

## The 2005/2006 Water Conservation Be a Reader Patch Activities Project

### **Dear Girl Scout® Leaders and Advisors:**

*This year's Be a Reader booklet examines a very familiar, extremely vital subject: water. We'll examine where it comes from, how it's absolutely necessary for life on Earth, and what to do to conserve it and keep it usable.*

*Girls will find much information related to water conservation in books and online. However, because water is such a tangible subject, physical observations and experiments are probably the best way to reinforce the importance of this basic natural resource. By involving knowledgeable people in your community, girls will learn from and work with experts in this important area. Even younger girls can develop a sense of effectiveness by being part of a water conservation event or service project. These activities are also ideal for reinforcing the Girl Scout Law to "use resources wisely, make the world a better place." Take the opportunity to weave these important principles into your discussion with girls.*

*The activities in this year's Be a Reader booklet, our fourteenth edition, will engage and entertain girls just as much as those in the last thirteen issues. We're sure you'll enjoy helping girls explore this year's focus.*

*Thanks for your continued support and interest in the Be a Reader Patch Activities Project. Enjoy helping girls as they work on and complete the activities. Encourage the girls to work on these activities when they're participating in the Be a Reader QSP Family Subscription Activity--and let them know they should wear the Be a Reader patch with pride. Please remember that although Daisy Girl Scouts are too young to take part in the subscription sale activity, they can still participate in the fun activities in this booklet especially designed for them and earn the Be a Reader Patch.*

### **Who Is Eligible for a Be a Reader Patch?**

Any Girl Scout at any age level is eligible to receive the Be a Reader patch. Recognitions for participation are available for purchase through your Girl Scout council. Girls receive the large Be a Reader patch the first time they participate. The smaller embroidered bees represent a girl's participation in subsequent years. Like other participation patches, the Be a Reader patch is worn on the back of Girl Scout vests and sashes.



### **How Do Girls Become Eligible for a Be a Reader Patch?**

Although troop/group leaders should determine the number of activities required for the group to be eligible for the Be a Reader patch, give girls under age eleven an opportunity to choose among different activities. Girl Scouts ages 11-17 work with their advisors to decide on the number of activities required. Timing is up to you. Many Girl Scouts work on these projects when they're taking part in the Be a Reader QSP Family Subscription Activity.

However, the activities listed here can also easily be completed in conjunction with Brownie Girl Scout Try-Its, Junior Girl Scout badges, and interest projects and STUDIO 2Bsm activities for girls 11-17. Daisy Girl Scouts—who do not participate in any group money-earning activities—may participate in the learning activities designed just for them in this booklet. The activities dovetail well with the Daisy Girl Scout Learning Petals. Related awards are listed at the end of each age-level section.

### **What You'll Need to Get Started**

Girl Scout handbooks and leader's guides provide some great ideas for water conservation projects. And Safety-Wise (GSUSA® 2000) is, as always, a key reference when planning trips, events or projects. The STUDIO 2B Guide for Advisors (GSUSA® 2002) also has many helpful suggestions for working with girls 11-17, including adopting a by-girls, for-girls approach.

Even though the activities in this Be a Reader booklet are grouped by age, younger girls with more experience or skills can select activities from the older age groupings if they're ready for them. Likewise, girls ages 11-17 should not hesitate to choose activities in the younger girls' sections, as progression is a key element of Girl Scout Program. Activities suggested for Daisy Girl Scouts are very appropriate for Brownie Girl Scouts as well, so please look them over.

### Consider these tips as well:

- Many of these activities can be completed at a Girl Scout camp. If there is one near you, inquire about the types of activities and projects troops/groups can do there.
- Ask your council if there is special equipment available, such as water test kits, through a camp or council office.
- Contact local colleges, public water authorities, engineering firms that drill wells, as well as parks and wildlife centers for the names of individuals willing to speak to your girls or offer demonstrations. The Environmental Protection Agency (EPA), the U.S. Geological Survey, The National Park Service, The Nature Conservancy, The U.S. Fish and Wildlife Service, The National Institute of Environmental Health Sciences and The U.S. Forest Service are all excellent resources and most have state and/or local offices. Ask your council for a directory of national partnerships with governmental agencies through Linking Girls to the Land.
- Numerous Web sites are mentioned throughout *Be a Reader* in conjunction with specific activities. Be mindful of cyberspace safety rules when using these or any other Web sites. Refer to "My Online Safety Pledge" on page 130 of *Safety-Wise* (GSUSA® 2000) or on [www.girlscouts.org](http://www.girlscouts.org), Girl Scouting's own national website which includes links to Girls Only and STUDIO 2Bsm.
- Check out [http://www.gogirlsonly.org/games/myplanet\\_water\\_popup.html](http://www.gogirlsonly.org/games/myplanet_water_popup.html), also at the Girl Scout Web site for a game called "Running on Empty."
- The Water Drop Patch is a Girl Scout project done in conjunction with the EPA. You'll find all you need to know at [http://www.girlscouts.org/program/gs\\_central/insignia/online/participation\\_patches/water\\_drop/](http://www.girlscouts.org/program/gs_central/insignia/online/participation_patches/water_drop/).
- When looking for help with girls ages 11-17, reach out to volunteers 18-29 accomplished in the activity you choose. These volunteers are important role models for tween and teenage girls and often know the most up-to-date ways of doing an activity. And, they're delighted to be invited to share their skills.
- World Water Monitoring Day, October 18, is an excellent time to schedule events, displaying solidarity with other Girl Scouts and Girl Guides in the protection of our world's water supplies. For more information, visit [www.worldwatermonitoringday.org](http://www.worldwatermonitoringday.org)
- Key into groups that educate about water and the lives that depend on it, such as: The Cousteau Society, National Wildlife Society, National Audubon Society, Clean Water Fund and Sierra Club.

