
Module 6 Why We Monitor and Volunteer Monitoring

Introduction

When do we need to know about the quality of our water? Why waste time and tax money on “rinky-dink” volunteer programs? Why should anyone get involved in volunteer water programs?

In the decade ahead our population will increase in the Pacific Northwest and water will become a more limiting resource than ever imagined. Across our region, communities are taking action to protect their own water resources. Volunteer monitoring efforts can help in this process.

In this module participants will examine: *Why we monitor, the top 20 water quality parameters assessed by volunteers, how monitoring data is used, and getting started in volunteer monitoring programs.*



Why We Monitor

The federal Clean Water Act of 1972 states that “it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985.” Despite substantial progress in the past three decades, we clearly have yet to meet this important goal. In the Pacific Northwest (PNW), industries, municipalities, and individuals continue to discharge great quantities of pollution each year. Some of these pollutants can be highly toxic to people, plant, and animal species, and marine life, while other pollutants are less immediately harmful but nonetheless can cause long term damage to the water resources of our communities.

The single largest factor limiting our ability to make intelligent policy decisions on issues affecting PNW water quality is that we do not have sufficient information (i.e. hard data). Although numerous organizations — including state and federal agencies, citizens groups, universities, and private industry — have conducted a variety of tests and studies in our region, there remains a significant gap in our understanding of water quality in our watersheds. The reason for this gap is that few watersheds to date have implemented a comprehensive, continuous water quality monitoring program.

Due, in part, to limited public resources, the federal and state agencies charged with monitoring and protecting water quality have found it increasingly difficult to fulfill their mandates. More and more agencies have come to value the contributions of citizen based programs. That is why volunteer monitors are so important. We are beginning to collect the information needed to chart an intelligent and sustainable course for the future of the Pacific Northwest. Gathering this data will not occur overnight; rather, it will take several years to accumulate enough information to be able to identify the trends that will help us shape management decisions. But the effort will be worthwhile, because we have the opportunity to maintain the quality of life which is so important to those who live and visit here.



Volunteer Monitoring

Across the Pacific Northwest, volunteers are monitoring the condition of streams, rivers, lakes, reservoirs, estuaries, coastal waters, wetlands, and wells. The number and variety of these projects is continually on the rise; so, too, is the complexity of the monitoring conducted and the uses of the data collected.

**Top 20
Parameters
Assessed by
Volunteer
Monitors**

Water temperature
pH
Dissolved Oxygen
Macroinvertebrates
Debris clean-up
Habitat assessments
Nitrogen
Phosphorus
Turbidity
Coliform bacteria
Secchi depth
Aquatic vegetation
Flow
Birds/Wildlife
Fish
Watershed mapping
Rainfall
Photographic surveys
Salinity
Sediment assessments

Source: *Directory of
Volunteer Environmental
Monitoring Programs,
4th Edition*

Most volunteer monitoring projects evaluate the chemical, physical, or biological condition of waters in a given watershed. They may address different kinds of waters — e.g., streams with associated embayments — and they may conduct several types of monitoring activities. Some projects may address only one type of monitoring in one type of waterbody, e.g., nutrient sampling in estuaries. More comprehensive projects may take basic chemical measurements of conditions such as dissolved oxygen levels, pH, or salinity, evaluate the physical condition of streamside habitat, and evaluate the biological condition of aquatic insects or vegetation.

Not only do volunteer projects monitor many different parameters and types of waters, they are also organized and supported in many different ways. Volunteer monitoring projects may be associated with state, tribal, interstate, local, or federal agencies, with environmental organizations or universities, or may be entirely independent. Financial support may come from government grants, partnerships with business, endowments, independent fund-raising efforts, corporate donations, membership dues, or a combination of any and all of these sources. Most volunteer projects are fairly small and have very small budgets. Based on EPA's latest *Directory of Volunteer Environmental Monitoring Programs, 5th Edition* (<http://yosemite.epa.gov/water/volmon.nsf>), we know that the median program size is 25 volunteers, and the median annual budget is under \$5,000. However, there are also volunteer programs with over 1,000 volunteers and those with annual budgets of more than \$50,000.

Although the goals and objectives of volunteer projects vary greatly, virtually all volunteers hope to educate themselves and others about water quality problems and thereby promote a sense of stewardship for the environment. Many projects, in fact, establish these as their goals. These projects might be called primarily **education** oriented.

