

Stormwater Pollution

What is Stormwater Pollution?

What is a River Basin?

River Basin Riddler Cards

So, Now What Can You Do?

What is your ecological address?



Pollution Solutions

Dirt Can Be Dirty

Grade Your Schoolyard

Water Puzzler

N.C. River Basins



*Text: Rachel Golden and Marty Wiggins, Office of Environmental Education; Graphics: John David Hardee, Creative Services, Office of Public Affairs, unless otherwise noted. Above graphic, left to right, Boys in river composite of NCDENR river picture and swimmers by Lawrence S. Early, NCWRC. Yellow Belly Turtle by Derrick Hamrick. Junaluska Salamander by R.W. Van Devender for David Wojnowski's "Project SAVE- Saving Amphibian Vital Environments - Curriculum and Activity Guide". Please Don't Feed The Storm Drain by Texas Commission on Environmental Quality. North Carolina Department of Environment and Natural Resources Logo by Creative Services Staff.

What is Stormwater Pollution?

THAT Causes Pollution

When it rains, some of the rainwater soaks into the ground, and part of it flows over the ground and directly into creeks, streams or rivers. This water that runs off into the river is called runoff, or sometimes stormwater runoff. Clever, huh? Sometimes this stormwater runoff gets polluted. Pollution is anything that harms natural resources, whether it is air, soil, or in this case, water. Sometimes the pollution is something you can see, like trash floating on top of the water. Other times you can't see the pollution at all, like when motor oil from a car washes into a nearby creek. Polluted runoff is the number one cause of water pollution in the United States, and North Carolina is no exception. So, who is to blame? Who is making the water that we drink and swim in dirty? We all are...take a look.

Many things we do and that happen around us every day can cause polluted runoff. Here are a few examples...

Washing the car

Have you ever washed your parents' car? It's fun, and you can soak your friends with the hose! If you wash the car in the driveway, all of the soap, scum, and oily grit run down into the storm drain. Did you know the storm drains on your street and in your neighborhood carry rainwater away from your house, apartment building, or yard directly into the streams and rivers near you? If you live in the country, water from your yard may go into a ditch and then flow to streams and rivers. If you live near the coast, it may go straight to the ocean. It is not cleaned or treated along the way, so anything that goes to the storm drain or ditch goes into the water. Soap and oily grit aren't good for the animals in the river, and they aren't good for us when we use the river water for swimming or drinking.



So, do you get to tell your parents that you will not wash the car? Sorry, there's a better solution. Wash the car on gravel or grass instead of the street or driveway. Streets and driveways are made of asphalt, which is impervious, meaning that water can't go through it. Gravel or the lawn are pervious, meaning water can soak into them so it won't go straight to the storm drain. When people wash their car on a pervious surface, or better yet take it to a car wash where the water gets treated, they help reduce stormwater pollution.

Litter

Do you ever see people throw trash out of cars or on the ground? You surely don't do that, DO YOU?! Litter on the street washes into storm drains and ditches, then ends up in creeks, rivers, and lakes. It harms water quality and wildlife. A tiny cigarette butt can take 25 years to break down! So, don't litter, and tell others to keep their butts in the car!



Lawn Care

Some people use fertilizer on lawns to help them grow. When people use more fertilizer than their lawn needs, or if they fertilize just before it rains, a lot of fertilizer ends up in runoff and not on the lawn. You know what happens next...down the storm drain and into the river. Fertilizer helps things grow, but when it gets in water, it helps algae grow. Algae blooms can cause major problems in waterways because they use up oxygen needed by other river critters. What can people do who want to fertilize their lawn? Only use as much fertilizer as the lawn needs, and try not to fertilize before it rains.

Another thing to think about is the grass clippings left after you or your parents mow the lawn. What gets done with the leaves you rake? Putting grass clippings, leaves, and yard debris in the street, storm drain, or ditch can cause problems for you and your water. Storm drains can clog, streets can flood, and water can become polluted. To avoid this, use clippings as fertilizer, use a mulching lawn mower, compost leaves and clippings, or bag them for yard waste collection day.



Let's Talk About Poop

No, really, let's talk about poop. Does your family own a dog? Do you know other people with a dog? What do you think happens to all of the dog waste our pets leave behind? Right...down the storm drain and into the water! When you think about how many people own dogs, this can really build up! Did you know dog waste contains bacteria that can harm people? When people don't pick up after dogs these bacteria end up in the water that we drink. Don't worry! Nobody has to give up his or her pooch! Pet owners can improve water quality by picking up after their pets and throwing their pet's waste into a trashcan.



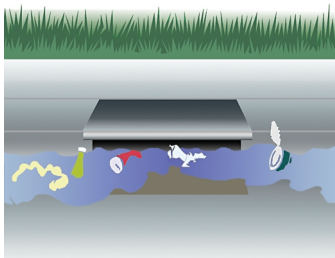
So, you can see that many causes of stormwater pollution are activities that people do everyday. Many people do not even know that what they do is polluting their water.

Who cares anyway ?

Okay, some of the water in North Carolina is polluted. Big deal.

Should you really care? Does it really affect you? Well, think about this:

- Do you like seafood? After a rain, some shellfish beds in North Carolina have to be closed due to polluted runoff
- Where does your drinking water come from? Fifty-five percent of North Carolina's citizens get their drinking water from a surface water source.



90
80
70
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10

2X, 2001

C M Y K

Pollution Solutions

Can you find at least eight things in the picture below that could cause litter, waste, or other pollutants to end up in the storm drain and eventually flow into nearby lakes and streams? Circle each activity that could cause pollution and then check your answers below. Next, come up with ways the same tasks could be accomplished with less pollution.



