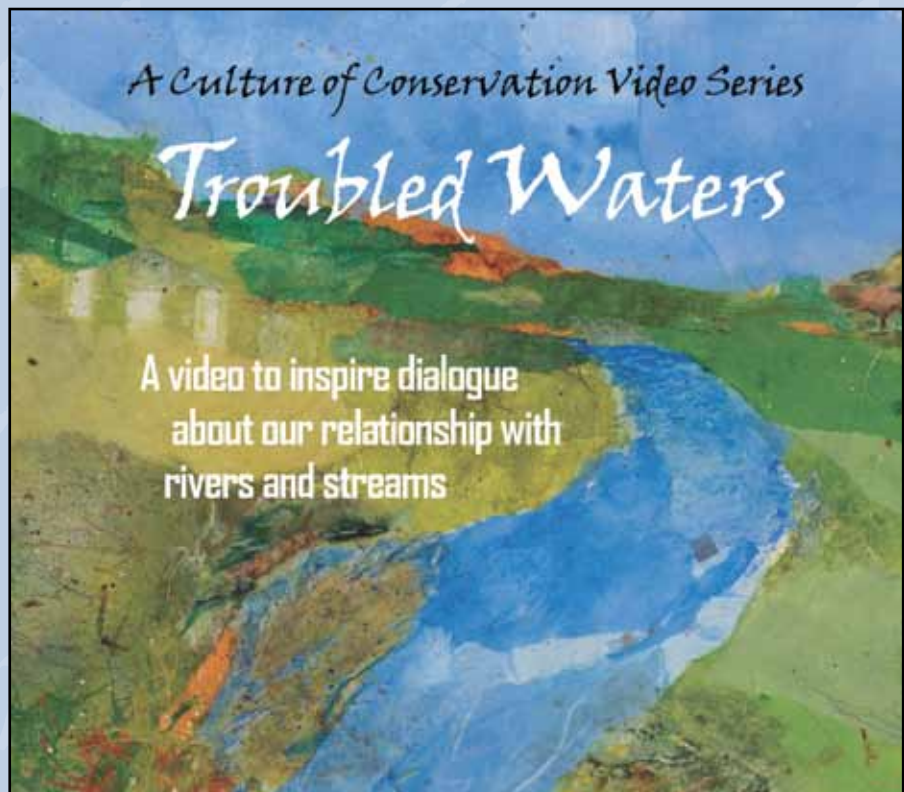


*Building a Culture of Conservation –
It All Begins with You!*

Enhancement activities for middle school, high school/junior college students to accompany the video “Troubled Waters”



Iowa Learning Farms

Iowa Learning Farms, initiated in 2005, is a unique partnership of farmers, state and federal agencies, conservation groups, the research community and the general public.

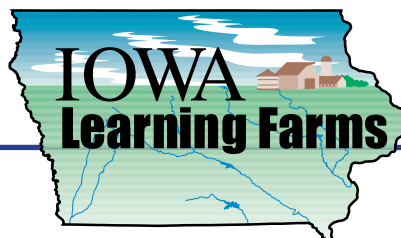
Iowa Learning Farms is building a Culture of Conservation, taking a grassroots approach to develop innovative ways in which all Iowans have an active role in keeping our natural resources healthy.

For more information about the Iowa Learning Farms, visit our web site:

www.extension.iastate.edu/ilf

Check the web site periodically for additional resource information.

The Culture of Conservation video series was developed for the Soil and Water Conservation Districts of Iowa and is based on ideas expressed by farmers, resource staff and other Iowans during listening sessions conducted across the state by Iowa Learning Farms in 2008.





Building a Culture of Conservation – It All Begins with You!

Enhancement activities for the video “Troubled Waters”

The enhancement activities in this booklet link students to nearby water sources and discusses the social concept of “Common Good” as it applies to the river systems that support all life on earth. The activities are used in conjunction with the “Troubled Waters” video, approximately 25 minutes in length.

The activities for 6-9th grade include:

- “Find Your Watershed Address,” exploring the geography of place,
- “River Writing” uses the senses and descriptive writing to explore place,
- Issue-oriented research and discussion activities: students are required to think critically about environmental problems, research information to better understand issues and demonstrate an understanding of the concept of “Common Good.”

