

Earth Systems I – Unit 2 Study Guide

es1u2sg (Freshwater Biome)

Study Objectives

1. Know the dominant characteristics of a watershed and how looking at a problem from the watershed level is important (Watersheds and Rivers Handout)
2. List and describe the abiotic factors critical to life in a stream (Wild World Down Under/Field Study)
3. Know the common benthic macro invertebrates of aquatic ecosystems and why these critters are such good indicators of stream health (Wild World Down Under/Field Study)
4. Demonstrate understanding of how energy flows into and through the aquatic system (Wild Worlds Down Under)
5. Evaluate stream health of the Midway and St. Louis rivers (Field Study)
6. Analyze the impact on major human systems if various parts of the Antarctic ice sheet melted causing a significant rise in sea level (Water World GIS activity)

Generalized Unit Flow

Day 1(Tues): L – “Wild World Down Under” (computer lab)

Day 2 (Wed): K - What do you already know about water? Create class concept map with student knowledge using Cmap; W - generate a list of what we might want to know about a water ecosystem; “All the Water in the World” demonstration

Day 3 (Thurs): L – Overview of Freshwater Biome; “Watersheds and Rivers” handout

Day 4 (Fri): Vocabulary Quiz1; Case Study – “Plumbing the Colorado River”

Day 5 (Mon): Aquatic Investigation Tools and Skills

Day 6 (Tues): Aquatic Investigation Tools and Skills

Day 7 (Wed): Field Day (2nd – 6th hours ; field trip collecting data at both Midway and St. Louis rivers)

Day 8 (Thurs): Making sense of our data

Day 9 (Fri): Making sense of our data

Day 10 (Mon): Introduce the power of GIS

Day 11(Tues): Water World

Day 12 (Wed): Water World

Day 13 (Thurs): Vocabulary Quiz2

Day 14 (Fri): Unit 2 Test (with notebook check)

Vocabulary (quiz1; quiz2)

allochthonous input DOM CPOM FPOM biofilm hyporheic zone littoral zone benthic zone limnetic zone
profundal zone oligotrophic eutrophic hydrologic cycle benthic macro invertebrate
biochemical oxygen demand(BOD) dissolved oxygen(DO) run pool riffle stream order
stream flow reach phosphate riparian zone riprap substrate turbidity watershed pH nitrate cfs

Assignments

- Text Resource: Environment – the science behind the stories, Chapter 15, pages 432-439
- Science Notebook: **10pts** (Evidence)
 - “Wild World Down Under” – web activity
 - Handout: “Watersheds and Rivers”
 - Class/Discussion/Reading Notes
 - Concept Map <http://www.mreclassroom.com/conceptmapping.pdf> (group)
 - Midway and St. Louis river data sheets
 - Case Study: “Plumbing the Colorado River”
 - Water World – a GIS activity
- Stream Side Field Work **10pts** (Professionalism)
- Vocabulary **Quiz1 10pts** (aquatic ecology terms)
- Vocabulary **Quiz2 10pts** (stream studies terms)
- Stream Studies **Test 20pts**

Web Resources:

Stream Ecology Tutorial: http://www.biology-online.org/6/1_producers_consumers.htm

Wild World Down Under: <http://www.nps.gov/sitk/naturescience/stream-ecology-the-wild-world-down-under.htm>