Responding to

Geohazards in the Kope Formation, Northern Ky

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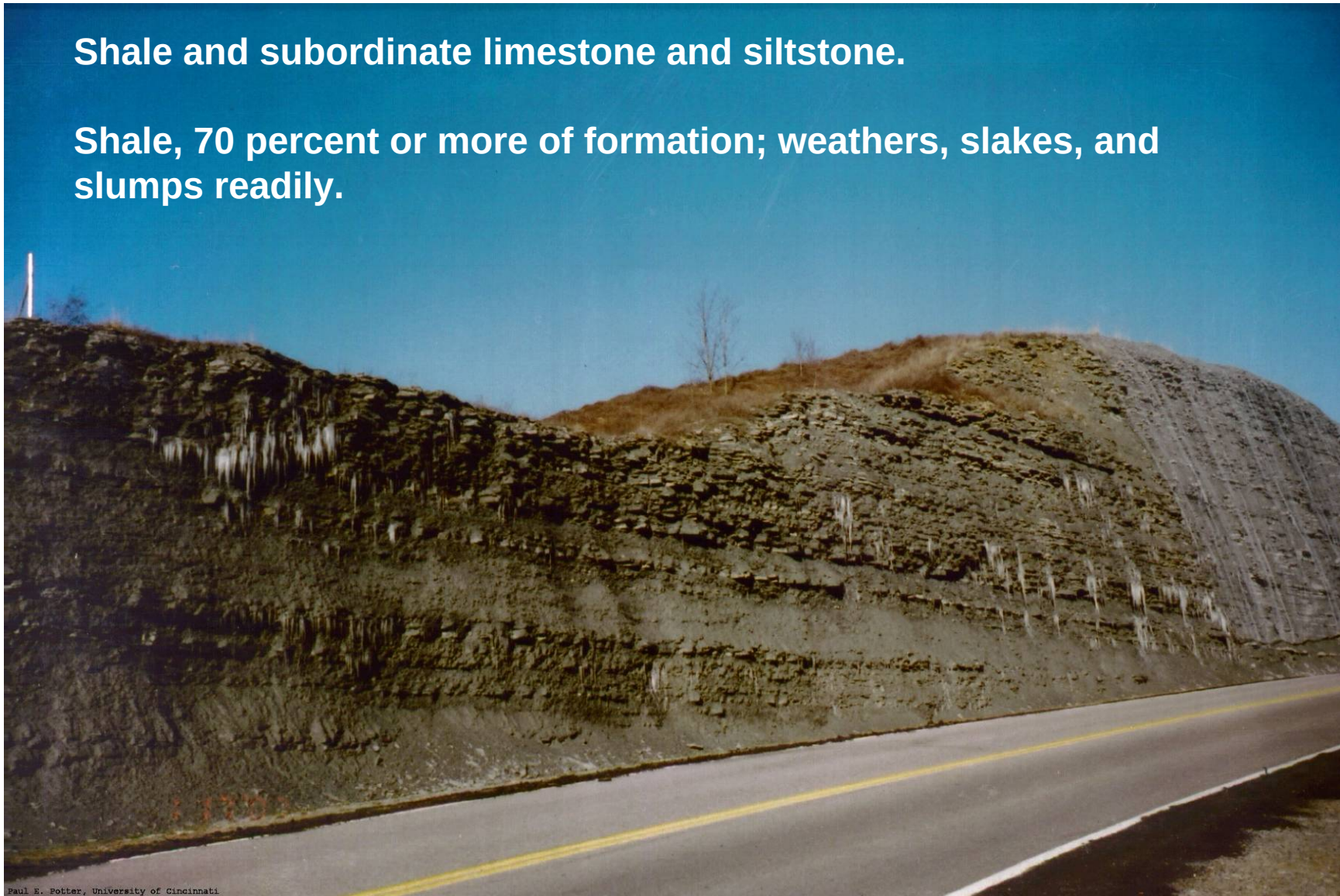
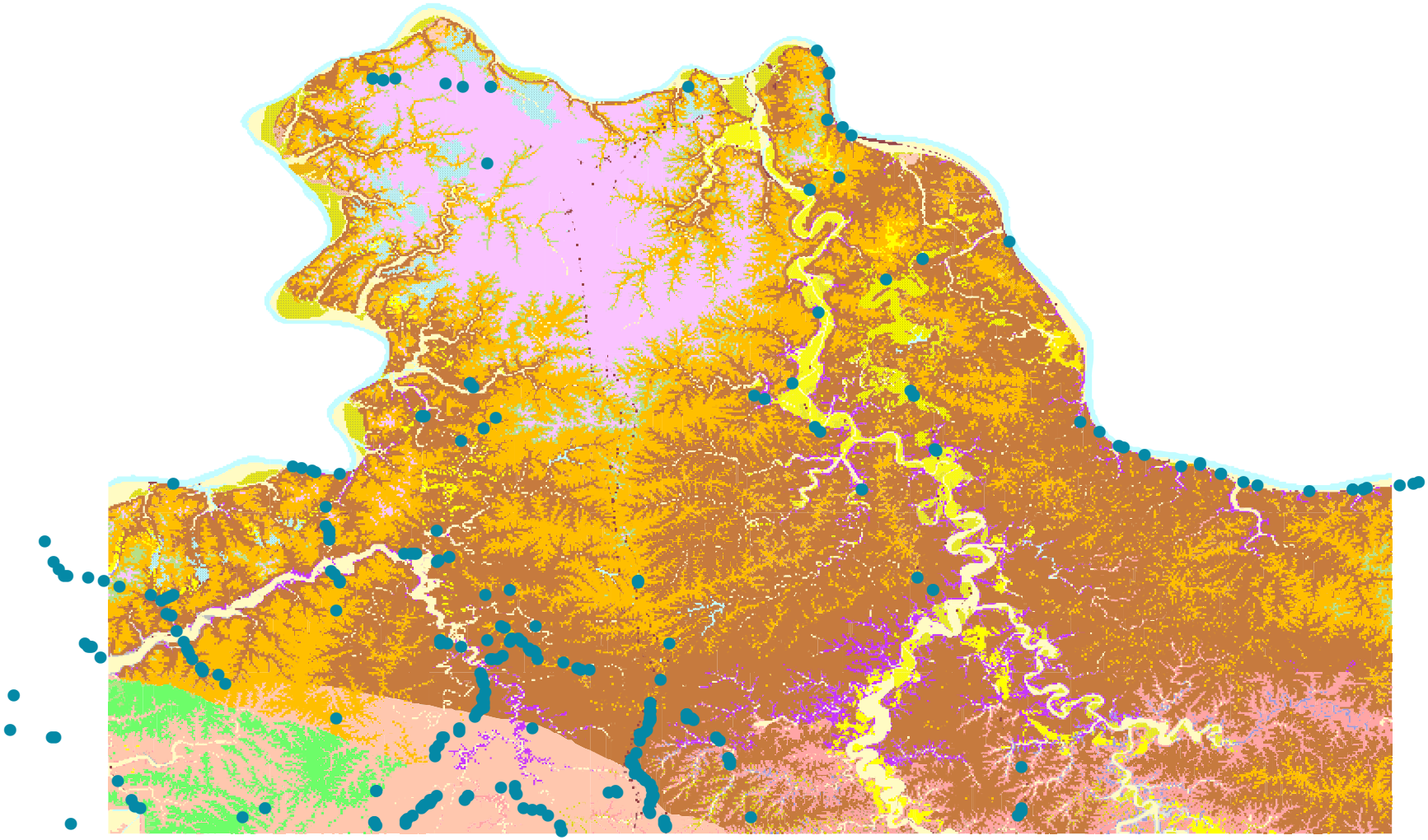
Kentucky Geological Survey
UNIVERSITY OF KENTUCKY