The activities for high school/community college include:

- “History of a river,” exploring a river’s changes and why it has changed
- “Common Good and the Land Ethic,” students learn the effects of change on populations downstream and how this relates to the land ethic.

The “Troubled Waters” video and curriculum enhancement is rooted specifically in Iowa, emphasizing the near environment. This video explores the importance, the history and the relationships we have with rivers, creeks and the water they carry. These activities further develop the themes of the video and deepens the learning experience for your students.



Curriculum for Middle School

TOPIC: Living in the Watershed

Understandings and Concepts

- Students will locate their watershed address
- Students will discover ways that water connects everything
- Students will express their connection to a river or stream
- Students will explore the concept of “Common Good”

A watershed is an area of land in which all of the water on or below the surface drains to a common point. Water naturally goes from a high point to a low point. Everyone lives in a watershed! Every living thing in the watershed is connected by the water.

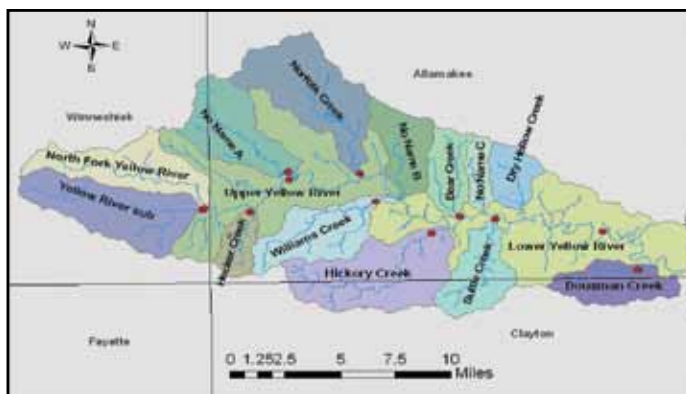
What watershed do you live in? Watersheds are often identified by the name of the body of water that they drain into, such as the Storm Lake Watershed or the Big Creek Watershed. Small watersheds are part of larger watersheds. For example, the Raccoon River Watershed is part of the Des Moines River Watershed, which is part of the Mississippi River Watershed.

Activities

Find your Watershed Address

Just as you have a mailing address, you have a watershed address. The water that falls on your home in some form of precipitation either soaks in and becomes groundwater or becomes runoff. It then drains into the nearest stream or river and continues to flow into larger rivers until it reaches the ocean. The route of the runoff is your watershed address. For instance, someone living in Carroll, Iowa would have an address of:

- Middle Raccoon River
- North Raccoon River
- Des Moines River
- Mississippi River
- Gulf of Mexico.



Yellow River Watershed, Northeast Iowa

Use a large USGS topographic map for this activity, or a detailed map with rivers clearly marked. Find your home, then find the waterway nearest to your home. Record the waterway’s name if it has one; otherwise, call it an unnamed stream. Follow that stream until it joins another stream or river. Record the name of that stream or river. Continue following the streams until you reach the end of the watershed—which will be the Gulf of Mexico for anyone living in Iowa. This list will be your complete watershed address!

What's in My Watershed?

Write the name of your watershed on the top of a piece of paper. Then list eight things that are interesting or important about your watershed. Pick one of those things and describe it in more detail – include all of the senses in your description.

Here are some questions to help you think about what is interesting or important.

- What kinds of activities happen on the land around your watershed?
- Are there landmarks that people are familiar with?
- What land forms are in your watershed (hills, prairie pothole wetlands, etc.)?
- What is the history of the land (coal mine, flour mill, canning factory)?
- Are there parks, libraries, museums, trails? Do they have any connections to the water sources?
- Are there other links in your watershed besides water?

River Writing

Write an essay about a river, creek or lake that you've spent some time around. Pick a day or an event that you remember or that you wish you'd had. Describe it using all of your senses, so that another person will understand how it looked, felt and smelled to you. It doesn't have to be a good experience. If you are writing about a bad experience, talk about what happened and how it made you feel.

Interview some older people in your community about a river, creek or lake that they knew as a younger person. Ask them to describe it to you. You might want to share your essay with them.

Common Good

Definition: common good (noun);
Resources shared for the collective benefit of the whole group of people.

Read the definition to students. Talk about what a resource is (anything you use). Give a few examples of common good in your classroom (shared books, tables). What happens when someone messes up a space that is shared by all?

