

Starting a Water Monitoring Team

Introduction

In addition to sampling on your own, either on your land or on a series of streams, ponds and lakes in your community, we encourage you to work with others. For example, a student using these materials for an independent study or 4-H project might benefit from collaboration with other students to share data, test kit materials and the camaraderie of joint sampling.

In Alabama, the Water Watch program provides adults, often retired seniors, the opportunity to sample rivers and lakes close to housing developments and other areas near their communities. In Iowa, a statewide program provides three levels of training and a Web site for posting data. Missouri supports an adopt-a-stream program, where monitoring is only one of many activities encouraged. In some programs, water sampling is conducted by families to encourage children and parents to learn together.

In Kansas, there are several resources available, including this set of fact sheets. Two organizations that are particularly active are Stream Link, sponsored by the Kaw Valley Heritage Alliance, and Project WET, sponsored by KACEE. Both of these are referenced later in this fact sheet and are designed for youth. The Kansas Department of Health and Environment (KDHE) sponsors and promotes World Monitoring Day in October each



Water monitoring teams can focus on local rivers, streams, lakes, or other water bodies of interest to the community.

year, which is for all ages. The Citizen Science program and educational materials are designed for adults and older students at least 14 years old. Science concepts are incorporated into the program as well as practical advice on sampling, running tests and interpreting the results in the context of a rural or semi-rural agricultural community.

The resource list at the end of this fact sheet provides examples of various networks and projects throughout the country. These can be used as models for your project and as resources and networks that you may want to join, contribute to and provide data and other information. These are not endorsed by K-State as the only ones to consider, and we cannot vouch for the quality of the training or materials provided. We are familiar with many of the organizations, have used their resources and materials, and believe they are helpful. This fact sheet is not an exhaustive list of resources because new networks are often created. The EPA Web site and others may keep more up-to-date lists of citizen-monitoring networks, so check the Web for new resources.

Resources for your team or project

First of all, these fact sheets can be used as a tutorial, and members of our project are available to provide training and outreach to your group through K-State Research and Extension. Our contact information is listed on the next page under “Citizen Science,” and is also on our fact sheets, brochure and Web site.

You can obtain local help through your local K-State Research and Extension office, or from K-State’s watershed specialists, which you can find in your phone book, or on the K-State Research and Extension Web site: www.oznet.ksu.edu. Your Natural Resource Conservation Service (NRCS) office is another resource, especially if you are farming and using water quality testing in conjunction with farm improvements funded through many of the USDA program payments authorized in the Farm Bill.



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What Kind of Team or Project?

Consider the following questions when creating your water network. The resources listed can help you create this network after you have decided on some of the parameters.

- Will this group be made up of primarily adults, youth or both?
- Are you interested in sampling once or continuing a long-term, repeated sampling effort on a particular stream or other water body?
- Do you want more qualitative information (see the visual stream assessment, W-8), or quantitative information (see W-2 through W-7)?
- Are you interested in stream biology in addition to chemistry? (See W-9.)
- Do you want to share your data with each other? Within your group? Beyond your group? Through a Web site posting system of some sort?
- Will you sample primarily on public lands or on private land? Do you need permission to access any of your sampling sites?
- Is the data primarily for your own use/ education, or will it be used for a science fair project? Will you want someone familiar with water quality data to look at the data before it is presented?
- Is this a local network, designed to sample an area of only a few streams or nearby ponds, or would you like to initiate a larger effort? For example, you might sample all the tributaries flowing into a reservoir used for drinking water, or tributaries of one of Kansas' major rivers.
- Would your group benefit by being linked to a state or national network, or can you accomplish your goals as a separate, local group?
- Who will be responsible for data quality control? For reminding the group of planned sampling efforts? For ordering the test kits, and such?
- Finally, the most important point: What water quality question would you like to address? It can be a simple question, such as "Is the water quality better upstream or downstream from my farm?" or "How does the water quality change between these three points on a river in the county?" Another question might be how fencing and alternative water affects the level of *E. coli* in the ponds from which your cattle drink.