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

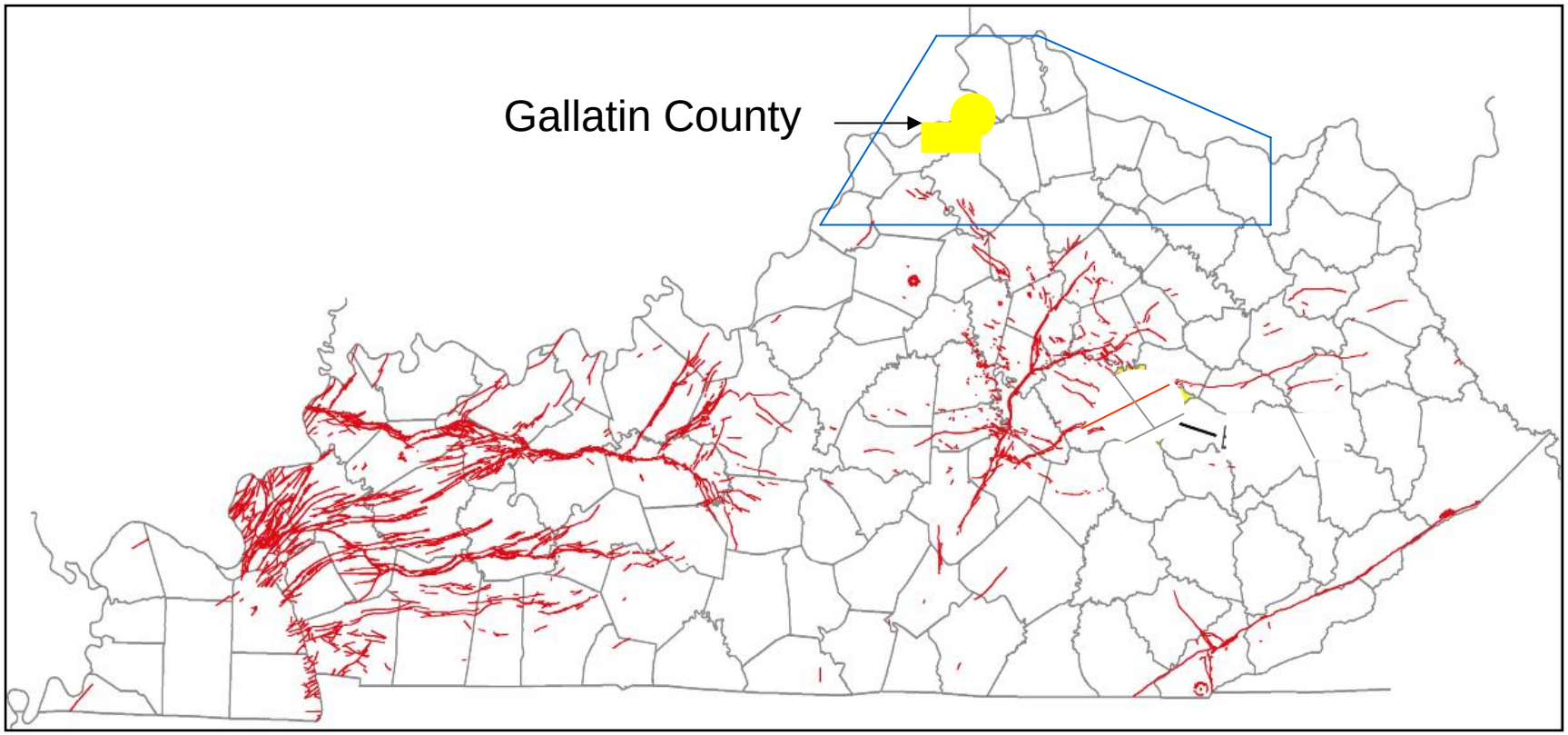
Ordovician Kope Formation



Falmouth Landslides

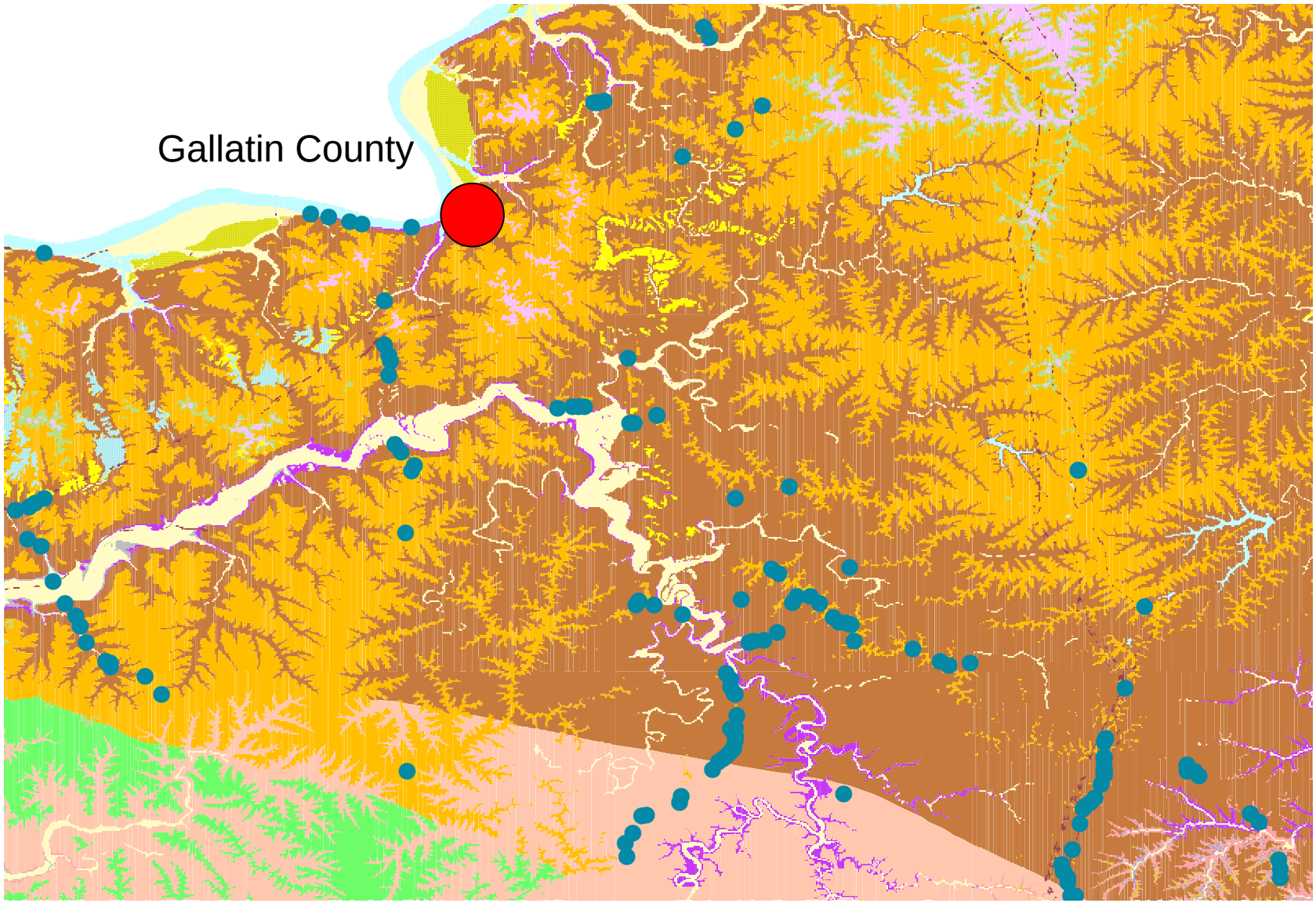