Read *A River Ran Wild* by Lynne Cherry. Answer the following questions, either on a worksheet or collectively in class.

1. Many people, from early Indians to European settlers, came to the river. Give at least three benefits of living by the river.
2. People lived by clean rivers for about 400 years before the Industrial Revolution. Then the rivers were greatly polluted in the next 150 years. Name at least three things that were done that damaged the rivers.
3. Through the efforts of Marion Stoddart and many other people the Nashua River was restored. Name at least three things that were done to help this river.
Talk about how, by working together, the people cleaned up and restored the river as a common good. See if there are examples in your community or watershed where people have worked together to restore a common good.

Compiled from curriculum developed by Mary Koester, Kuemper Catholic School, Carroll, Iowa, and Pamela McIntosh, Detroit Public Schools, Detroit, Michigan

See Also: Know Your Watershed & We All Have a Place in the Watershed curriculum

Additional Web Resources:

- Mississippi River Discovery Packets from the National Parks Service, including songs!
- www.nps.gov/miss/forteachers/curriculummaterials.htm
- Interdisciplinary Curriculum for The Rio Grande (7th grade) This curriculum was developed for New Mexico but contains many ideas and activities that could be adapted to Iowa.
- www.nmculturenet.org/heritage/river/

Curriculum for adult/community college

Most of the major rivers in the world have been shaped by centuries of human activity. River management intensified in the 1900s as people began to think of rivers as agents of economic and social opportunity. River after river was transformed to meet the ever-increasing demand for water for industry, agriculture, recreation, electricity, tourism and flood protection. Time and again we learned that people can't out-engineer the rivers.

Paper Assignment and/or Group Discussion Ideas:

History of a River: Have students explore the history of a river. They will research the cultural and natural history of an actual river. Encourage them to utilize libraries, Internet, maps, historical societies, etc. to gain understanding of how and why the river has changed over time.

Questions to consider:

How have the towns/cities and land use around the river been shaped by the river?

What kind of influence have the cities and/or surrounding land use had on the river in return?

What conflicts have arisen around the uses of the river?

Assign a 1-2 page paper and/or facilitate group discussion about findings and ideas. Highlight how human decisions have affected the river.

Map River Comparisons: Have students explore historical aerial photos of a river by using the Iowa Geographic Map Server: http://ortho.gis.iastate.edu/client_pls.cgi?zoom=900&x0=469163&y0=4653689&layer=ortho_1930&width=600&height=450.

Choose a segment of a stream or river that is a half-mile or less in length and download aerial photos from that segment for a series of years. Students can compare maps from 1930s-2009.

Choose a location that is familiar to most students and compare maps from several years. Discuss changes in the course that the river has taken over time. Document changes

in vegetation near the river, and along the river riparian area. Discuss the potential causes for the changes in the river over time.

Compare maps from before and after significant flooding events such as 1993 or 2008. Discuss how large scale events drastically change the river in a short amount of time compared to natural changes over a longer period of time.

Common Good: Rivers are shared spaces. Have the students explore the concept of "Common Good" by listing at least three changes in the river they have selected and then determine how that change effected the human population downstream. Discuss the reasons why a decision that is good for one group might negatively affect another.

Questions to consider:

What happens when the negatively affected group wants to have some control of the situation?

In what ways have these conflicts been resolved both positively and negatively?

Has anything similar happened to the river closest to you?

Who is upstream and downstream from you?



The English word "river" is derived from Latin rivus, also the root of rival and rivalry, which means "to compete" or even more literally, "those who use the same stream." Individuals and civilizations have always competed over sources of water.

The Land Ethic: Once the students have researched and discussed the effects of change in the river on human populations, ask them to consider the rest of the beings that depend on the river. Have them brainstorm a list of other beings, and then re-visit the changes that have occurred in the river and how these have affected life other than humans.

Questions to consider:

What implications does the “Land Ethic” have for planning when it comes to rivers?

Human groups have the opportunity to speak up when they are being hurt by a decision that is made upstream. Do other beings have this opportunity?

What kind of feedback can we look for that tells us that we are impacting other beings in the rivers?

Aldo Leopold, a famous conservationist from Iowa, believed that we need to expand our idea of community beyond just human needs. He called this a “Land Ethic.” The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.



