Butler County Stream Team Youth Volunteer Program

Acknowledgements

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Andera Challiet

My name is Emma Jones. I have created this booklet for my Girl Scout Gold Award. I also created this booklet because I want the younger generation to be involved with community and local issues. I got started with protecting the Great Miami River, when I did my Girl Scout Bronze Award. I put down abou 300 “No Dumping” medals on storm drains in Hamilton. I got started with the Butler County Stream Team, with my troop when I did my Girl Scout Silver Award. My troop and I collected samples from a stream and learned the tests in the Stream Team lab. I was very inspired to learn more aabout how to protect our waterways and teach others so they can do the same thing.

The leadership is built into this program because I have taken the lead to train the Stream Team volunteer staff to continue the implantation of my program to make the next generation valuable enviromental stewards. I will be presenting this to my school’s campus ministry, so this project can be sustained in another way.

Upon completion of booklet, please fill out an evaluation form (found in activity pages). Please turn into the Butler County Stream Team and receive a patch. For Girl Scouts, this program may help you with journeys and future badge work.

Introduction

This project was designed to inspire you to learn about water quality and to take action in your community to protect the nation's most valuable resource.

You will:

• Discover — Explore the natural world to learn about watersheds and water pollution

• Connect — Use your skills and your knowledge to work with others to educate your community about the need to protect the nation's valuable water resources

• Take Action — You will make a difference in your community by becoming watershed and wetlands steward

Historical Note:

Thanks to the passage of the Clean Water Act, America has seen much progress in cleaning up the nation's rivers, lakes, stream, and coastal waters. In 1972 the Potomac River was too dirty for human contact, aquatic life in Lake Erie was dying, and Ohio's Cuyahoga River was so polluted it caught fire. Many rivers and beaches were little more than open sewers. Conditions in these and thousands of other water bodies are much better today. The nation has made tremendous progress in addressing pollution from sewage treatment plants and industrial facilities.

Despite these accomplishments, many challenges remain, including threats to human health. Approximately 40 percent of monitored waters still fail to meet state water quality standards, which means that they do not support basic uses like swimming and fishing. A disturbing number of freshwater fish species are now threatened or endangered.

The remaining pollution problems come from many different sources, not just from a sewage pipe. Polluted runoff from city and suburban streets, construction sites and farms is the primary reason many of our waters are not fishable or swimmable. Tackling these problems will not be easy. However, we can help make a difference by becoming watershed stewards in their communities.

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Watersheds

- A watershed is like a funnel. It catches water and moves it to a nearby body of water.
- Everyone lives in a watershed.
- To locate your watershed, visit the EPA's website or the US Geological Survey Website.
- Watersheds supply us with the water to use at home, school, work, and for recreation.
- Watershed health is important because pollution can hurt all that live with in it.
- In the continental US, there are 2,110 watersheds; including Hawaii and Alaska. In Puerto Rico there are 2,267 watersheds.

What is a Watershed?

