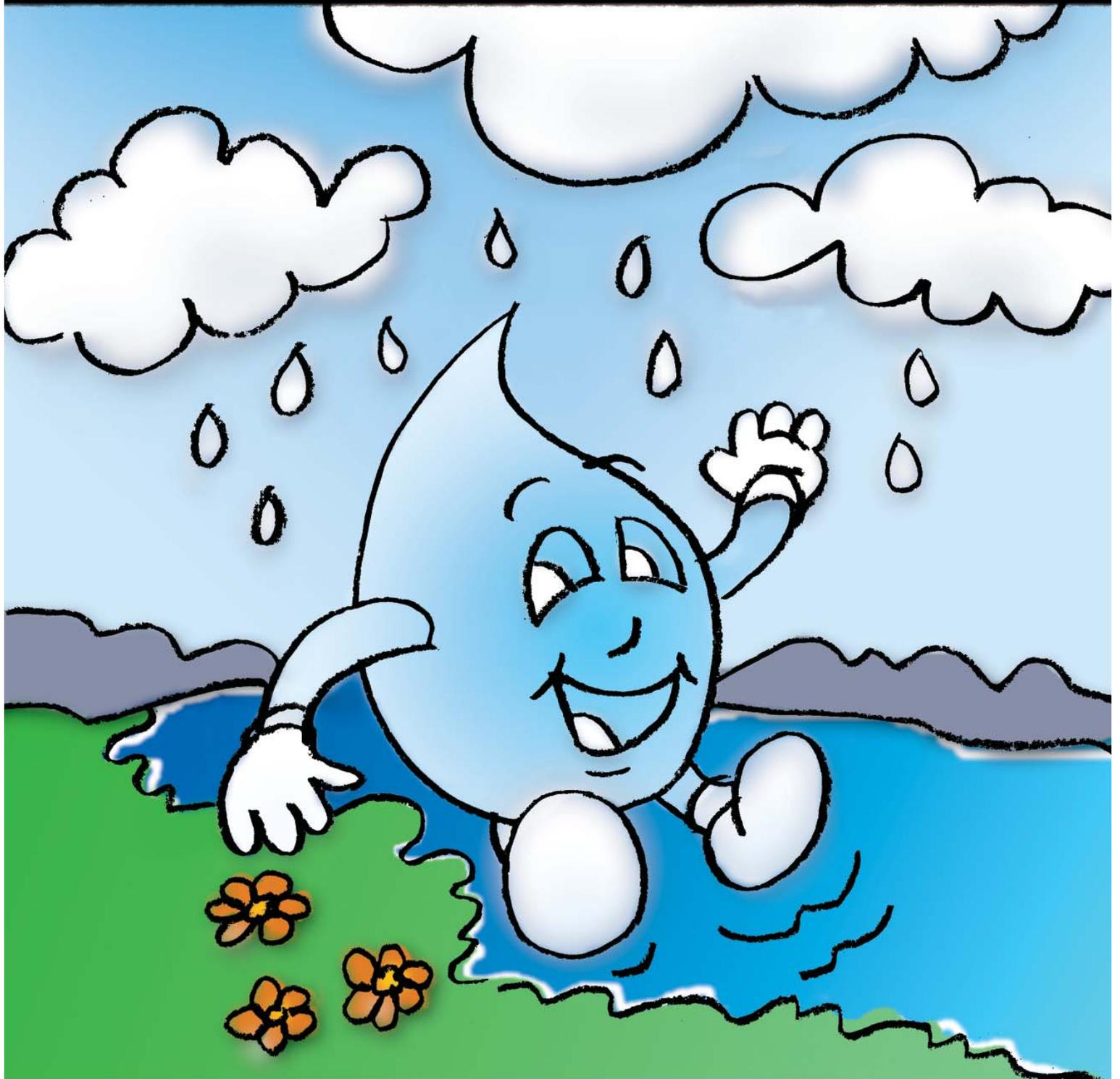


Raindrops

Keep Falling on Your Head



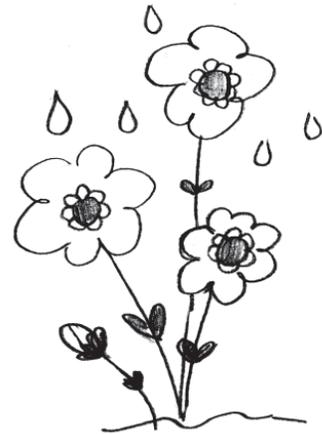
Activities for kids who care about the environment

Raindrops Keep Falling on Your Head

Soil and water conservation activities for elementary students

Table of Contents

Notes to the teacher.....	2
What are natural resources?.....	3
<i>What can kids do to conserve and protect them?</i>	
Water Quiz - What's your H ₂ O IQ?	7
How to make recycled paper - <i>Make your own paper from trash</i>	8
The water cycle - <i>Where does rain come from? Where does it go?</i>	9
What is a watershed?	10
What's your watershed address? - <i>Where are you in the world of watersheds?</i>	11
Water Word Find - <i>A wet word puzzle</i>	12
What's the Point? <i>Point and nonpoint source pollution</i>	13
Tubs, toilets and turf - <i>The biggest water users in our homes</i>	14
Soil Puzzle - <i>Crack the code to find ways that soil is used</i>	15
Soil: Nature's water filters - <i>An experiment with different soil types</i>	16
Down the Drain Game - <i>A group game about water pollution</i>	18
Gutters and Downspouts - <i>A drawing activity</i>	20
Water is an important natural resource	21
<i>Crack the code for an important message about water</i>	
Soil and water crossword puzzle.....	22
Glossary of soil and water terms.....	23
Puzzle answers	24
Websites, resources and recognition for your school.....	25



Raindrops Keep Falling on Your Head

Natural Resources Activities

The original *Raindrops Keep Falling on Your Head* was produced more than 15 years ago by the Virginia Department of Conservation and Recreation. This is the fourth printing. DCR has revised and reprinted the original with correlations to the Virginia Standards of Learning.

The students who helped illustrate the original version attended the 1991 Regional Governor's School program at West Point Elementary School and long ago finished high school. They include: Sarah Perry, Michelle Ringley, Michael Pfeiffer, Jimmy Muse, Hannah Simmons, Karen Randall, Patrick Feucht, Will Burgess, Maria Browning, Jenny Tressler, Megan Previs, Samantha Muse and Ashleigh Cork.



Note to the teacher:

Many activities in this book can be used in the classroom as group activities, demonstrations, experiments or science fair projects. The science grade level Virginia SOLs are given below for each activity to help you plan your lessons.

Thank you for the valuable job you do making students aware of environmental issues and encouraging solutions to environmental problems. You are one of Virginia's most valuable resources.

Science SOLs

What are natural resources? – page 4: K.10, 1.8, 2.7, 2.8, 3.7, 3.9, 3.10, 4.5, 4.8 and 5.7

Recycled paper – page 10: K.10, 1.8

Water cycle – page 11: K.5, K.8, 1.8, 3.9, 4.5, 4.8 and 5.7

What is a watershed? – page 12: K.5, 1.8, 3.6, 3.10, 4.8 and 5.7

What's your watershed address? – page 13: 3.6 and 4.8

There are two kinds of water pollution – point and nonpoint source pollution – page 15: 1.8, 2.7, 2.8, 3.7, 3.10, 4.8 and 5.7

Turf, Toilets and Tubs – page 16: K.10, 1.8, 3.9 and 3.10

Soils – Crack the code – page 17: 1.8, 2.7, 2.8, 3.7, 4.8 and 5.7

Soils: Nature's water filters – page 18: K.5, 1.1, 1.8, 2.1, 2.7, 2.8, 3.1, 3.7 and 3.10

Down the Drain Game – page 20: K.5, K.10, 1.8, 3.9, 3.10 and 4.8

Gutters and Downspouts – page 23: K.5, K.10, 1.8, 2.7, 2.8, 3.7, 3.9, 3.10, 4.8 and 5.7

Water is an important natural resource. – page 24: 1.8, 3.9 and 3.10

What are natural resources?

Natural resources are things like air, soil, water, trees and minerals under the ground (like oil and gold). They are what is on, around and inside the earth. We can't make them – they have been here on Earth for millions of years.

People use Earth's natural resources faster than the Earth makes them. That's why we need to be careful how we use them.

There are many things kids can do to conserve our natural resources.

