

Wonderful Watersheds

Subject: Social Studies / Geography

Grade Level: 5th – 8th Grade

Idaho General Education Performance Standards:

- Speaking and listening: Comprehension and Collaboration: 2
- Reading: Key Ideas and Details: 1

Time: 90 min.

This lesson can be taught in two parts

Supplies:

- 10 compasses
- GPS unit (optional)
- 30 computers with internet access
- Large rock
- Glass baking dish
- Overhead or whiteboard
- Copies of student handouts
- 30 3x5 cards

Learning Objectives:

Students will:

- Identify the watershed they live in using computer resources
- Identify some latitude and longitude coordinates on the boundaries of their watershed using computer resources.

Content Overview:

All land on earth is part of some watershed. A watershed is defined as “An area of land that water flows across, through, or under on its way to a stream, river, lake, ocean or other body of water.” Watersheds are named based on the body of water the land “drains” into. A lot of Idaho is part of the Snake River Watershed. Many small watersheds can be part of a larger watershed. Because all land is part of a watershed, all rangeland areas are also part of some watershed. Runoff and water that infiltrates into a rangeland area eventually drains into a body of water such as a stream, river, lake, or ocean. What happens in a rangeland area can greatly affect water quality for whoever is downstream. Latitude and longitude coordinates can be used to find any exact location on earth, and are useful for finding the distances between locations. Students should notice that as they go east to west, the longitude numbers get larger (farther from the Prime Meridian), as they go north to south, the latitude numbers get smaller (closer to the equator). Students should have some background in latitude and longitude before this lesson, or it will need to be taught as part of the lesson. Make copies of the Wonderful Watersheds handout. Write the names of things that are and are not parts of watersheds for the closing activity.

Instructional Approach:

Interest Approach:

1. Write in a prominent location “what is watershed?”
2. Ask students if they’ve ever seen Jay Leno’s “jaywalking.” Put students in groups of 4 to 5. Have one student be the recorder, one the reporter, and the rest “people.” Record the “people’s” responses to the question and have the “reporter” report interesting / believed correct responses to the class.

-
1. Place a large rock or overturned bowl into a glass baking pan. Pour water over the object in a location students can see clearly.
 2. Discuss which part of the water cycle this models (runoff).
 3. Let students know they will be discussing where runoff goes in their lesson today.

Learning Activity:

1. Show cardinal directions, explain how to use compasses (& GPS units if applicable).
2. Short field trip outside where they can see land features (mountains, ditches etc.). Have students face North with their compasses.
3. Record in notebooks the tallest land feature to the North.
4. Record other tall land features “between” the cardinal directions (NE, NW, etc.)

5. Ask students about precipitation that falls on these features (review water cycle): *What body of water does the precipitation end up in before going in to a larger body of water? That is the name of the watershed these features and all the land downhill are a part of?*
6. Have students record the latitude and longitude of this location at the school, if possible, using a GPS unit. If you do not have a GPS unit, go to google maps and enter the school location. Right click on the school, and then click on “What’s here.” The latitude and longitude will appear in the Google search box above the map and will also be displayed if you drag your mouse across the school’s location. Google maps may also be used to find the names of land features by checking “Terrain” in the upper right corner of the screen.
7. Have students sketch/label land features observed. Explain that this land is all part of our watershed.
8. Have students give ideas of what they think a watershed is now.
9. In their notebook define watershed as: land that water flows over or under on its way to a body of water such as a stream, river, or lake.
10. Let students know what in the next activity, they will be finding the name of their specific watershed.

Note:

- **If this lesson will be taught in two parts**, skip to Step 12 to use as a closing activity to Part I, returning to Step 11 during Part II.
- **If this lesson will be taught in one part**, proceed with Step 11 and complete the remainder of the lesson in the order listed.

