Learning about Kentucky’s Land and Water:
Resource Materials for Teachers
Questions for the Classroom

Maps and Map Reading
Geographic Information Systems
Global Positioning Systems, GPS
Data layers and sources
Scale and Legend
Topographic Maps
Questions for the Classroom
What is GIS?
What is the scale of your map?
One inch on the map equals how many inches on the ground?
One inch on the map equals how many feet on the ground?
One inch on the map equals how many miles on the ground?
If the map scale is 1:63,360, then one inch on the map equals 63,360 inches on the ground or, 63360/12=5,280 feet=1 mile.
Can you find your neighborhood and school on the map?
How far is your neighborhood from your school?
If you were a bird, how far would you fly from your house to your school?
If you flew 20 miles per hour, how long would the flight take?
What is the elevation of your school?
What is a contour line?
What is the contour interval of your map?
What does it mean if contour lines are close together? Far apart?
Is the land steep or level near your neighborhood?
How far is the nearest stream, wetlands, sinkhole, spring, or well from your school?
Are there sinkholes in your county? Are there wetlands? Are there mined areas? Are there oil and gas wells? Are there water wells? Are there springs?
What are some things you might want to put on a map?

What Students Should Know
How to read a topographic map
Understand contour lines
Understand the map scale concept and apply it to the map.
Understand the Map Legend.
Understand the importance of where things are in relation to each other and why GIS is useful
What GPS is and how it can be used.
Geology and Landforms

Sedimentary Rocks
Geologic History: The Building of Kentucky
Fossils
Stream Deposits
Geologic Faults
Physiographic Regions
How the Land has been Shaped
Karst

Questions for the Classroom
What are sedimentary rocks?
What are the different rock types in your county?
When and where were the sedimentary rocks in Kentucky formed?
Why are the rocks older in central Kentucky than in eastern and western Kentucky?
What is a geologic fault?
What is alluvium?
What is karst?

What Students Should Know
Younger rocks lay atop older rocks.
How the rocks in their county were formed.
Approximate ages of the rocks in their county.
Kentucky once lay beneath the sea.
The topography of Kentucky
The relationship between geology and the shape of the land.
The geology of karst.
The Physiographic Regions: Eastern Coal Field, Knobs, Bluegrass, Mississippian Plateau, Western Coal Field, Purchase
The region or subregion they live in.

Water
The Hydrologic Cycle
Kentucky Water Facts
Rainfall
Streams
Droughts
Floods
Water and Early Development
Springs, Wells, and Streams
Water for Communities, Industry, Agriculture, and Wildlife

Water Usage

Water Sources

River Basins and Watersheds

River basin facts

Ground Water

Water in Karst Areas

Questions for the Classroom

*How much water falls on Kentucky in an average year?*

*How many miles of streams in Kentucky?*

*What is a perennial stream? Intermittent stream? Ephemeral channel?*

*Where does the water in your house come from?*

*How much water does the average Kentuckian use each day?*

*What is ground water?*

What Students Should Know

What is the hydrologic cycle?

What a watershed is.

The major river basins of Kentucky

Which river basin they live in and where.

Where their water comes from.

About how much water they use in a year.

Why early settlers established towns where they did.

What an aquifer is.

Water wells and their uses.

Underground flow in karst areas.

Resources and Environment

Minerals

Energy Resources

Oil and Gas

How it was formed

How much we have

Coal

How it was formed

How much we have

Electric Power

Coal-fired power plants

Usage of electricity by Kentuckians

Dealing with CO2
Hydroelectricity
Agriculture
   Importance to Kentucky economy
   Prime Farm Lands and Pasture Lands
Recreation
   Public Lands
      Wildlife Management Areas
      State and National Parks
   Lakes and Waterways
      Large lakes
      Ponds
      Wetlands
      Aquatic life
      Fishing
      Boat Ramps
      Locks and Dams
Questions for the Classroom
   Is there a farmer’s market in your county?
   Energy resources in the county?
   Minerals used in the community?
   What are the recreational areas in your county?
What Students Should Know
   How electricity is generated and where their electricity comes from.
   Where their food comes from.
   The resources within their county.

Living with the Land
   Understanding the Land We Live On
   Protecting the Air, Land, and Water
      Water quality
         Wastewater Treatment
            Public
            Domestic
            Straight Pipes
      Wetlands
      Storm Water Management
      Source and Ground Water Protection Areas
   Air quality
   Geologic Hazards
      Flooding
Landslides
Earthquakes
Unstable Shales
Radon
Mined Areas
Shrinking and Swelling Shales
Sinkholes

Questions for the Classroom

*How does water get polluted?*
*What are some of the pollutants and what are the problems that they cause?*
*What are the nonpoint sources of pollution in your county?*
*Where are the areas in your county that might get flooded?*
*Are there shales in your county?*
*Should you build a house on or near a sinkhole?*
*Why should you not throw trash in a sinkhole?*
*What is the risk of an earthquake where you live?*
*Are there mined areas in your county?*
*Why do we need to know about radon? Is it in your county?*
*How is the wastewater from your house treated?*
*What percent of your county is on public sewer?*
*If you could live anywhere in your county, where would it be and why?*
*If you could live anywhere in Kentucky, where would it be and why?*

What Students Should Know

*Understand water quality*
*Why wastewater treatment is important.*
*Where geologic hazards may occur and what to do about them.*
*Best uses for floodplains.*
*What wetlands are and why they are important.*
*Why it is important to understand the geology of where they live.*