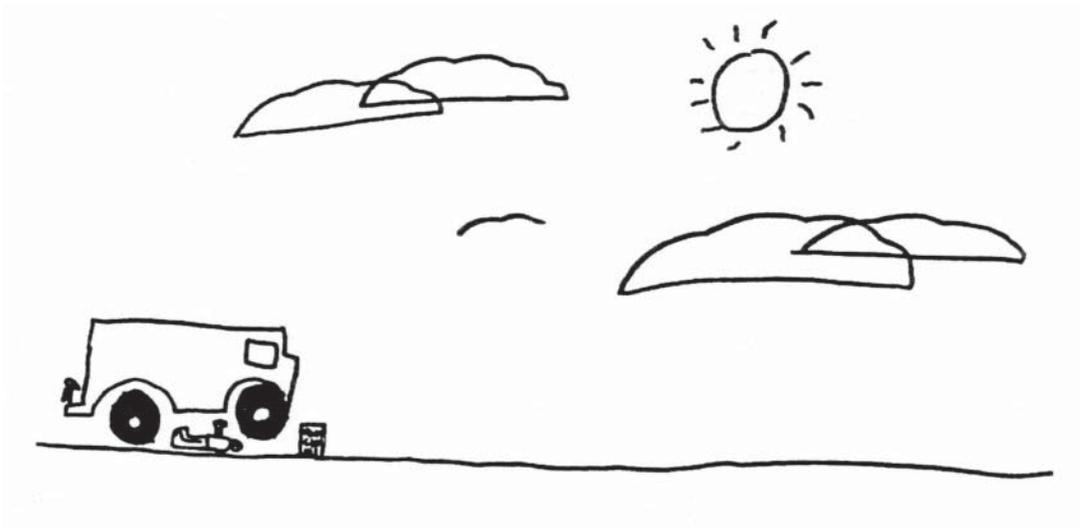
Recycle. Lots of things can be used over again.

Soda cans	Newspapers
Glass	Plastic
Motor oil	



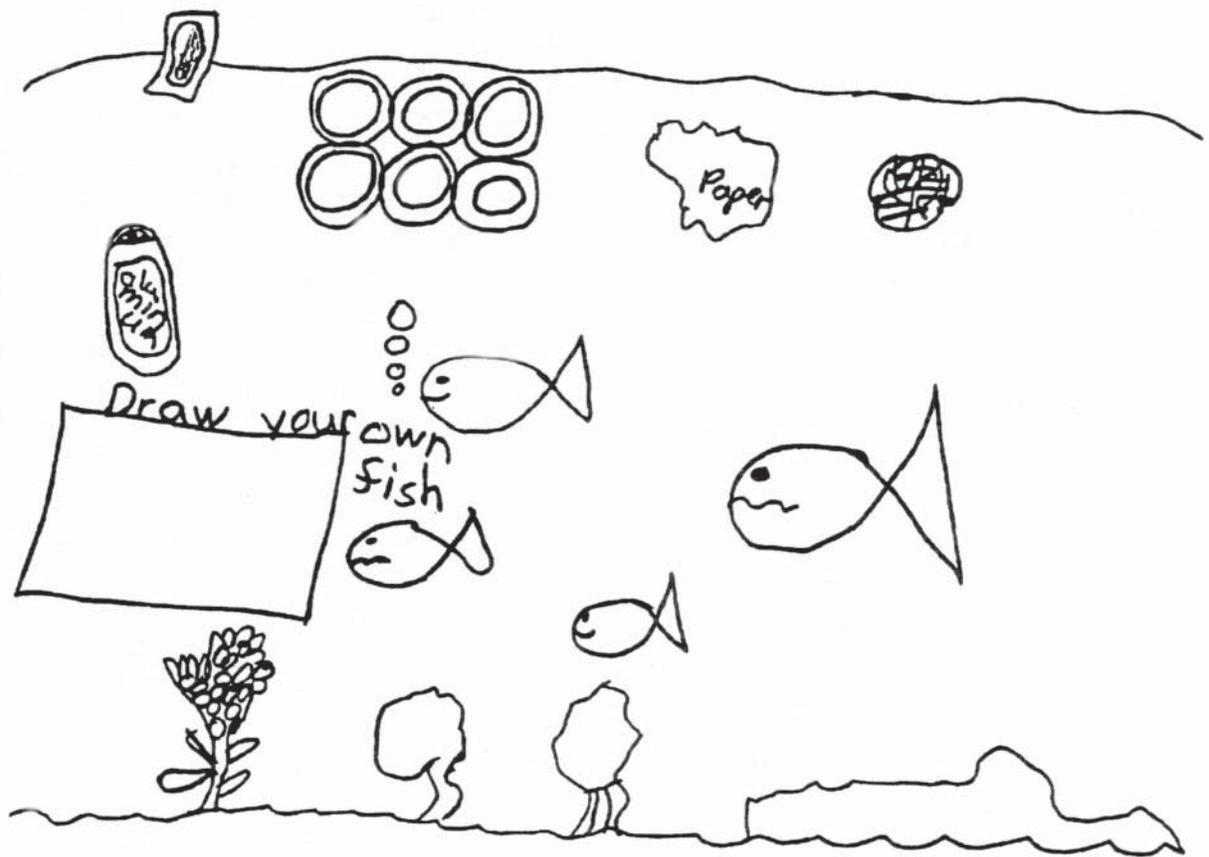
Get your family and your class at school to separate trash and recycle it. Start a box for used notebook paper at school and take it to a recycling center... or use it to make your own recycled paper, you'll find a recipe for making recycled paper (see page 8).

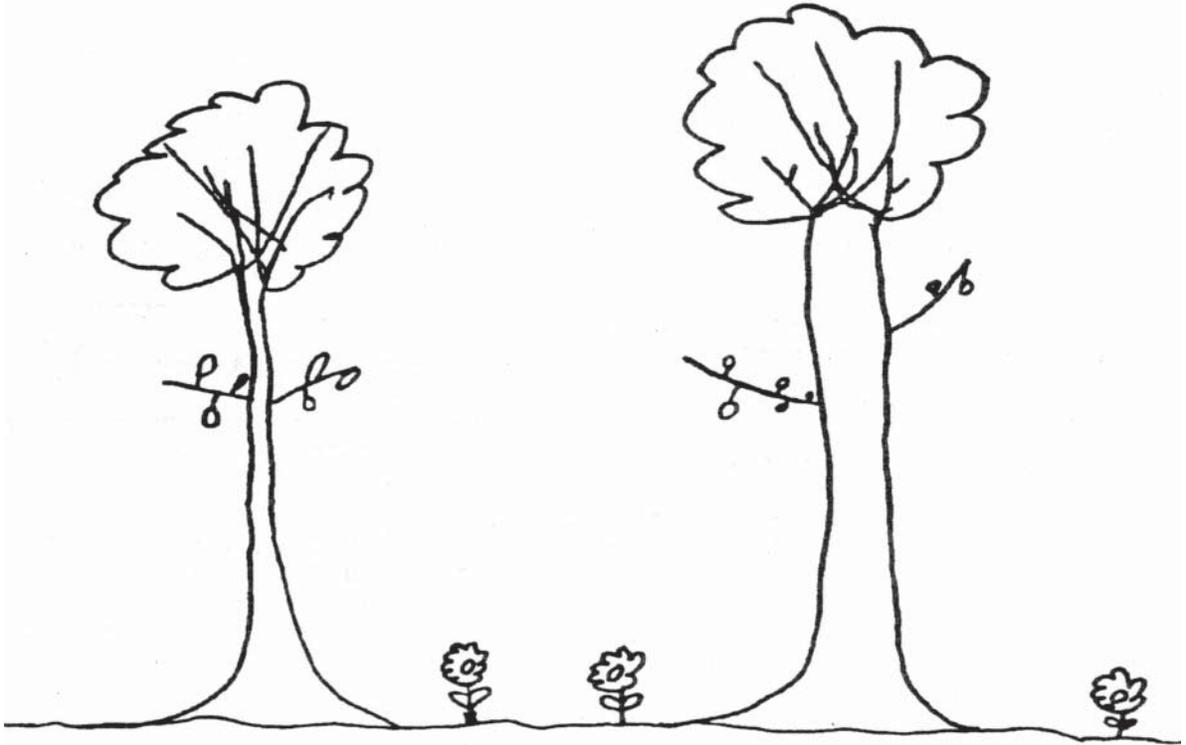




If you know someone who changes the oil in his or her car, make sure the used oil isn't dumped on the ground. Tell that person to recycle it at a gas station. One quart of motor oil can pollute up to two million gallons of water.

Don't litter. If you visit a river or go to the beach, don't throw trash in the water. Creatures live there. How would you like it if people dumped garbage in your house? You and your friends or family could adopt a stream or river and help keep it clean.





Help prevent soil erosion.

Plant a tree, some grass or flowers to hold soil in place.