Other projects seek a more active role in the management of local water resources, and therefore strive to collect data that can be used in making water quality management decisions. Common uses of volunteer data include local planning decisions, such as identifying where to route a highway; local priority setting, such as determining which county lakes require restoration; screening for potential pollution problems, which might then be investigated more thoroughly by water quality agencies; and providing data for state water quality reports, which might then be used for statewide or national priority setting. Projects doing this type of monitoring might be called primarily **data** oriented. Data oriented volunteer projects, in particular, must continuously wrestle with the issue of credibility. They must prove to skeptics that their volunteers collect good-quality data that is:

- ▶ consistent over time and within projects and group members;
- ▶ collected and analyzed using standardized and acceptable techniques;
- ▶ comparable to data collected in other assessments using the same methods.

These projects must adopt protocols that are straightforward enough for volunteers to master and yet sophisticated enough to generate data of value to resource managers.

To do this, groups develop a quality assurance plan that details a project's standard operating procedures in the field and lab, outlines project organization, and addresses issues such as training requirements, instrument calibration, and internal checks on how data are collected, analyzed, and reported. Just how detailed such a plan needs to be depends to a large extent on the goals of the volunteer monitoring project.



Starting Out in Volunteer Water Monitoring

What is volunteer water monitoring?

People volunteer to monitor water because they want to help protect a stream, lake, bay, or wetland near where they live, work, or play. Their efforts are of particular value in providing quality data and building stewardship of local waters.

Volunteers make visual observations of habitat, land uses, and the impacts of storms; measure the physical and chemical characteristics of waters; and assess the abundance and diversity of living creatures — aquatic insects, plants, fish, birds, and other wildlife. Volunteers also clean up garbage-strewn waters, count and catalog beach debris, and become involved in restoring degraded habitats.

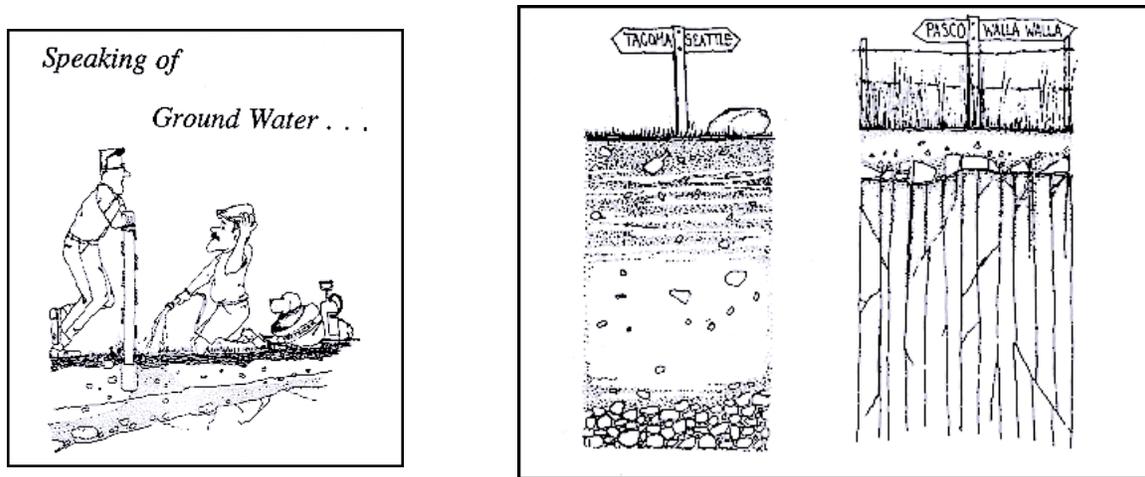


Figure 2.1.1 Cover and inside illustration from League of Women Voters of Washington training manual, "Speaking of Groundwater."

Volunteers Provide Quality Data

Many volunteer groups collect data that supplements the information collected by state and local resource management or planning agencies. These agencies might use the data to:

- ▶ Screen water for potential problems, for further study or for restoration efforts;
- ▶ Establish baseline conditions or trends for waters that would otherwise go unmonitored; and/or
- ▶ Evaluate the success of best management practices (BMPs) designed to mitigate problems.

In general, the volunteer monitoring program should work cooperatively with state and local agencies in developing and coordinating its technical components. To ensure that its data are used, the monitoring program should also develop a strong quality assurance project plan (QAPP) that governs how volunteers are trained, how samples are collected and analyzed, and how information is stored and disseminated.