1. Oil leaking from car in garage
2. Chemicals in garage stored improperly
3. Washing paint brush in driveway
4. Overflowing trashcans
5. Over-fertilizing
6. Changing oil in driveway and spilling
7. Dog poop on lawn
8. Washing grass clippings down driveway

Answers to Pollution Solutions



Graphic Adapted from San Bernadino County, CA

NC State Standards • Stormwater Pollution • Corresponds with the following NCSCOS:

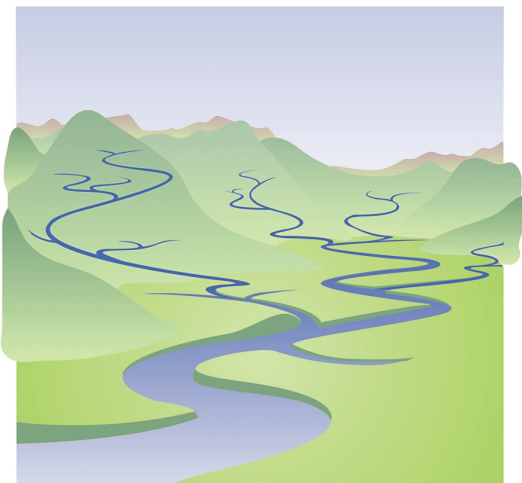
- | | | |
|--|---|------------------------------|
| 5th grade - 3.01 | 6th grade - 3.06 | 8th grade - 3.02, 3.07, 3.08 |
| 9th grade - Earth Science - 4.04, 4.05 | AP Earth/Environmental Science - 4.03, 5.02 | |

What is a River Basin?

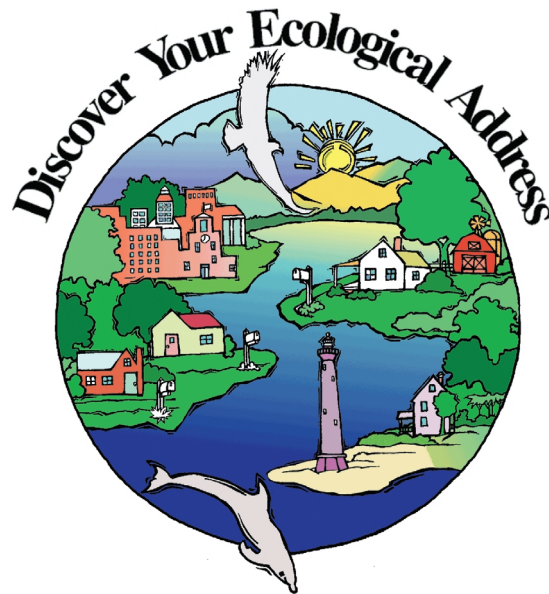
A river basin is the land that water flows across or under on its way to a river. Just as a bathtub catches all of the water that falls within its sides, a river basin sends all of the water falling within it to a central river and out to an estuary or to the ocean.

A river basin drains all of the land around a major river. Basins can be divided into watersheds, or areas of land around a smaller river, stream, or lake. North Carolina is made up of many watersheds connected to each other. Within each watershed, all water runs to the lowest point - a stream, river, lake, or ocean. On its way, water travels over the surface of the land across farm fields, lawns, and city streets, or it seeps into the soil and travels as groundwater. Large river basins are made up of many smaller watersheds.

Everyone lives in a river basin. It is part of your ecological address. You can change what happens in your river basin, for good or bad, by how you treat the natural resources - the soil, water, air, plants, and animals. As water moves downstream, it carries and leaves behind gravel, sand, and silt. It also carries bacteria and chemicals. Whatever happens to the surface water and groundwater upstream will eventually have an effect downstream. Even if you don't live near a river, you still have an effect on your river basin.



Erin Hancock, NCWRC



4X, 2001



Crumple Paper

Take a piece of paper that you are finished with. Crumple it up into a ball. Now gently open up the paper, but don't flatten it out completely. The highest points on the paper represent the mountaintops and the lowest wrinkles, the valleys. Choose one color of water-soluble marker and use it to mark the highest points on the map. These points are the mountain ridgelines. Choose a second color and mark the places where different bodies of water might be: creeks, rivers, and lakes. With a third color, mark four or five places to represent human settlements: housing tracts, factories, shopping centers, office buildings, schools, etc. Try sprinkling a powdered material, such as cinnamon, red pepper, or cocoa powder, to demonstrate how pollutants flow through the watershed. Use spray bottles to lightly spray the topographic watershed maps. The spray represents water falling into the watershed (Source: VA Love-A-Tree).