### DEFINING SOME TERMS

Here are a few terms that provide background for the water conservation activities in *Be a Reader*.

**Aeration:** adding air to water, which increases levels of dissolved oxygen in water, promoting better habitat for water critters and ridding the water of some harmful chemicals, as well as decreasing the amount of plant life. Aeration is also used to make soda water using carbon dioxide gas.

**Algal bloom:** too much algae growing in water, which is often caused by phosphorus or nitrogen. It decreases the oxygen in water that fish and other plants need to survive.

**Aquifer:** geologic formations that store and transmit water underground. An aquifer may be a layer of gravel or sand, a layer of sandstone or cavernous limestone, a rubble top or base of lava flow, or even a large body of massive rock, such as fractured granite, that has sizable openings.

**Condensation:** the process of water vapor (a gas) becoming a liquid, water.

**Desalination:** removal of salt from water.

**Evaporation:** the process of a liquid becoming a vapor, usually by heating or drying.

**Ground water:** water that is stored in, and moves slowly through, moderately to highly permeable rocks called aquifers. Water from wells and springs come from groundwater. (See aquifers above.)

**Hydrologic cycle:** the water cycle, which is water circulating between the air and the ground through precipitation, evaporation, and condensation.

**Leachate:** contaminated liquid made by water such as rain seeping through solid waste at garbage dumps or landfills.

**Permeability:** the ability to let water seep through. Aquifers are made of permeable materials, such as sand or gravel.

**Runoff:** water that doesn't soak into soil but that goes directly into a sewer or body of water.

**Watershed:** the area of land that catches rain and snow and drains or seeps into a marsh, stream, river, lake or groundwater.

**Water Conservation:** wise use of all water resources.

**Sustainable development:** social, economic and political progress that allows the present generation to meet its needs without using up resources for future generations.

## DAISY GIRL SCOUTS

(girls ages 5-6)

### WATER GIRL

Ask girls to take a good look at themselves and their friends. Ask them if they know that they're made up of mostly water. It is everywhere in their bodies. It stops their eyes from drying out and their bones from grinding. It carries chemicals to the brain so they can think and blood to their toes. Water keeps their skin soft and helps them digest their food. Ask them to guess how long they could live without drinking water? The answer is a few days, depending on the surroundings and climate.

**Body-wise:** Ask girls to trace one another on large sheets of craft paper. Then draw a line on all pictures showing about how much of their bodies are water (70%). They can color this part in if they like.

**Food-wise:** If you want to continue this project, girls can cut pictures out of a magazine of: a tomato (94% water), a watermelon (93% water), yogurt (89% water), apples (84% water), meat (50-70% water) and bread (35% water). Again, mark the portion of the item that is composed of water and ask them to color it in.

*Note: Since the concept of "percentage" does not compute with children this young, use words such as "almost all of," "a lot of," "some," or "a little" when explaining this idea.*

### THE MAGIC OF WATER

Here's a fun experiment that shows how water can be a solid, a liquid or a vapor. Start with the solid state by collecting one cup of snow with girls or provide several ice cubes. Leave the snow or ice at room temperature until it melts into its liquid state. Now, put the very same water in a pan and boil it. Hold a long handled ice cold metal spoon (that you've previously placed in the freezer) over the steaming water vapor. The vapor will condense, turning back into liquid and fall just as rain does. Make sure the girls don't stand too close when you are working over the boiling water. Steam hurts!

Ask girls to draw a picture of the water at each stage: when it's a solid as snow or ice, when it's a liquid, and when it's vapor in the air. If they want, they can draw pictures of themselves enjoying or using water in each of these states, For example, swimming, ice skating, or walking through fog all involve water in various states.