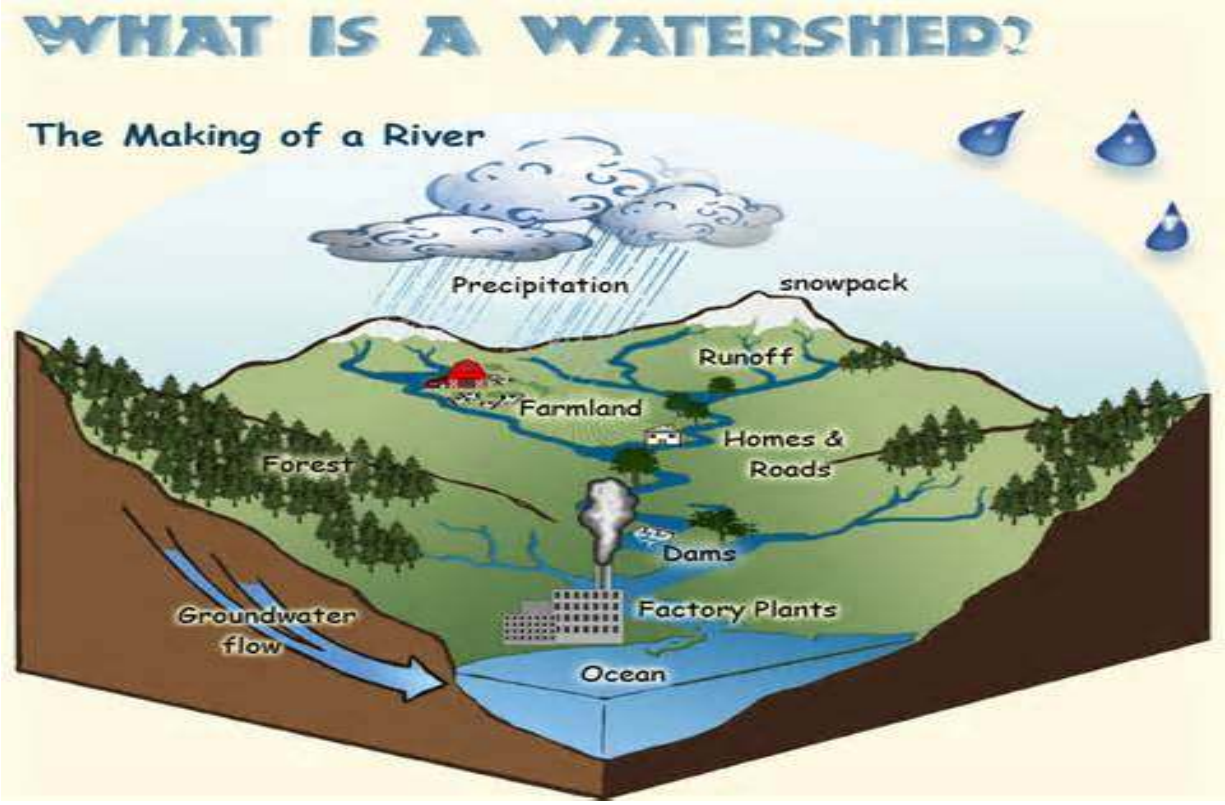
This is an excellent question. Close your eyes and picture an enormous funnel.
This funnel is the watershed. It catches all the water that falls to the ground.
The water that is caught in the funnel is either used by plants or animals in the ecosystem or it is moved out of the funnel to a nearby body of water. These bodies of water are streams, brooks, rivers, lakes, oceans, and even underground lakes or rivers. These bodies of water are used for recreation, farming, manufacturing, and drinking. Water flows in, across, through and out of a watershed just like it would a funnel. Watersheds also come in many different shapes and sizes.

Who lives in watersheds?

Everyone! No matter if your yard is close to a body of water or miles away. Which watershed do you call home? The US Environmental Protection Agency at cfpub.epa.gov/surf/locate/index.cfm and the US Geological Survey can help you figure out which watershed you call home

Watersheds, why are they important to you and your community?

Watersheds are important because they supply communities with recreational opportunities like swimming, canoeing, and boating. They supply drinking water from either the above ground lakes and rivers or the underground lakes and rivers. Watersheds also supply water to the plants and animals that live in it.
It is very important to protect the quality and health of the watershed because pollution of all types can negatively impact the watershed. It affects the health of the plants and animals that reside in it. If the watershed is too polluted, the water from it cannot be used for drinking or recreation.



(Air, Water, and Aquatic Environments Science Program)