C M Y K



River Basin Riddler Cards

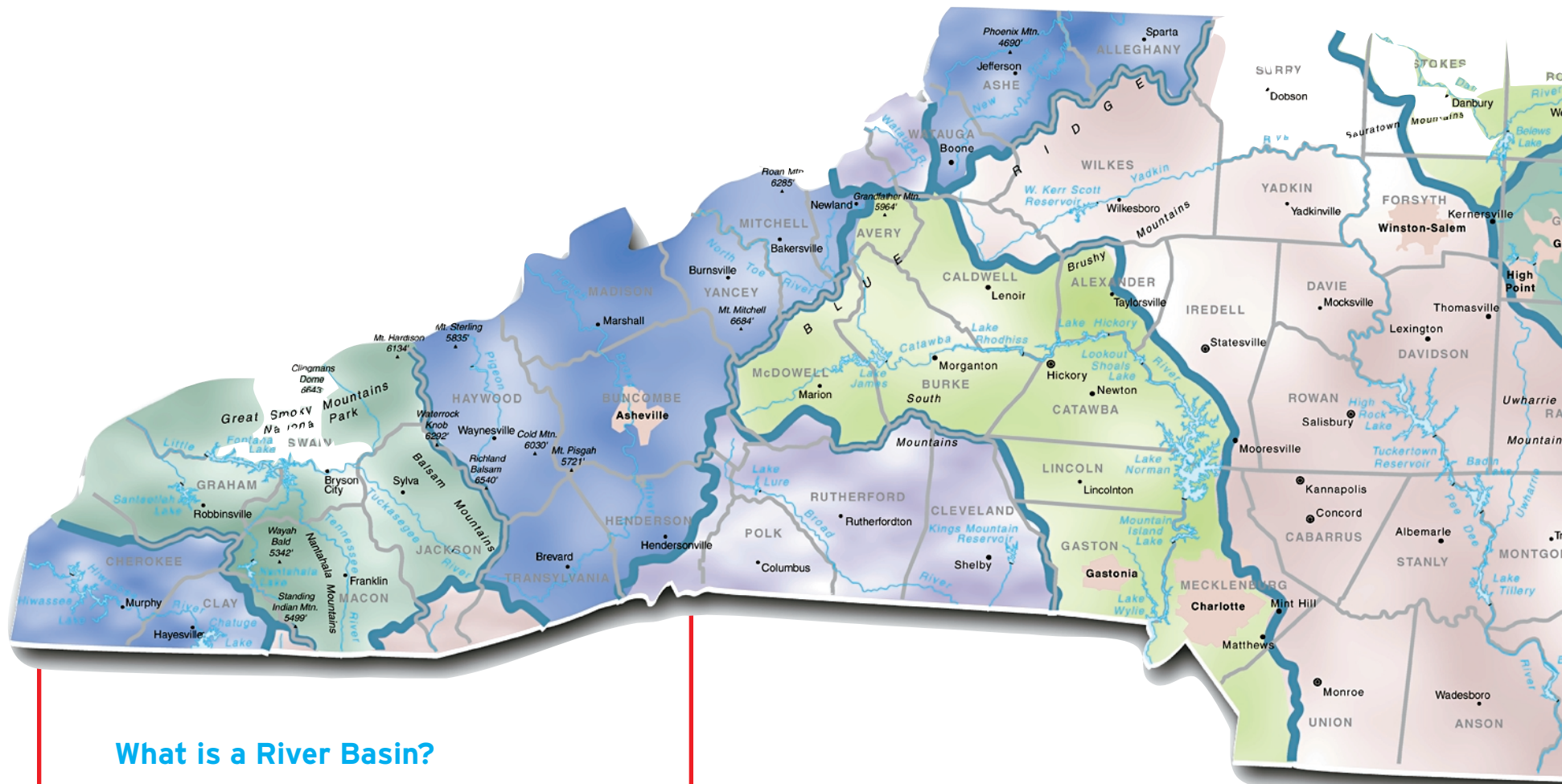
Cut out the fact cards to make your own river basin trivia game! Study the cards and hold a class competition, or quiz your friends or parents.

You can also use these cards to play the "River Basin Riddler" game at www.eenorthcarolina.org under the "Discover Your Ecological Address" section.