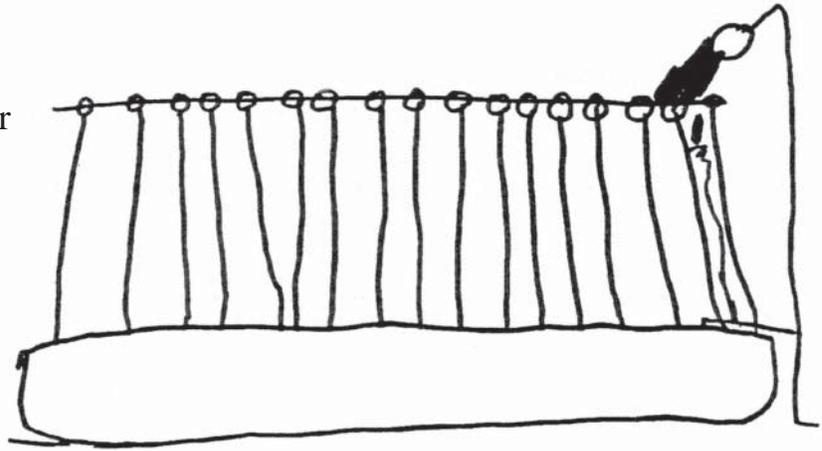
BE A
POOPER...
SCOOPER



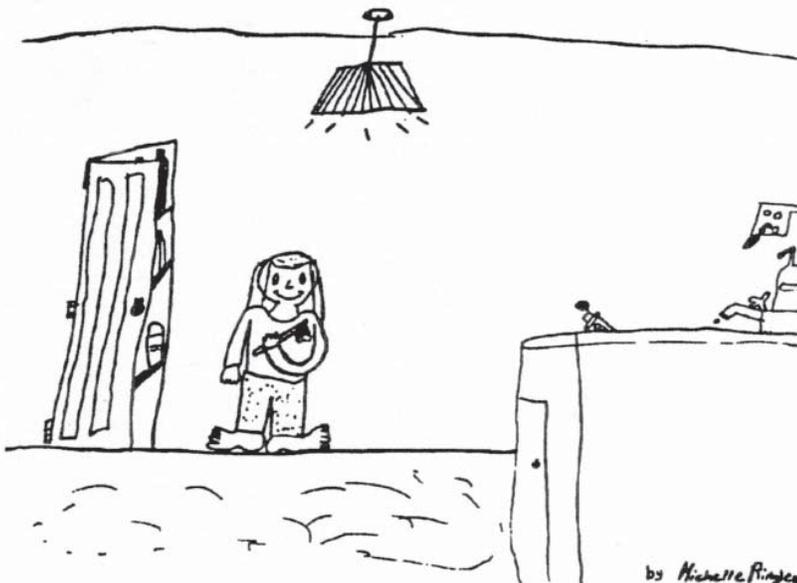
Clean up after your pet. Bury animal waste in the leaves so it won't wash down the street and end up in the river.

Save water.

Take a short shower, not a bath. Get out of the shower before your mom yells at you. Running a shower uses five gallons of water per minute. A bath takes about 35 gallons. If you really hate to take a bath, use water conservation as an excuse not to take a bath if you really don't need one!



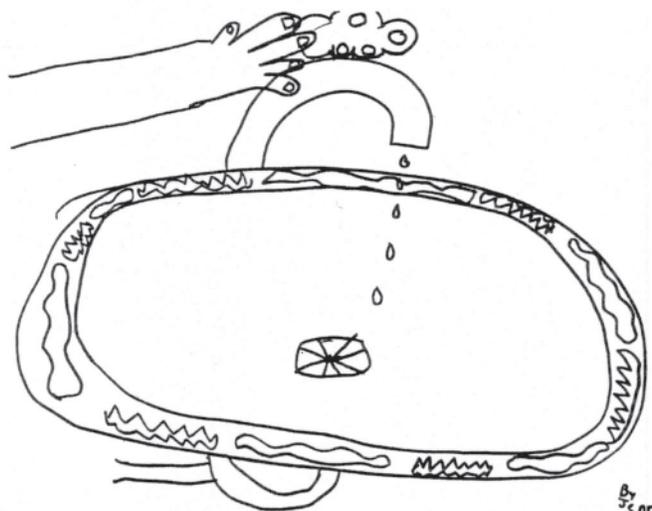
Patrick Feucht



Turn off the water while you're brushing your teeth.

You could save as much as two gallons of water every time you brush.

Help grown-ups fix drippy faucets in the house.



Water Quiz - What's your H₂O IQ?

1. By volume, the number one pollutant of Virginia's waters is:

- a. from sewage treatment plants
- b. sediment or soil washing off the land
- c. industrial waste
- d. litter

2. Which is a major source of water pollution?

- a. factories or industry
- b. sewage plants
- c. agriculture
- d. all of the above

3. From which source does the highest percentage of water evaporate?

- a. the oceans
- b. freshwater lakes
- c. plants and trees
- d. rivers and streams

4. People use about how many gallons of water each day?

- a. 5
- b. 10
- c. 25
- d. 70

5. What resource do factories use the most of?

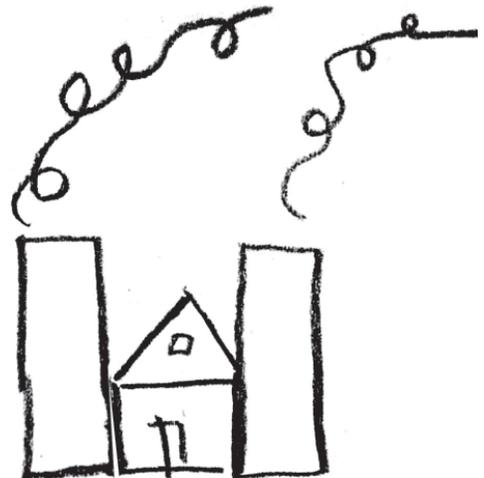
- a. oil
- b. water
- c. wood
- d. iron

6. Every living thing on Earth is mostly water. What percent of water are you?

- a. 70 percent
- b. 90 percent
- c. 65 percent
- d. 15 percent

7. Water can be found naturally on Earth in which forms?

- a. liquid
- b. gas
- c. solid
- d. all of the above

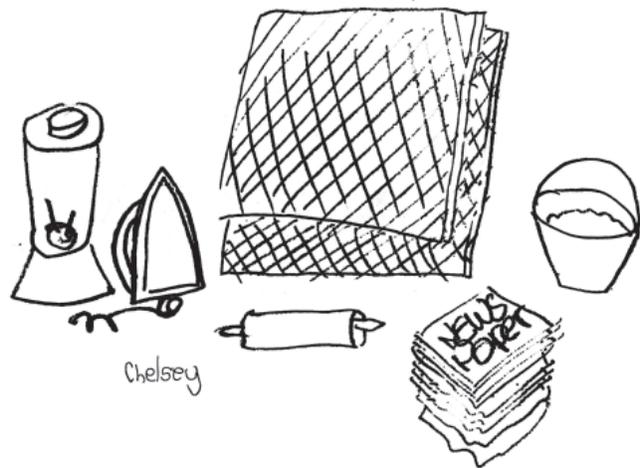


Answers:
1. b. sediment or soil washing off the land, 2. All of the above, 3. a. oceans, 4. D. 70, 5. B. water, 6. C. 65 percent, 7. D. all of the above

How to make recycled paper

What you need:

- An adult to supervise
- A blender
- 12" or 14" embroidery hoop
- 2 pieces of window screen, about 16" x 16" square (recycle an old screen or buy some)
- a bucket old newspaper, magazines or home work papers (Make sure they've already been graded!)
- an iron
- a rolling pin
- water
- 4 old towels



Set up your work area in four stations

Station 1

1. Tear used paper into pieces about 2" square. White paper with black ink will make gray paper. If you want to produce color paper, add scraps of used colored construction paper.
2. Fill the blender 2/3 full of water.
3. Add paper and blend at medium speed until you have a well-blended pulp.

Station 2

1. Stretch a piece of screen between the embroidery hoops to create a strainer. Place the hoop strainer over the bucket.
2. Pour the pulp over the screen. Try to cover the screen evenly so that your paper will be an even thickness. Let the water from the pulp drain into the bucket.
3. Place the second piece of screen over the pulp and remove the embroidery hoops. The pulp will be sandwiched between the screens.

Station 3

1. Place the screen and pulp sandwich on a folded dry towel.
2. Cover with another towel.
3. Using a rolling pin, press out the excess water. **DO NOT REMOVE THE SCREENS!**

Station 4

1. Place the screen and pulp sandwich on a dry towel.
2. Cover with another towel and press with a warm iron. Be careful not to burn yourself. Steam will rise from the towels.
3. Remove the towel and top screen from the paper.
4. Turn paper out onto a piece of cardboard or a stiff, flat surface to dry overnight.

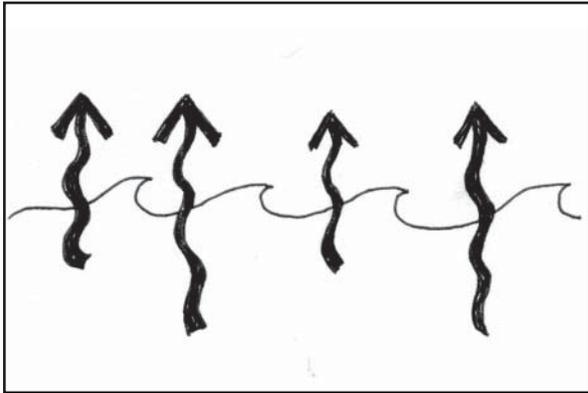
It's paper! Write your friend a note on it . . . Make a card . . . Paint a picture on the paper . . . Then recycle it again.

