

# WETLANDS



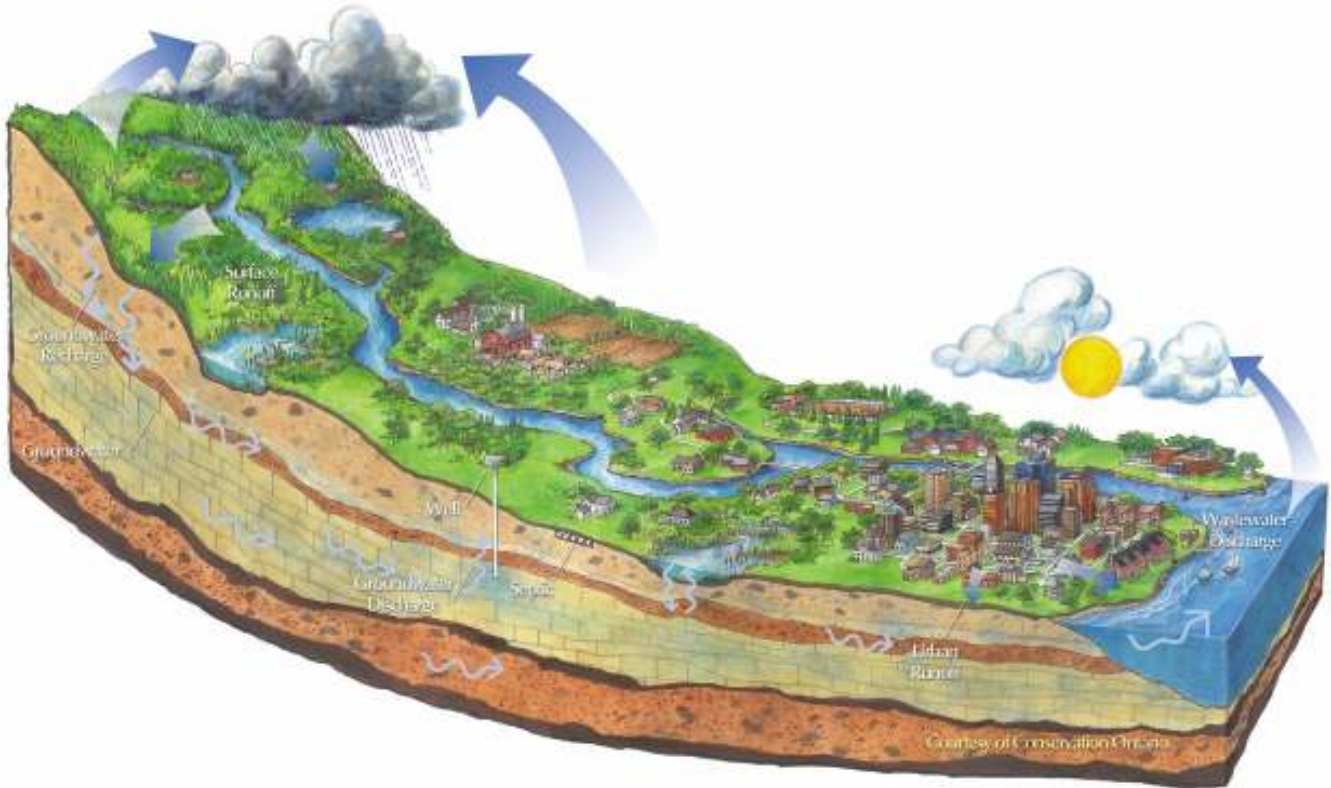
<u>Item</u>	<u>Number of</u>
<u>Wetlands Plants and Animals CD-ROM &amp; Book</u>	2
<u>WOW! The Wonders of Wetlands</u>	1
<u>America's Wetlands Guide to Plants and Animals</u>	2
<u>Pond and Brook: A guide to Nature in Freshwater Environments</u>	2
<u>A Naturalist's Guide to Wetland Plants</u>	2
<u>Golden Guide Pond Life</u>	2
<u>Project WET Kits: Seeing Watersheds</u>	1



# Station 2- Watersheds and Wetlands

## What is a Watershed?

A watershed is an area of land where all of the water that is under it or drains off of it goes into the same body of water. Watershed boundaries cross county, state, and national borders and come in all shapes and sizes. Some are millions of square miles in size; others are just a few acres big. All watersheds are nearly always part of a larger one. Homes, businesses, and cities make are all within watershed limits. No matter where a person is, they are in a watershed.