| | | | | | |
|---|--|--|--|--|--|
| <p>Broad</p> <ul style="list-style-type: none"> ● Contains the "Bat Cave," the largest granite fissure cave in a home for the endangered Indiana Bat. ● Home of the popular tourist destinations Chimney Rock Park and Lake Lure. ● Contains 97 rare plant and animal species. | <p>Savannah</p> <ul style="list-style-type: none"> ● This river basin contains no part of the river for which it was named. ● Home of the 411-foot Whitewater Falls, the tallest waterfall east of the Rockies. ● Three fish, the turquoise darter, redeye bass, and rosyface chub, are found only in this basin's Gorges State Park. | <p>French Broad</p> <ul style="list-style-type: none"> ● Home of the 6,684-foot high Mount Mitchell. ● Begins as a 50-foot waterfall in Transylvania County. ● Only NC river basin that is home to the common mudpuppy, an aquatic salamander, and the rare Eastern spiny softshell turtle. | <p>Chowan</p> <ul style="list-style-type: none"> ● Contains Edenton, the first permanent European settlement in NC. ● Along with the Roanoke River, it supplies fresh water to the Albemarle Pamlico Estuary, the second largest estuary system in the US. ● Contains less than 1% of the state's population. | <p>Little Tennessee</p> <ul style="list-style-type: none"> ● Home of Bridal Veil Falls, a waterfall that you can drive a car under. ● River otters were reintroduced into streams in the basin, which helps the basin keep a natural balance of native aquatic animal life. ● Contains Nantahala Gorge, one side of which reaches more than 1,000 feet. | <p>Hiwassee</p> <ul style="list-style-type: none"> ● Got its name from the Cherokee word meaning savanna or meadow. ● Home of the endangered knotty elimia, a freshwater mollusk that lives nowhere else in the world. ● Contains Peachtree Mound, one of the most important Cherokee ancestral sites. |
| <p>Watauga</p> <ul style="list-style-type: none"> ● Grandfather Mountain, the highest peak in the Blue Ridge Mountains, is located in this basin. ● This is the second smallest river basin in NC with only 6 incorporated towns. ● This basin's rare animal residents include the peregrine falcon, the Carolina northern flying squirrel, the Virginia big-eared bat, and the spruce-fir moss spider. | <p>White Oak</p> <ul style="list-style-type: none"> ● This basin is filled with coastal and freshwater wetlands, and is made up of four river systems. ● The 160,000-acre Croatan National Forest is home to more insect eating plants than any other national forest. ● Insect-eating plants like the Venus flytrap, pitcher plants, bladderworts, butterworts, and sundews can be found in this basin. | <p>Neuse</p> <ul style="list-style-type: none"> ● This river is the longest contained in NC's borders, and at its mouth it is the widest in North America at 6 miles across. ● Contains an unusual feature for the coastal plain, a 100-foot canyon carved by the river, located near Goldsboro. ● Home to the Neuse River waterdog (a rare aquatic salamander), the rare Carolina madtom fish, and the panhandle pebblesnail. | <p>New</p> <ul style="list-style-type: none"> ● This river is actually thought to be one of the oldest in the world, estimated at 300 million years old. ● More bog turtles live in this basin than any other basin in NC. This rare and threatened turtle weights only about 4 ounces when it reaches adulthood. ● This basin is the largest supplier of Christmas trees in NC. | <p>Pasquotank</p> <ul style="list-style-type: none"> ● This basin has more national wildlife refuges than any other and the fewest number of people. ● Home of Lake Phelps, the second largest natural lake in NC. It has crystal blue water, and more than 30 ancient dugout canoes have been found on its bottom. ● In 1987, red wolves were reintroduced into the Alligator River National Wildlife Refuge located in this basin. | <p>Roanoke</p> <ul style="list-style-type: none"> ● This river carries more water than any other in NC, it also has the widest floodplain – up to 5 miles in some places. ● Contains the densest population of white-tailed deer, wild turkey, and black bear, and has at least 214 bird species. ● This river was once called "the river of death" because its spring floods claimed so many lives. |
| <p>Lumber</p> <ul style="list-style-type: none"> ● Lake Waccamaw is the largest water-filled Carolina Bay in NC. ● Contains a large portion of the Green Swamp, which has the highest density of small-scale plant diversity in North America. ● American alligators, carnivorous pitcher plants and Venus flytraps, as well as the Waccamaw silverside and Waccamaw darter, are found in this basin. | <p>Tar-Pamlico</p> <ul style="list-style-type: none"> ● This basin contains Lake Mattamuskeet, NC's largest natural lake. ● 90% of all commercial seafood caught in NC is born in the Albemarle-Pamlico estuary in this basin. ● NC's largest producer of tobacco (Pitt) and producer of corn, wheat, and sorghum (Beaufort) are located in the basin. | <p>Yadkin-PeeDee</p> <ul style="list-style-type: none"> ● This basin was the location of the United States' first documented gold discovery. ● Location of the Uwharries, the oldest mountain range in North America. ● This basin is called the cradle of civilization of the Carolinas. The area has artifacts of Native American culture that date back 12,000 years. | <p>Cape Fear</p> <ul style="list-style-type: none"> ● The largest river basin located entirely in NC. ● Home of the Cape Fear Shiner, an endangered minnow species that lives nowhere else in the world. ● Contains 1/4 of the state's population. | <p>Catawba</p> <ul style="list-style-type: none"> ● Contains the most major dams of any NC basin. ● Home of Lake Norman, the largest man-made lake in NC. ● Home of the rare Edmund's snaketail dragonfly. | <p>SCORE CARD</p> |