*I use water when it's a solid.*

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*I use water when it's a liquid.*

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*I use water when it's a vapor.*

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### WHAT'S WRONG WITH THIS PICTURE?

There are many ways water gets polluted. Discuss with girls some of the ways people pollute water. For a fun game, go to <http://www.epa.gov/OWOW/NPS/kids/whatwrng.htm>. Daisy Girl Scouts should also be aware of how people waste water. Go to [http://www.gogirlsonly.org/games/myplanet\\_water\\_popup.html](http://www.gogirlsonly.org/games/myplanet_water_popup.html), the Girl Scout Web site, to play the Water Savvy game.

Follow up by taking a walk and making a list together of all the ways girls see water being polluted or wasted.

*We saw water being wasted in these ways:*

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*We could fix things by:*

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### SAVING WATER

Even Daisy Girl Scouts can help conserve Earth's water by doing just a few things at home everyday. They can brush their teeth with the water off, take faster showers, soap up and then rinse off in the shower, soak in less bath water, and (with adult help) put a closed quart container of water weighted with pebbles in an older model toilet tank to reduce the amount of water used. What else can they think of to save water? Ask them to commit to a plan of action for the following week. Help each girl write down or draw the action she is going to take to conserve water. At your next meeting, take a poll to see how many girls actually conserved water. Try to add up the approximate number of gallons the group as a whole saved.

To guide you, here's a rough estimate of how much water is used in American households: 5 gallons per flush on a toilet; 30-40 gallons for a bath; 20 to 40 gallons for a shower; and 10-20 gallons for bathroom sink use.

Our troop saved \_\_\_\_\_ gallons of water during the week of \_\_\_\_\_ .

If girls cut down on the water they use, congratulate them! You might want to remind them that hygiene is still important and that this project isn't meant to prevent them from washing hands or taking baths and showers, but to help them learn how to use less water.

### SO TASTY

Set up a water tasting for your Daisy Girl Scouts using tap water and different brands of bottled spring and mineral water. Ask them to rate each type of water on a scale of 1 to 5, with 5 being the best tasting water. They can use stars instead of numbers if they'd like.

Talk about where the water came from and ask them if they know what type of water is unsafe for them to drink, such as water in streams or lakes. Discuss why this water is unsafe. (It contains animal waste and bacteria among other things.)

*Glass 1*

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*Glass 2*

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*Glass 3*

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*Glass 4*

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**DAISY GIRL SCOUT LEADER ADVICE:** You decide how many activities the girls in your troop can complete according to their maturity and abilities. **RELATED LEARNING PETALS:** Use Resources Wisely and Make the World a Better Place.

## BROWNIE GIRL SCOUTS

(girls ages 6-8)

### WATER SMARTS

See what you know about water by answering these questions. (Answers are at the end of this section.)

- |  | <i>True</i>              | <i>False</i>             |
|--|--------------------------|--------------------------|
| 1. You can always drink water that comes out of a tap.                                       | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. The water you drink today might also have been drunk by a dinosaur millions of years ago. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Plants in the desert don't need water.  | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. It takes 300 gallons of water to produce one loaf of bread.                               | <input type="checkbox"/> | <input type="checkbox"/> |

### WHERE IN THE WORLD IS THE WATER?

There's a lot of water in the world. In fact, water covers 70% of the Earth's surface. But finding fresh, usable water isn't so easy. Of the total water on Earth, only 3% is fresh water. Of that 3%, 77% is stored in polar ice caps and glaciers! Here are some activities to help you figure out where drinking water comes from.

- Pour each girl a small glass of fresh water and one of salt water. (Add one tablespoon of salt to one cup of water.) After they taste each type of water, discuss why people cannot drink salt water. On a globe or map of the world, show girls where the oceans and seas are located. Then ask them if they can guess what type of water they would find in there. Fresh clean drinking water? No way. It's too salty- like the water they just sampled. Most of the water on the surface of the earth is salty-about 97%.
- Again, on the map or globe find the coldest regions (Arctic and Antarctica) and the highest points that are covered with snow. That's fresh water. Most of Earth's surface fresh water is frozen in glaciers, in effect, under lock and key so we really can't use it.
- Check out the rivers and lakes that you can find on the map. Most of the fresh water used in the United States (about 74%) comes from this type of water, called surface water.
- So, where is the rest of the world's fresh water? Basically, it's hiding underground where we can't see it. About 97% of Earth's fresh water is underground. Ground water is stored in and moves slowly through rocks called aquifers. Let girls know where the water at your meeting place comes from. If you don't know, try to find out before doing this project by asking the building manager. You may have to call the water utility to learn more.