Location-Northern Kentucky



Ohio River

Falmouth Landslides



Gallatin County Subdivision

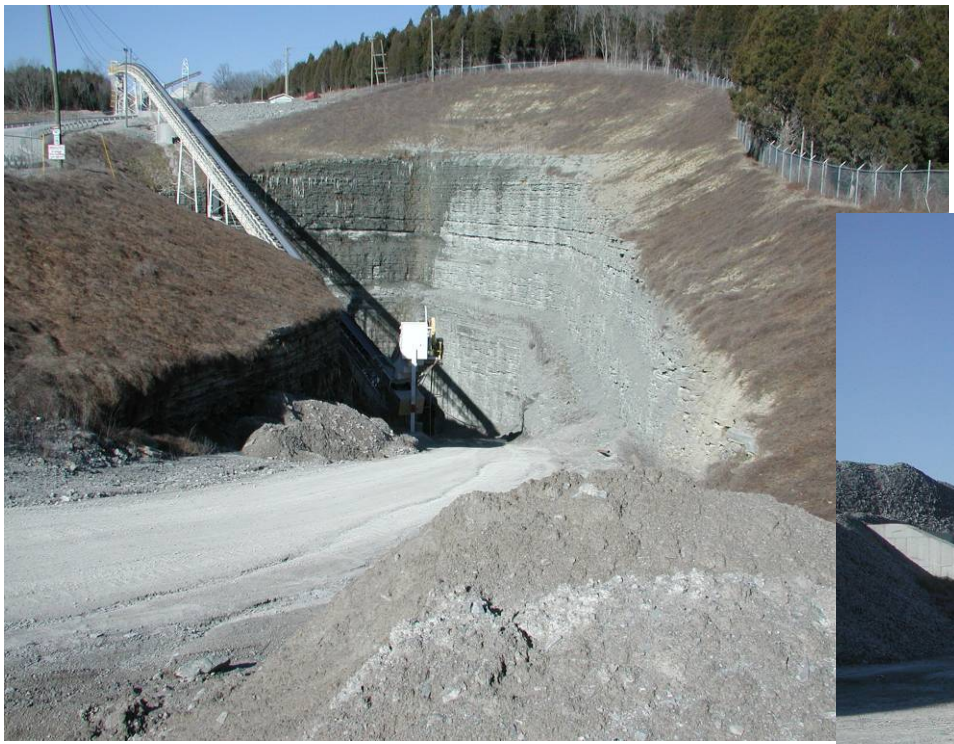
New construction

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

