Lesson Plans

MOSS

McCALL OUTDOOR SCIENCE SCHOOL

University of Idaho

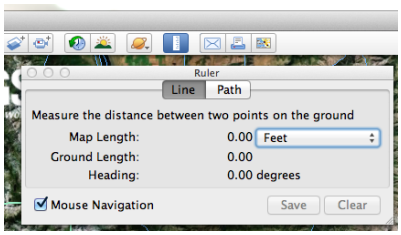
College of Natural Resources

Title: Mapping your Watershed Address!
Grade Level: 5th-8th grade

Topic:	**Watershed Address**
Background:	Watershed addresses show a link of all rivers, streams or lakes downstream of a certain location. Most streams/rivers have a source of where they start and an ending location typically in an ocean. Water travels through many different landscapes and can affect what is downstream or upstream of a particular location. So to know what is happening with your water resources where you live, it is important to know your watershed address.
Next Generation Standards:	ESS2.C, ESS3.A, ESS3.C, ESS3.B
Goals:	This lesson will allow students to interactively map their watershed address using Google Earth. Essential questions for the students: • What is a watershed address? • Why is it important to know your watershed address?
Objectives:	• Students will be able to look at where they live and follow a water source to where it ends. • Students will understand how to use Google Earth to map their watershed address. • Students will understand the importance of their watershed address and be able to analyze the potential problems that can affect their river/stream.
Materials:	• Google Earth • Access to internet via smart board or projector • Copies of "watershed address envelope" for each student • White Pages • Cutouts or strips of each river/lake that make up the watershed address (eg. N. Fk. Payette River, Cascade Lake, N. Fk Payette River, Payette River, Snake River, Columbia River, Pacific Ocean). • Local and state maps showing names of rivers for students to look at. (Can either be bought or printed online)

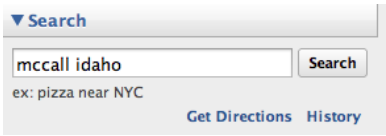
Set up:	Knowledge of: • Closest water source from school to start activity. • From starting water source, trace river or stream to ocean or where it ends. (This can be done through Google earth or on the terrain view of maps.google.com)  Terrain view seems to work best to I.D. rivers and lakes from labels. • Read through "watershed address via Google earth" instructions on how to set-up and trace river path.
Classroom Time:	1 session – 45 minutes – 1 hour Plus prep time
Introduction (Engage):	Introduce the white pages in front of class and explain what it is (book of local addresses). Emphasize that everyone has an address that is very unique to where they live. Proceed to ask the students what the school's address is. Do this until you have the name of school, street name, city, state, county, and country. Record this information on your white/chalk board. Hopefully by this point, an introduction to watersheds was previously done. Tell the students that they are going to figure out their watershed address from a source closest to the school. Have the student's think of possible creeks or rivers that are nearby where they could start. Write these names on the white/chalk board and start from one of them you feel comfortable with. Have the students form a hypothesis about the total distance of water source and total number of different rivers and lakes it takes to reach the end.
Activity (Explore):	Hand out "watershed address envelope" and have students put their name and the water source (start) on line 1. Follow the instructions of "watershed address via Google earth". It would be best for the teacher to trace the water source instead of the students. You can decide to trace the water route prior to this lesson and click on sections of address as they come up or trace a new route as you go. I have found it easier to perform this task prior to the lesson. Arrange students in small groups and hand out local and state maps with names of lakes/rivers on them. Give students time to think about watersheds and how water flows to explore the water's

route. After completing the entire route, have one of the students use the ruler tab  in Google Earth and measure the path from source to sea to find the total distance (see pic below). Have each of the students count the number of different lakes/rivers that are part of watershed address.

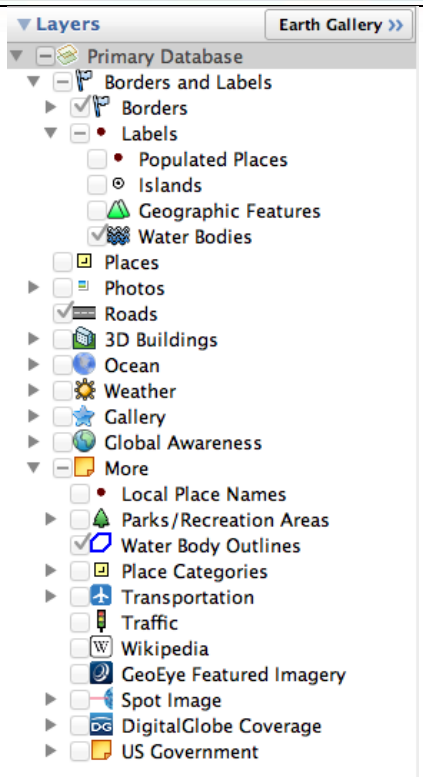


Watershed Address via Google Earth Directions

1. Open Google Earth on your computer.
2. Under the search box, type in your school's address or city and hit enter.



3. Under the layers menu on lower left side of screen, check boxes as shown below.



4. Under the places menu on left side of map, right click on my places and add folder titled "Watershed Address".

5. Under "Watershed Address" folder,  Click on "add placemark" button above map and mark your starting spot for this journey.

6.  Using the "add path" button on top of map, trace your river/stream to the ocean (or ending location). I will use my location at MOSS as an example of how this process is completed.

    a. Click on "add path" button as shown above and name the body of water but do not hit enter.

    b. Once in the edit path pop-up, click on the style-color tab and change width to something big like 4.0 for better viewing.

    c. Hold the left mouse button down on the starting point and trace the outline of the lake or path of river. When lake is

	completely traced or river meets new river/lake, click on ok of edit path pop-up. This will highlight your new path and will show up under the places menu on left hand side of map. d. Continue tracing (by adding new path – do not use current path) of river until final destination is met. It is not important to be 100% accurate on your tracing of the river. It is important to show the path and learn the watershed address. 7. Once all of the paths (lakes/rivers) have been added, make sure they are all in order from source to sea and in places menu. 8. You can then uncheck every path so no paths are shown prematurely on the map in front of the class. Show the students each path by checking a single path from source to sea as they figure out their watershed address. You might want to do this once or twice on your own so it runs smoothly during the lesson. 9. The picture below shows all of the paths for my watershed address starting in McCall, ID.
Explanation	In front of the class, call on students to explain the process of mapping out their watershed address. Have the students verbalize their findings for the total distance the water source traveled and how many different lakes/rivers were involved. The teacher could then explain some terms or definitions involved with watershed addresses and how technology can teach us about our world. Did their data support their hypothesis? Why or why not?
Elaboration:	Have students divide into groups to start a think, pair, share session answering what the importance might be of their watershed address and the potential problems related to where their river/stream travels through.
Evaluation:	Have a certain number of students come to front of class (determined by how many lakes/ rivers in watershed address) and hand out cutouts or strips. Engage the other students to put their classmates in order according

	to their watershed address. You can do this however many times you need to or put your own spin to it. Ask about potential problems they might see upstream or downstream from their start point from the landscape of the water's path. Assign homework to the students asking them to take a certain river in the United States and map it's watershed address with potential problems upstream or downstream of the start.

My Watershed Address

Name:_____

1._____
2._____
3._____
4._____
5._____
6._____
7._____
8._____
9._____
10._____
11._____
12._____

Additional resources:.
http://cfpub.epa.gov/surf/locate/index.cfm