### FROM THE CLOUDS TO YOU

Find out how much rain falls in your area by making a rain gauge. For instructions, turn to page 97 of Brownie Girl Scout Handbook (GSUSA® 2000). Brownie Girl Scouts all around the country complete this project and get many different results depending on the climate in their communities. Sometimes areas go through dry and then wet phases. Some areas are wet most of the time and others are dry most of the time. Try this Web site to see which areas of the world get more rain than others <http://www.blueplanetbiomes.org/climate.htm> Can you determine when the area you live in is wettest? Driest?

### WATER CYCLE: What Goes Round, Comes Round

Did you know the same amount of water is on Earth today as there was 3 billion years ago? It never goes away! It just keeps moving, going through the same actions, year after year in what's called a cycle. To watch the water cycle in action, log on to this Web site: <http://www.epa.gov/OGWDW/kids/cycle.html>

If you want to see first hand how the water cycle works, build your own. Fill a medium-size jar with small rocks, then sand, followed by soil. Add a few small plants and a small container of water. Screw the lid on the jar and put it in a sunny spot. Look at the jar carefully each day for a week. Draw or describe in writing what you see each day.

**Water Wise All Week**

*Sunday*

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*Monday*

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*Tuesday*

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*Wednesday*

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*Thursday*

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*Friday*

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*Saturday*

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**HOW MUCH WATER DO WE REALLY HAVE?**

If you did either of the two activities above, you'll know where water comes from, but you may not know how much fresh water people can actually reach and use. To understand Earth's water situation better, try this experiment: fill with water a bucket, a coffee cup and a small bottle cap. Place them side by side. The bucket represents all the water, salty and fresh in the world. The coffee cup contains all the fresh water. The bottle cap is fresh water we can get to and use.

Make a poster showing the various amounts of water and hang it at your local library, car wash, grocery store, school, or other location after obtaining the owner's or manager's permission. Include suggestions on how people can conserve water at home.

**WORLD WATER MONITORING DAY**

Celebrate World Water Monitoring Day, October 18, by working with older Girl Scouts to test a body of water near your home, take part in a water festival or clean up a stream. For more information, log on to [www.worldwatermonitoringday.org](http://www.worldwatermonitoringday.org) with your leader or another adult. Draw or write something that describes what you learned. (Please note: The testing period runs from September 18 to October 18. Water test kits can be ordered through the Web site starting in July.)

**DROPS ADD UP**

Fill in the blanks in the following sentence with these numbers: 10, 3,000 and 50,000.

*"A faucet leak that can fill up a cup in \_\_\_\_\_ minutes means that more than \_\_\_\_\_ gallons of water will be wasted in a year. That's about \_\_\_\_\_ glasses of water a year!"*

That's a direct quote from the Water Everywhere Try It on page 142 of Try-Its for Brownie Girl Scouts (GSUSA® 2000). Turn to page 142 and follow directions for chasing down leaks in your home, school or camp.

**BROWNIE GIRL SCOUT LEADER ADVICE:** Refer to Brownie Girl Scout Handbook (GSUSA® 2000), pages 93-105.

**RELATED BROWNIE GIRL SCOUT TRY-ITS:** Water Everywhere, Earth is Our Home, Earth and Sky, Plants and Science in Action.

**ANSWERS: to Water Smarts:** 1. False. Tap water isn't always clean enough to drink. It depends where it's coming from and if the pipes bringing it there are clean. If you are away from home and aren't sure about the tap water, ask someone if it is safe to drink, or drink bottled water instead. 2. True. Believe it or not, the water on Earth today is the same that was here billions of years ago-it just keeps getting recycled. 3. False. They do need water. Although the desert has very little water, desert plants are expert at storing the little rain that does fall. Some desert plants develop very long roots to reach faraway underground water. 4. True. The grain used to make bread takes a lot of water to grow. Meat takes even more water: one pound of beef requires 3,500 gallons of water. In fact, farms use much of the fresh water in the United States and other countries.

## JUNIOR GIRL SCOUTS

(girls ages 8-11)

### WATER ON THE MOVE

For help matching the words on the left to their meaning on the right, check page 131 of the Junior Girl Scout Handbook (GSUSA® 2001). (Answers are in the "Junior Girl Scout Leader Advice" section below.) Then take the water-cycle hike that is suggested.

Words	Meanings
1. precipitation	a. lakes and oceans
2. evaporation	b. moving water on the ground that doesn't soak in; storm drains
3. run-off	c. rain, snow and fog
4. bodies of water	d. streams and rivers
5. flowing water	e. water changes its form, moving between the air and ground
6. water cycle	f. sunlight, dried puddles

### CHECK YOUR WATER IQ

Guess how many gallons of water it takes to produce things you use or eat everyday-like the car you ride in or the hamburger you chow down? How much water rains down from the sky on your backyard? The United States Geological Survey can help you figure it out. Just visit <http://ga.water.usgs.gov/edu/sacsc.html>.