The Water Cycle

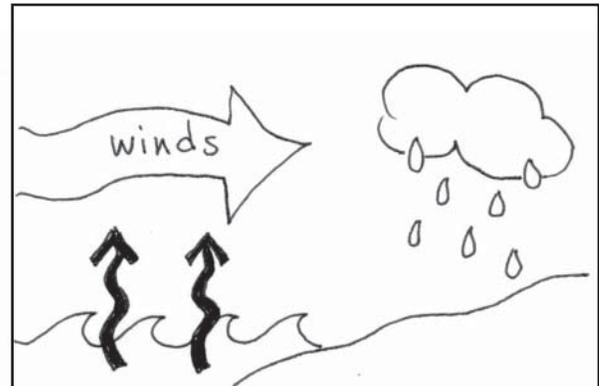
Where does rain come from?

Where does it go?

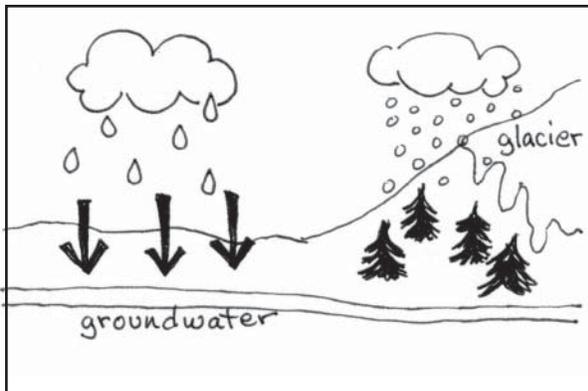
Earth holds the same volume of water today it did three billion years ago. The water cycle is in constant motion, powered by the sun and gravity.



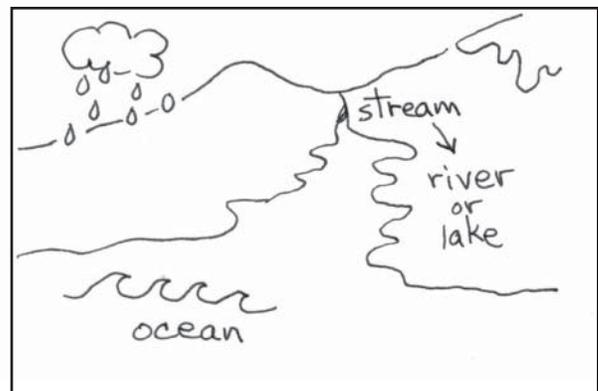
Water evaporates from the oceans and is carried by the wind.



As humid air moves over the land, it condenses and falls as rain, hail, sleet and snow.



Some of the precipitation becomes trapped in ice or glaciers. Some penetrates the soil and becomes groundwater.



It gets recycled!

Most of the water drains into streams, lakes and rivers and then flows back to the sea.

In some areas, trees, bushes, grass and other plants slow down the speed of water runoff. But in towns and cities, rain often falls on streets or parking lots where it can't soak into the ground. The water moves faster into storm drains, drainage ditches or drainage pipes. It picks up sediment, nutrients (such as fertilizers or animal waste) and toxic pollutants on its way to the nearest river.

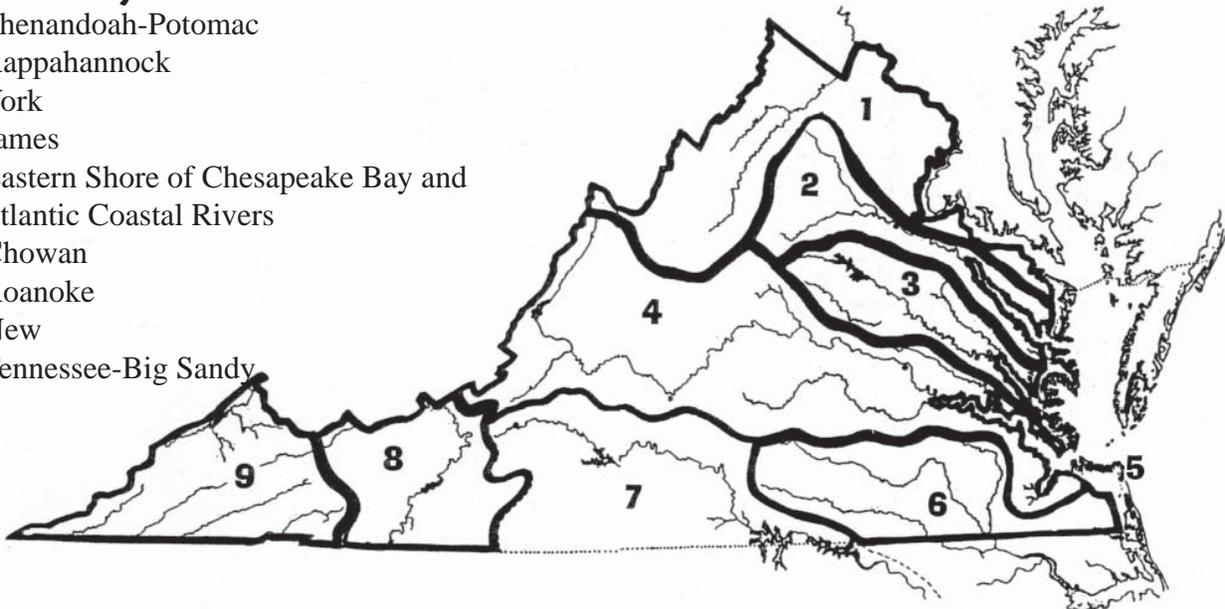
What is a watershed?

When rain falls on the Earth, that water flows across or under the ground and begins its way to a stream or river, and then on to a larger body of water such as an ocean. The land that the water flows across on its way is called a *watershed*.

Large watersheds, such as the Chesapeake Bay's, are made up of many smaller watersheds. There are nine major watersheds in Virginia. The Shenandoah-Potomac, Rappahannock, York and James River watersheds are all part of the larger Chesapeake Bay watershed. The Chowan and Roanoke rivers flow to the Albemarle-Pamlico Sound in North Carolina. The New, Upper Tennessee and Big Sandy go to the Mississippi River and eventually the Gulf of Mexico.

Virginia's major watersheds

- 1) Shenandoah-Potomac
- 2) Rappahannock
- 3) York
- 4) James
- 5) Eastern Shore of Chesapeake Bay and Atlantic Coastal Rivers
- 6) Chowan
- 7) Roanoke
- 8) New
- 9) Tennessee-Big Sandy



Not all watersheds are the same. A watershed can be in the mountains or where the land is nearly flat. Cities, farms and forests may be in a watershed. How we use the land in a watershed affects the water that flows through it. What we do in our backyard impacts our waterways. We all live in a watershed – even plants and animals – so it's important to protect our waterways.

We need clean water for drinking, swimming, fishing, recreation and producing goods.



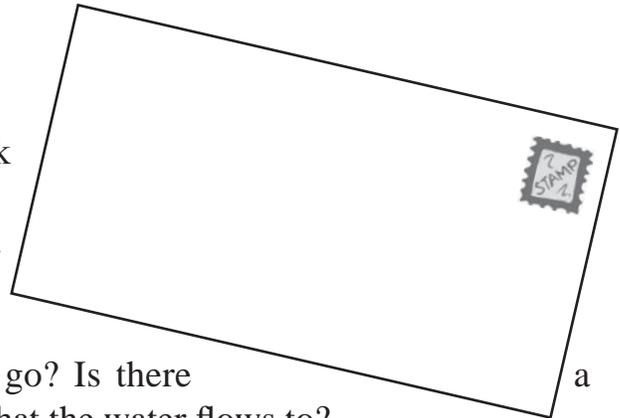
What's your watershed address?

You know your street address.

Do you know your watershed address?

To figure out your watershed address, think about where you live. Find a map of your county and figure out exactly where you live.

When it rains on the roof of your house or apartment, where does the water go? Is there creek, stream, lake or river near your house that the water flows to?



your name _____

1) _____

2) _____

3) _____

My watershed address

1) The name of the closest body of water is the first part of your watershed address. Write the name of that waterway on the second line on the envelope.

Note: You may have to do some detective work if you have storm drains on your street. Where does the water go from the storm drain? Look at a map and see if you can trace its path.

You may live in an area where the water seeps into underground caves and streams. This land is called **karst**. If you live in a karst area, the rain from your roof may flow straight to the groundwater.

2) Where does the water go from there? Trace the river or creek to the next body of water on the map. That's the next part of your address. Write the name of the waterway on the next line.

3) Keep following the path the water would take on the map until you get to a bay, ocean or lake. This is the last part of your watershed address. Write the name of the waterway on the last line.

Now you know your watershed address!

Elizabeth Mills
Mattaponi River
York River
Chesapeake Bay

Creed Crabtree
James River
Chesapeake Bay

Jerry Elkins
Levisa River
Big Sandy River
Mississippi River
Gulf of Mexico

Water Word Find

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

Find these “water” words (hint: they appear in every direction!)

- | | | |
|-------------------|----------------|---------------|
| 1. waves | 6. salty | 11. marsh |
| 2. Atlantic Ocean | 7. marine life | 12. ecosystem |
| 3. stream | 8. tidal basin | 13. fish |
| 4. evaporate | 9. algae | 14. barnacles |
| 5. coast | 10. moisture | 15. sea |



What's the point?

