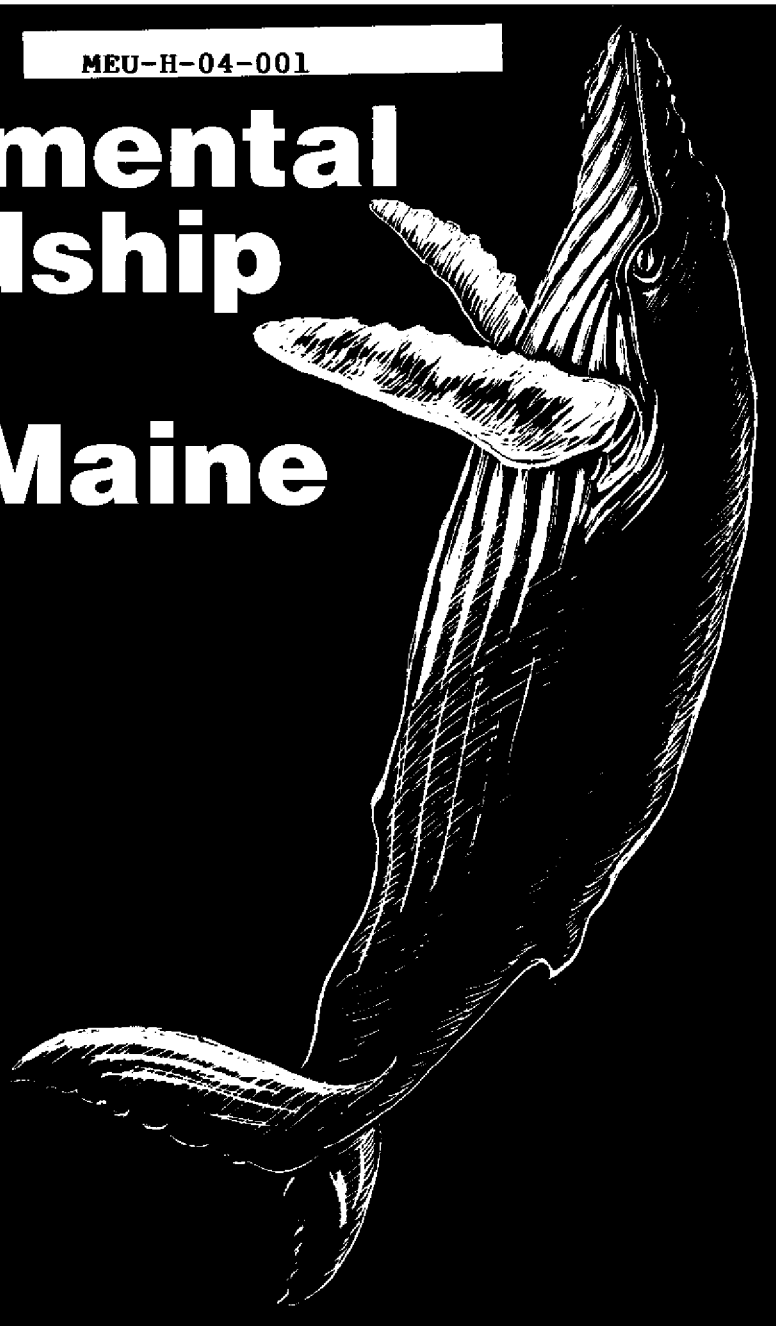
MEU-H-04-001

Environmental Stewardship in the Gulf of Maine



A COORDINATOR'S MANUAL FOR VOLUNTEER MONITORING

University of Maine
Cooperative Extension
and Sea Grant Program

Maine Coastal Program
of the Maine State Planning Office

MEU-H-04-001

Environmental Stewardship in the Gulf of Maine

A Coordinator's Manual for Volunteer Monitoring

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THE UNIVERSITY OF MAINE Cooperative Extension

Gulf of Maine Council on the Marine Environment

2004 ?

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And finally, we have had an overwhelming response from community groups asking for organizational resources and inspiring us to develop and distribute this manual. Thank you coastal community volunteers for all your meaningful work on behalf of our coastal lands and waters.

Esperanza Stancioff

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Introduction

As concern over the natural environment has increased during the past several decades, volunteer monitoring and citizen action in coastal communities has been on the rise. Citizen groups are an integral part of the ongoing effort to assess problems and implement solutions affecting our watersheds.

The purpose of this manual is to inform and educate citizen groups about organizing themselves toward accomplishment of their goals. There is a considerable amount of information available on each subtopic in the manual that could not be included. It was not our intent to provide comprehensive information on every topic, but an effort to compile a cookbook sort of document with the topics all in one place, and provide resources listed as a way to access more in-depth information.

While the focus is on assisting community groups around the Gulf of Maine, its application goes beyond this region. There are two major sections: Part 1: Getting Your Program Up and Running is intended to provide the A to Z of organizational information for citizen groups at all stages of development who are conducting an environmental monitoring program. The examples and material in Part 1 focus primarily on water quality monitoring, however, other types of monitoring and conservation groups can also utilize this information to build their skills and knowledge. Part 2: Building Your Groups Effectiveness assists any type of community group or organizational entity in building their capacity in areas ranging from running effective meetings to evaluating the group.

Please refer to Hints on Using this Guide (below) for help in determining how to access the information you need. For assisting you at whatever stage of development your group might be in, the Program Self-Evaluation Checklist (pages 2 and 3) is a useful tool to provide answers to your questions.