Would you like to know if your state uses more water than California? It probably doesn't because as of 2000, California used the most water of all 50 states-51,200 million gallons a day with most of that going towards irrigation. Total water use in the United States was 408,000 million gallons. Check out your state's usage at <http://ga.water.usgs.gov/edu/maptotal.html>.

Where does all this water come from? Most of it (262,000 million gallons per day) comes from surface water such as rivers and lakes. The other 83,400 million gallons a day is drawn from ground water. Find out the source of the water you use at home and at school. If it comes from a public supply system, contact the company or service that provides the water and ask if you can visit a treatment plant and/or pumping station. (See page 215 of the Junior Girl Scout Badge Book, requirement seven (GSUSA® 2001)). Ask the representative if you're drinking surface or ground water, or both. If your water comes from a private well (self-supplied), find a well driller who can tell you how he or she finds and tests underground water.

### EVERY DROP COUNTS

Everyone on Earth needs fresh, clean water. Plants and animals can't live without it either. Think of something you can do to conserve water. For some good ideas, open your Junior Girl Scout Badge Book (GSUSA® 2001) to one of these pages. Choose at least one of these activities and complete it.

- page 97, requirement three of the Eco-Action badge
- page 72, requirements 3 or 4 of the Environmental Health badge
- page 184, requirement 4 of the Globe Trotting badge.

*We did:*

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*We learned:*

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### CLEANING WATER, NATURALLY

Some water comes right out of the ground ready to drink. To see how this process occurs when water seeps through the soil and into underground aquifers, get two glass jars, a funnel big enough to rest on the lip of one jar, small pebbles, gravel and sand.

In jar number one, mix dirt and water together. This jar is the "dirty water" that will be filtered and made cleaner. Rest the funnel in the mouth of the other jar. Now, put the pebbles in the funnel first, then a layer of gravel and finally a fair amount of sand. Slowly pour the "dirty" water from jar one through the funnel. As the water flows through the layers of sand, gravel and stone, it should get cleaner. A word of caution: Do not drink this water, no matter how clean it looks. For more information on groundwater, go to this Web site: <http://www.groundwater.org/kc/whatis.html>.

## A YUMMY LOOK UNDERGROUND

Learn how we get water from underground by building an edible aquifer in a clear plastic cup. Different levels of soil, sand and rocks hold actual water underground. In fact, you are probably walking or sitting on top of an aquifer right now. Start your imitation aquifers by creating the bedrock: fill clear plastic cups 1/3 full with gummy bears, chocolate chips, or crushed ice. Then just cover the candy or ice with clear soda. Now add a layer of ice cream to "hold the water in the aquifer." Put more crushed ice on top of this and then colored sugars and sprinkles to represent porous gravel and soil close to the surface of Earth.

Now add pollutants: a few drops of blue or red food coloring. Ask girls to watch what happens and tell them the same thing happens when pollutants are spilled on the Earth's surface.

Take a straw to use as your tool for drilling a well into the center of your aquifer. When you start sucking on the straw you become a pump! Watch as the liquid goes down in your cup. You're lowering the water table. As you "pump" your water out, you are also sucking up some of the food coloring. This process is very similar to how pollutants get into our drinking water.

Want to recharge your aquifers? Simply add more soda, representing a rain shower. [Note to leaders: As with any activity involving food, be aware of any allergies or health conditions, such as diabetes, that girls may have.]

## RUN-OFF

*What is run-off?* Check the box you think is correct.

- What you'd like to do when you disagree with your parents, guardians, siblings, or friends.
- Using a photocopier to copy pages of a book you need for a homework assignment.
- A foot race.
- What happens in an election when two or more candidates oppose each other.
- Rain, melted snow or irrigation water that runs off the land into streams or other bodies of water.

All of the above are acceptable definitions for "run-off." But the last one obviously describes an important phase of the water cycle. Chemicals dissolve easily in water and run-off can carry these chemical pollutants into our drinking and bathing water. Chemicals in run-off also affect plants and animals that need water. When you or your parents wash your car on your driveway, the soapy water runs right into a storm sewer, and from there it goes to streams and lakes, and even the ocean. The same thing happens with oil and gasoline that leak from cars or motors, paint that's dumped near the street, or animal droppings that get into the sewer. What's the solution? Take a look at <http://www.epa.gov/adopt/patch/html/> (Girl Scout Water Drop Patch) to find out what you can do to prevent water pollution.

## OIL SPILLS SPELL SPOILED WATER

Ever try to separate oil from water? Give it a try by doing requirement five of the Oil Up badge. It's on page 196 of your Junior Girl Scout Badge Book (GSUSA® 2001).