[http://www.crowevalley.com/4/4\\_4/images/watershed\\_labeled\\_hor.jpg](http://www.crowevalley.com/4/4_4/images/watershed_labeled_hor.jpg)

## Why is a watershed important?

Everyone, including wildlife, relies on water and other natural resources to exist. A watershed provides water for our everyday needs such as drinking, irrigation and industry. Healthy watersheds are crucial for a healthy environment.

## How are watersheds getting polluted?

Humans are the main reason watersheds are being polluted. Humans are dumping such materials as mercury, manure, trash, and PCB's (polychlorinated biphenyls) into the water. Putting salt on the roads in the winter deposits chlorides. Fertilizers, manure, and septic systems release nitrates, bacteria and viruses. New construction sites increase erosion. Hazardous wastes come from landfills, industrial wastes, and careless household dumping. Gas stations, junk yards, car repair shops, and leaky underground storage tanks free hydrocarbons.

## Surface Water

Surface water flows on top of the ground. It is visible in bodies of water such as oceans, lakes, stream, creeks, and ponds. Water flow in streams and rivers is measured in feet per second.

## **Groundwater**

Groundwater, once taken for granted, is a hidden treasure that at one time was very clean and plentiful. It flows under ground through the rocks and soil, the movement usually measured in feet per year. This is why a pollutant that enters groundwater requires many years before it purifies itself or is carried to a well that is checked. Groundwater simply follows the path of least resistance. Although most movement is sideways, it can move straight up or down.

Just like the water level in rivers and streams, the amount of water in the groundwater supply can vary due to seasonal, weather, use and other factors. In today's environment, contamination and availability of both surface and groundwater are serious problems.

## **Aquifers**

Aquifers are underground layers of material such as rock, gravel, and soil that allow water to pass down through them. Eventually the water that seeps down becomes part of a well or groundwater. Coarse materials like sand and gravel allow water to move quickly. They also form excellent aquifers because of their ability to hold water. In contrast, fine-grained materials, like clay or shale, are very difficult for water to move through. Thus, water moves very, very slowly in these materials.

Water table elevations often rise and fall because the amount of water falling into them. They generally are at the highest in the winter and spring due to rains and snow melt. Throughout the summer the water table usually drops due to evaporation, uptake by plants, increased use by people, industrial use, and crop, golf course and lawn watering.



Montgomery County is a part of the Sugar Creek Watershed. Sugar Creek flows for approximately 90 miles starting in Tipton County and joining the Wabash River. The part that runs through Montgomery County cuts it about in about half, and is about 50 miles long.



<http://en.wikipedia.org/wiki/File:Indiana-Watersheds-map-large.jpg>

Sugar Creek has 31 tributaries Walnut Fork, Dry Branch, Bowers Creek, Spring Branch are some of those tributaries that flow through Montgomery County.

## **Types of Wetlands**

### **General Characteristics of Wetlands**

Wetlands come in many forms. Although half of North America's original 200 million acres of wetlands have been lost or destroyed, the remaining aquatic wetland ecosystems may be grouped as marshes, swamps or bogs.

Most of the soil in a wetlands environment is saturated with water long enough during a growing season that it no longer contains enough oxygen for most land-based plants to grow. Some types of plants thrive; however, these are the wetlands plants, the water-loving plants. Scientists generally classify a wetland according to the type of plants it contains. In fact, they divide wetlands into very specific habitats, such as mangrove swamps and peat bogs.