*There are two kinds of water pollution –
point source and nonpoint source.*

It's usually easy to figure out where point source pollution comes from. If you see a pipe emptying into the water, that's a *point source*.

You can point to where it's coming from.

Much of the pollution that enters our waterways comes from places you can't easily identify. That's *nonpoint source pollution*. It's hard to tell where it's coming from. Rain washes loose soil off construction sites, bare spots in the yard or plowed fields. Rain washes oil and litter from parking lots and roads into streams. Extra fertilizer on lawns, golf courses and farm fields washes into our waterways. Exhaust from chimneys and cars goes into the air and comes down with the rain. These are examples of nonpoint source pollution.



Which is point source and which is nonpoint source?

Place a *P* on the line if the source of pollution is a point source and an *N* on the line if the pollution is a nonpoint source.

- 1) _____ discharge from a pipe entering a river
- 2) _____ fertilizer from people's yards
- 3) _____ an overflow at a sewage treatment plant
- 4) _____ rainwater running off a parking lot after a storm
- 5) _____ loose soil from a construction site
- 6) _____ smoke in the air from a power plant
- 7) _____ animal manure from a pasture
- 8) _____ used motor oil from a car whose owner empties it into a storm drain
- 9) _____ soil eroding from a streambank



Tubs, toilets and turf

Tubs, toilets and turf account for about 70 percent of water use in a typical American home.



How can you help conserve water?

Tubs and toilets

Reduce water flow in faucets by having your parents partially close the valves for the hot and cold water pipes under the sink.

Don't leave the water running while you brush your teeth.

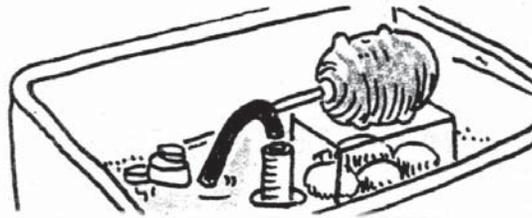
Toilets use three to six gallons of water with each flush. If your family agrees, flush less often... after two or three uses or when there is solid waste.

Never use the toilet as a trash can to flush away things like gum wrappers, paper towels, tissues or your dead goldfish.

Take short showers instead of baths. Get out before your mom yells at you. If you hate to take baths, use water conservation as an excuse not to take a bath if you really don't need one!

You can reduce the amount of water used for each flush.

Cut the top off a plastic gallon jug. Put some clean, heavy stones in the bottom part of the jug and put it in the tank where it won't get in the way of the moving parts of the toilet. Every time the toilet is flushed, you save the amount of water that remains in the jug. This method doesn't reduce the level of the water so it doesn't reduce the force of the water for flushing.



Help fix leaky faucets. Learn how to replace washers and tighten fittings so you can fix your own plumbing when you grow up.

Turf

Water the grass only when needed. Early morning is the best time to water for the least evaporation. Even in the summer, a lawn only needs about one inch of watering to stay healthy.

Soil is an important natural resource. Air, water, minerals and other organic matter make up our soil. It takes from 100 to 1,000 years to make just one inch of soil – that’s why we need to take care of it now.

Conservation is a big job. Everyone needs to pitch in to save our soil since we all use it. What are some uses for soil? Decode the words below to find some answers:

A=x B=o C=j D=l E=q F=r
G=e H=n I=t J=w K=a L=z
M=p N=v O=g P=u Q=y R=m
S=i T=c U=b V=k W=d X=s
Y=h Z=f

O F K L S H O K H S R K D X

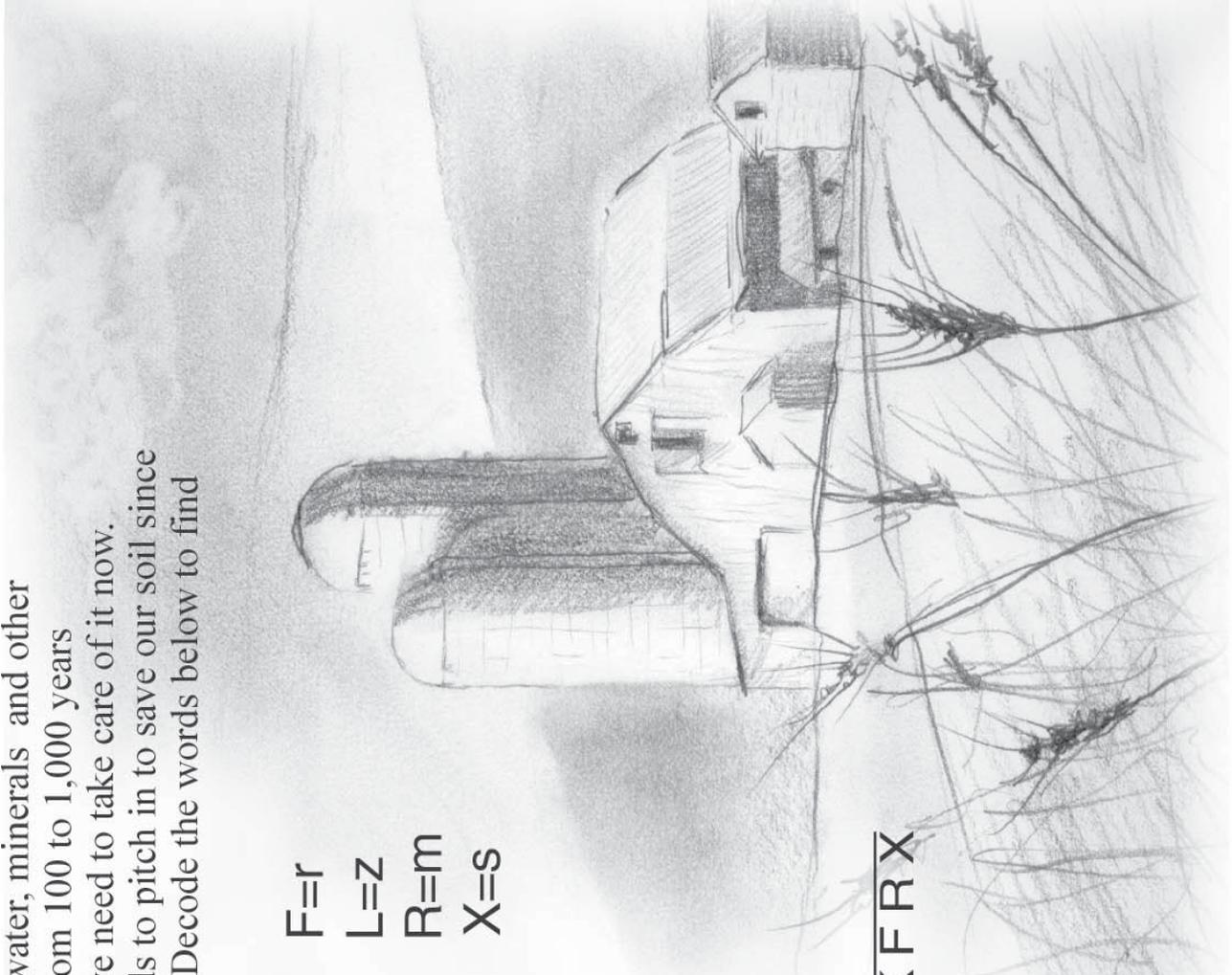
H K I P F G K F G K X

W K S F Q B F B I Y G F Z K F R X

T F B M X

T B H X I F P T I S B H

O K F W G H X



SOILS

Nature's water filters

Recommended as a demonstration for grades K-3
An individual or group experiment for grades 4-12
Science fair project

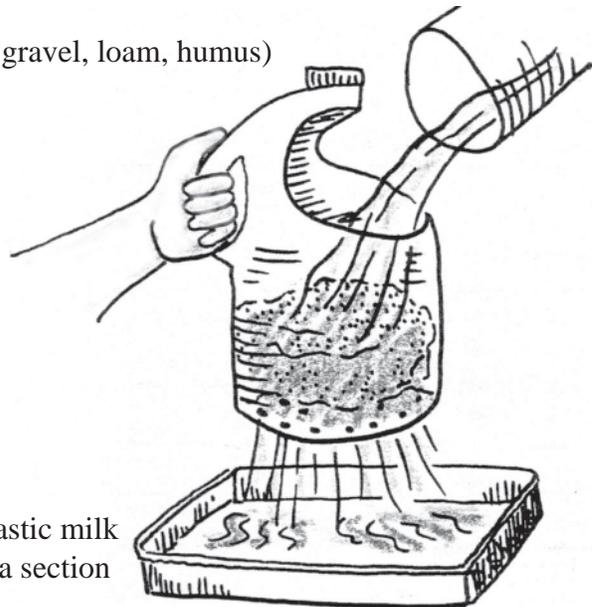
Soil filters particles out of the water that passes through it. Different types of soils have different abilities to filter pollutants out of water. Soil that is fine will be able to trap more sizes of pollutants than soil made of large particles.

If the flow of water is slowed down, it is more likely to go through the surface of the ground and pass through the soil. The slower the water passes through, the more particles will be filtered out.