Future plans

As this project matures, we hope to develop into a network of volunteer projects operating throughout the state. For now, we can provide training to groups and assistance to individuals who participate in our pilot test with agricultural education classes, farmer/rancher monitoring, and 4-H and homeschool study projects. Feel free to contact us for more information, or to offer feedback about these fact sheets or the Web site. Further information on test kits, where to order, and how to use them and interpret the results can be found on our Web site and in the other fact sheets in this series.

Volunteer networks in Kansas

Citizen Science

Project leaders: Rhonda Janke and Morgan Powell; research assistant: Rebecca Moscou
K-State Research and Extension
2024 Throckmorton Hall
Kansas State University
Manhattan, KS 66506
Phone 785-532-1443
www.oznet.ksu.edu/kswater

Started in 2003 at Kansas State University with funding from EPA and KDHE, Citizen Science strives to refine and extend the use of water test kits to educate citizens about water quality. The program works with three main groups: farmers, ranchers, and other rural landowners and managers; high-school students through vocational agriculture programs, FFA chapters,

4-H Club projects, and homeschool science projects; and citizens of all ages who participate in community water-quality monitoring efforts.

Kansas Association for Conservation and Environmental Education (KACEE)

Laura Downey, executive director
2610 Claflin Road
Manhattan, KS 66502-2743
Phone 785-532-3322
Isoqnwy@kacee.org
www.kacee.org

KACEE is a statewide non-profit association of public and private agencies, organizations, businesses and individuals. Project WET is a water education program sponsored by KACEE that focuses on water-related topics such as atmospheric, surface, and groundwater; water history; chemistry; watersheds; water economics and water stewardship.

Kansas Department of Health and the Environment (KDHE)

World Water Monitoring Day contact: Jaime Gaggero, Environmental Scientist, Bureau of Water, Kansas Department of Health and Environment, Watershed Management Section
1000 Jackson
Topeka, KS 66612
Phone 785-296-5579
jgaggero@kdhe.state.ks.us
www.kdhe.ks.gov
www.worldwatermonitoringday.org

KDHE is in charge of a variety of programs for the state of Kansas related to environmental quality, including funding research and education projects, regulatory oversight and monitoring. World Water Monitoring Day is a program that encourages citizen monitoring each year between September 18 and October 18. Water test kits are available through KDHE or www.worldwatermonitoringday.org for about \$20, including shipping. Tests include temperature, pH, dissolved oxygen and turbidity.

Kaw Valley Heritage Alliance (KVHA) and Streamlink

414 E. 9th St, Suite B
Lawrence, KS 66044-2629
Phone 785-840-0700
kvha@kvha.org
www.kvha.org
www.streamlink.org

Streamlink is a program within the Kaw Valley Heritage Alliance to provide a K-12 cross-curricular program designed to build students' water literacy through water quality assessment and watershed education. It provides educational opportunities to increase student awareness and understanding of the Kansas River Valley and watersheds statewide.

Other state and national volunteer network organizations

Note: Some of these may not seem directly related to your project but can be a source of ideas, training, or materials of use to you or your group.

Adopt-A-Stream Foundation

600 128th Street S.E.
Everett, WA 98208
Phone 425-316-8592
AASF@Streamkeeper.org
www.streamkeeper.org

The Adopt-A-Stream Foundation was established in 1985 to ensure that Pacific Northwest streams continue to provide spawning and rearing habitat for salmon, steelhead and trout, while serving recreational and commercial uses. The foundation's mission is "to empower people to become stewards of their watersheds."

Education programs include streamkeeper field training workshops, salmon fashion show school assemblies, watershed education workshops, Wetland Wizards field training, and Wetland Wigglers youth programs. Publications include Adopting A Stream: A Northwest Handbook, Adopting A Wetland: A Northwest Guide, Streamkeepers Field Guide: Watershed Inventory and Stream Monitoring Methods, and The Streamkeeper video, featuring Bill Nye "The Science Guy."



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Alabama Water Watch

203 Swingle Hall
Department of Fisheries
Auburn University
Auburn, AL 36849
Phone 334-844-4785

www.alabamawaterwatch.org

The Alabama Water Watch Association is a non-profit affiliation of citizen monitoring groups. The program office provides volunteer management and training in watershed testing and data analysis, and is coordinated through Auburn University's Department of Fisheries and Allied Aquacultures and the International Center for Aquaculture and Aquatic Environments. The program office publishes maps, a calendar of events, lists of groups and more information on their Web site.