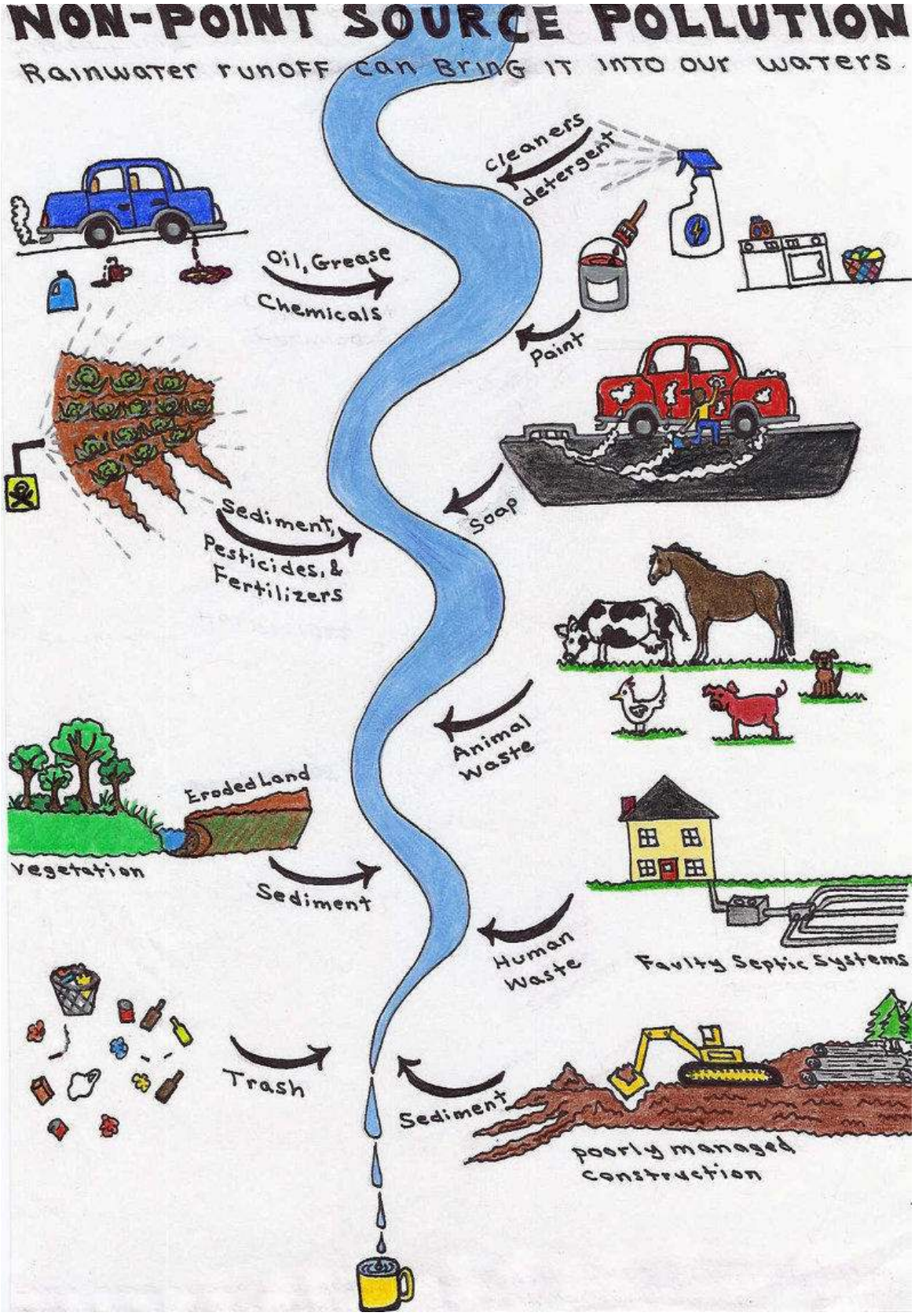
Non-Point Source Pollution

Non-point source pollution or NPS for short is pollution that doesn't flow through a pipe. It is not something that you put down the drain or flushed down the toilet. It is pollution that flows directly into a body of water. This is anything that runs off of a field when it rains or the oil from a parking lot. This kind of pollution can hurt the environment because the items in the water can hurt the plants and animals that survive in the stream/river. This type of pollution is almost harder to treat and control than the pollution that comes from a factory.

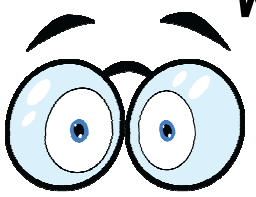
There are many different sources of non-point source pollution or NPS. These sources can include:

- Excess fertilizers and chemicals from farms
- Oil and grease from cars
- Rocks and sand from erosion and construction sites
- Bacteria from pet and liverstock waste and faulty septic systems

Helping the enviroment is very important and makes a difference in your community. Taking small actions can help in big ways. This makes a big difference. What we do here in Ohio can impact the Mississippi River and even the Gulf of Mexico. You can take action at your local river cleanup or even picking up garabage that is not yours because one small action can lead to bigger things.



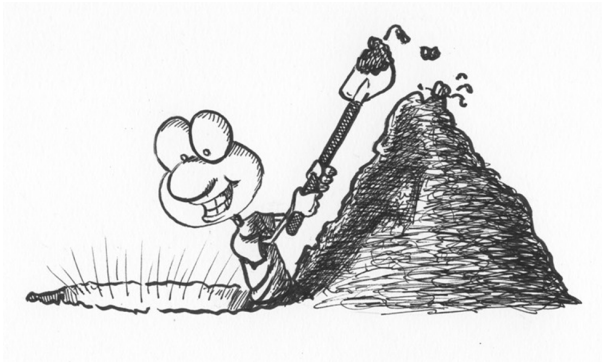
(Robert E. Less Soil and Water Conservation District)



Wetlands and their Characteristics

- Wetlands play a key role in fishing, hunting, agriculture, and recreation.
- Wetlands are the foundation of our nation's water resourcres and are very important to the health of waterways and communties that are downstream of the wetland.
- Wetlands are "nature's kidneys" they have the ability to filter pollution from the water.

Dig a Little Deeper into Wetlands



Have you ever heard the term swamp, bog, or marsh? If you have then you have heard about wetlands. Lets find out some more about these unquie landscapes.

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season. Water saturation largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants and promote the development of characteristic wetlands soils."
-- EPA, America's Wetlands: Our Vital Link Between Land and Water

Wetlands can usually be found alongside lakes and rivers. However, some wetlands have no connections to a lake, river, or ocean, so their connection is probably an underground water source.