The rate at which water passes through soil is called the *percolation rate*. As runoff and pollutants in the water percolate through the soil, particles are trapped within the soil. Many minerals in soil chemically bind to pollutants. There they are stored, resulting in cleaner water.

What you need for the experiment

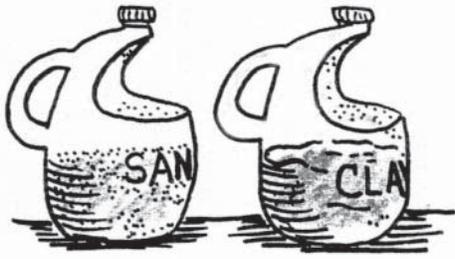
- Bags or containers for collecting soil
- ½-gallon samples of several soil types (sand, clay, gravel, loam, humus)
- a nail
- large funnel
- several aluminum pans
- scissors
- water
- a 1-gallon plastic milk jug or plastic bottle for each soil sample collected
- two glass containers for each soil sample collected
- recording sheet (see next page)



Preparing for the experiment

1. Punch a lot of small holes in the bottom of each plastic milk jug (one for each sample being collected). Cut out a section of the top of each bottle (see illustrations).
2. Collect soil samples. Try to find different types of soil, such as sandy, clay, humus or loam.

3. Fill each plastic bottle half-full with soil. Label each with the soil type – sand, clay, gravel, humus, loam



Proce-

dure

1. Place the soil-filled jug over an aluminum tray and pour a glass container of water on the soil.
2. Collect the water that drains through the holes in the bottom of the jug in the aluminum tray. Use the funnel to transfer the drainage to the second glass container. Label the container with the soil type. Which soil filtered the water best? Why do you think some soils filtered better than others did? A sample with fine particles that are close together and one with a tangle of roots in the soil should be better filters than a loose sample with large particles and lots of air spaces.
3. Record your findings on the chart below.
4. Pour the dirty water over each of the soil samples again. Record your findings. Does the water eventually become clear?

	sample 1	sample2	sample 3	sample 4
soil type				
water clarity rate 1 - 5 1 = cloudy 5 = clear				
results of 2nd pour				
results of 3rd pour				
results of 4th pour				

In nature, rain washes loose soil off construction sites, a bare spot on the lawn or plowed farmland. We call this process *erosion*. Eroded soil eventually ends up as sediment in our waterways . . . a form of nonpoint source pollution. It clouds the water, chokes fish and other animals, blocks sunlight that aquatic plants need to grow and makes it harder to clean up our drinking water.

What can we do to prevent soil erosion?

We can reduce the amount of loose soil by controlling erosion and sediment from new construction sites and by caring for lawns. Where water is running downhill over the ground surface, it will carry loose soil and pollutants. If there isn't time for the water to soak or percolate into the soil, erosion and sediment become a problem.

Find ways contractors, road builders and homeowners can prevent nonpoint source pollution. You'll find some of the answers in this booklet.

Down the Drain Game

Toxic substances added to our sewer systems can cause water pollution. Things we do every day can sometimes harm the environment. You can help prevent this kind of pollution by being careful about what goes down the drain at your house. The chart on the next page covers some of the things you should be careful not to let go down the drain.



What you need to play:

For each player – one clean, empty container from anything that might end up being disposed of down the drain, such as toothpaste, soap, shampoo, toilet tissue, detergent, cleanser, window cleaner, floor wax, bathroom cleaner, cooking oil, coffee grounds, motor oil or paint

A large box or other container to represent a sink

Preparation:

1. Seal or tape containers, if possible, and give one container (see above) to each player.
2. Choose a person to hold the “sink.”

To play:

1. Players should form a circle with the “sink” in the middle.
2. The first player holds up his or her item (toothpaste) and says, “I brushed my teeth and added toothpaste to the water.” Players may wish to act out each action described.
3. The player will put the item in the “sink.”
4. The next player will hold up his or her item and say, “I washed my face and added soap to the water,” and the first student will add “and toothpaste to the water.” The soap will be added to the sink.
5. Continue around the circle until the last person adds his or her item. By the end, the sink will be full of containers, illustrating the amount of pollutants that could be added from one home.
6. Remove the items and put them in the categories on the next page. Reading labels on the containers may help you.

Down the Drain Game chart

List the objects from the sink under the correct heading. Remember the safest way to dispose of toxic substances to protect our water.

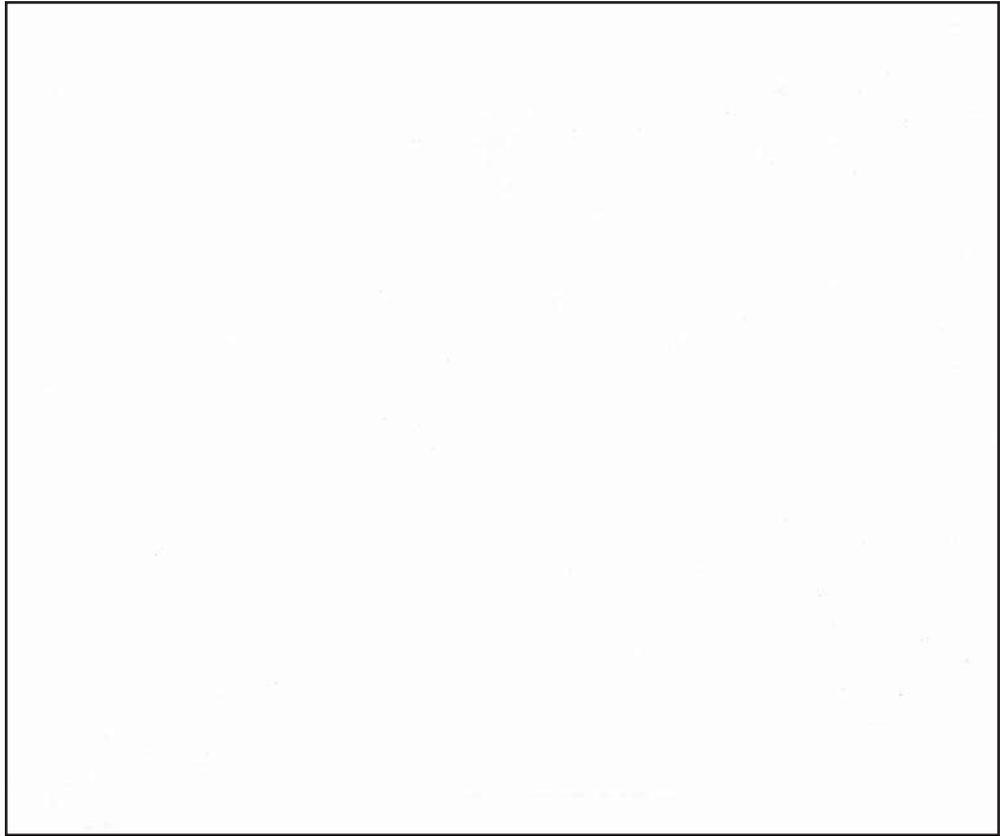
<i>Things that can safely go down the drain with plenty of water</i>	<i>Things that cannot be poured down the drain but can be disposed of in a sanitary landfill</i>	<i>Things that should be saved for community-wide collection or given to a hazardous waste contractor</i>
<p>dish detergent laundry detergent bar soaps toothpaste</p> <p><i>These have been made so that they harm the environment as little as possible (phosphate-free detergents)</i></p>	<p>food items (unless you have a sink garbage disposal that grinds waste and sends it down the drain and on to your local sewage treatment system or septic tank)</p> <p><i>Most foods, especially oil, fats and coffee grounds, will clog pipes and may not be removed from wastewater. Seal in a garbage bag or put in the compost pile.</i></p>	<p>motor oil turpentine</p> <p><i>These can be recycled. Keep in tightly closed containers. Have adults take to a recycling center. Poisonous! Never dump down the drain!</i></p> <p>medicines some household cleaners pesticides other chemicals</p> <p><i>Tightly cap in original containers. Wrap in many layers of newspaper. Put in a tightly tied trash bag for regular collection. Poisonous! Never dump down the</i></p>

Things that are dumped on the ground or in a storm drain will be washed into waterways when it rains. Be careful about disposing substances. Keep poisons and potential pollutants out of the drain.

Think before you dump!

Gutters and Downspouts . . .

Drawing activity

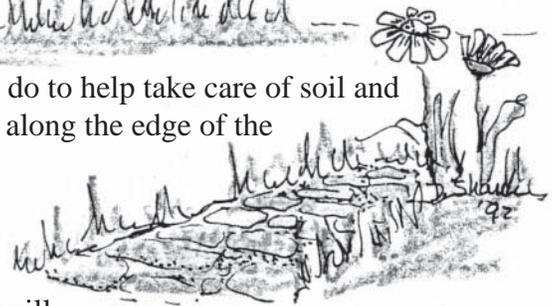


1. Draw a picture of a house. There are many things you can do to help take care of soil and water. Look at your drawing. Does the house have gutters along the edge of the roof? Gutters and downspouts help prevent soil erosion. If you didn't draw them on your building, add them.