11. Instruct students to complete the “Find Your Watershed” worksheet. Demonstrate the websites students will be using to answer the questions using a smart board or projector.
 - Enter a zip code other than your own (Example: 83262) on the first website, and let students know they will be using their zip code when they’re completing the worksheet to find data on their watershed.
 - On the second website, choose the watershed name you found from the first website in the upper right hand corner (American Falls for provided example).
 - Show students where the longitude and latitude are displayed in the lower left corner.
 - Demonstrate how to find the Northernmost point, etc. for the example watershed.
12. Hand out a card to each student with names of things that are or are not part of a watershed (all things that are land formations are, all other things that are not land formations may influence watersheds, but are not). Make a table on the board that says, “Watersheds Are/Are Not.” Have students place their cards on one side or the other. Discuss the cards as a class and list the items after coming to a consensus if something is part of/a feature of a watershed.
13. Set up a data table for the class for northern, southern, eastern, and western reaches of their watershed and discuss what they noticed for changes in latitude for North/South, and what they noticed for changes in longitude for East/West (see example).

Assessment:

1. Determine based on student responses if they understand that all land on earth is part of a watershed.
2. Give students pairs of latitude or longitude coordinates and have them state which is farthest north/south or east/west.

Extension Activities:

1. Students can explore other features of both of the websites listed in the activity. From the first website, students could brainstorm ideas to improve their watershed using the “adopt your watershed” link. On the second website, they can click “show legend” to interpret what different map features mean. Some easy ones to use include mercury-impaired bodies of water and land cover.
2. Look up the meaning of drainage basin. Is this the same as a watershed? Look at the boundary descriptions of some IDFG hunting units. How else might the term “watershed” or “drainage” be useful for setting boundaries?

Attachments:

- Watershed Education Course Key Questions
- Wonderful Watershed Notes Example
- Find Your Watershed Student Handout

Watershed Education Course | Key Questions

Introduction to Watersheds: Name three limited resources.

What percentage of water in the world is fresh water we can use?

What is a watershed?

How do you delineate a watershed?

Name your local watershed?

How does a healthy watershed affect our lives?

Why is an assessment of water quality a good indicator of watershed health?

“Rules of the Game”

What do you need to know about a watershed to assess its functional health?

How are human values integrated into watershed management?

What does the term “multiple use” mean in the context of resource management?

How are state guidelines and standards set? Enforced? By whom?

What is monitoring and how can it be used an effective management tool?

Water Movement Through a Watershed

Describe how water movement through the water cycle is naturally recycled?

Describe the climate of your region? (Temperature, precipitation, weather patterns, etc.)

How does water move underground and what is its role in the water cycle?

What are the key characteristics in a healthy functioning riparian zone?

How does upland characteristics and condition affect water quality and quantity?

Making it Work

What does an owner/manager of an area need to know before developing a management plan?

How might management strategies be affected by economic realities?

What is integrated resource management?