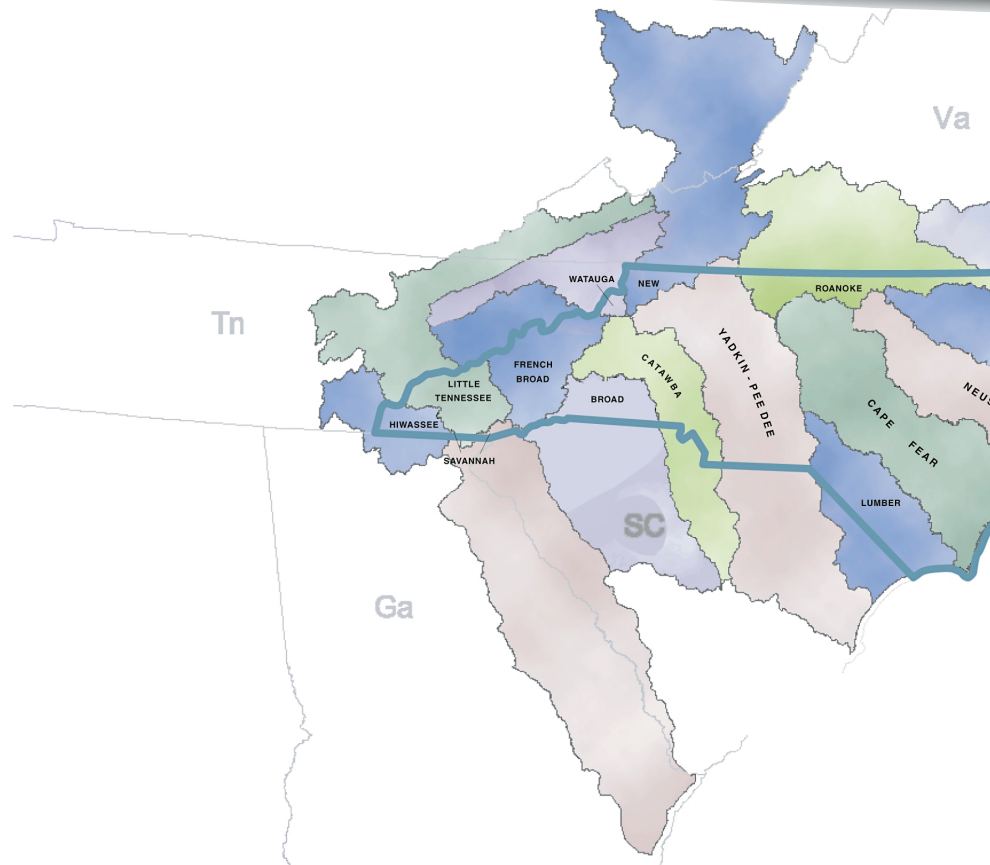


North Carolina



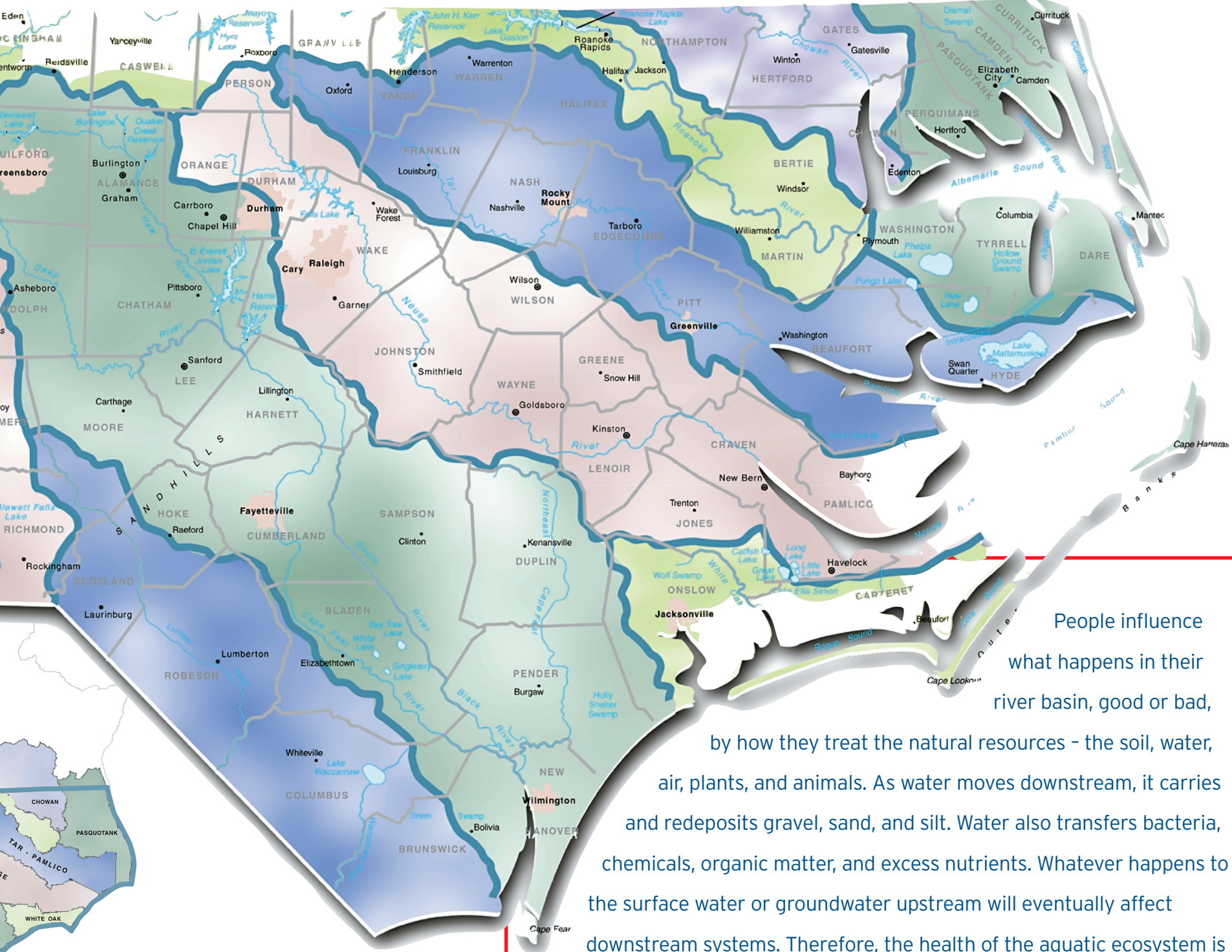
What is a River Basin?

A river basin is the portion of land drained by a river and its tributaries. Everyone in North Carolina lives in one of the state's seventeen river basins. Even if your home is not near a river, the water that falls there drains to a lake, creek, or stream that connects to a larger body of water. Topography determines each of the river basins. Just as a bathtub drains all of the water that falls within its sides, a river basin drains all of the water landing in it to a particular river and then eventually to an estuary or the ocean.





's River Basins



People influence what happens in their river basin, good or bad, by how they treat the natural resources - the soil, water, air, plants, and animals. As water moves downstream, it carries and redeposits gravel, sand, and silt. Water also transfers bacteria, chemicals, organic matter, and excess nutrients. Whatever happens to the surface water or groundwater upstream will eventually affect downstream systems. Therefore, the health of the aquatic ecosystem is directly related to activities on land.

A poster-sized version of this map is available through the Office of Environmental Education and can be ordered by calling 1-800-482-8724.