Have the students (in groups or in guided discussion) create a plan for making better decisions about a river close to them. Is any part of their plan a reality now? Is there any part they can act upon to create change?

See also the *Enhancement Activities* for “*The Culture of Conservation*” video series.

Suggested Reading

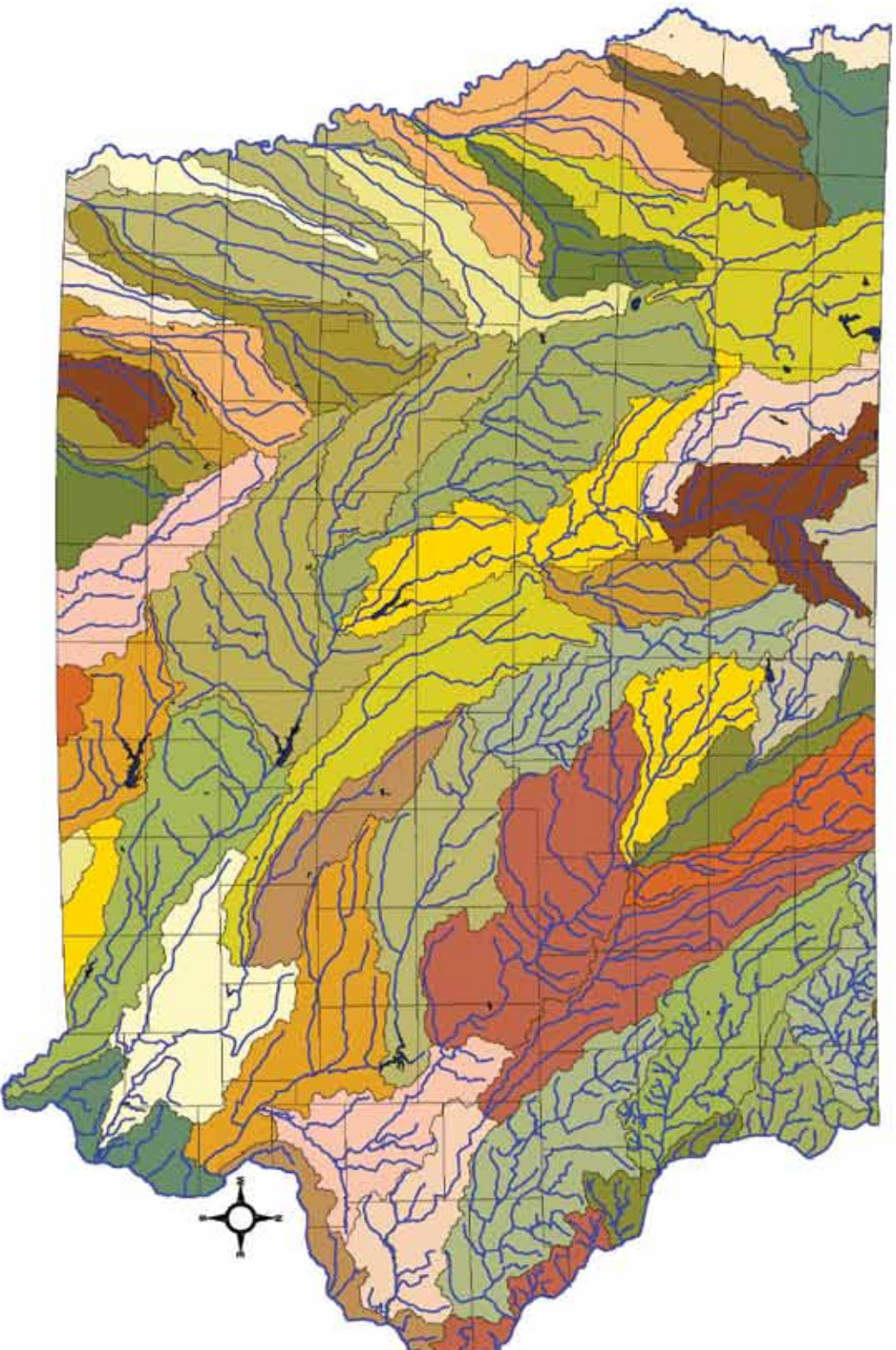
Middle School:

