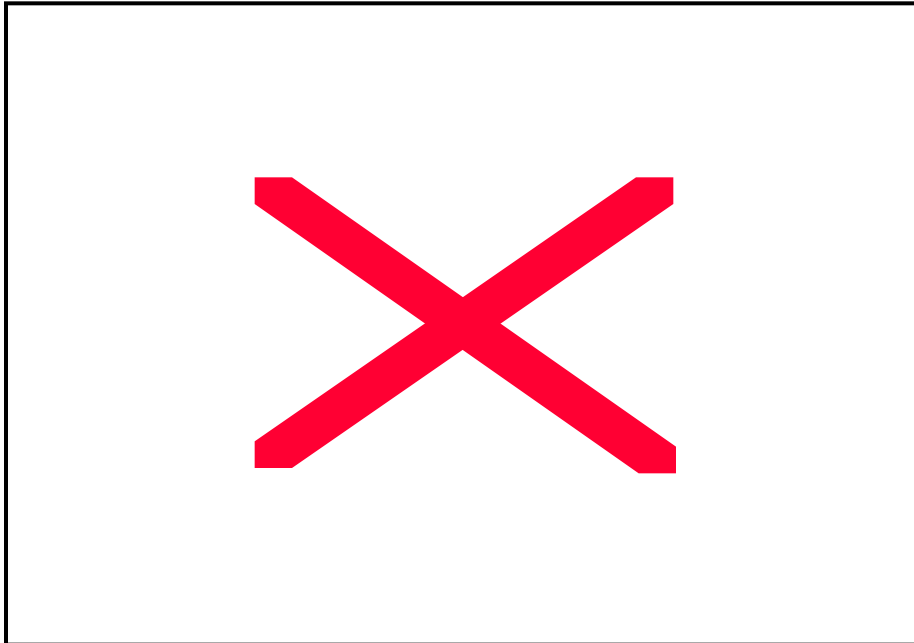


## #14: Wetlands



HAMS students take a field trip to a wetland.

### Goal:

The students will appreciate the functions that wetlands and other forms of vegetation have in benefiting and preventing the degradation of the environment.

### Objectives:

1. The students will define the term "wetland".
2. The students will recall the term "flood plain".
3. The students will explain how a water table is related to water levels in the earth.
4. The students will compare residential and natural wetland areas of a drainage basin.
5. The students will recognize the benefits of wetlands and vegetation and why they are important in regard to:
  - Natural filtering system
  - Recharges the soil with water
  - Prevents flooding
  - Natural buffers
  - Wildlife habitat.

6. The students will explain the interrelationship of precipitation, runoff and wetlands.
7. The students will define the term "groundwater recharge".
8. The students will describe the consequences further destruction of wetlands will have on the environment.
9. Given a topographical map students will predict/select areas in a region where wetlands can exist.
10. The students will explain the relationship of porous and impervious surfaces to groundwater levels, runoff and wetlands.
11. The students will explain how specific human land management practices can affect wetlands.
12. The students will describe how plants remove pollutants from the water.
13. The students will explain how wetland soils can filter pollutants out of water.

#### Procedures:

Students read information about wetlands from the resources WOW! The Wonders of The Wetlands and Juniata College's Wetland Module see one of two videos: "Wetlands, Maligned Treasures" or "Wealth of Wetlands". We also use our drainage basin model for visualization of the benefits of wetlands. The students compare the residential developments in the wetland area of the Muddy Run Watershed to natural wetland areas that do not have developments. Then, the students participate in a fieldtrip to residential areas of the Muddy Run Watershed and to the created wetlands at Raystown Lake where they conduct water monitoring tests related to a wetland. Beginning the 1996/97 school year students have access to a created wetland adjacent to the Middle School to include in their study.

#### Assessment:

Teacher-Made Test; Performance Assessment, i.e., conducting appropriate water monitoring test for pH, dissolved oxygen, etc.

#### Resources to Implement:

##### Teacher handouts:

- Basic Facts About Wetlands (adapted from WOW! The Wonders of Wetland)
- Why Wetlands are Important
- Wetlands (adaptations of Juniata College Outreach Program, Wetland Module, used with permission)

- Cooperative Wetlands Activity
- Freshwater and Coastal Wetlands
- Student Activities from the following resources:
  - 1) WOW: Wonders of the Wetlands:
    - "Wetland Metaphors" (pp. 85-86)
    - "Wetland Habitats" (pp. 87-92)
    - "Wetland Address Cards" (pp. 147-151)
    - "Salt Marsh Players" (pp. 165-173)
  - 2) SWIMM:
    - "What's Hanging Out in the Yard"...HAMS Wetland (pp.17-25)

Videos:

- Wetlands, Maligned Treasure (DEP)
- Wealth of Wetlands (PA Fish and Boat Commission)
- Wetland in Crisis (PA Fish and Boat Commission)

Literature:

- WOW! :The Wonders of Wetland, 1993, pp. 7-11
- Mid-Atlantic Wetlands A Disappearing Natural Treasure, 1987
- America's Wetlands Our Vital Link Between Land and Water, 1988
- Juniata College's Wetland Module, 1995
- The Water Sourcebook, 1994, F-59-61

Equipment:

- Water Monitoring Kits (e.g., dissolved oxygen, water hardness, phosphates, nitrogen, alkalinity)
- Water Monitoring Meters (e.g., dissolved oxygen, pH, dissolved solids)
- hip boots
- pH 7.0 Buffer solution
- VCR/TV

Field Study:

- Huntingdon Area Middle School property
- Muddy Run Watershed
- Fouse's Crossing, Raystown Lake
- Huntingdon Area Middle School Wetland (beginning 1996/97)

PA Academic Standards for Environment and Ecology:

- 4.1. Watersheds & Wetlands
  - Identify various types of water
  - Identify living things found in water environments
  - Identify a wetland and plants and animals found there
  - Explain the effects of water on the life of organisms in a watershed
  - Explain and describe characteristics of a wetland
  - Recognize the impact of watersheds and wetlands on animals and plants
  - Describe the impact of watersheds and wetlands on people
  - Identify and describe natural and human events on watersheds and wetlands

- Describe the multiple functions of wetlands
- 4.3. Environmental Health
  - Know that plants, animals and humans are dependent on air and water
  - Describe how human actions affect the health of the environment, e.g., land use
- 4.6. Ecosystems and their Interactions
  - Understand that living things are dependent on nonliving things in the environment for survival
  - Explain the flow of energy and matter from organism to organism within an ecosystem
  - Identify how ecosystems change over time
  - Explain how ecosystems change over time
- 4.7. Threatened, Endangered & Extinct Species
  - Explain natural and human actions in relation to loss of species
- 4.8. Humans and the Environment
  - Explain how human activities may change the environment
  - Explain how people use natural resources
  - Explain how human activities may affect local and regional environments
- 4.9. Environmental Laws and Regulations
  - Know that there are laws and regulations for the environment
  - Explain the role of environmental laws and regulations



A wetland planned, designed, paid for, and constructed by HAMS students to help reduce stormwater runoff in Muddy Run Watershed and to used as an outdoor laboratory for student environment and ecology projects.