It is our hope that this Guide will be a valuable resource for your group or program. In order to improve upon the information, we have included a few questions for evaluation and planning (final page). We would be grateful if you would complete and return the form as you use the manual, so that we can develop updated materials and plan training workshops.

HINTS ON USING THIS MANUAL

This manual is designed to be used by a variety of environmental monitoring groups to meet a variety of needs. For communities contemplating starting a new program, most if not all sections will be relevant. For the seasoned monitoring group, this manual can help you revisit your program's goals and objectives; reinvigorate your monitors; or refocus your efforts. In this case, specific sections will assist you at this juncture of your monitoring program. While coastal water quality monitoring has been used as the primary example in this document, the organizational and planning information is relevant to any community-based environmental monitoring initiative or conservation group work.

We do not advise reading this manual in one sitting. Instead, use it as a tool to help you through the distinct steps of program planning, development and implementation. The following pages will help you find the information most pressing to your program. The end of each chapter also includes a list of resources, such as books, other manuals, resource people or agencies, and web pages with related information.

In a few sections (data management for example), we have included only introductory information. We suggest that for more in-depth information you obtain the recommended manuals. The summarized introductory material is presented to make you aware that these parts of a program are critical and that you will need to consider them in your overall planning and implementation processes.

Volunteer environmental monitoring programs have both technical and organizational components. The following checklist will help you assess the status of your overall program. The specific questions will help you determine which chapters in this manual might be valuable to your group. If you read a chapter and find you still cannot answer the checklist questions, you might want to revisit an aspect of program planning or implementation.

Hints on the layout of this manual:

Note that items that illustrate or amplify on points made in the text have a gray bar next to them. If you'd like to add your own notes, there is ample room at the top of most pages to do so.

Program Self-Evaluation Checklist[1]

Program planning is required before any monitoring should begin. It involves several steps, including collecting background information about the watershed of interest; assessing current needs, uses and values of the watershed; and involving a wide range of citizens, scientists and other professionals in the planning process. Answer these questions:

- Does your group receive input from community members and organizations in assessing your program's purpose and direction?
- Was a thorough background study conducted to best determine goals for your program?
- Does your program have a vision statement that nicely describes the purpose of your program?

See Chapter 1 for more information.

Study design is the process of deciding and documenting the why, what, where, how and when of your monitoring effort. It describes your program and its purpose in clear terms and establishes your program as a credible monitoring program. Can you:

- Describe your group's purpose and plan?
- Outline the parameters you are monitoring and why they were chosen?
- State the level at which you want your data used and explain data requirements chosen to meet those uses?
- Provide an interested citizen with a map of your sites?
- Explain your chosen sample collection and analysis places and procedures?

See Chapter 2 for further information on study design.

Fundraising is critical for the success of any monitoring program. Without financial support, monitoring programs are very limited in what they can accomplish. Answer these questions:

- Does your group have stable, long-term sources of funding?
- Do you rely on one or many sources of funding?
- Are you comfortable writing grant proposals?
- Can you solicit funds, services or goods from local sources?
- Does your program have a well-developed budget, and is it operating within the budget?

See Chapter 4 for information on these topics.

Sharing information within your group and your community is a form of outreach and education that most monitoring programs wish to provide. Outreach is educational in purpose but serves other purposes, such as public relations, recognition, recruitment and fund-raising support. Answer these questions:

- Is your outreach program achieving more than one objective?
- Is the community receptive to your message?
- Are you visible in your community?

See Chapter 11 if you need help with some of these areas.

Volunteers are what make your program work. Without a solid group of dedicated citizen monitors, it would be hard for you to achieve your goals. Answer these questions:

- Do you have long-term monitors, or do they tend to leave after a season or so?
- Do you provide regular feedback and offer development activities to your monitors?
- Does your program encourage shared responsibility, or do one or two people tend to carry most of the workload?
- Do your volunteers feel valued?
- Do volunteers see results from their work?
- Are volunteers provided with training to help them achieve desired results?

See Chapter 8 if you are having trouble with your people resources.

Collecting samples is only part of an environmental monitoring program. Doing something with all the information you collect is the other. Sharing your data with targeted groups helps you achieve your original mission and goals. Answer these questions:

- Have you sufficiently documented your program to provide credible information?
- Do you have a written Quality Assurance Project Plan?
- Are you reviewing and validating your data results?

See Chapters 3 and 7 for more information.

- Do the groups you originally targeted to use your data use it?
- Do you regularly present findings to targeted users and other interested community members?
- Are data used to assess past accomplishments and set future goals and objectives?

See Chapter 7 for more information.

School-based monitoring programs can be particularly beneficial to a community. Is your program based in a school? If so, special human resource and planning needs exist.

See Chapter 8 for more information on school-based monitoring programs.

[1]Modeled after River Watch Network's, "Characteristics of a Successful Volunteer Water Quality Monitoring Program Checklist."

Chapter 1

Starting An Environmental Monitoring Program

Illustrations by Robert Shetterly

Chapter One:

Starting an Environmental Monitoring Program

Chapter One will help you:

Define the purpose of your program.

Develop a vision statement.

Set goals.

Determine who will use your data.