2. Draw some grass, flowers and shrubs next to your house where the downspouts empty onto the ground. The plants will make the house pretty. They will also help to keep the soil from washing away when it rains.

3. Is there a sidewalk in your picture? What is it made of? Sidewalks made of stones, gravel or bricks let the rain soak into the ground.

4. Is there a pet in your picture? Cleaning up after pets is important if you live in the city. When it rains, animal waste washes from sidewalks into the street storm drains. It could end up in our rivers. If you were a fish, would you want that dumped in your living room? Be a pooper-scooper. Clean up after your pet.



Water is an important natural resource

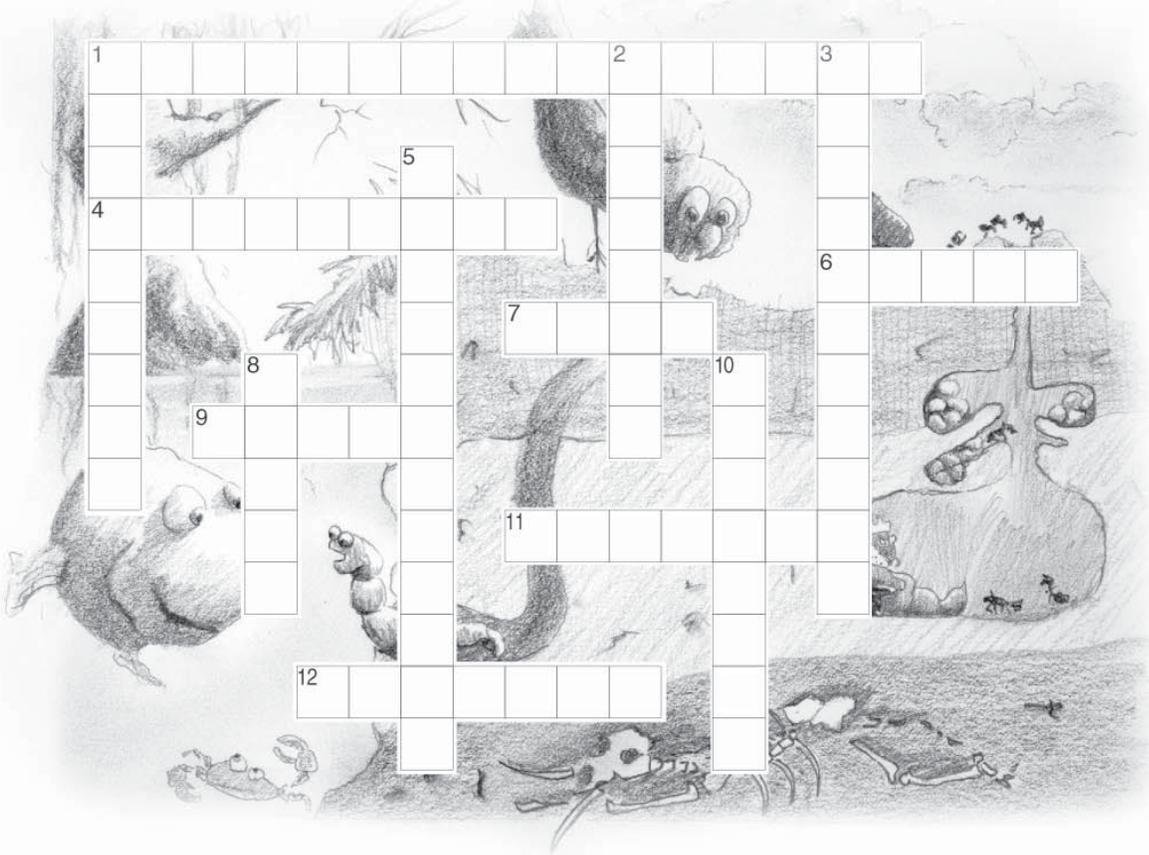
Water is a resource we often take for granted. We use it every day. At home, we use it for drinking, bathing and cleaning. At work, water is used for growing food, providing power, heating and cooling. We even use water at play - for fishing, boating, swimming and gardening. But water is a limited resource. Conserving water *now* helps make sure we always have plenty.

- The sloping ledge formed underwater alongside most continents is the con_____nent_____lsh_____f.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
- “Rivers of water” that flow through the ocean in certain directions are urr_____nt_____.
17 18 19 20 21 22 23 24
- Marine organisms called pl_____nk_____o_____ are food for animals that live in the ocean.
25 26 27 28 29 30 31 32
- _____ves_____ and ti_____s affect the shape of coastal areas.
33 34 35 36 37 38 39 40 41 42
- Two types of wetlands are sw_____mp_____ and _____arsh_____.
43 44 45 46 47 48 49 50 51 52 53 54 55
- P_____llu__________n can ruin water.
56 57 58 59 60 61 62 63 64



53 36 26 56 43 50 35 41 31 60 51 44 10 4 21 19

Soil and water crossword



Across

1. soil, water, forests, minerals, wildlife, fish-things found in nature (two words)
4. man-made lake where water is stored
6. weathered objects that contribute to soil
7. natural mixture of minerals, organic matter, water and air that forms land surface
9. liquid we need to live that covers most of Earth
11. loosening and movement of soil by water, ice, landslides and wind
12. science of the history of Earth

Down

1. "foods" that help soil grow plants
2. any living being (people, animals or insects)
3. everything that surrounds us
5. wise use and protection of soil and water
8. planet we live on
10. material deposited by water, glaciers and wind

(hint: use the glossary to help solve the puzzle)

Glossary of soil and water terms

conservation - wise use of our natural resources

ecology - science of the relationships between plants, animals and their environments

environment - everything that surrounds us

erosion - loosening and movement of soil by wind, water, ice and landslides

geology - science of the history of Earth

habitat - an area in which plants and animals live, grow and reproduce

mineral - (a natural resource) an inorganic substance with definite chemical and physical properties and crystalline structure

natural resources - found in nature: soil, minerals, forests, water, fish, wildlife

nutrients - things that provide nourishment for organisms
(it can be food or chemicals)

organic matter - plant and animal materials in different stages of decay
(decomposition) that may be part of the soil

organism - a living being (people, animals, plants and insects are all organisms)

particle - a very small piece or part of something bigger

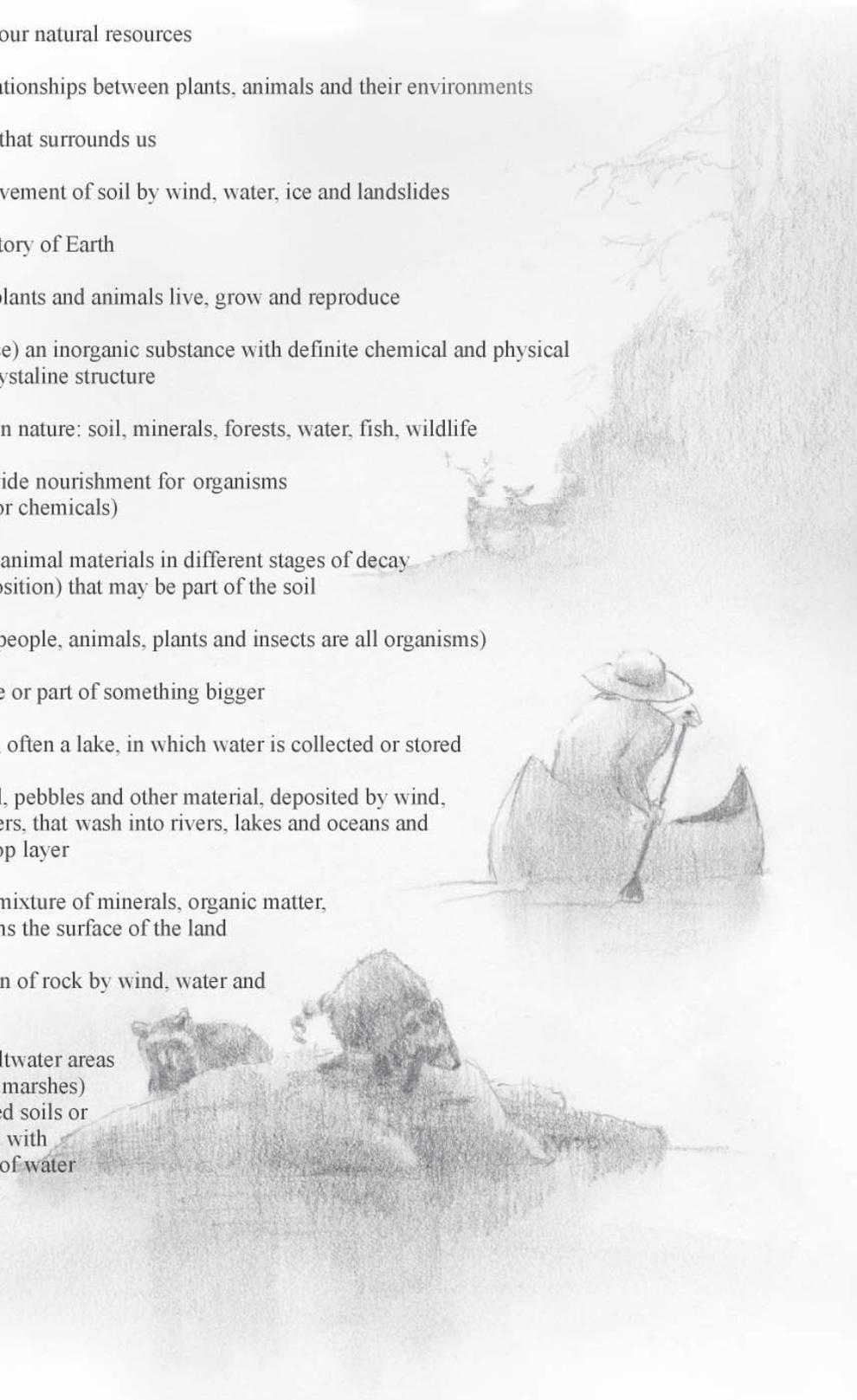
reservoir - a body of water, often a lake, in which water is collected or stored

sediment - bits of sand, soil, pebbles and other material, deposited by wind, water and glaciers, that wash into rivers, lakes and oceans and pile up layer atop layer

soil - a naturally occurring mixture of minerals, organic matter, water and air that forms the surface of the land