The oil you used was safe, even edible. But the oil spilled into the ocean by huge tankers or onto the ground at gas stations or landfills are major pollution problems making water unusable for humans, animals and plants. As you can see, it's not easy to clean up an oil spill.

Requirement six of the Oil Up badge, "How Does an Oil Spill Affect a Beach?" is another great activity. Try it if you have time.

**JUNIOR GIRL SCOUT LEADER ADVICE:** Make sure girls refer to their Junior Girl Scout Handbook (GSUSA® 2001). It's packed with good ideas. **RELATED BADGES:** Water Wonders, Eco-Action, Earth Connections, Environmental Health, Globe-Trotting and Oil Up. Eleven year olds might also want to check out STUDIO 2B Collections 11-13 where they will find several articles and advice related to outdoor adventures. **ANSWERS: *Water On the Move:*** 1-c; 2-f; 3-b; 4-a; 5-d;6-e.

## Girls Ages 11-17

### KNOW YOUR H2O

Find out about Earth's water supply. Test yourself by drawing a line between the definition on the left and the type of water source on the right. (Find answers at the end of this section.)

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|---|----------------------|
| 1. 77% of Earth's fresh water is locked up in these   | a. groundwater       |
| 2. Most of Earth's water (97%) is here  | b. continental shelf |
| 3. Places where freshwater rivers and streams flow into the ocean, mixing with the seawater.                    | c. surface water     |
| 4. Geologic formations that carry water underground   | d. water sheds       |
| 5. Water found between underground particles of soil and rock   | e. estuaries         |
| 6. Water in rivers, lakes and reservoirs  | f. ice caps/glaciers |
| 7. Narrow strip along shoreline that is the most biologically productive part of the ocean.                     | g. drought           |
| 8. Land areas that catch rain or snow and drain to specific marshes, streams, rivers, lakes, or to ground water | h. aquifers          |
| 9. Condition of an area when so little rain falls that plants cannot grow and animals and people cannot live    | i. oceans            |

**Service Project Idea:** Choose one of the water sources listed above and research its importance and what people can do to conserve it. Get involved in a water conservation project locally. If you want ideas, check out the Girl Scout Water Drop Patch program (<http://www.epa.gov/adopt/patch/html/>). Or, think more globally. For a Girl Scout Thinking Day event, contrast areas of the world with different water availability: rainforests, temperate areas, areas that regularly experience floods and locales that are frequently stricken by drought. Show water usage by area as well. Who uses the most water per day? People in Kansas or people in Bangladesh? Discover what people around the world are doing to insure water quality and quantity.

### PINPOINTING WATER POLLUTION

As water travels throughout its endless cycle, some of it accumulates pollutants that negatively affect water quality. Although some pollutants can be removed, those that cannot make the water unusable for certain activities, such as drinking and bathing. More and more of Earth's water is becoming unusable, and may stay that way for thousands of years.

Where is this pollution coming from? Pollution comes from many places, but some are more obvious than others.

Environmentalists call sources of water pollution either point sources or nonpoint sources.

To learn what these terms mean, go to <http://www.worldwatermonitoringday.org/kidsstuff/point/point.html> or to [http://interactive2.usgs.gov/learningweb/explorer/topic\\_water.html](http://interactive2.usgs.gov/learningweb/explorer/topic_water.html).

Once you know the difference, sort the following words by putting them into one of the two categories below.

	<b>Point Sources of Water Pollution</b>	<b>Nonpoint Sources of Water Pollution</b>
<i>wastewater-treatment plant</i>	_____	_____
<i>septic tank</i>	_____	_____
<i>factory</i>	_____	_____
<i>parking lot</i>	_____	_____
<i>agricultural field</i>	_____	_____
<i>logging area</i>	_____	_____
<i>storm drain</i>	_____	_____
<i>suburban lawn</i>	_____	_____
<i>construction site</i>	_____	_____
<i>landfill</i>	_____	_____

Now help a younger girl learn about sources of pollution. Use the online booklet called "And Your Point Is?" You'll find it at <http://www.worldwatermonitoringday.org/kidsstuff/point/point.html>.

## TALK IT OUT

Everyone agrees that clean water is good. However, people hold diverse views on many aspects of water. Hold a debate on a topic related to water. For instance, you could debate the causes and effects of global warming. Some people believe that global warming is caused by human activity. Others take the opposite viewpoint, claiming that it occurs naturally. Find evidence that global warming is harmful because it would cause environmental changes lethal to wildlife, affect climate worldwide, and make oil harder for heavy oil rigs to obtain in spongy, defrosting Arctic areas. Or, you could take the opposite position that says global warming is good because it lengthens agricultural growing seasons and would increase the number of fish available for food.