### **What Makes a Wetland?**

Here are the most common ways that wetlands form – and remain waterlogged:

- Rain and runoff that regularly saturates a low-lying area
- Groundwater very close to the earth that bubbles up through porous soil, providing a constant "flow from below"
- Floodwaters spreading out from large, periodically flooding waterbodies such as rivers and lakes
- Coastal waters cyclically immersing the land, such as along Lake Erie

Not all wetlands originate completely on their own. Here are some ways that animal and human behavior may encourage wetland formation:

- Beavers dam rivers and streams, making those waters more likely to flood large surrounding land areas.
- State fish and wildlife agencies may intentionally flood dry areas to provide more breeding and nesting grounds for waterfowl and other species dependent on wetlands for reproduction.
- Construction may unintentionally block the natural flow of surface water, causing it to overflow its banks. Not every stretch of land under shallow water is a wetland, though.

## **Importance of Wetlands**

Wetlands are much more than the muddy places we once thought of as a barrier to moving from one place to another, or taking up land that could otherwise be farmed. Wetlands were also thought to be a problem causing flooding in some areas. They were promptly drained of their water, and streams near them were straightened. Ironically, our harsh treatment of wetlands proved more costly than ever thought. Wetlands commonly provide important benefits throughout the nation, such as:

### **Flood Control**

Some wetlands, particularly those on floodplains and in coastal areas, function in flood control by storing and decreasing the velocity of excess water during heavy rainfall. As water flows into wetlands, it naturally loses velocity as it collects and continues to spread out. Wetland vegetation provides another natural barrier to fast moving water and therefore aids in flood speed reduction. The result of wetland activity during floods is often decreased damage to surrounding areas.

### **Silt Catchers**

When flood waters are slowed by wetlands, they drop sediments among the roots and stems of the plants. This protects downstream water dwelling beings by preventing a dangerous build-up of gill clogging and egg damaging silt.

### **Erosion Control**

Wetlands buffer shorelands against erosion because they are often located between water bodies and high ground. The roots of wetland vegetation bind the soil, putting a hold on it, while the plants themselves absorb the impact of waves.

### **Water Cleaners and Suppliers**

Wetlands fed by groundwater further transport the water to streams that may otherwise dry up during warm summers or times of drought. Furthermore, wetlands absorb water during the wet seasons and gradually release it during dry seasons, and can thereby refill aquifers and other drinking water supplies. Wetlands not only supply water, but they cleanse it. When water enters a wetland, the wetland becomes a giant kidney, filtering out impurities before allowing the water to leave. The wetland vegetation plays a large role in this filtering system as it uses its roots and stems to trap and gather sediments comprised of both chemicals and nutrients.

### **Vital Habitats**

There is more life in a one acre of a healthy wetland than there is in one acre of almost any other kind of habitat. Wetlands are virtual havens for the endangered species of the United States; about 35% of all plants and animals listed as threatened or endangered in the United States either live in wetlands or depend on them in some way.

### **Nature's Nurseries**

The thick vegetation found in wetlands provides a safe haven and plentiful food supply for the young of many fish, crabs, and other small creatures that begin life in wetlands, remain safely until they are not so vulnerable, and move to open waters when the time comes.

### **Migration Stations**

Many migratory birds including ducks, herons, sandpipers, and eagles "visit" wetlands in the fall and/or spring to feed while en route to their summer and winter destinations. A large number of birds nest and winter in wetlands as well, but the greatest bird populations are recorded during migration.

## **Recreation and Economy**

Hunting, fishing, hiking, boating, photographing, and bird watching opportunities are abundant in America's wetlands. Wetlands support an annual commercial fur and hide harvest of \$300-\$400 million and the 50 million people who observe and photograph birds and wildlife in wetlands spend close to \$10 billion a year supporting their hobby.