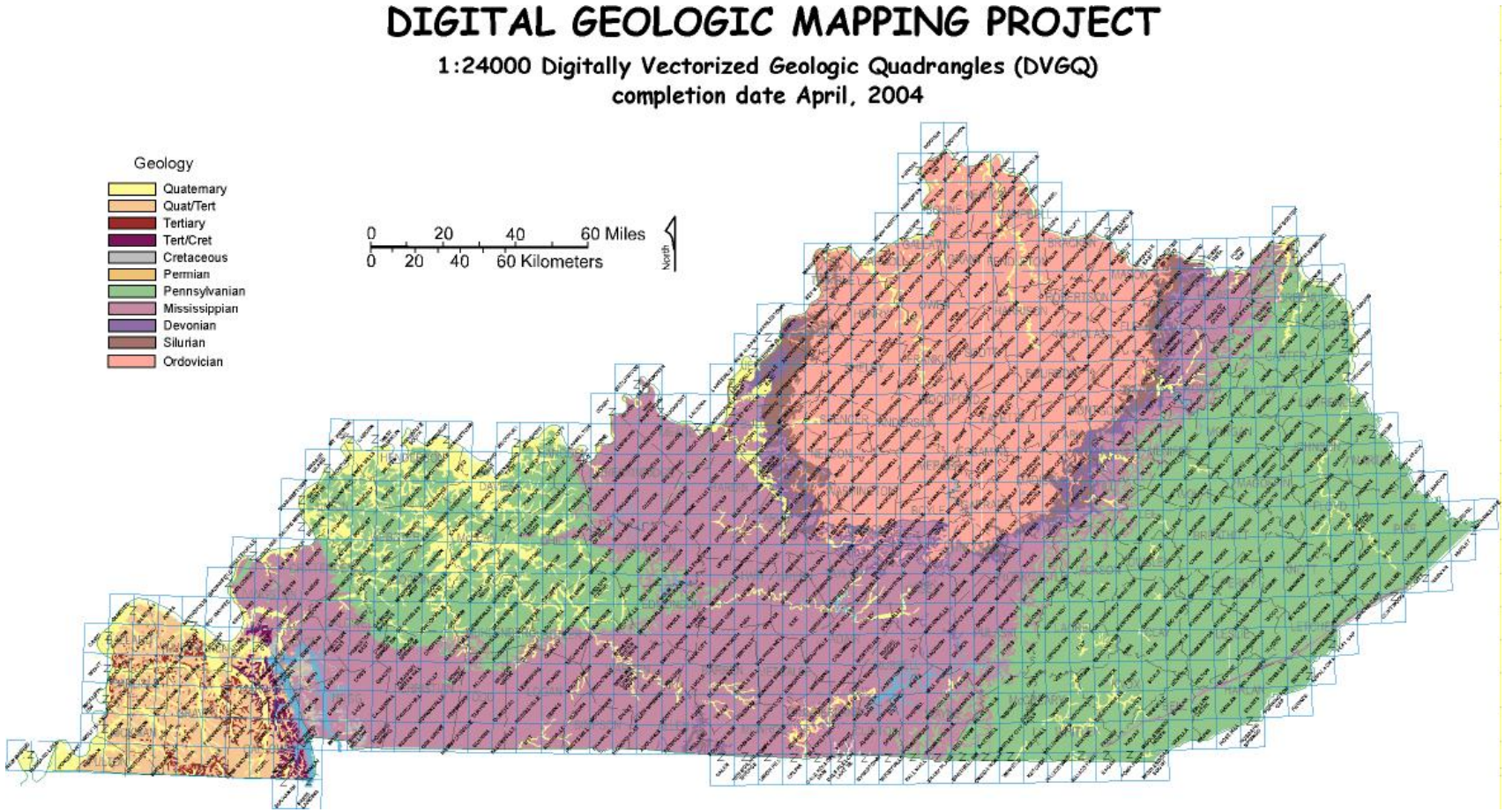
KGS Activities

- Digital geology, website
- Generalized geology for landuse planning
- Workshops, training
- New field mapping
- Future: geotechnical maps