DEFINING YOUR PROGRAM'S PURPOSE AND SETTING GOALS

Why are you interested in environmental monitoring? Answering this question will help set the direction for your monitoring program and clearly define who may benefit from your monitoring efforts.

Having a well-defined purpose is the important first step in organizing any environmental monitoring or watershed program. It will make your program more successful and help prevent problems in the future. So take the time necessary to clearly define your program's purpose. In this first step, involve interested community members from all different backgrounds and professions. Participants who agree with the intended purpose of the group will better understand the work to be done and will be less likely to lose interest over the long run, or to be confused about their roles and responsibilities.

Try this five-step approach to clarify your program's purpose.

1. Brainstorming

Gather a core group to brainstorm and discuss issues of interest to your community. Invite people who live by the bay, river or lake; representatives from local environmental or conservation groups; high school science and environmental studies teachers and students; municipal public works officials; and representatives from state or regional agencies who might want to use your data to your first meeting. For information and inspiration, you might also invite a monitoring program coordinator from a nearby region who can speak about the structure, mission and accomplishments of his/her group's program. A knowledgeable government agency person familiar with your region can also provide a valuable perspective.

2. Compile Information

Compile information provided and note issues that arise at this meeting. Depending on the complexity of issues relevant to your community, and the interest generated at the first meeting, it may take more than a single gathering. It may require several meetings to document issues and gather information about local or regional natural resources and characteristics of the waters or watershed(s) that your group would like to study. This initial brainstorming will help identify what is known and not known about water quality and pollution problems in your area. Then you'll know what gaps your program can fill. Depending on the issues in your community, it might be helpful to have an experienced facilitator help in this initial brainstorming process. (See Appendix 1A, Brainstorming Techniques.)

There are many potential sources of natural resource and community information. Government agencies with responsibilities for land use planning, resource management and environmental protection have data you can access. University libraries, researchers and scientists are another potential source, as are local and provincial/state environmental organizations and nonprofit groups such as land trusts. Remember to tap into knowledgeable residents in your community, for example those who have lived for many years in the area and can report on environmental changes they have witnessed.

3. Assess What's Possible

Assess the scope of possibilities for your program based on considerations such as:

- The skills and knowledge within your group that are useful for the program;
- The capacity to acquire financial resources for the group;
- The use of your group's data by potential users;
- The amount and type of data that can be generated based on available skills, resources and dedication; and
- The existence of other local/regional monitoring activities that your group will not want to duplicate, but perhaps complement or enhance.

4. Develop a Vision Statement

Using the information generated above, prepare a vision statement based on your desired future. Vision statements are concise written statements that guide the organization in its efforts. Such statements help groups create and maintain a clear and compelling direction for their programs. They also provide a basis for evaluating the effectiveness of past activities, and for refocusing a group's future direction. Additionally, vision statements help communicate a group's purpose to the public and new program participants.

Although vision statements are important, their development is often done too quickly. Put effort into creating a sound vision statement. It defines the group and will motivate those who read it in your newsletter or hear it spoken aloud at a meeting, articulating a united purpose for your group.

A vision describes a credible, attractive future in a given endeavor —in this case, environmental quality. Visions must be strategic and lofty, strategic because they anchor the plans and actions in the context of the specific environment and lofty because that is what is needed to inspire commitment and action. (See The Visioning Process, Appendix 1B).

The visioning process focuses on these key questions:

- Where have you been?
- Where are you now?
- Where do you want to go?
- How will you get there?
- How will you know when you are there?

The result is a simple but powerful vision that recognizes the past, assesses the present and stimulates the mind to describe the desired future. It then moves the group quickly to action steps that will shape the future of water quality in the community.

5 . Set Goals and Objectives

While good vision statements are clear, they are also typically broad in scope. To provide focus and help your group fulfill its vision, set goals and specific, measurable objectives. These will help program participants work towards something tangible and provide a means for measuring your group's success. The ability to develop specific goals and objectives is sometimes beyond the scope of small groups. They may lack funds or staffing to create such goals and provide follow-up. However, we have included information on goals and objectives to help larger programs and smaller ones who are thinking about expanding. Larger monitoring programs that undertake a wide array of monitoring activities can

WORKING VISION STATEMENTS FROM GULF OF MAINE MONITORING PROGRAMS

These vision statements concisely express what the group is doing and how it will be done.

- Friends of Casco Bay (FOCB) is a marine stewardship organization with a mission to improve and protect the environmental health of Casco Bay. FOCB monitors water quality of Casco Bay and works collaboratively with concerned citizens and businesses to solve pollution problems in a responsible and balanced manner.
- The Great Bay Watch is comprised of citizen volunteers, working with the UNH Cooperative Extension/Sea Grant Program, who are dedicated to monitoring, promoting, and protecting long-term health and natural resources of New Hampshire's coastal waters and estuarine systems through educational programs, stewardship, and community-based science activities.
- Salem Sound 2000 is a coalition of local governments, businesses, non-profit organizations and citizens from the communities of Beverly, Danvers, Manchester, Marblehead, Peabody and Salem, dedicated to taking cooperative action to protect and enhance the environmental quality of Salem Sound. Since 1990, the organization has worked to promote a regional watershed approach to environmental protection.
- Nova Scotia's Clean Annapolis River Project (CARP) is a citizen's group with a principal mission of improving the environmental health of the Annapolis River and its watershed.

benefit greatly by establishing goals and objectives.

