley bottom margins. Gravel consists of flat, well-rounded to angular pebbles, cobbles, and boulders of sandstone, siltstone, coal, quartz, chart, and limestone; occurs as bed load of streams and as scattered lenses in thick deposits of finer alluvium.

Silt, clay, sand, and gravel, as in unit description north of Pine Mountain.