

Bryant Watershed Atlas
presents

Karst: The Movie

An animated online presentation showing groundwater, sinking streams, sinkholes and other features of karst topography in an everyday landscape.



<http://www.watersheds.org/earth/karstmovie.htm>

- **Learn about karst features in a typical Ozarks landscape.**
- **Answer questions about possible sources of pollution from everyday activities.**

Karst Resource Packet

Includes a complete lesson plan, teacher guide, student guide, a quiz and evaluation.

Teacher Guide to the Karst Movie

Grade Levels: 4-9. May be used with a small group of students with the teacher at a classroom computer, or with an entire class using a Smartboard or other digital projection system.

Subject Areas: Communication Arts, Natural Science

Duration: 15-20 minutes in front of computer; 10-15 at desk to complete evaluation

Objectives: To introduce or reinforce classroom study of karst topography and the management of nonpoint source (NPS) pollution.
To use and evaluate an Internet based learning tool.

Show-Me Standards:

Process:

Goal #1.5-comprehend and evaluate written, visual, and oral presentations

Content:

Science #8- impact of human activity on resources and the environment
Communication Arts #3-comprehending and evaluating nonfiction materials
Communication Arts #5-comprehending and evaluating multimedia presentations
Communication Arts #6-participating in informal discussions of issues and ideas

Materials: A print copy of the student evaluation form for each student. The form may also be filled out using a word processor if there is sufficient computer access and student skill. You may print the Student Guide as a handout if you want to use it.

Background: There is a suggested background reading list on the **Karst Resources** page: <http://www.watersheds.org/teacher/rd.htm>. Text may be printed and copied for handouts.

Preparation: Open your Web browser and connect to the Internet. The **Karst Movie** URL is <http://www.watersheds.org/blue/earth/karstmovie.htm> Bookmark this page or add to Favorites so you can bring it up quickly. Go through the screens of the movie yourself to get familiar with the navigation. Click on all the buttons. Do not use the back button on your browser to navigate; it will take you completely out of the movie. Use the menus and arrows at the bottom of the movie window to move through the different screens.

Listen to the sound effects throughout the movie. Adjust your computer's sound to a comfortable level. Take particular note of the sound effects for the forest, the septic tank, the cows, and the car on the Nonpoint Source Pollution page. Be sure you know how to reduce or mute the sound level when you want to.

With students:

1. Ask the students to identify familiar features of the landscape in the opening screen.
2. Click on **Karst Features**. The cutaway appears revealing the underground features of karst. Have the students identify any that they can. What is happening to the water flow?
3. Click on the arrow in the lower right corner. Buttons appear on each karst feature. Now that they are located, let the students name any they know. Click on the buttons for the definitions. Ask them to talk about karst features in their area, or any that they have visited.
4. Now click on **Main Menu** to go back to the first screen, and click on **Nonpoint Source Pollution**. As students take in the scene, review the definition of NPS: *Widespread runoff containing substances that are harmful to water quality; contamination that does not originate from one specific location.*
5. Ask the students to identify potential contributors to NPS depicted. When they have named all they can, click on **Answer** and check for ones they haven't named. Each button will explain how a source may contribute to NPS. Ask students for their experience with any of these contributors.
6. Click on **View with Cutaway** to reveal more possibilities.

What now becomes more obvious?

Answers: The sinkhole dump, the septic tank, the pipe draining waste into the creek.

How is the pipe different from the other contributors?

Answer: It is point source pollution; pollutants can be traced to a particular source.

Ask again for experience with these contributors. Have they seen a sinkhole used as a dump? Has anyone had a septic tank cleaned, or helped to install one?

7. Click on the arrow in the lower right corner. Give the students a chance to suggest answers to the question. Click through the answers. What is the significance of the well in the illustration?
8. Ask the students ways they know about that help to manage NPS from the different contributors. What are the best management practices? What personal experience do they have with any of these practices?
9. Have students return to their desks to evaluate what they have seen and heard using the form.

Extensions

Have the students make lists of potential causes of NPS that they see on the way to and from school.

Have them plot the examples on a local map, such as a county map.

Have students select a contributing cause of nonpoint source pollution and write reports on the best management practices.



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Student Guide to the Karst Movie

1. Look at the opening screen of the movie. Identify familiar features of the landscape.
2. Click on **Karst Features**. The cutaway appears revealing the underground features of karst. Identify any features that you can. What is happening to the water flow?
3. Click on the **arrow in the lower right corner**. Buttons appear on each karst feature. Now that they are located, name any that you know. Click on the buttons for the definitions. What karst features do you have in your area? Have you visited any of them?
4. Now click on **Main Menu** to go back to the opening screen, and click on **Nonpoint Source Pollution**. Look at the scene. What does nonpoint source (NPS) pollution mean?
5. Identify potential sources of nonpoint source pollution in the picture. When you have named all you can, click on **Answer** and check for ones you haven't named. Each button will explain how a source may contribute to NPS. Do you have any experience with any of these contributors?
6. Click on **View with Cutaway** to reveal more possibilities. What now becomes more obvious? How is the pipe different from the other contributors? Do you have any experience with these contributors? Have you seen a sinkhole used as a dump? Have you had a septic tank cleaned at your house, or helped to install one?
7. Click on the arrow in the lower right corner. Suggest answers to the question. Click through the answers. What is the significance of the well in the illustration?
8. What ways do you know about that help manage NPS from the different contributors? What are the best management practices? What personal experience do you have with any of these practices?
9. Evaluate what you have seen and heard using the Student Evaluation Sheet.

Karst Movie Quiz

Take this quiz after watching the Karst Movie.
Use the back of this sheet if you need more room for your answers.

Name: _____

Class/Teacher: _____

1. Name a karst feature that can be seen above the ground.

2. Name two underground features of karst.

1. _____

2. _____

3. Where does the water flowing from a spring come from?

4. Where does the water in a losing stream go?

5. Define one feature of karst.

6. Name two possible contributors to nonpoint source pollution.

1. _____

2. _____

7. How can farm animals pollute the groundwater?

8. Name one thing you might have at home that could contribute to nonpoint source pollution.

9. What is one way that pollution on top of the ground can get into the water underground?