American Rivers

1025 Vermont Ave., N.W., Suite 720
Washington, D.C. 20005
Phone 202-547-6900

www.amrivers.org

American Rivers, founded in 1973, is a national conservation organization dedicated to protecting and restoring America's river systems and fostering a river stewardship ethic. Based in Washington, D.C., American Rivers operates regional offices in Phoenix, Ariz., and Seattle, Wash. The organization promotes public awareness about the importance of healthy rivers and the threats that face them including issues such as flood control and hydropower policy reform, endangered aquatic and riparian species protection, western in-stream flow, clean water and urban rivers.

Center for Watershed Protection

8390 Main Street, 2nd Floor
Ellicott City, MD 21043
Phone 410-461-8323

center@cwpp.org

www.cwpp.org

Founded in 1992, the Center for Watershed Protection is non-profit that combines local governments, activists and watershed organizations around the country to protect streams, lakes and rivers. The organization has

developed multi-disciplinary strategy for watershed protection, including publications on watershed planning, watershed restoration, stormwater management, watershed research, watershed design, education, outreach and training.

**Global Learning and Observations
to Benefit the Environment (GLOBE)**

Phone 800-858-9947

www.globe.gov

GLOBE is a worldwide network of students, teachers and scientists working together to study and understand the global environment. Students make a core set of environmental observations at or near their schools and report their data on the Internet. Scientists use GLOBE data in their research and provide feedback to the students to enrich their science education. GLOBE helps increase environmental awareness and scientific understanding of the earth.

**Global Rivers Environmental Education
Network (GREEN)**

206 South Fifth Ave., Suite 150
Ann Arbor, MI 48104
Phone 313-761-8142

www.green.org

GREEN is an international network of schools and communities in more than 50 nations and every state in the United States. GREEN provides materials and ideas for people interested in evaluating and improving local water quality through hands-on monitoring and problem solving. GREEN offers public workshops and publications on environmental topics at various locations around the country.

The Groundwater Foundation

P.O. Box 22558
Lincoln, NE 68542-2558
Phone 402-434-2740

www.groundwater.org

The Groundwater Foundation provides various programs, conferences and publications including the Groundwater Guardian Program, which supports and rewards communities that begin groundwater awareness and protection activities.

The Foundation sponsors three youth programs: Children's Groundwater Festival, Groundwater University (grades 7-12) and Groundwater Grad School. It also sponsors a Water Festival Workshop, a Fall Symposium Series and the Groundwater Guardian conference annually. It publishes three newsletters (The Aquifer, Infiltration and Sprinkles).

IOWATER Volunteer Water Quality Monitoring

Wallace State Office Building
502 East 9th St.
Des Moines, IA 50319
Phone 515-281-3252
www.iowater.net

IOWATER is a statewide, citizen-based, volunteer water quality monitoring program. Citizen monitors supply data and reinforce the concept of public ownership of the environment. Volunteers are supported with on-site training workshops, standardized levels of testing, user-friendly databases, testing equipment, financial assistance and tools for local advocacy on local water quality issues.

Izaak Walton League

707 Conservation Lane
Gaithersburg, MD 20878
Phone 301-548-0150
general@iwla.org
www.iwla.org

The Izaak Walton League is a diverse group of 50,000 individuals dedicated to protecting the nation's soil, air, woods, waters and wildlife. Their interests span the spectrum of outdoor recreation and conservation activities, from angling and birding to stream monitoring, wildlife photography and hunting. Publications on their Web site include a field guide to macroinvertebrates, the Watershed Stewardship Action Kit, and Save Our Streams Volunteer Trainer's Handbook.

Kentucky Water Watch

kywwp@igc.apc.org
www.state.ky.us/nrepc/water/wwhomepg.htm
Kentucky's water page: www.water.ky.gov

Kentucky Water Watch has created a Web site that has links to more than 40 high-quality sites from around the nation that deal with volunteer monitoring.

Conservation Technology Information Center: Know Your Watershed

1220 Potter Drive, Room 170
West Lafayette, IN 47906-1383
Phone 765-494-9555
kyw@ctic.purdue.edu
www.ctic.purdue.edu

The Know Your Watershed program maintains a database of watersheds, informational materials and watershed groups. Visit their Web site to learn more about their programs and resources.