Goals describe an end your group would like to achieve (e.g. "To reduce non-point source pollution to our estuary."). An objective supporting this goal (and your group's vision) could be to eliminate 25 percent of farm-based sources of nitrogen by the year 2000. This objective is specific and measurable. It will help program participants maintain focus and enthusiasm while not being overwhelmed by a long-term vision. A sample form for recording the group's goals and objectives is included in Appendix 1C.

Refer to your group's vision, goals and objectives regularly at meetings, in publications and at publicity events. All members of your group should carry out their responsibilities with the vision clearly in mind. Reviewing and updating the vision, goals and objectives on a regular basis (perhaps at the annual season-end meeting) is important. Over time, the focus of a program might change. Perhaps you have successfully addressed one concern or accomplished something important, or the needs in your watershed have changed and you are adapting to provide necessary services. Whatever the reason for change, discuss it, gain consensus from your group about changes, and then revise the vision statement, goals and/or objectives as needed.

COMMON QUESTIONS AND RESPONSES DURING INITIAL PROGRAM PLANNING

Why monitor water quality?

Why conduct a watershed survey?

What do we want to achieve?

- To determine contaminant levels and trends in surface waters and the implications of these levels and trends for drinking water, swimming areas, wildlife health and fish and shellfish consumption.
- To identify opportunities for pollution prevention and cleanup.
- To help raise government classification of local waters.
- To work with regulatory authorities to open closed shellfish harvesting areas.
- To determine the impacts of development and help improve land use and development practices.
- To collect baseline data for planning purposes.
- To supplement professionally collected data.
- To revise local ordinances/by-laws to protect natural resource values (economic, natural, recreational, etc.).

INFORMATION THAT WILL HELP DEFINE YOUR PROGRAM

- The overall vision within your community for the local environment and quality of life.
- What your community values about the watershed you are interested in (i.e. values tied to scenery, tourism, recreation, boating, commercial fishing, recreational fishing, etc.).
- Local/regional water or resource uses that are constrained due to water quality problems (e.g. drinking water, fishing, shellfishing, and swimming).
- Current provisions in municipal and state/provincial planning that are a help or a hindrance to maintaining natural resources.
- Nearby land uses that impact water quality (e.g. forestry, agricultural, road construction and habitat).
- Waste water and storm water collection systems and known discharge points.
- Any baseline environmental data previously collected that you can use for a starting point.
- Information about government classification of water body with regard to bacteria, dissolved oxygen, temperature or aquatic life.
- Information concerning the status of the shellfish classification and why that classification exists.

- To educate and build a constituency of citizens to practice sound, local environmental management, and to build public support for water quality protection.
- To provide an enriching, hands-on learning experience for students.

What are we going to do with the data that we collect?

- Publish reports in local newspapers or newsletters to build better local understanding and stewardship.
- Submit reports to the public; state/provincial/federal agencies; conservation/planning commissions; municipal selectpeople/councilors, code enforcement officers/public works officials; shellfish committees.
- Use data to alert officials to potential pollution problems and violations.
- Submit data to a larger regional monitoring program.

What is our time frame? How long will we do this?

- For the program: one year, five years, for the foreseeable future.
- For a monitoring season: Weekly, biweekly, monthly, spring-fall, year-round.

What types of community support might we enlist?

- Conservation groups, planning commissions, shellfish committees, elected town officials, tourism establishments, fishers, outdoor enthusiasts, teachers, school children, school clubs.

How much will our program cost? Where could we find financial support?

- Could range from a couple of hundred to thousands of dollars per year depending on group vision, size (5-200+ participants), program scale and specific monitoring activities.
- Potential funding sources: corporate, service club and individual donations, earned income (e.g. from event and merchandise sales), donations of in-kind services and used equipment, government and foundation grants.

Will the project be successful? Has it worked in other places? Is it worth the reward?

- If it is well thought-out and has energy and enthusiasm behind it, yes!

DETERMINING WHO WILL USE THE INFORMATION YOU COLLECT

Defining how you want your monitoring data used, and by whom, is the next important step.

Data users might include state/provincial/federal natural resource agencies; town governments; soil and water conservation districts; university researchers; watershed, river and lake associations; land trusts and nature conservancies; local conservation groups and others. Individuals with a potential interest in your group's data include planners, environmental engineers, fishery biologists and managers, water quality analysts, game or shellfish wardens, and park staff.

Although there are many potential users, a citizen group's data may best be applied at the local level. If this is the case, town officials appropriate to your project (e.g. code enforcement officer, plumbing inspector, planning board members, town manager, selectpeople/councilors, harbor committees, shellfish committees) should be part of the planning process. Their input and support can be critical in planning, implementing and sustaining your program.

With all of these potential scientific and technical resource people, consider organizing them and a few citizen monitors into a technical advisory committee. This committee can review proposed survey, sampling and analytical methodologies, sampling site selection, instruction manuals and training plans. Such a committee is also useful in refining program objectives and in answering technical questions that might arise during program implementation.

