Reading the River, Summer 2003

Watersheds
Water, Where Does it Come From & Where Does it Go?

Grades 9-12
Earth Space Science

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This lesson consists of a 2-day unit on what a watershed is, how to know your own and the factors affecting the water as it comes to water features (wells, creeks, rivers, etc.).

The first day will be spent using topographical maps to discover where the water comes form and how watersheds work.

The second day will involve how the watershed changes daily, seasonally, by human and animal activity and the importance of protecting the water supply by testing it regularly

Title: Watersheds

Objectives: Students will be able to describe their own watershed, identify the features that impact it and identify ways they may impact their own water supply.

Program of studies:

Scientific Inquiry

Identify and refine questions that can be answered through scientific investigations combined with scientific information.

Use appropriate equipment tools, techniques, technology and mathematics in scientific investigation.

Communicate the results of scientific investigation.

Applications/connections

Recognize how science is used to understand changes in the environment and the importances of science in daily life.

Core Content:

SC-H-2.1.4- Global climate is determined by energy transfer from the sun at and near earth's surface. This energy transfer is influenced by dynamic processes such as cloud cover and the earth's rotation and static conditions such as the position of mountain ranges and oceans.

Materials:

topographic maps of Lawrence county and Kentucky
watershed map (from Reading the River)
boxes to draw topographical maps of an area.
pH test kit
dissolved oxygen test kit
conductivity meter
list of industrial and commercial development in Lawrence County and on the Big Sandy River.
magnifiers
Pond life book
Algae book

computer (accessing Licking River info)
calculators
student water samples from home

Activity Procedures:
Day 1
1) The use of topographical maps will be reviewed.
2) The action of the water cycle will be reviewed.
3) Students will perform the molded box activity (as per Reading the River).
4) After making a topographical map, students will use Lawrence Co. maps to identify their own watershed. (Groups may be used if students live in the same area.
5) Students will identify and mark impacting sites in their area.

Day 2
1) Students will test the water from their home area. (pH, conductivity, hardness and microorganisms). Calculations will be made for dissolved solids from conductivity test
2) Dissolved oxygen test will be demonstrated and the impact of dissolved oxygen will be discussed. Factors impacting dissolved oxygen will be discussed.
3) Students will prepare a water quality report on their own watershed and suggest what action they might take to improve or protect it. This report will be presented to the class.

Continuing activity:
The Licking River information will be monitored at least once a month to compare the data each time.

Handouts: The topographical map construction activity as per Reading the River.

Definition/context explanation:
Watersheds are area from which water collect into a creek, pond, well, river, etc. Many organisms live in, depend on and impact each watershed. Natural occurrences as well as human activities change a watershed and the water in it. The lay of the land (topography), temperature, time of day and chemicals making up the soil as well as those applied to it all change the water we need and enjoy. Students will understand the importance of water conservation and protection as they understand their watershed.

Method of assessment:

Student presentations of their findings will be assessed by the following rubric.

Watershed evaluation
Watershed identified
Water testing results given
Organisms found in water identified
Poster or visual of information

4-all requirements met
3-most requirements met
2-some requirements met
1-few requirements met

References: Reading the River notebook and materials.