The way a wetland works and why they are so important is because of their ability to filter impurties from the water. Sediment and contaminants settle then the pollution binds to plant material. This results into better water quality. Wetlands also provide habitats for

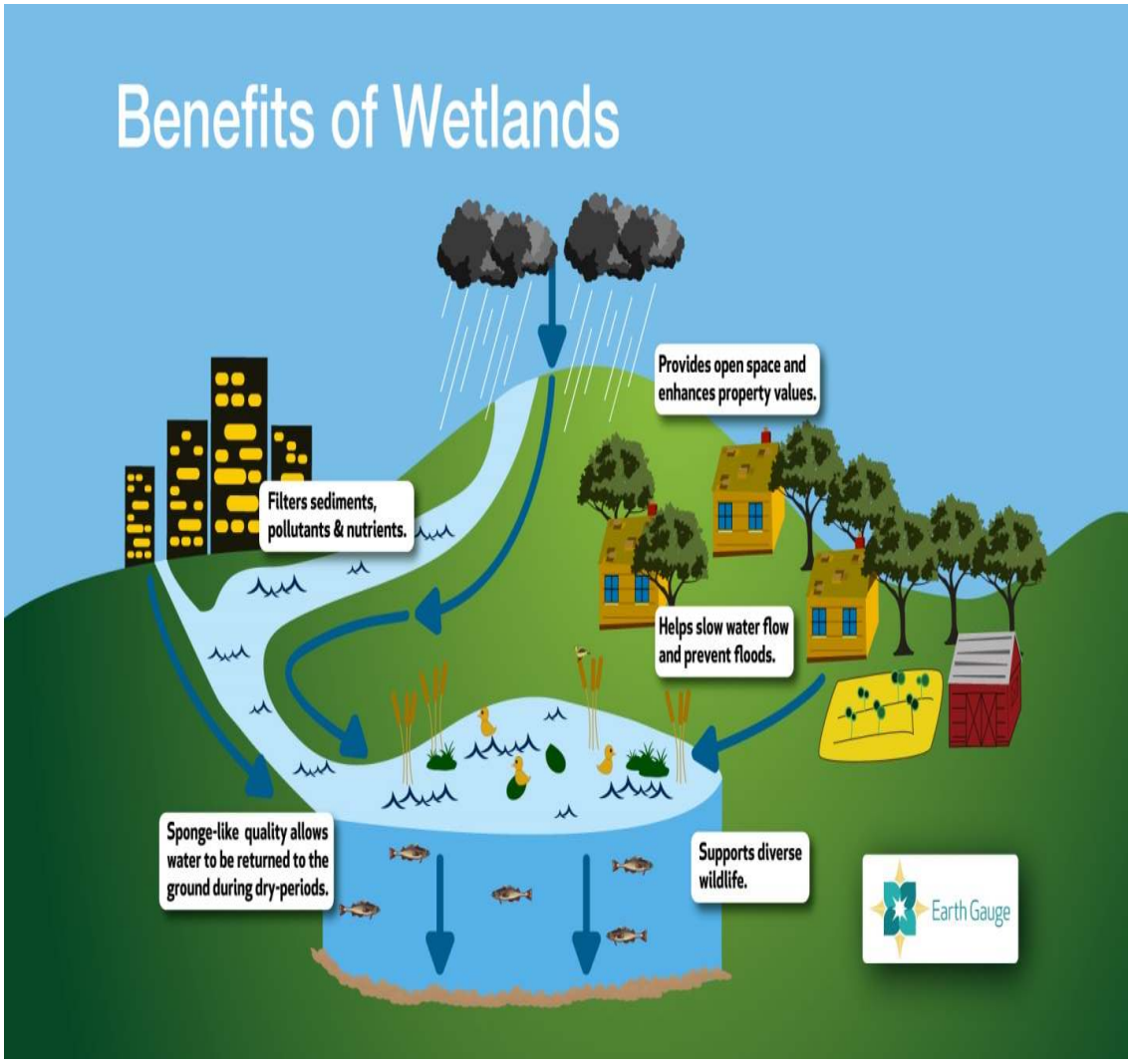
many rare or endangered species, they are fish spawning areas, bird nesting and feeding areas.

Need more information about wetlands?

 Wetland Delineation Manual (1987) — ***http://el.erdc.usace.army.mil/wetlands/pdfs/wlman87.pdf***.

 National Wetland Inventory (NWI) maps — produced by the U.S. FWS, these maps can be used for initial indication of wetland locations and types. Available at ***fws.gov/wetlands/Data/Mapper.html***.