EXAMPLES OF CITIZEN MONITORING

- In Maine, the Department of Marine Resources is using samples and shoreline survey data collected by citizen monitoring groups coast-wide in support of shellfish growing area classification.
- The Maine Department of Environmental Protection uses estuarine water quality information generated by citizen's groups in the department's Water Quality Assessment Report to the US Congress, beginning in 1996.
- In New Brunswick, many citizen water quality monitoring groups have participated in the new New Brunswick Department of the Environment water classification process-program. A few of the groups who participated (and work in watersheds along the Bay of Fundy) include the St. Croix International Waterway Commission, Hammond River Angling Association, and Eastern Charlotte Waterways.
- In Maine, Mount Desert Island High School's Sophomores for Cleaner Shores studied storm water outflows into Bar Harbor to assist the harbormaster in learning about alternatives for reducing these sources of pollution into the harbor.
- In Canada, ACAP St. John and Eastern Charlotte Waterways are participating in the Gulf of Maine Council on the Marine Environment's Gulfwatch Monitoring Program. They are the first two citizen groups to participate in this project.
- In Massachusetts, Salem Sound 2000 identified a cross-connection in a sewage/drainage into the North River, and brought it to the attention of the City of Salem, which led to the re-mediation of this pollution. Fecal coliform data has been used by the municipality to post warnings about swimming in beach drainage flows.
- ACAP Saint John, through its PAH testing, was able to identify a source (CANADA Post building) of creosote input to the Saint John River. Upon alerting the owners of the building, remediation of the site took place.
- In New Hampshire, Great Bay Watch data has been used by consultants involved in sewage treatment plant construction/expansion, by the Department of Transportation for EIAs related to bridge construction, and has been included in New Hampshire's Water Quality Report to Congress.
- The Maine Phytoplankton Monitoring Program provides real-time data to the Department of Marine Resources as an early warning indication to their Shellfish Biotoxin Monitoring Program.

Keep in mind that not everyone will want to do the actual field or data analysis work. Establishing a technical advisory committee allows technically oriented citizens who might not otherwise be involved to participate in the program and stay informed about issues and technical concerns. Greater citizen involvement may help the public (at all levels) better understand your work (see Chapter 5).

WORKING IN A LARGER GEOGRAPHICAL CONTEXT

Numerous citizen groups around the Gulf of Maine are now involved in environmental monitoring activities. Many work closely with each other. Some share a common watershed or a common set of issues. Consider linking up with the organizations in your state or province to expand your group's monitoring knowledge and perspective, share your group's information and expertise, and help promote your cause. Collaborating may also help reduce some program costs. For example, you could share particularly expensive equipment or training programs.

Contacts for information on regional monitoring networks are included in the resources section. Also, the Internet is a great place to learn more about watershed initiatives. The US Environmental Protection Agency (USEPA) has a "Surf Your Watershed" homepage which allows a computer user to access data and information about watersheds from around the country (http://www.epa.gov/surf/). It is a great tool for finding other regions with similar concerns and contacting program coordinators working in that region to learn new ap-

proaches or share some of yours. The Senator George J. Mitchell Center for Environmental Watershed Research at the University of Maine is creating another great monitoring computer tool in its Public Education and Access to Resources About Lakes (PEARL) program. PEARL will house data in its website about health of many of Maine's lakes (http://pearl.spatial.maine.edu/). Such programs make initial assessment work easier and help you to find other monitoring programs in other regions.

Chapter One was adapted from
The River Work Book, US Department of the Interior, National Park Service, 1988.
Massachusetts Riverways Programs Adopt-A-Stream Manual, Department of Fisheries, Wildlife, and Environmental Law Enforcement, 1992.
Integrating Quality Assurance into Tribal Water Programs, US EPA, 1993.
River Monitoring Study Design Workbook, River Watch Network, 1995.

CHAPTER ONE RESOURCES

General Information

Program Organizing Guide. River Watch Program of River Network,. Montpelier, VT, 1995.

Volunteer Water Monitoring: A Guide for State Managers, US EPA, 1990.
"The Volunteer Monitor Newsletter: The National Newsletter of Volunteer Water Quality Monitoring." Quarterly, free publication. Contact River Network at 520 SW 6th Ave., Suite 1130, Portland, OR 97204; 503-241-3506; volmon@rivernetwork.org. "The Volunteer Monitor Newsletter" has an excellent website with many issues available online. www.epa.gov/OWOW/monitoring/volunteer/vm_index.html.

Water Quality Monitoring: A Guide for Concerned Citizens, Long Island Sound Taskforce, 1992
A useful resource for strategic planning is a 38-page workbook put out by the Community Animation Program (CAP), in Atlantic Canada. CAP is jointly funded by Environment Canada and Health Canada. Its goal is to strengthen the ability of community groups to act on linked health environmental issues. CAP also offers a small grants program where they will supply facilitation and training to community groups on topics such as strategic planning, fundraising, volunteer management, writing grant proposals and others. To find out more see www.ns.ec.gc/community/cap.html or contact: Rochelle Owen at Environment Canada, 16th Floor, Queen Square, Dartmouth, Nova Scotia, B2Y 2N6. Phone: 1-800-663-5755, fax: 902-426-2062, email: rochelle.owen@ec.gc.ca.

Information and Assistance in Planning or Implementing a Monitoring Program

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www.state.ma.us/dfwele/river/riv_toc.htm

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Chapter 2

Study Design: A Blueprint for Your Monitoring Program

Chapter Two:

A Blueprint for Your Monitoring Program

Chapter Two provides information on:

Creating a study design.

Deciding what to monitor.

Picking sites for monitoring.

Determining use levels for your data.

Defining a monitoring season.

Deciding where and how to analyze samples.