Dirt Can Be Dirty

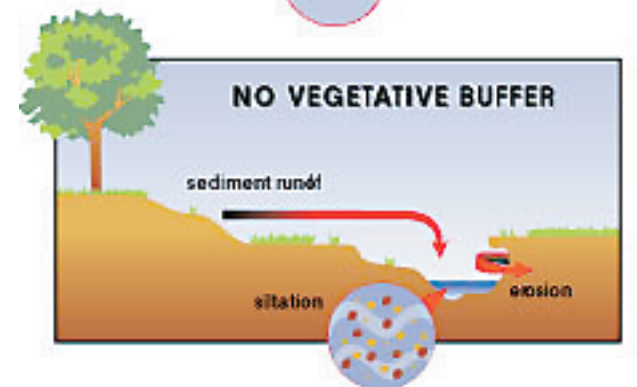
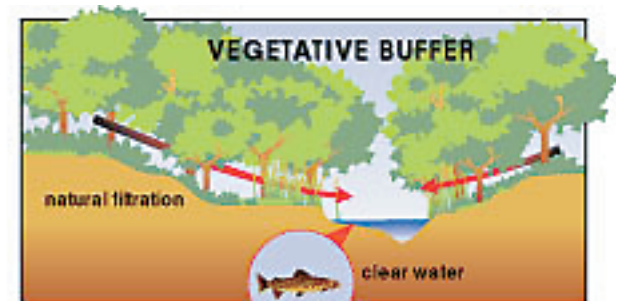
Did you know that the #1 pollutant in North Carolina is dirt? When soil is washed into streams and river, it smothers small animals and fish by clogging their gills. Look for bare patches of ground around your home and around your school that might add to the soil washed into waterways. Could something be planted here to keep the soil in place?

Buffers

Pervious materials will let water through them. Impervious materials will not. When new houses, office buildings, and shopping centers are built, the amounts of impervious surfaces often go up. The concrete and asphalt used to build roads and parking lots are impervious. Water runs on top of them, collecting pollutants as it goes. When impervious surfaces are constructed right next to streams and creeks, polluted runoff goes straight into the water.

Some builders and homeowners plant or keep what is called a buffer between developed areas and the water. A buffer is an area with plants that help do two things. First of all, they slow the water down. This makes it less likely for the soil in that area to erode, or wash into the water. Second, plants in the buffer area actually help soak up some pollutants in the runoff before they make it into the stream.

THE EFFECT OF PLANTS AND TREES

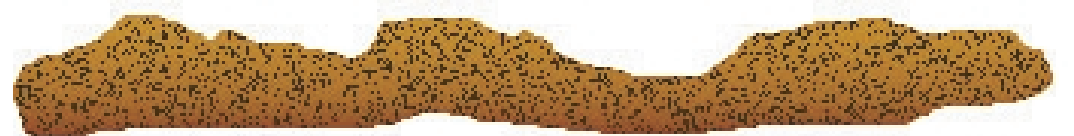


Erin Hancock, NCWRC



Build Your Own Buffer

You can see how buffers work by pouring water down a slanted, impervious surface like a clipboard or cookie sheet. Now, crumple up a bunch of small pieces of paper and tape them to the clipboard. Do this until the whole clipboard is covered with crumpled paper balls. Tip your new "buffer" to a slanted position again and pour the water. What do you notice that is different from the last time? How has the speed of the water changed? How much water comes off of the bottom compared to when there was no buffer? If you want, you can add "pollution" to the water, like coffee grounds or pencil shavings, and see how many are trapped by the buffer.



8X, 2001

C M Y K





Grade Your Schoolyard



What is your school doing to protect and conserve water? Use the following questions to find out. When you are done, make some suggestions for how your school could improve. What could you and your class do to help?

Runoff and Erosion

1. What type of surface do your school's downspouts pour onto?
 - a. patch of rocks, vegetation, or mulch - 10
 - b. on pavement or eroding ground - 5
 - c. on ground near waterway without buffer - 0
2. How much of your schoolyard is covered with an impervious surface?
 - a. less than 10% - 10
 - b. 10%-25% - 5
 - c. more than 25% - 0
3. Walkways where plants can't grow are covered with...
 - a. a pervious surface like wood chips - 10
 - b. an impervious surface - 5
 - c. bare ground - 0
4. Look for patches of bare soil and signs of erosion, like areas where rain-water has carved out ditches or soil has splashed onto windows or walls. The schoolyard has...
 - a. very little erosion and bare patches - 10
 - b. several areas showing erosion
 - c. large bare patches and eroded areas - 0

Vegetation

1. How much of the grounds are regularly mowed?
 - a. less than 50%
 - b. 50%-80% - 5
 - c. over 80% - 0
2. Land around where water drains and collects (like storm drains) is...
 - a. covered with trees and shrubs - 10
 - b. covered with unmowed grass - 7
 - c. covered with mowed grass - 3
 - d. bare soil or pavement - 0
3. How is the grass fertilized?
 - a. with grass clippings - 10
 - b. with lawn fertilizer according to soil tests - 7
 - c. with lawn fertilizer according to instructions - 3
 - d. lawn fertilizer randomly applied - 0
4. Generally, how many trees and bushes are on the school ground?
 - a. many trees and bushes - 10
 - b. trees and bushes dot the landscape - 5
 - c. few or no trees and bushes - 0

Education

1. How many storm drains are labeled to let people know they go straight to waterway?
 - a. all - 10
 - b. a few - 5
 - c. none - 0
2. How many ways are there to learn about water quality at your school? (posters, books, etc.)
 - a. 3 or more - 10
 - b. 1 or 2
 - c. none - 0
3. How much litter do you see in the schoolyard?
 - a. none - 10
 - b. some - 5
 - c. a lot - 0

Transportation

1. How many people work at your school? How many cars are in the parking lot?
 - a. 50% fewer cars than people - 10
 - b. 25% fewer cars than people
 - c. one car per person - 0
2. Are there bike racks at your school? Are they used?
 - a. bike racks full of bikes - 10
 - b. bike racks with a few bikes - 5
 - c. no bike rack - 0
3. Is there any sort of reward or encouragement for teachers or students to walk to school, ride their bikes, carpool, or take public transportation?
 - a. yes - 10
 - b. no - 0

Total Score _____ (possible 140)

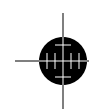
0-80 Needs Improvement

80-120 Better Than Average

120-140 Excellent

Text adapted from N.C. Coastal Federation *Coastal Connections*.