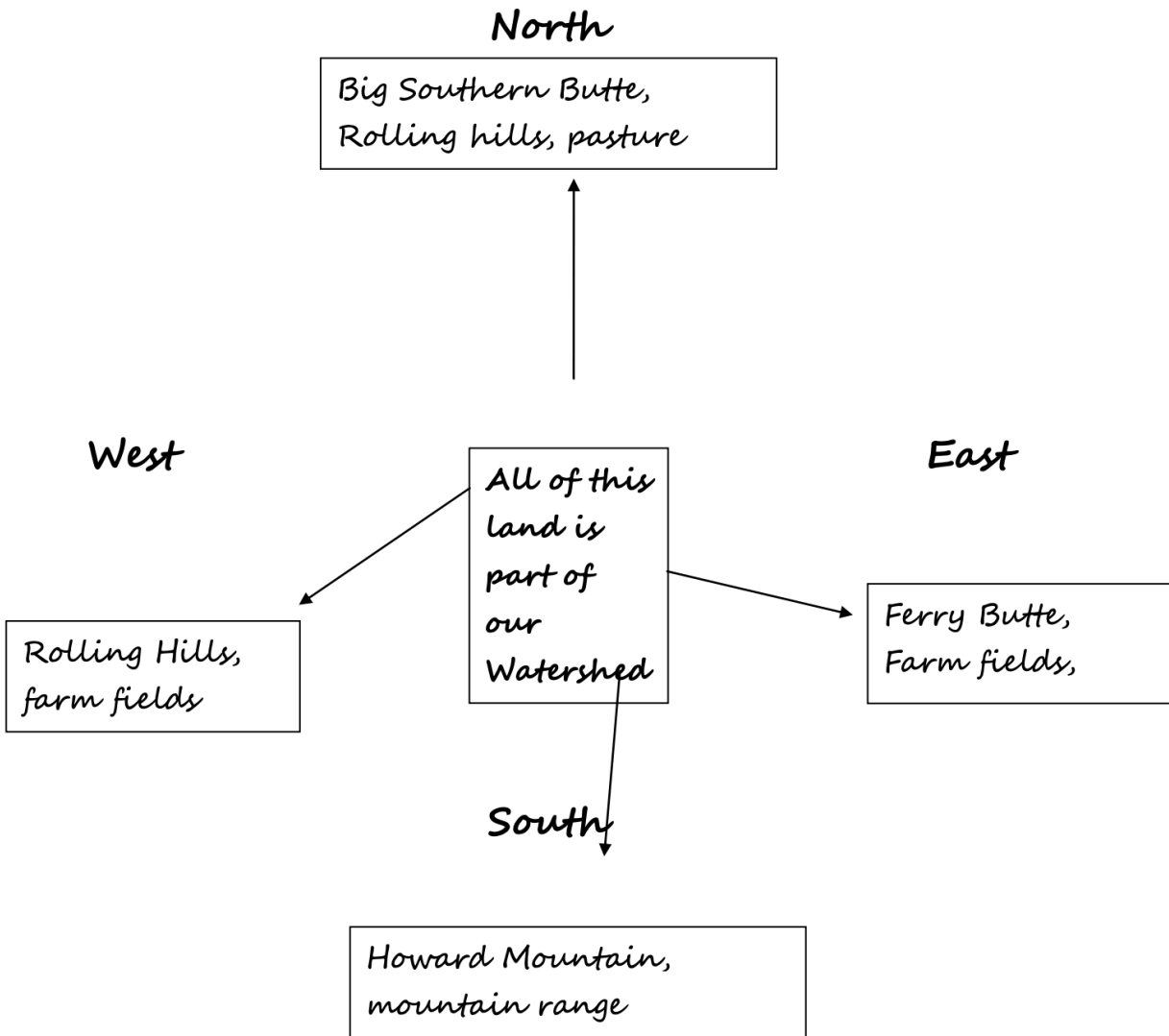
On the Ground

What are the economic realities farmers and ranchers face today?

What are some of the complexities of meeting cooperative management requirements?

What does the phrase “resource sustainability” mean, and who does it benefit?

Wonderful Watersheds Notes Example



Our location: 43.117378N, -112.598455 W

We can also see: Pocatello, Trees on Snake River, Monsanto Refinery

Find Your Watershed

1. Load the “Surf Your Watershed” webpage:
<http://cfpub.epa.gov/surf/locate/index.cfm>
2. Click on the map to find your watershed or enter your zip code.
3. What is the “official” name of your watershed?
4. What counties is this watershed located in?
5. What are the names of the citizen-based groups working on this watershed?
6. Does this watershed connect to another state? If so, which one?
7. Next, visit: <http://global.deq.idaho.gov/Website/wq2010/run.htm>.
8. Select your watershed in the top right hand corner where it says “Select a Subbasin by name.” Use the name you found in question #3 above.
9. Notice in the lower left part of the screen, the latitude and longitude coordinates are displayed.
10. Place the mouse cursor over the part of your watershed that is farthest to the right of the screen.
 - What cardinal direction is at the right side of a map?
 - What is the longitude coordinate for this point (remember, look at the lower left of the screen)?
 - What is the latitude coordinate for this point?



11. Place the mouse cursor over the part of your watershed that is farthest to the left of the screen.
 - What cardinal direction is at the left side of a map?
 - What is the longitude coordinate for this point?
 - What is the latitude coordinate for this point?
12. Place the mouse cursor over the part of your watershed that is nearest the top of the screen.
 - What cardinal direction is at the top of a map?
 - What is the longitude coordinates for this point?
 - What is the latitude coordinate for this point?
13. Place the mouse cursor over the part of your watershed that is nearest the bottom of the screen.
 - What cardinal direction is at the bottom of a map?
 - What is the longitude coordinates for this point?
 - What is the latitude coordinate for this point?
14. Sketch the map of your watershed in the space below, and label the northernmost, southernmost, easternmost, and westernmost points of your watershed.