You've answered important questions concerning why you are interested in monitoring water quality and you've defined a mission and established goals and objectives, if appropriate. Now it's time to look more precisely at what you are going to do — to develop a study design. Study design addresses what, when, who, and how for your monitoring program and is applicable for all environmental monitoring programs including lake, riverine, estuarine and marine monitoring. A study design describes the rationale for your monitoring program and the specific approach towards it. Crafting a sound study design plan can be the most important step in organizing your group's monitoring program.

Without such a plan there is a risk of:

- Spending a lot of time and money on equipment and procedures that are inappropriate for your purposes;
- Looking for the wrong things in the right places or the right things in the wrong places;
- Not answering the questions you ask, answering a question you didn't ask, or possibly not answering any questions at all; and
- Finding that decision-makers are reluctant to use your data due to lack of confidence in your study approach.

Designing the study and preparing a written plan go hand in hand, since the process of writing the plan forces you to completely think through each aspect of the design. This is a great time to draw upon the expertise of your technical advisory committee.

Study Design Plan Elements

The design of your study should flow naturally from the vision, goals and objectives you've already determined. For example, let's say your group's vision is "to study the health of the Blue River Watershed and Blue River Bay, determine threats to this health and make recommendations and promote action to maintain and improve environmental quality within the watershed." Your group has already determined, from available information, that the lower Blue River fails to meet your jurisdiction's standards for dissolved oxygen, thereby jeopardizing aquatic life. You suspect that Blue River Bay also has a bacterial contamination problem, but have little available data to reference.

For the current year, one goal of your group could include further characterization of the dissolved oxygen problem and intensive monitoring for bacterial contamination in the bay. Tasks could include 1) biweekly sampling conducting dissolved oxygen profiles at 20 sites in the lower Blue River between April and October and 2) biweekly sampling for fecal coliform bacteria at 20 sites in the bay. Having established this goal and the two tasks, you have begun addressing the first element of your study design plan — the water quality parameters or *indicators* to be measured.

> In five years, someone is looking at your water quality data and wants to know why you are studying particular parameters at a given site. This person should be able to find this out by reviewing your design.

What Water Quality Indicators Are To Be Measured?

Water quality within lakes, rivers, estuaries and marine waters is the result of numerous interrelated physical, chemical and biological factors. Many factors can determine water quality: the depth and natural flushing of a waterbody (physical factors); the characteristics of soil and bedrock surrounding the waterbody and sediment underneath it, as well as the exposure to contaminants carried through the atmosphere or discharged on land or

Table 2.1: Common Coastal Water Quality Indicators Monitored by Citizens

Parameter	Importance	Influenced by
Physical	**Physical**	**Physical**
Water Temperature	Determines where aquatic organisms can live; impacts feeding and reproductive behaviors; alters metabolism	Air temperature Degree of shading Snow/ice melt Temperature of incoming ground water Heated or cooled effluent from some point sources In estuaries and marine areas, movement among colder offshore and warmer inshore waters Suspended solids (can cause nutrients near surface to absorb heat, increasing temperature)
Clarity	Clarity needed for aquatic plants to photosynthesize and for benthic organism health	Suspended solids (from erosion and/or carried by land runoff) Plankton blooms (natural and human induced)
Chemical	**Chemical**	**Chemical**
Dissolved Oxygen	Fish, invertebrates, plants and aerobic bacteria require oxygen to live	Water temperature (generally, as temperature rises, oxygen decreases, and vice-versa) Water turbulence Degree of tidal movement and strength of currents Presence of oxygen-producing plants Oxygen-depleting materials (e.g. wood debris) and organisms (e.g. excess algae)
Salinity	Affects distribution of aquatic organisms according to their salt tolerance	Amount of freshwater input to saltwater bodies Tidal stage
Biological	**Biological**	**Biological**
Fecal Coliform Bacteria	Indicative of pathogens that may cause illness in those who have ingested water contaminated with bacteria or who have consumed shellfish tainted with bacteria; can cause increased oxygen utilization; may increase water temperature	Indicative of pathogens that may cause illness in those who have ingested water contaminated with bacteria or who have consumed shellfish tainted with bacteria; can cause increased oxygen utilization; may increase water temperature Fecal coliform bacteria are present in digestive systems of warm-blooded animals. Its presence in a waterbody is indicative of the discharge of wastes from such animals. The severity of bacterial contamination depends on water temperature (as temperature declines, bacteria tend to die off); whether human sewage is treated or not, and if treated, to what extent; and the relative presence of farm and other animals near a waterbody such that their wastes can be washed into the water.
Benthic Macroinvertebrates	Benthic macroinvertebrate diversity and abundance is indicative of the health of a waterbody	Benthic macroinvertebrate diversity and abundance is indicative of the health of a waterbody Temperature Pollution Habitat conditions (e.g. extent of sedimentation)

water (chemical factors); and the presence or absence of certain plant and animal species (biological characteristics).

It would be very time consuming and costly to measure every water quality parameter. However, certain parameters that are good indicators of water quality, and best fit your needs, can be chosen. Some examples of indicators commonly used by citizen monitors are:

Physical
including temperature, depth, flow, bottom composition, water clarity, suspended solids

Chemical
including dissolved oxygen, pH, alkalinity, nutrients, conductivity, salinity

Biological
including benthic macroinvertebrates, fish, bacteria, algae, plankton, rooted aquatic plants

Qualitative
including watershed surveys, shoreline surveys, observations of factors affecting water quality at each sample site

Table 2.1 on the preceding page illustrates what a few of these indicators can reveal about an estuarine waterbody.