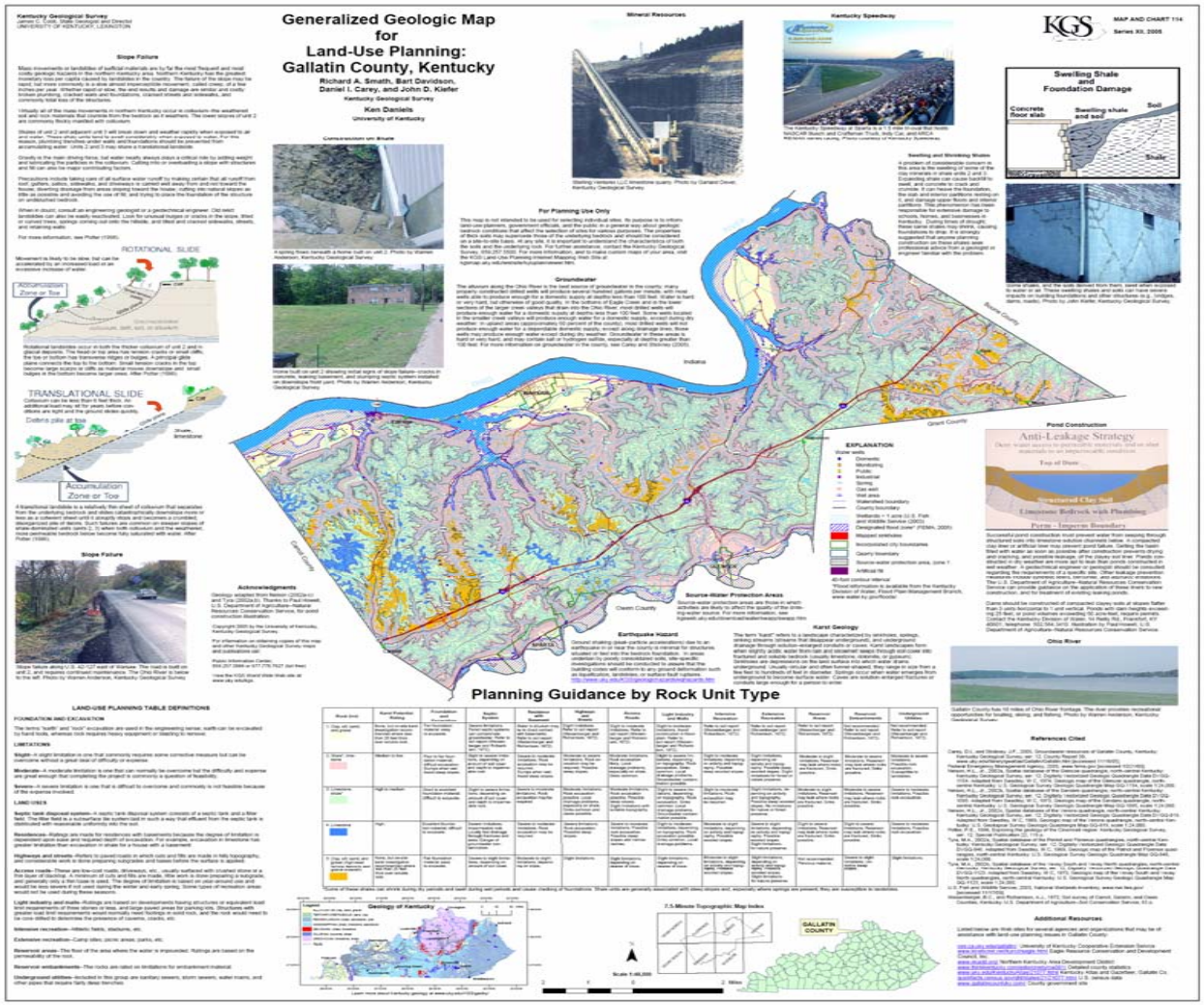
DVGQ’s

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

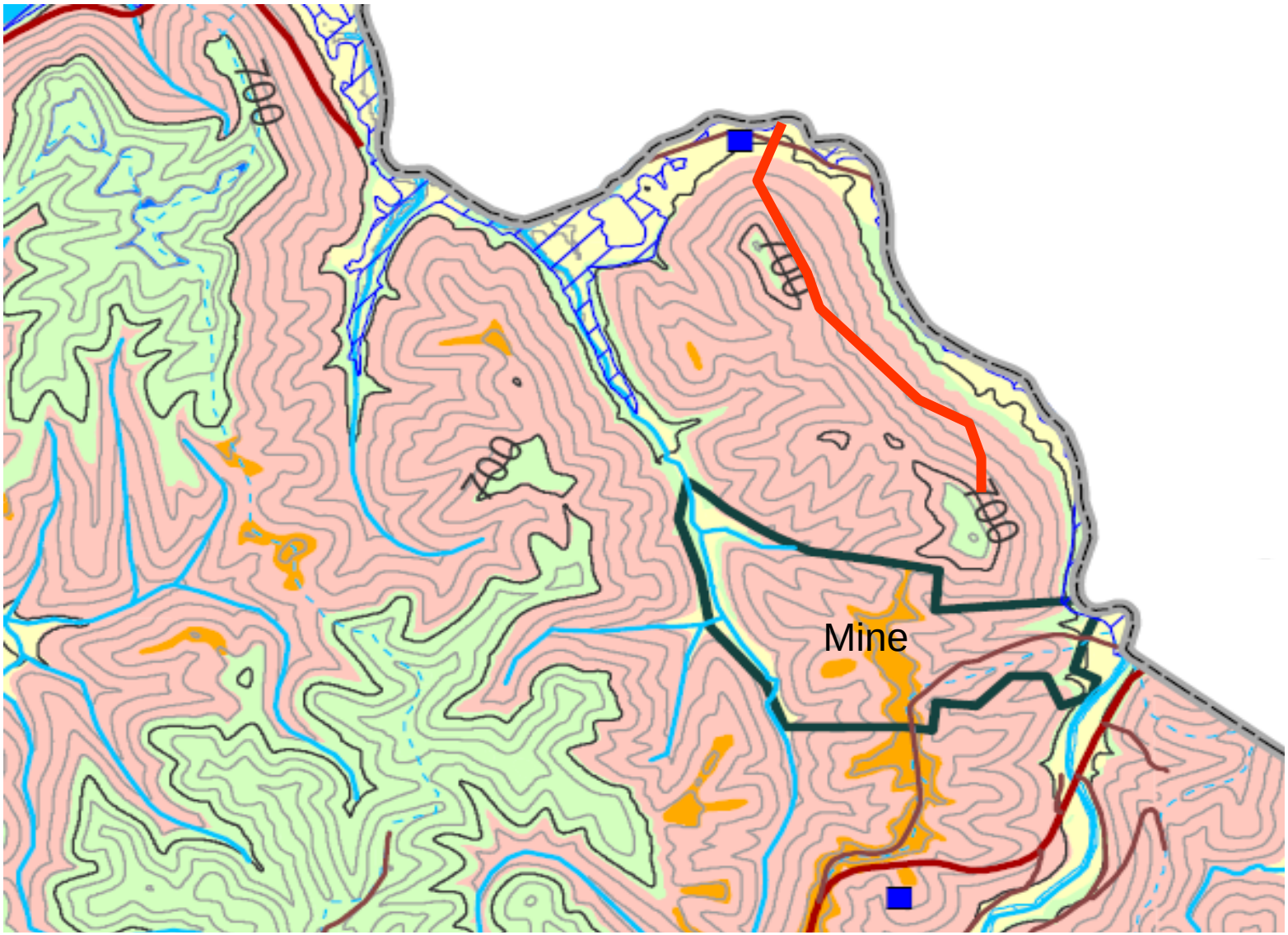
Digital Geologic Mapping Project



Land Use maps



LU Map-Subdivision area



Kentucky Geological Survey
University of Kentucky

"Earth Resources---
Our Common Wealth"

General Information

Rocks and Minerals

Fossils and Prehistoric Life

Earth Science Education

Geology of Kentucky

Research

Oil and Natural Gas

Industrial Minerals

Coal

Water

Earthquakes and other Geologic Hazards

Stone fence in the Bluegrass

Data and Services

Search Databases and Publications

GIS and Maps

Laboratory Services

Well Sample and Core Library

News (RSS) XML What's RSS?