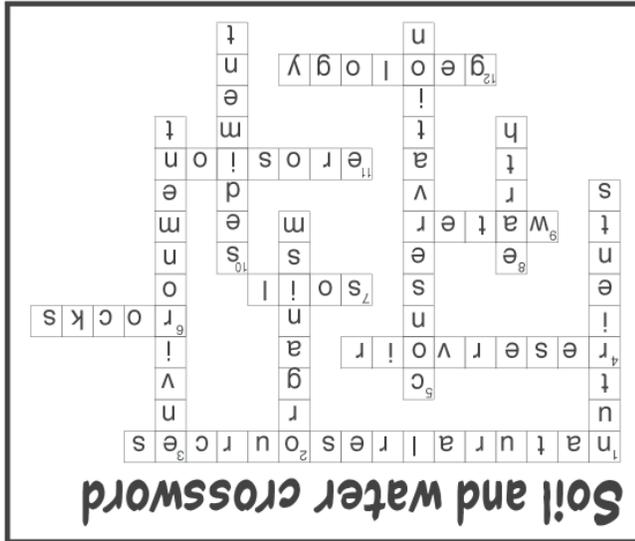
weathering - breaking down of rock by wind, water and living things

wetlands - freshwater or saltwater areas
(swamps, bogs, marshes)
with waterlogged soils or
that are covered with
a shallow layer of water

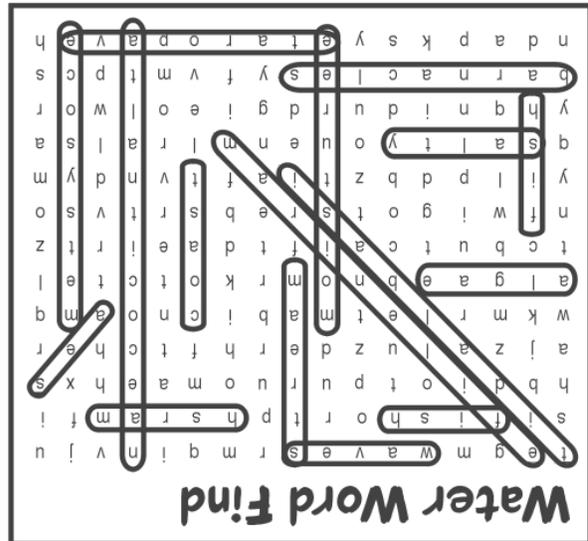


Answers

Puzzle 1



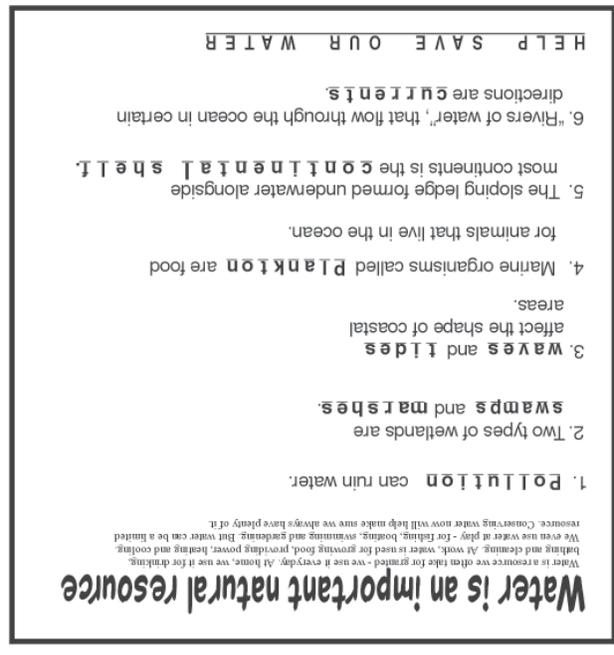
Puzzle 2



Puzzle 3



Puzzle 4



[Note to teacher]: Puzzles relate to Virginia Science Standards of Learning: 3.6, 3.7, 3.9, 3.10, 4.8, 5.6 and 5.7.

Websites, resources and recognition

The Bridge - marine education website - <http://www.vims.edu/bridge>

CHESSIE - Chesapeake Bay education website - <http://www.bayeducation.net>

Commonwealth of Knowledge - website with lesson plans and more - <http://www.knowledge.virginia.gov>

Project Learning Tree - forestry-related activities curriculum guide - contact Virginia Department of Forestry, <http://www.dof.virginia.gov/kid/kidplt.htm>

Project WILD - wildlife-related activities curriculum guide - contact Virginia Department of Game and Inland Fisheries - <http://www.dgif.virginia.gov>

Project WET - water-related activities curriculum guide - contact Virginia Department of Environmental Quality - <http://www.deq.virginia.gov>

Project Underground - groundwater, cave and karst-related activities curriculum guide - contact Virginia Department of Conservation and Recreation - www.dcr.virginia.gov/underground.htm

River of Words - watershed-related art and writing competition - <http://www.riverofwords.org>

School Yard Habitats - program for creating wildlife habitats on school grounds - contact Virginia Department of Game and Inland Fisheries - http://dgif.virginia.gov/wildlife/habitat_partners/school_sites.html

Save Our Streams program - citizen volunteer water quality monitoring program - contact the Izaak Walton League of Virginia, www.sosva.com

Virginia 4-H programs - projects, programs, competitions, camps - contact Virginia Cooperative Extension - <http://www.ext.vt.edu/resources/4h>

Virginia Naturally Exemplary Schools program - school recognition program - www.dgif.virginia.gov/education/van_school_recognition.html

Virginia Naturally website - environmental education website - <http://www.VaNaturally.com>

Virginia State Parks: Your Backyard Classroom - history and natural resource-related activities curriculum guide designed for field trips to Virginia State Parks - <http://www.dcr.virginia.gov>

Water Wizard Van - van loaded with environmental education materials and interactive exhibits - contact Virginia Cooperative Extension - <http://www.ext.vt.edu/resources/4h/wizard>

W.A.V.E.S. - Chesapeake Bay-related activities curriculum guide - contact the Chesapeake Bay Foundation - <http://www.cbf.org>

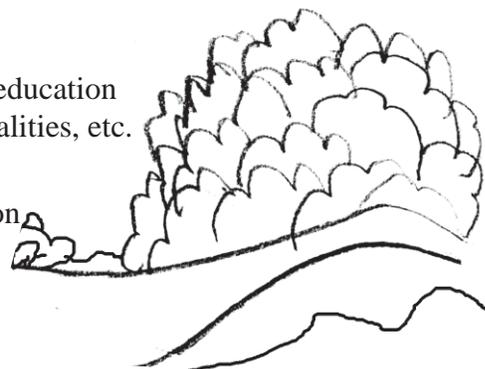
Wildlife Mapping - volunteer recording of wildlife observations for database - contact Virginia Department of Game and Inland Fisheries - <http://www.dgif.virginia.gov>

Grant opportunities

Chesapeake Bay Restoration Fund grants - Chesapeake Bay education projects sponsored by schools, environmental organizations, localities, etc. - <http://dls.state.va.us/cbrfac.htm>

Virginia Environmental Endowment - environmental education grants - www.vee.org

Virginia Resource Use Education Council classroom grants - watershed education and restoration projects. Only schools can apply - vanaturally.com/classroomgrants.html



For more information about Virginia's natural resources,
visit DCR's website at www.dcr.virginia.gov
or the Virginia Naturally website at
www.VaNaturally.com

Virginia Department of Conservation and Recreation
203 Governor St.
Richmond, VA 23219
1-877-42WATER

*Funding for this project comes through
a grant from the Chesapeake Bay Program*



Virginia Department of Conservation & Recreation
State Parks • Soil & Water Conservation • Natural Heritage
Chesapeake Bay Local Assistance • Land Conservation
Outdoor Recreation Planning • Dam Safety & Floodplains



Chesapeake Bay Program
A Watershed Partnership