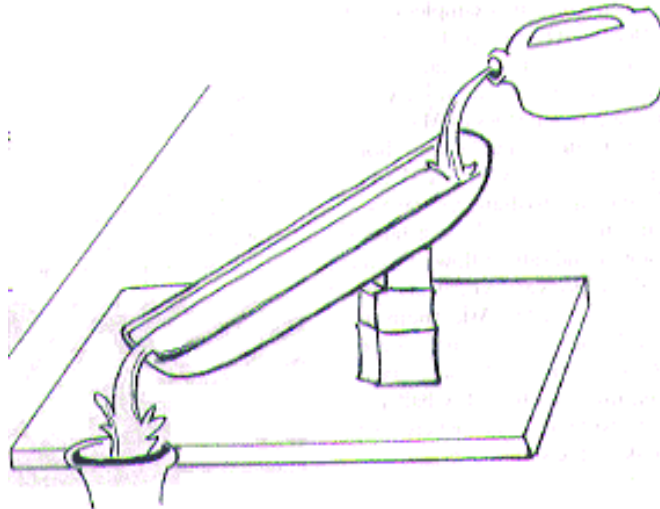
## **Inspiration**

Nature in all forms inspires us to protect our environment and express ourselves through the arts. For centuries, naturalists, artists, photographers, and writers have recorded their experiences with America's wetlands and continue to do so in this, the age of technology through new mediums such as internet web pages and documentaries.

<http://epa.gov/bioindicators/aquatic/types.html#mar#mar>

## **Activity suggestions before visiting the Nature Park**

- Create a slope using a long, large piece of wood or plastic. Elevate this using a chair or set of books. Place a large sponge in the middle of the slope. Slowly pour muddy water out of a gallon milk jug at the top of the slope so that it flows down. Observe the water quality that filters through the sponge and the water quality of the water that doesn't.



- Read and study basic information about wetlands and floodplains

## **Activity suggestions during your visit to the Nature Park**

- Choose an area of the floodplain using the tape measurer and draw a picture of the biotic and abiotic factors
- Complete any of the activities in the resource books to assist with the focus or topic.
- Use the nets to capture plants and animals that live in the area
- Use pond guides to identify the species
  - Classification
  - Description
  - Habitat
  - Scientific and common name
  - Picture
  - Two interesting facts
  - Sources where the public can find more information
  - Describe the habitat each of the plants

### **Activity suggestions after visiting the Nature Park**

- Create a diorama of the area that was studied
- Create a board game to teach others about wetlands and floodplains
- Write a letter about your findings and send it to the Sugar Creek Nature Board in care of  
The Mayor's Office  
300 East Pike Street  
Crawfordsville, IN 47933
- Construct a food chain using the species that were found during your visit.
- Create an inventory (poster, PowerPoint, scrapbook) of the flora (trees, wildflowers, shrubs, grasses) within the boundaries of Sugar Creek Nature Park. Share the information on the Nature Park website, [www.sugarcreeknaturepark.com](http://www.sugarcreeknaturepark.com). Use the pond guides to assist you in your inventories.

### **Resources in the travelling trunk**

- Creek and Pond Lie Science Activity Kit
- A Naturalist's Guide to Wetland Plants: An Ecology for Eastern North America
- Pond and Brook: A Guide to Nature in Freshwater Environments
- Wow! The wonders of wetlands
- Wetland plants and animals
- Wildflowers coloring book
- Americas wetlands
- Guide to wetlands
- Water nets

### **On-line References**

Wetland Wonderland, <http://tv.hww.ca/video/watch/4>

Wetlands & Wonder: Reconnecting Children with Nearby Nature,  
<http://epa.gov/wetlands/education/wetlandsvideo/>

Protecting Local Wetlands, <http://video.bobvila.com/m/21328181/protecting-local-wetlands.htm>

Droplet and the water cycle <http://kids.earth.nasa.gov/droplet.html>

Watershed Game, <http://www.bellmuseum.org/distancelearning/watershed/watershed2.html>

Freshwater Wetlands Program, <http://www.dec.ny.gov/lands/4937.html>

Wetlands Plants, <http://mmh.lethsd.ab.ca/grade5/wetlands/page5.htm>

Lists of multiple wetland resources, <http://edtech.kennesaw.edu/web/wetlands.html>

Wetland Plants and Animals, [http://www.naturalresources.nsw.gov.au/water/wetlands\\_facts\\_paa.shtml](http://www.naturalresources.nsw.gov.au/water/wetlands_facts_paa.shtml)