The indicators you choose will depend on the questions you are asking and on your available human and financial resources. For example, if you want to know whether water is safe for swimming, you would analyze water samples for bacteria. If you want to assess the health of a stream's aquatic communities, benthic macroinvertebrates are often good indicators of this. Determining the impacts of a farm on a river could involve testing a number of parameters: *suspended solids* and *water clarity* to indicate the amount of erosion that is occurring; *nutrients* to assess the extent to which fertilizers are entering the water; *bacteria* to indicate the presence of animal manure; and *dissolved oxygen, algae,* and *benthic macroinvertebrates* to assess the overall impacts on stream chemistry and river communities.

Some contaminants, such as heavy metals and many complex chemical contaminants, such as pesticides and polycyclic aromatic hydrocarbons (PAHs), are more challenging for citizens to monitor. This is due to sampling procedures, which are often complex, and analytical procedures, which frequently require highly trained personnel and expensive laboratory equipment.

However, for some groups these may be the priority contaminants for which there is compelling reason to monitor. The Passamaquoddy Tribe at Pleasant Point, Maine, for example, was awarded an Environmental Justice Grant in 1997 by the USEPA to assess various toxic contaminants in local fish and shellfish resources. Other groups, such as those situated in urbanized areas, may want to assess the significance and risks of storm water runoff. Such runoff is commonly laden with toxic chemicals collected from impervious surfaces (e.g. roads, parking lots).

Due to tremendous costs associated with toxin monitoring, any program should plan for extra fundraising and give special attention to the study design for toxic monitoring. Your technical committee is probably best suited to research whether such monitoring is feasible and most certainly would be helpful in designing a program around toxic substances. Accredited or certified laboratories probably will be needed, as well, to perform the sample analyses. Bring personnel from such laboratories into your planning. Often times, volunteer groups can set the agenda for agencies or researches to do this work through the process of study design.

What Data Quality Objectives and Requirements Are To Be Met?

After determining the parameters you want to monitor, the next step is to decide for what purpose(s) the data are to be used. To determine this, the following two elements are employed. The first, data quality *objectives* (DQOs), is a narrative statement that links the quality of data with its intended use. The second, data quality *requirements*, refers to how precise, accurate, and sensitive your methods and equipment must be and how *complete* (do you have enough samples?), *representative* (do they represent conditions in the water?), and *comparable* (can you compare the results from one site to another?) your data must be to meet your DQOs.

For example, if your group wants to evaluate the health risk of swimming at a popular beach, one DQO might be

"to produce data that our local health officer can use to determine whether or not to post warning signs." An associated data quality *requirement* could be "to sample for enterococus (the chosen indicator for marine swimming beach monitoring) weekly between May and September at six surface and six-subsurface sites (12 samples weekly). The analysis of one split sample (the field collection of one sample then split into two samples for analysis) collected each week must have agreement within 10 percent."

As another example, suppose your group has a goal of nominating a local river for certain status under a river designation or classification program. To put forward the nomination, you have to provide sound information on current environmental conditions, including water quality. One DQO might be to produce data that the decision-making group will accept as a valid characterization of current conditions. You then select a set of water quality indicators to meet that objective, along with associated data quality requirements. Hypothetically, one of these requirements could be "to detect concentrations of total phosphorus in the water that are as low as 0.01 mg/l, with an accuracy and precision of ±0.005 mg/l."

The selection of DQOs and requirements will be most useful when you take into consideration your group's capabilities and resources, the procedures needed to meet the requirements, and the potential application of the data by end users. Many other monitoring groups and supporting networks (e.g. River Network) and institutions (e.g. Cooperative Extension offices; provincial, state and federal environmental agencies) have experience with DQOs and can offer good advice. These professionals can help your group select monitoring methods that will match your data quality requirements with the capabilities of your human financial resources. *A Guide to Protecting the Critters in the Gulf of Maine* and its addendum are an excellent resource for determining

SELECTING SAMPLE SITES

Use topographic maps and marine charts to select, on a preliminary basis, the sites that appear to be suitable for your program.

Field check (visit) each site for physical accessibility and the monitors' safety.

Check to make sure the chosen site will provide the information you are seeking.

Record directions to and a brief description of the site so others may find the site on their own.

Photograph each site at the sample collection point.

Where Will Samples Be Collected?

What you want to know and which indicators you have chosen to measure determine where you sample. Volunteers most commonly undertake three kinds of studies:

1. A **characterization survey** is designed to establish baseline information on a waterbody or watershed's physical, chemical and/or biological characteristics, usually to answer questions about the system's overall health. For such surveys, sampling sites should be located at a variety of locations representing the range of conditions potentially affecting the waterbody or watershed in question. For example, sites may be chosen to help assess the effects of different land uses (e.g. urban, agricultural, forestry), point source discharges, non-point source pollution and, for estuarine and marine waters, different tidal stages (make sure you can get to such sampling sites at all tidal conditions necessary to your study area. This is generally a long-term monitoring regime.

- A *reference or control site* immediately upstream or "up bay" of any potential impact;
- An *impact site* immediately downstream of the alteration (at a point where the impact is completely integrated with the water); and
- A *recovery site* downstream of the impact (where you suspect the water has at least partially recovered from the impact).