Volunteers Build Stewardship of Local Waters

By educating volunteers and the community about the value of local waters, the kinds of pollution threatening them, and how individual and collective actions can help solve specific problems, volunteer monitoring programs can:

- ▶ Make the connection between watershed health and our individual and collective behaviors;
- ▶ Build bridges among various agencies, businesses, and organizations; and
- ▶ Create a constituency for local waters that promotes personal and community stewardship and cooperation.

Volunteer groups whose primary purpose is education and constituency-building generally adopt simple, easy-to-use assessment methods and may not need to develop a stringent quality assurance project plan.

How do you get started as a volunteer monitor?

1. Determine your personal goals.

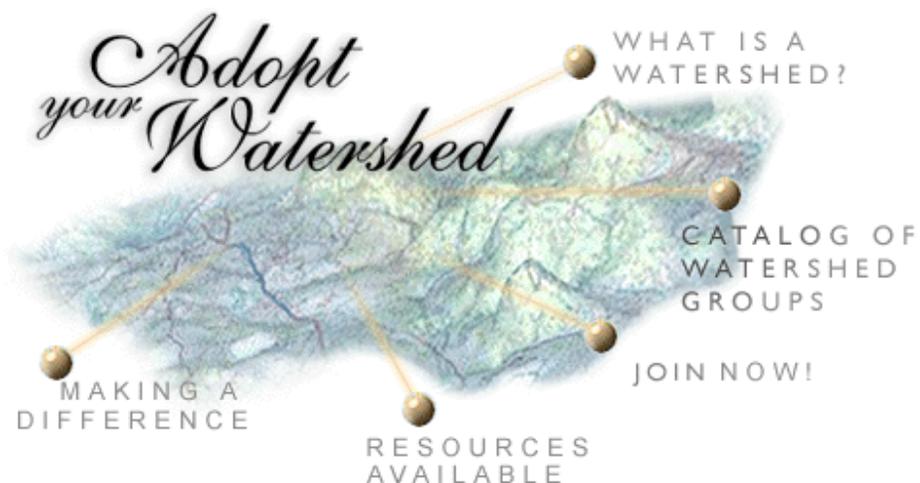
Ask yourself why you want to become a volunteer monitor. Do you want to provide high-quality data to be shared with state and local government agencies, or are you more interested in helping local students learn about the environment? Do you want to monitor a specific stream in your neighborhood or are you willing to be assigned a site by your county resource management agency?



Participating in a volunteer program that provides data to be used by government agencies will usually require that you take part in formal training sessions and commit to a regular schedule of sampling (usually weekly, monthly, or seasonally, depending on the project). If you are more interested in learning about your local waterway and educating others, your time commitment may be less and any training will probably be less formal.

2. Learn about any existing volunteer monitoring programs in your area and around the country.

The National Directory of Volunteer Environmental Monitoring Programs, published by the U.S. Environmental Protection Agency (USEPA), can help you locate existing groups nearby and around the country and help you learn about the kinds of monitoring taking place. In addition, USEPA's *Adopt Your Watershed* site on the World Wide Web can help you link up with volunteer groups in your watershed (see USEPA resources).



Another good place to start is with your local or state environmental protection agency, natural resource agency, parks, or fish and game agency. Even if it does not sponsor a volunteer program, the agency may be aware of other programs or groups you can join. Other potential sponsors or sources of information include:

- ▶ Local community-based groups such as civic or watershed associations, garden clubs, universities, and activist organizations;
- ▶ National environmental organizations with chapters in your area; and
- ▶ Regional offices of federal agencies such as USEPA, the US Department of Agriculture's Extension Service, the U.S. Park Service, and the U.S. Fish and Wildlife Service.

Once you locate volunteer monitoring groups, you will probably find that they offer a variety of opportunities. You might become involved in collecting samples, analyzing the results in a laboratory, developing ways to present data, writing reports, speaking to local groups about water resource issues and the volunteer project, producing a newsletter, fund-raising, or recruiting and training new volunteers. Most existing programs will have a set of policies, for example, the Cook Inlet Keeper program in Alaska (see below). Ask to read the policies to learn what each group does. You might also become involved in organizing stream cleanups, planting trees, and other habitat restoration activities. Chances are you will find opportunities that suit your interests and skills.