 Wetland Plants of the State of Ohio — a list of plant species that occur in Ohio wetlands is available at ***http://rsgisias.crrel.usace.army.mil/NWPL/#***.



(Earth Gauge)

Program Requirements

Easy Activities – Green

Medium Activities – Blue

Hard Activities – Purple

Grades 2-3 – 3 easy; 3 total

Grades 4-5 – 2 med; 4 total

Grades 6-8 – 3 hard; 5 total

Grades 9-10 – 5 hard; 7 total

Grades 11-12 – Do ALL Activities

Activities

1. Do 2 coloring pages or puzzles from the back of this booklet.

2. Go to www.discoverwater.org and do several different activities to make and create your very own Take Action Poster.

3. Find a local watershed group or the Butler County Stream Team and report on their mission with upcoming events. Visit butlercountystreamteam.org for more information.

4. Sign up to collect a sample and spend the day in the Stream Team lab. Try your hand at one or more of the laboratory tests that are run on the samples that are collected.

When everyone lends a hand, chores get done faster and everyone can spend more time relaxing in a cleaner, tidier home. Clean beats *filthy* and *relaxing* beats *working* just about every time. Visit butlercountystreamteam.org for more information.

Streams, lakes, ponds, and wetlands need a break, too. Do you enjoy going to the beach, whitewater rafting, or fishing in your favorite lake? You and your friends can lend a hand to help keep the water resources we use and enjoy running clean and clear by volunteering your time and talents in a water project. *Will I really help the environment?* You bet! *Will it be fun?* Definitely! *Will this make the most popular kid at school?* Um...we'll get back to you on that one (but we know you'll be popular with some very cool fish).

5. Participate in a local River clean up event.

Another activity that can use the help of you and your friends is clean-up campaigns. Typically, teams are organized to pick up and remove trash and debris from a section of streams, beaches, wetlands, or lakeshores. The cleanup can be a onetime activity or, better yet, an ongoing project where the team "adopts" an area and visits it regularly. Several national organizations can help students build a "dream team" of clean-up volunteers. The first thing to do is to learn about the groups already active in your watershed and join in! Visit www.GreatMiamiRiverCleanup.org for more information.

6. Participate in a local Earth Day Event. For example, host a booth to educate the public on water pollution, water conservation or any water related issue.

Visit butlercountystreamteam.org or www.gwconsortium.org/earth-day.php for more information.

7. Become a Volunteer sample collector for a year or more. Visit butlercountystreamteam.org for more information.

8. Research why the laboratory runs the nitrate, phosphorus, pH, turbidity, total dissolved solids, and bacteria tests.

Career Corner

A volunteer monitoring coordinator develops a monitoring program, gathers volunteers, and helps to monitor the health of streams.

A biochemist studies the chemistry of living organisms.

An entomologist studies insects and their environment.

9. Tour a water or wastewater plant.

Many local water and wastewater plants are happy to give tours to the public. All you need to do is call and set it up. Contact your local municipality for more information.

10. Research the watersheds of the Great Miami River and why they are important to protect. Do you live near a stream or a river? If so, which is it and how/where did you find the information needed to identify the stream?

11. Volunteer at least 5 times in a volunteer water quality-monitoring lab.

Volunteer monitors are people who measure the water quality of lakes, streams, rivers, estuaries, and other bodies of water. In most programs they take water samples and either send them to a laboratory or analyze the water themselves using portable water quality test kits. Contact your local municipality or visit butlercountystreamteam.org for more information.

12. Educate your community by labeling storm drains in your local neighborhood with 'Don't pollute' decals. Speak to your local Soil and Water Conservation District to get supplies.