1. ***Biodiversity.*** By Dorothy Hinshaw Patent. Stresses the importance of protecting the planet’s rich gene pool for the survival of all species.
2. ***Clean Water.*** By Karen Barss. Discusses the problems of maintaining a clean water supply and relates this to pollution, depletion of resources, and other environmental concerns.
3. ***A Drop Of Water: A Book of Science and Wonder.*** By Walter Wick. Shows the different forms of water in detailed photographs; explains water’s properties.
4. ***Drought.*** By Christopher Lampton. Investigates the causes and effects of drought, giving the history of some of the most severe droughts in the U.S. and elsewhere.
5. ***Our Endangered Planet: Rivers & Lakes.*** By Mary Hoff and Mary M. Rodgers. Explains the way rivers and lakes work together and how we have harmed them. It tells stories of success in reviving dying rivers and lakes and of failure to preserve our fresh water.
6. ***Rivers: Make It Work!*** By Andrew Haslam and Barbara Taylor. Explains where rivers come from, why people settle near them and how rivers form valleys and underground caves. Discusses how rivers create energy and why it’s important to control flooding.
7. ***Water: A Resource in Crisis.*** By Eileen Lucas. Discusses the quality and quantity of water on a global scale and includes discussions of resources, the ways we use water, pollution, making water safe, and taking care of our water.

High School & Adult:

1. ***Food and Water: Threats, Shortages and Solutions.*** By Bernard S. Cayne (Editor), Jenny E. Tesar. Discusses the importance of having an adequate supply of food and water and the effects of pursuing this need through various forms of storage and farming methods.
2. ***Last Oasis: Facing Water Scarcity.*** By Sandra Postel, Linda Starke (Editor). The worldwide water crisis, according to this book, is due to its ready availability, low cost, people’s overuse and lack of respect. Solutions are offered for restoring and sustaining this essential lifeline.
3. ***Rising Tide: The Great Mississippi Flood of 1927 and How It Changed America.*** By John M. Barry. While tracing the history of the nation’s most destructive natural disaster, this book explains how human decisions helped cause the flood and how the policies created to deal with the disaster changed the culture of the Mississippi Delta.
4. ***Tapped Out: The Coming World Crisis in Water and What We Can Do About It.*** By Paul Simon. Discusses increasing global population and a water supply that cannot increase; faced with this crisis, what can the average citizen do?
5. ***Water: A Natural History.*** By Alice Outwater. Takes us on a 500 year journey to recover a lost knowledge—how the land cleans its own water, how natural ecologically interacting systems can create healthy waterways.
6. ***Water: Almost Enough for Everyone.*** By Stephanie Ocko. Through case studies, anecdotes, facts, and theoretical explanations, this book provides a look at the social and environmental implications of severe droughts, their causes, and some possible solutions.

Iowa Watersheds



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| | Major_rivers.shp |
| | County.shp |
| | Huc_8_sub-basin.shp |
| | Apple-Plum |
| | Bear-Wyaconda |
| | Big Papillion-Mosquito |
| | Blackbird-Soldier |
| | Blue Earth |
| | Boone |
| | Boyer |
| | Coon-Yellow |
| | Coppers-Duck |
| | East Fork Des Moines |
| | East Nishnabotna |
| | Flint-Henderson |
| | Floyd |
| | Grant-Little Maquoketa |
| | Keg-Weeping Water |
| | Lake Red Rock |
| | Little Sioux |
| | Lower Big Sioux |
| | Lower Cedar |
| | Lower Des Moines |
| | Lower Grand |
| | Lower Iowa |
| | Lower Wapsipinicon |
| | Maple |
| | Maquoketa |
| | Middle Cedar |
| | Middle Des Moines |
| | Middle Iowa |
| | Monona-Harrison Ditch |
| | Nishnabotna |
| | Nodaway |
| | North Fabius |
| | North Racoon |
| | North Skunk |
| | One Hundred and Two |
| | Platte |
| | Rock |
| | Rock |
| | Shell Rock |
| | Skunk |
| | South Racoon |
| | South Skunk |
| | Tarkio-Wolf |
| | Thompson |
| | Turkey |
| | Upper Cedar |
| | Upper Chariton |
| | Upper Des Moines |
| | Upper Grand |
| | Upper Iowa |
| | Upper Wapsipinicon |
| | West Fork Cedar |
| | West Nishnabotna |
| | West Nodaway |
| | Winnabago |