**COOK INLET KEEPER
MONITORING POLICY**

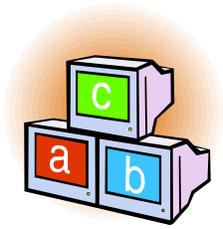
1. Each monitoring station or site will have one primary monitor or Team Leader and at least one alternate. If both primary and alternate monitors for any particular site are from the same household, a third person must be assigned as alternate to provide coverage for vacations, etc.
2. In order to maximize site coverage in the event of illnesses or vacations, efforts will be made to avoid assigning the same two monitors to any two sites.
3. All primary and alternate monitors will be at least 16 years old. People under 16 are welcome to attend training and quality control sessions and to assist monitors at the sites.
4. All monitors will complete phases I through III of training prior to monitoring and attend at least one of the two quality control sessions held each year.
5. Each monitoring team will have its own kit. Team Leaders will be responsible for maintaining their kits and for notifying the Monitoring Coordinator of any problems with their equipment. Team Leaders will bring their kits to all quality control sessions.
6. If a Team Leader is not able to monitor on a scheduled date it is their responsibility to locate an alternate monitor and provide them with their monitoring kit. If this is not possible the Team Leader should contact the Monitoring Coordinator to make arrangements, preferably in advance of the sampling session. Monitors are responsible for reporting equipment problems, reagent shortages, etc. to their team leaders or the Monitoring Coordinator.
7. All monitors will take part in monitoring at least once every four (4) months to maintain familiarity with equipment, procedures, and sites.
8. All monitors will have the option of joining an “alternate pool” in addition to their regular teams. The pool will provide coverage when regular monitors are not available at a given site. Only trained monitors may join this pool.
9. All monitors will be responsible for the quality and completeness of the data they themselves collect and for submitting this data to the Monitoring Coordinator on a timely basis. Monitors will also be responsible for maintaining an ample supply of standardized data.
10. The Monitoring Coordinator will be responsible for the overall quality of the data collected by the program. If problems arise with the data collected by any particular monitor, the Monitoring Committee will work with the monitor to resolve these problems.

3. If you can't locate a local group, consider starting one yourself.

If you decide to start your own program, you'll need to do some basic research to determine how to proceed. To help your research, develop a list of questions that you can discuss with other volunteer program coordinators. For example:

- ▶ What relationships does the program have with state and local agencies, local businesses, schools and colleges, other groups?
- ▶ What kind of monitoring does the program conduct?
- ▶ What are the program's monitoring costs? How is the program funded?
- ▶ How are volunteers recruited, trained, and retained?
- ▶ How is the quality of the data ensured? Does the program have an approved quality assurance plan?
- ▶ What reference materials, training aids, and methods manuals do they recommend?

Starting a volunteer monitoring program is not a simple task. You will need money for equipment and possibly for staff; appropriate meeting, training, and lab facilities; a network of knowledgeable people (such as educators, extension agents, local government representatives, etc.) who are interested in your project and willing to advise and help out; connection to (or sponsorship by) potential data users who can help you plan your project so that it meets *their* needs as well as your own; and organizational skills to manage and maintain the project. Most of all, you will need time to make contacts in the community, design your monitoring plan, develop training sessions, recruit volunteers, revise the program as it matures, raise funds, analyze the data, and report back to the volunteers and the community.



Here are some of the lessons learned by other volunteer programs:

Start small. A pilot project that serves to test out methods, training sessions, and organizational skills can keep you from being overwhelmed and allows you to evaluate and refine your project before moving on to more ambitious efforts.

Keep your goals — and those of your volunteers — realistic. Chances are slim that your data will ever be used in court to stop a polluter. Data collected for such regulatory purposes requires a very high degree of quality assurance. Most volunteer data is used to educate the community and to screen for potential problems.

Planning pays off. Beware of collecting a year's worth of data and then finding that you have no idea how to analyze it, that the methods you used are not considered valid, or that you sampled sites in the wrong locations.

Make connections. The more people you talk to in your community and within local and state agencies, the more friends and supporters your program will have. Include potential data users in all phases of your project's development.

Develop volunteer leadership. Volunteer leaders within a project provide the vision for setting goals and the commitment to achieve them. They also enable a project to develop and grow without stagnating. Build into your monitoring project plenty of opportunities for volunteers to develop as leaders.

Pamper your volunteers. Volunteers give up their free time to come to meetings, attend training sessions, and trudge out to monitoring sites. Provide social opportunities and reward volunteers for a job well done.