9X, 2001



So, Now What Can You Do?

So, now that you know more about what polluted runoff is, where it comes from, and how it affects you, what can you do about it? You make choices everyday in your home, at school, and with your money that can effect stormwater pollution.



- Many times people pollute water and don't know they are doing it. Now that you have the facts about polluted runoff, teach other people about it.
- Wash the family car on the lawn, not on the road or driveway.
- Never dump anything down the storm drain! It is meant only for rainwater.
- Take a look at what your school is doing to prevent polluted runoff. Could you and your classmates do more?
- Clean up after your pet! Bring bags along when you walk your dog and encourage others to do the same.
- Don't leave grass clippings and leaves in the street when you help with the yard work. Use them for fertilizer, compost them, or bag them.
- Don't litter!
- Use water wisely, and encourage others to do the same. Tell your parents that they can collect water from downspouts in rain barrels. This will reduce runoff, as well as the size of the water bill!

ACTIVITIES

- You have learned in this supplement about the environmental problems stormwater runoff may cause. What recent events in our country do you think may cause problems to creeks, rivers, lakes and streams? Look for photos in the news that show this type of pollution occurring. What do you think could be done in the future to lessen the severity of the damage from events like these? Looking in the weather section of today's newspaper, do you see areas

of the country whether predicted weather may cause problems? Is there anything residents in that area can do to prepare?

- Look for examples in the news of stormwater pollution caused by activities people engage in every day. Come up with your own public awareness campaign to let people know what they can do to prevent environmental problems! Design a poster illustrating your message.

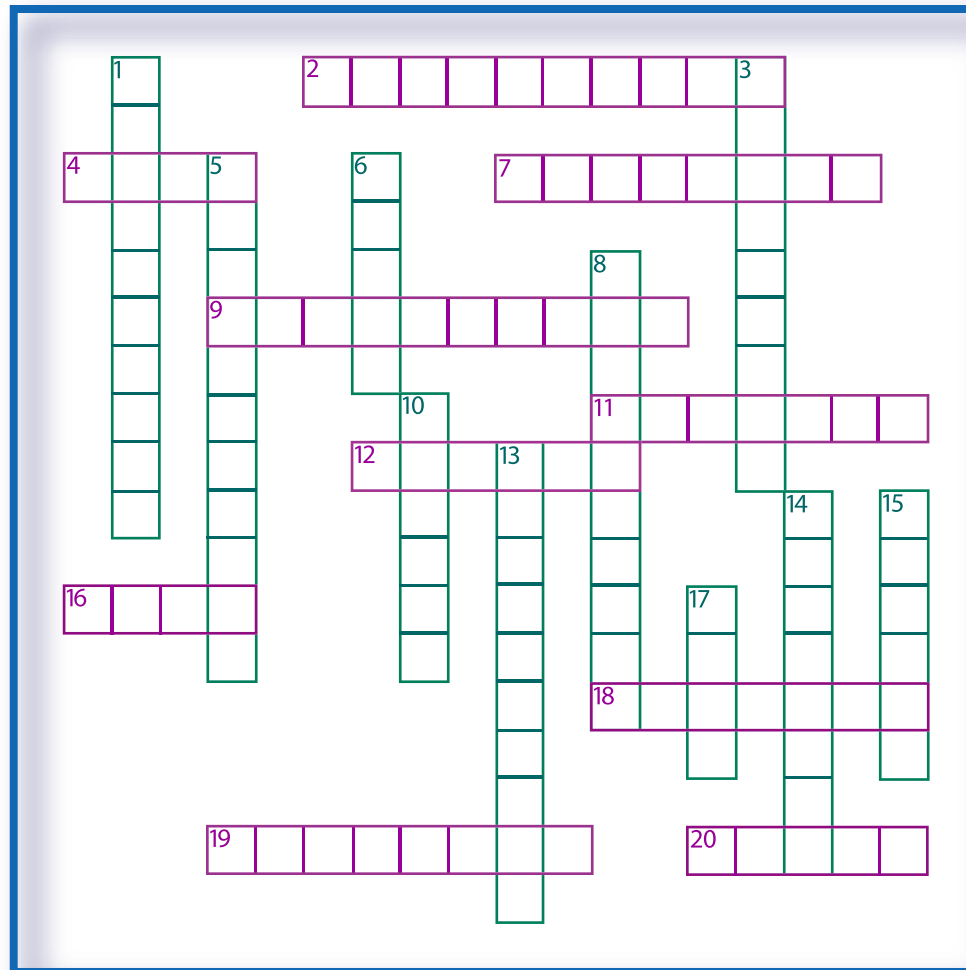
- Looking through the newspaper at articles and ads, come up with a list of activities or products that could cause problems to our streams, rivers, or the ocean. List the activity, the potential problem, and action being taken by the people involved to reduce runoff, and any possible solutions to the problem you can think of. Which activity do you think will have the most serious effects? Why?