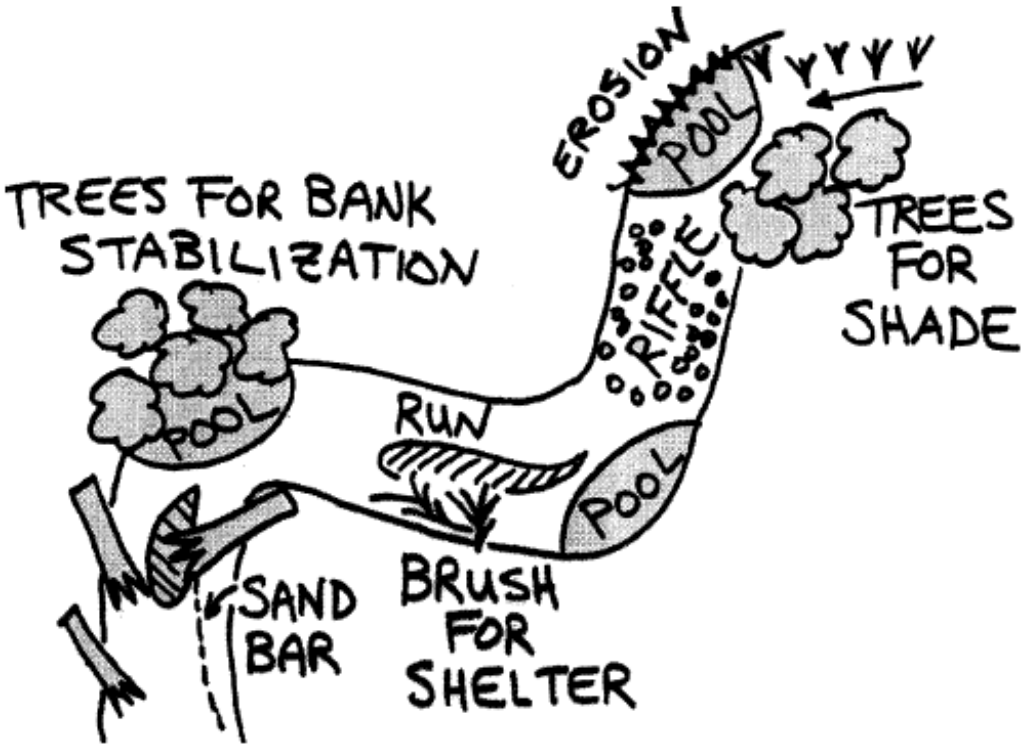
Butler Soil and Water Conservation District: (513)-887-3720 and butlerswcd.org

13. Come up with a creative way to get your friends, family members and others in your community involved in the Butler County Stream Team.

14. Write an article about water conservation, solutions to water pollution, watershed protection, or rain gardens and submit it to your local newspaper, newsletter, or the Butler County Stream Team newsletter or where it can be published.

15. In a group, make a birds-eye drawing of the stream located in Peffer Park in Oxford, Ohio.

Use the page provided in Activity and Resource section



(Miami Conservancy District-Volunteer Stream Team Monitoring Training Manual)

16. In the same stream, count drawn in #15, the number of macro invertebrates Mayflies, dragonflies, etc.

Record your finding on the Biological Data Sheet located in the back of the booklet.

17. In a group, do a Habitat Assessment of the stream located in Peffer Park in Oxford, Ohio.

Complete the Habitat Assessment Data Sheet located in the back of the booklet.

18. Find out how many plants and animals affect the stream's health. Is there anything you can do to help the stream's health?

Record your findings on the Biological Data Sheet located in the back of the booklet.

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Activity Pages

Space for drawing in #15

Evaluation Form

Name_____

Circle Yes or No

1. Did you have fun? Yes/No
2. Would you come back and do it again? Yes/No
3. Did you learn more information about something that you didn't know about? Yes/No
4. Would you tell others about your experience and encourage them to do this program? Yes/No

Short Answer

1. What did you like about this program?
   _____
   _____
2. What didn't you like about this program?
   _____
   _____
3. What new information did you learn from this program?
   _____
   _____

Please turn into a Stream Team Staff member when completed.

Biological Monitoring Data Sheet

Date:_____ Begin Time: _____ (am/pm) Number of Adults:_____

End Time:_____ (am/pm) Number of Students:_____

Watershed Name:_____

Stream/River Name:_____

Site Location (be specific):_____

Check Habitats Sample

□ Riffles	**□ Undercut Banks**	**□ Sediment**
□ Leaf Packs	**□ Snag/Vegetation**	**□ Other**

Pollution Tolerance Index (PTL)

PT Group 1 Intolerant	PT Group 2 Moderately Intolerant	PT Group 3 Fairly Tolerant	PT Group 4 Very Tolerant
Stonefly Nymph____	Damselfly Nymph____	Midges_____	Left-Handed Snail___
Mayfly Nymph_____	Sowbug_____		
Aquatic Worms____	Scud____	Dragonfly Nymph___	Black Fly Larvae____
Caddis Fly Larvae___	Crane Fly Larvae_____		
Dobsonfly Larvae____	Clams/Mussels_____	Planaria_____	Blood Midge_____
Riffle Beetle_____			
Water Penny_____		Leech_____	Rat-tailed Maggot___
Right-Handed Snail_____			

ADD THE VALUES FOR EACH GROUP

23 or More	**Excellent**
17-22	**Good**
11-16	**Fair**
10 or Less	**Poor**

HOW DOES THIS STREAM / RIVER RATE?

Habitat Assessment Data Sheet

Bottom Type

- □ Mostly large (fist size or bigger)
- □ Mostly medium (fist size or smaller but bigger than fingernail)
- □ Mostly small (smaller than fingernail, but still course bedrock)
- □ Mostly very fine (not course, sometimes greasy or mucky)
- □ Are the fist size and larger pieces covered by sand or silt?
- □ Is it black on bottom with very few insects?