Use your data. Report findings to volunteers and to the community. Help volunteers present monitoring results at fairs and town meetings. Send your findings to your contacts in state and local government. Create a newsletter or data report and let the world see what you've accomplished.

Some USEPA resources on the World Wide Web...

- ▶ Office of Water Homepage: <http://www.epa.gov/ow>
- ▶ Wetlands, Oceans, and Watersheds Homepage: <http://www.epa.gov/owow>
- ▶ Monitoring Water Quality Homepage: <http://www.epa.gov/owow/monitoring>
- ▶ Volunteer Monitoring Homepage: <http://www.epa.gov/owow/monitoring/vol.html>
- ▶ Surf Your Watershed: <http://www.epa.gov/surf>
- ▶ Adopt Your Watershed: <http://www.epa.gov/adopt/>
- ▶ Index of Watershed Indicators: <http://www.epa.gov/iwi/>



Volunteer Monitoring Resources

USEPA supports volunteer monitoring by sponsoring national conferences, publishing methods manuals, producing a nationwide directory of volunteer programs, and funding a national newsletter, *The Volunteer Monitor* (see next section for information on subscribing to this publication). Volunteer coordinators in the 10 EPA regional offices provide some technical assistance for local programs and help coordinate region wide conferences. The regions are also responsible for grants to the states that can be used, in part, to support volunteer monitoring programs that help assess nonpoint sources of pollution or that serve to educate the public about nonpoint source issues.

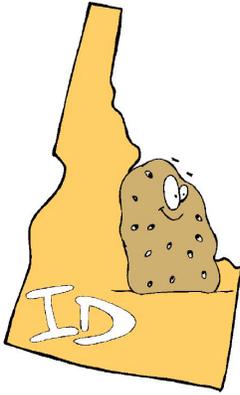
For more information on USEPA's volunteer monitoring program, or to obtain any of the documents listed in the following section, contact Volunteer Monitoring Coordinator, USEPA (4503F), 401 M Street SW, Washington, DC 20460.

Volunteer monitoring resources available from USEPA

- ▶ *National Directory of Citizen Volunteer Environmental Monitoring Programs, Fifth Edition.* EPA 841-B-98-009, November 1998.
- ▶ *Proceedings of the Fifth National Citizen's Volunteer Water Monitoring Conference.* EPA 841-R-97-007, 10/97.
- ▶ *Proceedings of the Fourth National Citizen's Volunteer Water Monitoring Conference.* EPA 841/R-94-003, February 1995.
- ▶ *Proceedings of the Third National Citizen's Volunteer Water Monitoring Conference.* EPA 841/R-92-004, September 1992.
- ▶ *Volunteer Estuary Monitoring: A Methods Manual.* EPA 842-B-93-004, December 1993. (<http://www.epa.gov/owow/estuaries/monitor/chptr01.html>)
- ▶ *Volunteer Lake Monitoring: A Methods Manual.* EPA 440/4-91-002, December 1991.
- ▶ *Volunteer Monitor's Guide to Quality Assurance Project Plans.* EPA 841-B-96-003, September 1996.
- ▶ *Volunteer Stream Monitoring: A Methods Manual.* EPA 841-B-97-003, November 1997.
- ▶ *Volunteer Water Monitoring: A Guide for State Managers.* EPA 440/4-90-010, August 1990.

The Volunteer Monitor, published twice yearly, is the national newsletter of volunteer water monitoring. The newsletter facilitates the exchange of ideas, monitoring methods, and practical advice among volunteer monitoring groups across the country. Subscriptions are free by contacting: River Network, Volunteer Monitor Newsletter, 520 SW 6th Ave, Suite 1130, Portland, OR 97204-1535; E-mail: volmon@rivernet-work.org. Also available online at: www.epa.gov/owow/monitoring/volunteer/vm_index.html

PNW Links to Water Quality and Assessment



- ▶ **Idaho: Department of Environmental Quality** is a new department created in 2000 with continuing responsibilities in the water quality area. IDEQ State Office, 1410 N Hilton, Boise, ID 83706.