- Look for articles about ongoing or planned construction in your area. Are environmentalists concerned about what that construction may do to the environment? Are the companies taking any steps to prevent erosion and stormwater runoff from occurring? If so, what are they doing? How do we as a community balance the need for development with the need to protect our environment? Write a letter to the editor explaining your point of view on this issue.



Water Puzzler

Solve the puzzle below and learn more about stormwater and runoff pollution.



ACROSS

2. Asphalt is _____, meaning water cannot go through it.
4. There are _____ river basins in North Carolina that do not cross stage lines.
7. The largest river basin in North Carolina is the _____.
9. Your river basin, the topography of your area, and what wildlife lives near you are part of your _____ address.
11. _____ is what happens to a stream bank when soil gets washed in the stream.
12. Builders can plant or keep a _____ area to keep construction pollution from getting into the water.
16. Washing a car on the _____ creates less runoff than washing it in the driveway.
18. Many people in North Carolina get their drinking water from _____ water like lakes or rivers.
19. Water can become _____ by some of the actions people do every day.
20. Most gas station car washes _____ their water.

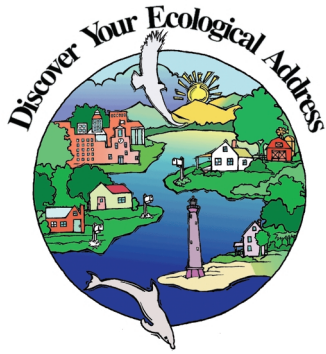
DOWN

1. The only thing that should go down a _____ is water because it leads straight to a nearby waterway.
3. Polluted runoff can force the closing of _____ beds.
5. There are 17 _____ in North Carolina.
6. Sediments in streams and rivers can clog the _____ of fish that live there.
8. A single river basin can be made up of many _____.
10. Water moving over the surface of the ground is called _____.
13. When _____ gets into the water, it can cause an algae bloom.
14. It is important to pick up _____ so bacteria from it does not get into the water.
15. Algae blooms cause problems for water critters when the _____ level drops.
17. _____ is the #1 cause of water pollution in North Carolina.

Answers to Crossword Puzzle
 1. storm drain 2. impervious 3. shellfish
 4. four 5. river basins 6. gills 7. Cape Fear
 8. watersheds 9. ecological 10. runoff
 11. erosion 12. buffer 13. fertilizer
 14. pet waste 15. oxygen 16. lawn 17. dirt
 18. surface 19. polluted 20. treat



What is your ecological address?



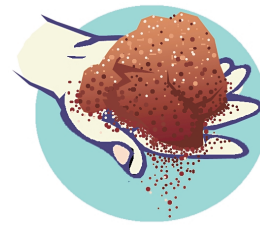
Your river basin is just one part of your ecological address. You know what street you live on, what town or county you live in, and what state you call home, but do you know where you live ecologically? Your ecological address can tell you a lot about your place in the natural world, whether your street address places you in the middle of a city, on a rural road in the county, or somewhere in between.

There are **NINE** Parts to Your Ecological address.



RIVER BASIN

You've already learned about this one, Which **river basin** do you live in? Can you find out where your water comes from when you turn on the faucet? Where does your wastewater go?



SOIL

Soil is the loose top earth's surface. It is made up of weathered rock and decayed organic (living or once living) matter. What kind of soil do you see where you live? What color is it? Does it have sand in it? Clay?

TOPOGRAPHY

Topography describes the terrain of the land. Is it flat or hilly where you live? Do you live in the coastal plain, Piedmont, or mountains? Draw a map of the hills and valleys around your school or home. You can get a topographical map of where you live from the **North Carolina Geological Survey**. Can you locate your school on the map? Is it in a valley or on a ridge?



AIR

Air, made up of mostly nitrogen and oxygen, surrounds the earth and makes life possible. Like water, air can be polluted. What kinds of things do you do that might **pollute the air** around you?



WETLANDS

A **wetland** is an area where the level of the surface water is at, near, or above the ground surface for part of the year. Wetlands act like a giant sponge. They soak up water when it rains, keeping places from flooding. They also help clean pollutants out of water. Finally, they give a home to most of the seafood that people like to eat.

Do you live near a wetland?



BIODIVERSITY

Biodiversity is the number of plants and animals in an area. People depend on biodiversity for food and medicine. Sometimes when one plant or animal becomes extinct, the whole ecosystem feels the effects. Do a biodiversity survey of your school grounds. How many different plants and animals can you find? Which plants and animals are native to North Carolina and which were introduced from **somewhere else**?

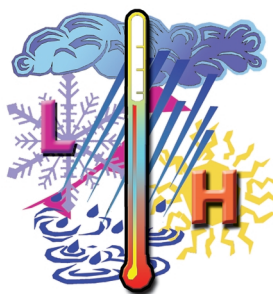
GROUNDWATER

Groundwater is the water found in cracks and spaces between sand, gravel, and rocks below the ground surface. Many people in North Carolina get their drinking water from groundwater sources. Where does your **drinking water** come from?



ENERGY

Energy is the ability to do work. We need energy for everything we do. Our bodies get energy from food. We use energy in the form of fossil fuels to light up our homes and travel in cars and buses. Think about your lunch. How much energy was used to grow the food? How much **energy was used** to get it to you? How much energy are you getting from it?



CLIMATE

Climate refers to the average weather conditions in an area. How much rain or snow do you see in a year? How hot or cold does it get where you live? Put out a rain gauge at your school to find out how much rain you get. Write or call a local meteorologist to find out what the average rainfall is in your area.



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