Minnesota Citizen Stream Monitoring Program

Laurie Sovell, coordinator
Minnesota Pollution Control Agency
520 Lafayette Rd, N.
St. Paul, MN 55155
Phone 651-296-7187
www.pca.state.mn.us/water/csmp.html

This program combines the knowledge and commitment of citizens with the technical expertise and resources of the Minnesota Pollution Control Agency to develop a more comprehensive statewide network for monitoring the state's 92,000 miles of streams.

Missouri Stream Team

PO Box 180
Jefferson City, MO 65102-0180
Voice mail 800-781-1989
Phone 573-751-4115 (ask for Stream Team)
streamteam@mdc.mo.gov
www.mostreamteam.org
www.conservation.state.mo.us/programs/strteam

The Missouri Stream Team program provides an opportunity for interested individuals to get involved in river conservation. Goals include: education – learning about Missouri's 56,000 miles of flowing water; stewardship – hands-on projects such as litter control, streambank stabilization, streamside tree planting, water quality monitoring and storm drain stenciling; and advocacy – speaking on behalf of an adopted stream when development projects or harmful activities tamper with them.



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**North American Lake Management Society
(NALMS)**

PO Box 5443
Madison, WI 53705-5443
Phone 608-233-2836
nalms@nalms.org
www.nalms.org

The North American Lake Management Society's mission is to forge partnerships among citizens, scientists and professionals to foster the management and protection of lakes and reservoirs. NALMS publishes several handbooks, guides and videos. They also sponsor the Great American Secchi Dip-In, which began on the weekend of July 4, 1994. The Dip-In is an effort by volunteer monitors to gather transparency data on the world's water bodies during a short period each summer. See also <http://dipin.kent.edu>.

River Watch Network

520 SW 6th Avenue #1130
Portland, OR 97204
Phone 503-241-3506 or 1-800-423-6747
info@rivernetwork.org
www.rivernetwork.org/

River Watch Network is a national, non-profit organization that works with community groups to develop river monitoring and protection programs. RWN offers organizational and technical assistance to conservation organizations, high school and college teachers, students and citizen volunteers. RWN has a corps of 6,000 volunteers nationwide working to restore and protect rivers.

**United States Environmental Protection
Agency, Office of Water - Volunteer
Monitoring Program**

www.epa.gov/volunteer/epasvmp.html
http://yosemite.epa.gov/water/volmon.nsf/VST?openview

The EPA encourages all citizens to learn about their water resources and supports volunteer monitoring. EPA sponsors biennial national conferences, manages an electronic bulletin board forum for volunteers, supports a national newsletter and prepares and regularly updates a directory of volunteer monitoring programs. They also publish manuals on volunteer monitoring methods and planning and implementing volunteer programs.

Estimating cost

Check company catalogs for current prices. (Contact information for suppliers is on page 11 of *Overview of Water Testing, W-1.*)

The thermometer, turbidity tube, and sampling scoop can be used multiple times. Test kit supplies usually come in kits of 25 to 30. Order two kits for more than 25 tests. One exception is the phosphorus kit; you can buy refills for \$21.50. Most pH strips come 50 per bottle, and

some tests, such as atrazine, can be ordered individually.

Keep in mind that you don't always need to run all the tests listed. For example, we usually don't run the triazine test unless we have reason to suspect it is present. Individual tests can be used if you can't afford to buy the whole kit.

Rather than purchasing a sampling scoop, you can make one using a container tied securely to the end of a 6-foot-long pole.



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Estimated cost of test kits and supplies

	<u>Start-up cost for 25-30 tests</u>
Multiple use items (one-time purchase)	
Thermometer	\$20.00
Turbidity tube	34.00
Sampling scoop	24.00
Test kits and supplies	
Phosphorus kit (30 tests/kit)	52.80
Ammonia strips (25 tests/bottle)	16.50
Nitrate/nitrite strips (25 tests/ bottle)	15.50
pH strips (50 tests/bottle)	13.50
<i>E. coli</i> plates (25 tests/pack)	40.00
Pipettes (25, but assumes bulk purchase)	4.00
Triazine kit (~\$7 per test)	varies
Estimated total cost	\$220.30



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