- Newly Released Website Can Aid in Searching for Groundwater-Quality Data
- Haney Lecture, Annual Seminar scheduled
- Monthly oil and gas production data now available
- New Morehead quadrangle map published
- KGS Fall 2006 Newsletter (pdf file, 0.58 mb)
- Regional Groundwater Quality Study Released by Kentucky Geological Survey
- Dr. Cobb's Kentucky Energy Summit Presentation (PDF file)
- Drilling Finished on Deep Borehole in Western Kentucky for Earthquake Research
- KGS Policy for Handling Customer Scanning Requests
- KYGeoCast
- >>More KGS News

New booklet, *Coal and the Environment*, available from KGS

KGS Strategic Plan December 2003 (PDF file) || UK 2003-2006 Strategic Plan

KGS Maps, Publications, and Data - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://kgsweb.uky.edu/main.asp Go Links

Kentucky Geological Survey
University Of Kentucky

Search KGS | Contact KGS | KGS Home | UK Home

KGS Home > Maps, Pubs, & Data

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

NEW News and Updates (click title to expand):

XML

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

Done Internet

KGSGeoPortal - Microsoft Internet Explorer

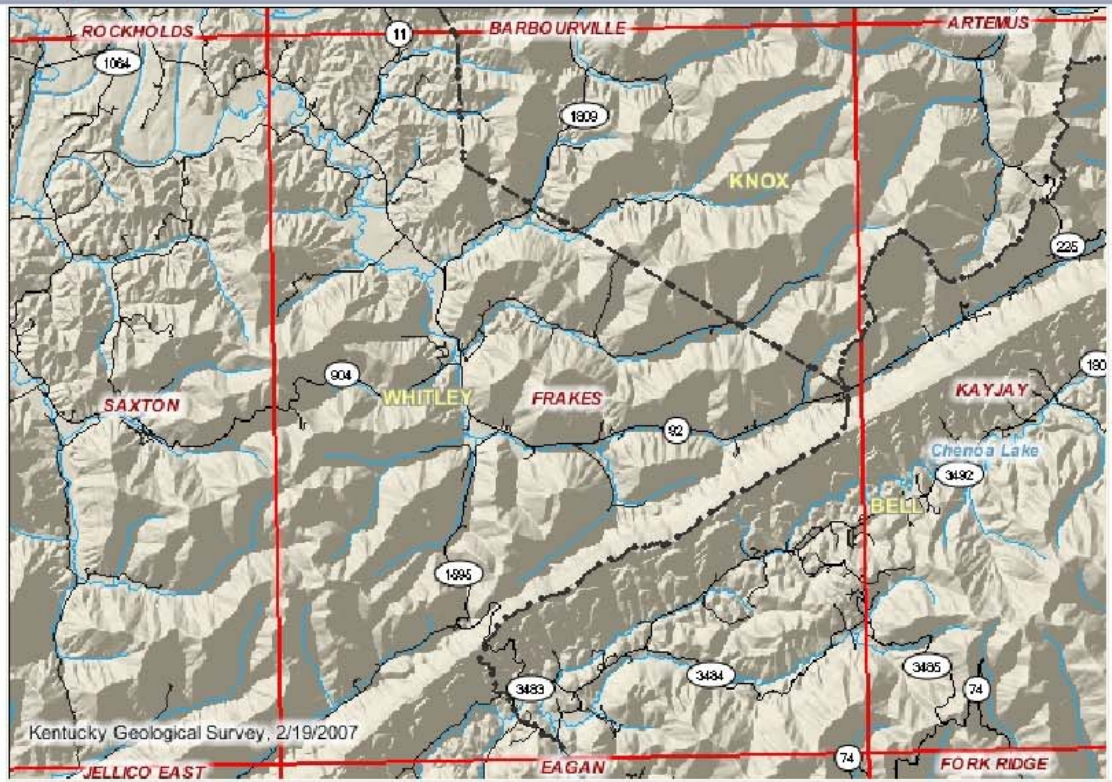
File Edit View Favorites Tools Help

Back Search Favorites

Address http://kgsmap.uky.edu/website/KGSGeoPortal/KGSGeoPortal.asp Go Links

Gateway to Online Maps, Databases, and Publications for Kentucky

KGS Home > Maps, Pubs, & Data > KGSGeoPortal



Map Layers Area Search Portal Links

Use the links below to open a map or data service to the displayed map extent:

- Data searches yield tabular results, and on large areas may yield slow response times (and timeout errors)
- **Descriptions of the services below**
- **About the KGSGeoPortal - Please Read!**

+ Basemaps

- Geology:

- **KGS Publications (tabular)**
- **KY Geologic Map Information Service (KGS)**
- **Core & Sample Holdings Map (KGS)**

+ Energy

- *non-mining energy related information*

+ Mining

+ Water

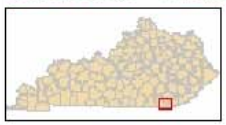
- Transportation:

- **Active Six Year Plan Projects (KYTC)**
- **HIS Interactive Planning Map (KYTC)**
- **Geotechnical reports (tabular - KYTC)**

- Land-Use Planning:

- *services that are specifically directed towards land-use planning*
- **Land-Use Planning (KGS)**

Current Scale = 1:125,619



Map Scale: choose a map scale

Map Size: half page (6.8 x 4.7 in)

More Information About the KGSGeoPortal

ArcIMS is optimized for use with Microsoft Internet Explorer 4.0 (and higher) and Mozilla Firefox.