Then take a stand or educate others on your topic:

- Should there be more government regulation or action to address your topic? If so, write your local congressional representative about your concerns, or find out about groups supporting your view and discover what you can do as an individual.
- Set up an information booth to explain what you learned at a safe local site such as a public library, grocery store or mall.

## SURF YOUR WATERSHED

You live in a watershed! Wait a minute, you say, I live in an apartment or a house. Not a damp storage unit. While you're right, the fact is, everyone on Earth lives in an area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean. That area is called a watershed. To find out more, visit <http://www.ctic.purdue.edu/KYW/glossary/whatisaws.html> online and click on the "What is a Watershed?" video.

Take your exploration one step further. Find out what watershed you're in by logging onto <http://cfpub.epa.gov/surf/locate/index.cfm>. Find out who manages the watershed you live in. It's your community's source of water. Search for a group in your area that's helping to keep the watershed healthy. Volunteer to help with one of their programs.

## OCEANS AWAY

What do you know about the bodies of water that cover about 70% of Earth's surface?

Test your knowledge of oceans by taking this true-false test. (Answers are at the end of this section.)

- |  | <i>True</i>              | <i>False</i>             |
|--|--------------------------|--------------------------|
| 1. Half the Earth's population lives within 50 miles of the coast.                           | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. The oceans can contain 1,100 times more heat than the atmosphere.                         | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Two-thirds of the world's largest cities are inland, or hundreds of miles from any coast. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. The most biologically productive part of the ocean is the area farthest from shore.       | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Oceans provide nearly 50 percent of Earth's oxygen  | <input type="checkbox"/> | <input type="checkbox"/> |

Feel like diving into this subject? Girl Scouts has the book for you: STUDIO 2B Focus: Makin' Waves (GSUSA® 2004). You can also check out [http://www.whoi.edu/institutes/coi/research/research\\_intro.htm](http://www.whoi.edu/institutes/coi/research/research_intro.htm) for more on oceans worldwide.

## ABOVE IT ALL

The National Aeronautics and Space Administration's (NASA) satellites circle Earth constantly sending back data on every aspect of the "water planet." The Aqua spacecraft-aqua is Latin for water-got its name from the huge amount of information this spacecraft is gathering about Earth's water cycle and will include valuable observations on oceans, atmosphere, land, ice and snow covers, and vegetation. Launched on May 4, 2002, Aqua has an anticipated lifespan of six years and is expected to provide data for improved weather forecasting.

Aquarius is another NASA satellite mission that measures global sea surface salinity, information that will help scientists better understand the links between the water cycle, the climate, and the ocean. To track these space missions, go to [http://science.hq.nasa.gov/missions/satellite\\_17.htm](http://science.hq.nasa.gov/missions/satellite_17.htm) for Aqua and [http://science.hq.nasa.gov/missions/satellite\\_59.htm](http://science.hq.nasa.gov/missions/satellite_59.htm) for Aquarius. List five things you learned.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## DRINKABLE?

You're hiking, you're in a foreign country, or your town's health department declares water supplies are contaminated. How do you get a safe source of water to drink? Of course, you can drink bottled water if you have it. Here are a few things you can do to clean up what may be your only water.

- Boil it for at least one minute,
- Use a water filtration device.
- Treat it with chemicals.

Before finding yourself in a situation where you may need to do any of the above, talk at length with someone who knows how to purify water. The public health department of your town or county can help or a local outdoor store that sells backpacking equipment.

Make a plan for a water emergency in your town or neighborhood. Think of ways to contact everyone in the area to inform them not to drink the water. Then, contact the police or fire department to see what they would do and how you could help them in the event of a water emergency.

## I WANT TO DO THAT TOO

Many women are working hard to uncover the secrets of the ocean. They follow careers in oceanography, aquatic science, marine biology, geography, marine geology, microbial ecology and geophysics. Think you might be interested? If so, check out pages 4-6 of the STUDIO 2B Focus: Makin' Waves (GSUSA® 2004).

## APPLY YOURSELF

Apply for an exciting STUDIO 2B destination in the United States or internationally that focuses on conserving and protecting water. Need some good ideas? Check <http://www.studio2b.org/escape/destinations/>. Before you know it, you might be visiting Florida's Everglades, standing on a glacier in Alaska or sea kayaking in New England. And you'll be learning up close and personal just how important water is.

## PARTNER UP

Itching to get started on a really significant water conservation project? Would you like to meet federal and state natural resource professionals who can point you in the right direction? Then, you absolutely should explore a special Girl Scout program called Linking Girls to the Land. This program brings these professionals together with Girl Scouts for conservation-related projects on public lands. Any Girl Scout 15 to 17 years old can submit a grant application. Go to [http://www.girlscouts.org/program/gs\\_central/insignia/online/participation\\_patches/getwithland](http://www.girlscouts.org/program/gs_central/insignia/online/participation_patches/getwithland)

## THE GREEN SCENE

Submit your thoughts on water quality to the Green Scene. The Green Scene is a little spot in the universe where you'll find everything to do with Mother Earth-her features, creatures, and how she works. Check it out at <http://www.studio2b.org/escape/greenscene>.