Phone: 208-373-0502; FAX: 208-373-0417; Web site:

[http://www2.state.id.us/deq/water/water1.htm#Surface Water](http://www2.state.id.us/deq/water/water1.htm#SurfaceWater)

Idaho Department of Water Resources (IDWR) was created in 1895 to serve the people of Idaho. It is charged to protect their welfare by ensuring that water and energy are conserved and available for the sustainability of Idaho's economy, ecosystems, and resulting quality of life. IDWR pursues its mission through controlled development, wise management, and protection of Idaho's surface and ground water resources, stream channels, and watersheds; and promotion of cost-effective energy conservation and use of renewable energy sources. State Office – 1301 North Orchard St., Boise, ID 83706. Phone: 208-327-7900; FAX: 208-327-7866;

Web site: <http://www.idwr.state.id.us/>

Idaho Geological Survey (IGS) has been serving the state since 1919 through geological research. It has a hydrology mission and several programs. IGS State Office, Rm 332 Morrill Hall, University of Idaho, Moscow, ID 83844. Phone: 208-885-7991;

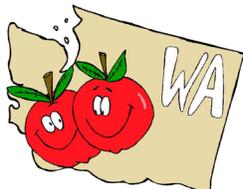
Web site: <http://www.idahogeology.org>



- ▶ **Oregon: Department of Environmental Quality** (DEQ) is the state agency responsible for protecting Oregon's public water for a wide range of uses. DEQ sets water quality standards to protect "beneficial uses" such as recreation, fish habitat, drinking water supplies, and aesthetics. DEQ monitors water quality with regular sampling of more than 50 rivers and streams in the 18 designated river basins found in Oregon. ODEQ regulates approximately 587 municipal wastewater sewage treatment plants and 223 industrial dischargers through individual permits that set limits on pollutants discharged. In addition, approximately 1,310 facilities have general permits that limit discharges and 1,410 facilities are covered by storm water general permits. DEQ also permits injection systems and inspects septic system installations. The department offers low cost loans to public agencies to help fund improvements to sewer systems.

ODEQ's Water Quality Programs: Biosolids Program, Drinking Water Protection Program, Ground Water On-Site Sewage Treatment and Disposal Program, Polluted Runoff (nonpoint source pollution), Pretreatment Program, Underground Injection Control Program (UIC), Wastewater System Operator Certification Program, Water Quality Permit Programs, Water Quality Standards Program.

For further information on how you can help protect Oregon's valuable water resources contact DEQ public affairs at: 503-229-5766. You may also call toll free in Oregon at: 1-800-452-4011. People with hearing impairments may call DEQ's TTY at: 503-229-6993. Web site: <http://waterquality.deq.state.or.us/wq/>



- ▶ **The Washington Department of Ecology's** mission is to protect, preserve, and enhance Washington's environment, and promote the wise management of its air, land, and water for the benefit of current and future generations. Mailing Address: PO Box 47600, Olympia, WA 98504-7600. Physical Address: 300 Desmond Drive, Lacey, WA 98503. Information and Receptionist: 360-407-6000, TTY for hearing impaired: 360-407-6006. Web site: <http://www.ecy.wa.gov/>



- ▶ **The National Water Quality Assessment (NAWQA) Program** is designed to describe the status and trends in the quality of the nation's ground and surface water resources and to provide a sound understanding of the natural and human factors that affect the quality of these resources. As part of the program, investigations will be conducted in 59 areas called "study units." These investigations throughout the nation will provide a framework for national and regional water quality assessment. Regional and national synthesis of information from study units will consist of comparative studies of specific water quality issues using nationally consistent information. Web site: <http://water.usgs.gov/nawqa/>



Cooperative State Research,
Education and Extension Service

- ▶ **The Cooperative State Research, Education, and Extension System (CSREES) Water Quality Program** brings university scientists, instructors, and extension educators into more effective and efficient partnerships with federal interagency priority programs in addressing water quality issues in US agriculture. The program seeks to provide watershed-based information that can be used to: assess sources of water quality impairment in targeted watersheds; develop and/or recommend options for continued improvement of water quality in targeted watersheds; and evaluate the relative costs and benefits associated with cleanup from all responsible sectors (e.g. farming, processing, urban runoff, municipal waste treatment, etc.).
Web site: <http://www.reeusda.gov/nre/water/water.htm>



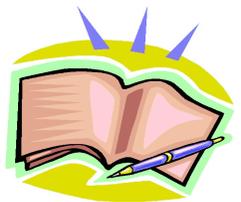
Discussion Points

- ❖ What images remain with you after considering volunteer monitoring programs in this module?
- ❖ Recall an event in your own lives that pertains to volunteer experiences dealing with water. After all have shared; explore the commonalities or differences. How does this relate to the information presented in this section of the short-course?
- ❖ In pairs go back through the key points presented in the “why we monitor” and “volunteer monitoring” sections. Ask them to come up with two questions that still need to be answered to help understand these concepts.
- ❖ Speculate on the role of Washington Department of Ecology, Oregon Department of Environmental Quality, or Idaho Department of Ecology in volunteer water quality monitoring efforts. List the roles you come up with and indicate whether you agree (A) or disagree (DA) with this use of government.
- ❖ List the three key ideas you gained from this discussion and why they are important.