Contact the **Webmaster** for questions and comments.
Last modified 02/19/2007 22:55:18

Image:634,63 Internet

KGS Geologic Map Service - Microsoft Internet Explorer

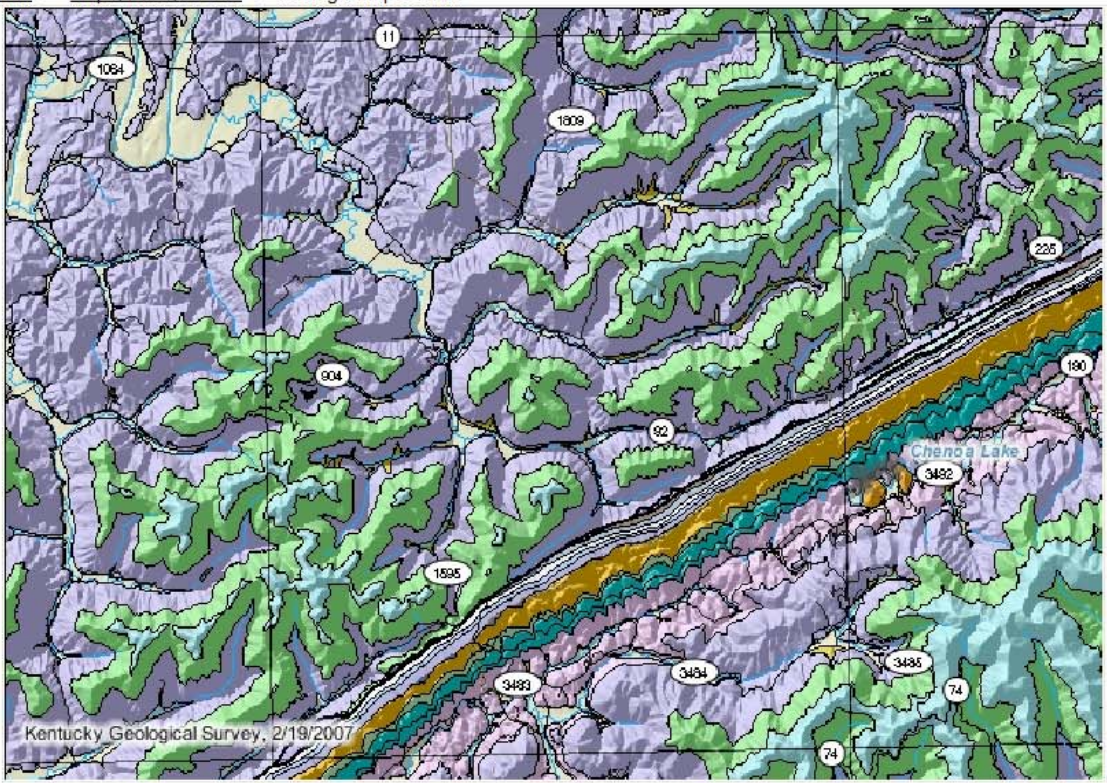
Address http://kgsmap.uky.edu/website/KGSGeology/viewer.asp?startLeft=5417926.92944444&startBottom=3390886.96&startRight=5487577.91055556&startTop=3439106.87&XY=5452752.42:3414

Go

Kentucky Geological Survey
Kentucky Geologic Map Information Service

Note: please disable popup blocking software for full functionality.

KGS Home > Maps, Pubs, & Data > Geologic Map Service



Map Legend | Map Layers | Geologic Information

Select a Map Layout:

- Standard Geologic Map
- Original GQ Map Image | about
- Dominant Lithology Map | about
- Karst Potential Map | about
- Petroleum Geology Map | about
- Coal Information Map | about

Bookmark Map:

create a bookmark

– Customize Map:

- dimmed layers are invisible at current scale: more info

- Geology:

- [x] 1:24K Scale Geology (detailed geology)
- [x] 1:24K Geology Labels
- [ ] Structure contours
- [x] Geologic Contacts (1:24K Scale)
- [ ] Outcrop Traces
- [ ] Coal Beds
- [ ] Formal Beds
- [ ] Non-Coal Beds
- [x] Faults

Scale = 1:127,582

Lithologic descriptions available for areas outlined in orange.

Map Scale:
choose a map scale

Enter a Custom Map Scale:
zoom

Map Size:
half page (6.8 x 4.7 in)

zoom to a location

KY MAPS
view other KY maps
(at same extent)

- General information about this service
- Geologic maps and geologic issues in Kentucky: a citizen's guide (pdf - 25 MB)
- Geologic maps and geologic issues in Kentucky: a citizen's guide (djvu - 2 MB)

ArcIMS is optimized for use with Microsoft Internet Explorer 4.0 (and higher) and Mozilla Firefox.

Done

Internet

Geologic map of the Frakes quadrangle, and part of the Eagan quadrangle, southeastern Kentucky (GQ-1249)

- view stratigraphic column (.pdf) for this quadrangle: GQ-1249

Qc

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, and 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 serial photographs. Contact with alluvium is interfingering and gradational.

Colluvium (GQ-1249):

image for Colluvium (GQ-1249) - IF READING THIS ON A NORMAL PAGE DISPLAY, THE IMAGE FOR THIS UNIT IS NOT AVAILABLE

Qal

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, sell-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.

Alluvium (GQ-1249):

image for Alluvium (GQ-1249) - IF READING THIS ON A NORMAL PAGE DISPLAY, THE IMAGE FOR THIS UNIT IS NOT AVAILABLE