Fish Cover (Hiding Places)

- □ Underwater Tree Roots (large)
- □ Underwater Tree Roots (small)
- □ Boulders
- □ Side Channels
- □ Down Trees, Logs, or Branches
- □ Water Plants
- □ Deep Areas (Chest Deep)
- □ Undercut Banks

Depth

- □ Deep (Chest Deep)
- □ Deep (Waist Deep)
- □ Shallow (Knee Deep)
- □ Shallow (Ankle Deep)
- □Shallow (Less than Ankle Deep)

Current

- □ Fast Moving
- □ Slow Moving

Litter

- □ Large amount of litter is in/around stream
- □ Medium amount of litter is in/around stream
- □ Small amount of litter is in/around stream
- □ No Litter is in/around stream

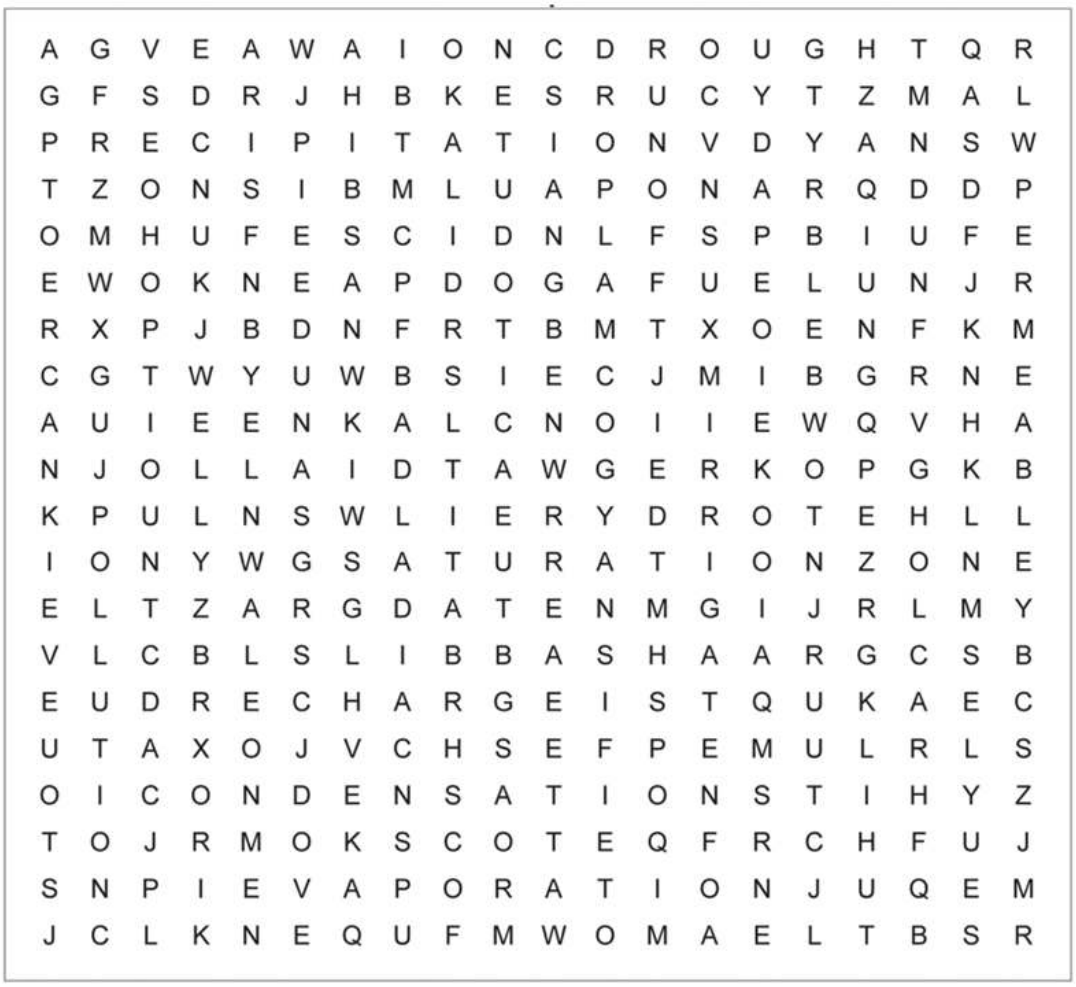
Wildlife in Stream (Visible)

- □ Large amount of wildlife in stream (23 or more)
- □ Medium amount of wildlife in stream (17-22)
- □ Small amount of wildlife in stream (11-16)
- □ Very small amount of wildlife in stream (1-10)
- □ No visible wildlife in stream


www.coloring-pages-kids.com
EVEN OUR FISH AND WATER
FOWL ENJOY CLEAN WATER

Groundwater Word Search

The Groundwater Foundation. Learn more at www.groundwater.org.