► *Major Points to Remember*

- ❖ There is a need for water monitoring because in most cases communities do not have sufficient information from which to make good water quality decisions.
- ❖ Volunteer water quality monitoring data is used primarily for education, problem identification, local decisions, research, assessment, watershed planning, water classification, and habitat restoration.
- ❖ Although the goals and objectives of volunteer projects vary greatly, virtually all volunteers hope to educate themselves and others about water quality problems and thereby promote a sense of stewardship.
- ❖ Volunteers presently monitor the condition of streams, rivers, lakes, reservoirs, ponds, estuaries, coastal waters, wetlands, and wells. They do this because they want to protect waters where they live, work, and play.
- ❖ There are many resources available to assist monitoring groups at the local, tribal, state, and federal levels. Getting started is perhaps the most important part of the process.



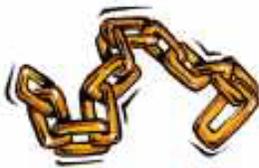
► *Journal and Evaluation*

In your journal write briefly on how your thinking changed as a result of discussion concerning water quality monitoring. Did the previously discussed information in **Part One** provide you with a foundation to understanding this module? Why or why not?



▶ *Additional Activities*

- ❖ Have a speaker from the Beachwatch, Groundwater Guardian, Watershed Steward, or other water quality monitoring program share what they are presently doing in your or a neighboring community.



▶ *Links and References*

Cook Inlet Keeper Volunteer Training Manual (1998) Citizens Environmental Monitoring Program, 1st edition, Master Watershed Steward Program, Anchorage Waterways Council, Anchorage, AK.

Lee MacDonald et.al. Monitoring Guidelines to Evaluate Effects of Forestry Activities on Streams in the Pacific Northwest and Alaska. EPA/910/9-91-001. May 1991.

Mitchell, M. and W. Stapp (1991) Field Manual for Water Quality Monitoring, Thomson-Shore Inc. Dexter, MI.

Mitchell, M. and W. Stapp (2000) Field Manual for Water Quality Monitoring: An Environmental Education Program for Schools, 12th Edition, Kendall/Hunt Publishing Company, Dubuque, IA.

PondWatch: A CommunityNet Project by Edu Tel Communications Inc. PondWatch Data Submittal.

http://www.edutel.org/pondwatch/pondwatch_data.html

Rabe, F. and J. White (1992) Idaho Streamwalk: A program for people interested in learning more about their streams and rivers, Idaho Water Resources Research Institute, University of Idaho, Moscow, ID.

Stapp, W. and M. Mitchell (1997) Field Manual for Global Low-Cost Water Quality Monitoring, 2nd Edition, Kendall/Hunt Publishing Company, Dubuque, IA.



▶ *Short-course Presenters*

An activity that has worked in this module is to have an existing volunteer monitoring group, or representative of one, share why they are monitoring as a formal presentation or in a round table discussion with the participants in your short-course. This can serve to reinforce the major points to remember. The representative of the existing groups might also work with smaller groups of two or three in answering one or more of the discussion questions with the participants.



▶ *Tips for Short-course Presenters*

- ❖ **Why We Monitor and Volunteer Monitoring:** Check out the web sites or great links identified before the program for your own watershed and state. If you have not used these resources before reflect upon how this information might be useful in the future.

It might be good to have the participants identify successful volunteer groups in their own community and have them speculate why they are currently successful. After the list is collected have them suggest:

- ▶ Which group might be a good partner or sponsor for a water quality awareness program?
- ▶ Which group might be a good partner or sponsor for a demonstration water quality monitoring program?

- ▶ Which group might be a good partner or sponsor for a 1-3 year volunteer water quality monitoring program?
- ▶ Which group might be a good partner or sponsor in a “Community Storm Event” water monitoring team?