This monthly feature includes surveys, environmental tips, cool photography, and guest columns by you, the Green Scene readers. Purified your own water on a backcountry hike? Helped create a river clean up? Set up a storm drain project? Your story could appear on this web page, so keep your eyes peeled for requests for feature writers.

**ADVISOR SUGGESTIONS:** Feel free to choose and adapt ideas based on girls' interests and developmental level. **RELATED IDEAS IN STUDIO 2B RESOURCES:** Make sure you look through Focus: Makin' Waves (GSUSA® 2004) because it's all very pertinent to this year's Be a Reader theme. Also see "A Case for the Environment," and "Buffy the Pollution Slayer?" pages 76 and 78 in Collection 11-13. (GSUSA® 2002) Make one of the writing activities in Focus: Write Now (GSUSA® 2002) about conserving water. Do the acid experiment on page 8 in the Focus: Parks Matter (GSUSA® 2004). Check out Collection 13-15: "Stepping Out for Change: Rate Your Activist IQ" page 88. In Collection 15-17: take a look at "Dreaming of Wind and Glaciers," page 59. **ANSWERS: Know Your H2O:** 1.-f; 2.-i; 3.-e; 4.-h; 5.-a; 6.-c; 7. -b; 8-d; 9-g. **Oceans Away:** 1. True. These people also live on less than one-fifth of Earth's land mass. 2. True. If all of the extra heat due to the greenhouse effect were to be deposited in the deep ocean, it would take 240 years for it to rise 1o centigrade. 3. False. They're on the coast. Every week, 14,000 new housing units are built on U.S. coastal land and 180 million people visit the coast annually in the U.S. 4. False. The coastal ocean is the most biologically productive part of the ocean because it's filled with nutrients washed up from the deep ocean and from the land. In coastal waters these nutrients receive enough light to grow. 5. True. Seagrass meadows, planktonic and benthic algae, and shoreline marshes-all contained in the ocean-produce oxygen just as trees on land do.

## **Additional Resources**

### **Books**

*A Drop Around the World* by Barbara McKinney and Michael Maydak. Published by Dawn Publications, Nevada City, California, 1998.

*A River Ran Wild: An Environmental History* by Lynne Cherry. Published by Harcourt, Orlando, Florida, 1992.

*Celebrating Earth Day* by Robert Gardner. Published by The Millbrook Press, Brookfield, Connecticut, 1992.

*Our Poisoned Waters* by Edward F. Dolan. Published by Cobblehill Books, New York, New York, 1997.

*Outdoor Education in Girl Scouting*. Published by Girl Scouts of the USA, New York, New York, 1996.

*Paddle to the Sea* by Holling C. Holling. Published by Houghton Mifflin, New York, New York, 1941. (60th anniversary edition 2001)

*Saving Water* by Sharon Dalglish. Published by Chelsea House Publishers, Inc., Broomall, Pennsylvania, 2003.

*The Magic School Bus, Wet All Over, A Book about the Water Cycle* by Joanna Cole and Bruce Degen. Published by Scholastic Books, New York, New York, 1996.

*Water: Almost Enough for Everyone* by Stephanie Ocko. Published by Atheneum Books for Young Readers, New York, New York, 1995.

*Water: A Resource in Crisis* by Eileen Lucas. Published by Children's Press, Chicago, Illinois, 1991.

*Water: Opposing Viewpoints*, edited by Carol Wekesser. Published by Greenhaven Press, Inc., San Diego, California, 1994.

*Water Wars* by Olga Cossi. Published by New Discovery Books, New York, New York 10022.

### **Periodicals**

*National Geographic*, published by National Geographic Society, Washington, D.C.

*Ranger Rick*, published by National Wildlife Federation, Reston, VA.

### **Videotapes**

#### ***Conserving America Series:***

*The Rivers*

*The Wetlands*

*The Challenge of the Coast*

WQED Productions in association with the National Wildlife Federation; V.I.E.W., Inc., New York, New York, 1994

*Down the Drain*, Children's Television Workshop, 1991.

*Earth Aid: Water Conservation*, V.I.E.W., Inc., New York, New York, 1994

#### ***Earth at Risk Environmental Video Series:***

*Acid Rain*

*Clean Water*

Schlessinger Video Productions/Library Video Company, Bala Cynwyd, Pennsylvania, 1993.

*The Adventures of Little Drip (Ground Water Protection)*, Seattle-King County Health Department, Seattle, Washington, 1995.

Sidebar/ real girls in action

Clean Water Counts