A G V E A W A I O N C D R O U G H T Q R
G F S D R J H B K E S R U C Y T Z M A L
P R E C I P I T A T I O N V D Y A N S W
T Z O N S I B M L U A P O N A R Q D D P
O M H U F E S C I D N L F S P B I U F E
E W O K N E A P D O G A F U E L U N J R
R X P J B D N F R T B M T X O E N F K M
C G T W Y U W B S I E C J M I B G R N E
A U I E E N K A L C N O I I E W Q V H A
N J O L L A I D T A W G E R K O P G K B
K P U L N S W L I E R Y D R O T E H L L
I O N Y W G S A T U R A T I O N Z O N E
E L T Z A R G D A T E N M G I J R L M Y
V L C B L S L I B B A S H A A R G C S B
E U D R E C H A R G E I S T Q U K A E C
U T A X O J V C H S E F P E M U L R L S
O I C O N D E N S A T I O N S T I H Y Z
T O J R M O K S C O T E Q F R C H F U J
S N P I E V A P O R A T I O N J U Q E M
J C L K N E Q U F M W O M A E L T B S R

aquifer
condensation
drink
drought
evaporation
fuel
groundwater
irrigate
permeable
pollution
precipitation
recharge
runoff
saturation zone
spring
well

Can You Find These Water Words?

(Circle each one)

Nonpoint Source
Runoff
Watershed
Monitoring

Conservation
Environment
Water
Pollution
Low Impact

Rain Gardens
Nutrients
Sediment
Pesticide

Fertilizer
Xeriscape
Riparian
Erosion

A	N	O	N	P	O	I	N	T	S	O	U	R	C	E
N	P	U	L	O	W	I	M	P	A	C	T	I	O	P
L	T	S	T	N	E	M	I	D	E	S	W	P	R	A
O	W	A	T	R	N	B	K	C	M	L	E	A	A	C
N	A	F	D	U	I	Y	F	F	O	N	U	R	I	S
O	T	E	W	O	T	E	R	B	W	T	N	I	N	I
I	E	R	Y	L	P	M	N	R	G	C	D	A	G	R
T	R	T	P	O	L	L	U	T	I	O	N	N	A	E
A	S	I	E	M	S	T	D	W	S	R	I	F	R	X
V	H	L	S	K	B	W	K	J	U	R	S	L	D	N
R	E	I	T	C	T	U	A	S	O	I	M	R	E	O
E	D	Z	I	P	L	V	O	T	A	W	Z	H	N	I
S	E	E	C	M	F	H	I	R	E	D	L	M	S	S
N	E	R	I	A	N	N	K	G	P	R	H	P	M	O
O	D	I	D	V	O	C	M	D	J	T	J	E	G	R
C	T	N	E	M	N	O	R	I	V	N	E	T	R	E

Shared by the Lake Superior Binational Forum for Lake Superior Day 2011
Find more games at the U.S. Environmental Protection Agency web site:
http://www.epa.gov/owow/NPS/kids/whatwrng.html

(Science Kids)

Find the listed words in the diagram below:
They will run in all directions: forward, backward, up, down and diagonally.

collection center	pesticides
compost	pollution
environment	prevention
fertilizer	recycle
flows to bay	reduce
go green	reuse
hazardous	runoff
mercury	toxic
motor oil	watershed
no dumping	zero waste

h	m	b	m	e	y	f	l	o	w	s	t	o	b	a	y
t	o	y	d	q	n	r	e	z	i	l	i	t	r	e	f
q	t	e	y	p	t	v	f	g	t	y	u	i	o	k	i
c	o	l	l	e	c	t	i	o	n	c	e	n	t	e	r
n	r	t	i	s	j	t	p	r	u	k	r	a	p	d	e
e	o	o	t	t	b	s	s	k	o	e	d	r	m	n	t
e	i	x	y	i	q	w	e	o	c	n	e	h	o	w	s
r	l	i	h	c	s	c	n	y	p	v	m	i	a	m	a
g	k	c	f	i	u	u	c	o	e	m	t	e	w	q	w
o	d	q	r	d	a	l	o	n	d	u	o	e	n	w	o
g	y	z	e	e	e	z	t	d	l	u	t	c	i	t	r
q	n	r	u	s	u	i	w	l	r	o	m	q	d	r	e
u	i	e	m	q	o	s	o	b	m	a	m	p	e	u	z

(Water Pollution Prevention Program)