3. A **water quality standards survey** is designed to determine whether a waterbody meets jurisdictional water quality standards for that waterbody's designated uses (such as swimming) and values (such as aquatic habitat or aesthetics) or for classification (based on parameters such as minimum dissolved oxygen levels). Sampling sites should be located to provide the best information. For example, to evaluate whether a river supports swimming, take samples from established swimming areas along the river.

Whatever type of study you undertake, it's important to ensure that the sites you choose give you samples that are representative of what you're measuring. For instance, if you're sampling for dissolved oxygen, you'll need to collect either individual samples at different depths or an integrated sample that combines water collected at different depths (since the oxygen content of water changes from the surface to the bottom). If you're collecting benthic macroinvertebrates in a riffle habitat, you'll need to collect samples at different current velocities and depths to get a representative sample.

How Will Samples Be Collected?

What waterbody and what indicators your group has decided to monitor will, to some extent, determine the sampling procedures your field samplers will need to follow. As much as possible, these procedures should be kept simple so that they can be carried out efficiently in the field. Put yourself in the place of a volunteer on a cold, wet morning. How much patience would you have with a complex procedure?

There are standard procedures written for water quality parameters commonly monitored by citizens. (See the resource section at the end of this chapter for a list of standard operating procedures written specifically for volunteer monitors.) When choosing field kits for your program, call a few supply companies to compare prices and to ask about known problems and benefits of their kits. Also contact monitoring networks and volunteer monitoring groups in your area to find out how their experience has been with certain kits and supply companies.

When Will Monitoring Be Undertaken?

The time of year and time of day for sampling, as well how long a sample can be held prior to analysis (holding time), can greatly affect analytical results. These factors

OUTSIDE LABORATORIES: EXTERNAL QUALITY CONTROL CHECKS

Split Samples

A sample that is splint into two sub-samples at the lab. One is analyzed at the project lab for bacteria, etc., while the other is analyzed at an independent lab. The results are compared.

Knowns

The quality control lab sends samples for selected indicators, labeled with concentrations, to the project lab for analysis prior to the first sample run. These samples are analyzed and compared with the known concentrations. Results are reported to the quality control lab.

Unknowns

The quality control lab sends samples to the project lab for analysis for selected indicators, prior to the first sample run. The concentrations of the samples are unknown to the project lab. These samples are analyzed and results are reported. If needed, adjustments are made to correct problems.

Taxonomic Verification (for benthic macroinvertebrates)

Macroinvertebrates samples identified by volunteers are checked by a aquatic biologist to verify correct identification. Samples are preserved and archived. A reference collection is assembled with representatives of key organisms.

must therefore be considered in deciding upon a sampling schedule. For most programs, monitoring will be seasonal. In many Gulf of Maine coastal communities, there are large population fluctuations from winter to summer. In the winter, many cottages are uninhabited and boats are taken out of the water. In summer, coastal cottages are inhabited and boats are in the water, creating potential water quality impacts. Focusing monitoring efforts during times of potential impacts will help the group to better find and address problems.

In deciding the time of year to conduct sampling, one must consider 1) sampler safety and comfort; 2) the uses of the water (are people clamming, swimming, boating?); and 3) the nature of the parameter being monitored. Taking safety and the ease of fieldwork into account is of paramount importance in planning the sampling schedule. Will access to and/or sampling be hazardous or difficult at certain sites during winter or other seasons? Are volunteers willing to work in freezing conditions? Think such questions through.

As one example, let us say your group is concerned with shellfish area classification. Clam harvesters may work a local clam flat year-round with day-to-day harvesting dependent on water quality conditions. If your group is contributing data to the classification of this shellfish area, it may be necessary to sample year-round (if volunteers are willing). As another example, if your group is concerned with water quality related to contact recreation (e.g. swimming), the time of year to sample will obviously be during warm weather months when people are likely to be swimming.

Some water quality parameters are best monitored at particular times of the year. For example, many aquatic biologists suggest sampling macroinvertebrates in the spring and fall. During the summer, many macroinvertebrates species change from the aquatic larval form to the winged adult form, thus escaping detection during summer sampling.

The time of day of sample collection can also be important in terms of analytical results. For example, in waters with dense aquatic vegetation, dissolved oxygen levels fluctuate dramatically over a 24-hour period, with the lowest levels at sunrise and the highest levels in mid-afternoon. So, if you want to know the "worst-case" (lowest oxygen) scenario, sample at sunrise.

Another factor to consider in determining the sampling schedule is frequency. How often samples are collected depends on the information being sought. In a characterization survey of water quality standards survey, for example, it may be sufficient to sample weekly or bimonthly. In an impact assessment study, this or a greater level of frequency may be needed. For example, monitoring bacteria die-off following a heavy rainfall (e.g. 1 inch or 25mm of rain in a 24-hour period) might require sampling intensively from every two hours over a 24-hour period to daily over a five-day period after the "storm event."

Where Will Samples Be Analyzed?

There are three options for the location for sample analysis: in the field; in a laboratory a group sets up for itself or to which it has direct access; and in a professionally accredited or certified lab. The choice among these options depends primarily upon the parameter being examined, the resources a group has to work with, and the intended use of the data.

Field Analysis

Field analysis is the only method for parameters (e.g. temperature) that will change during transport to a lab. Field analysis is also an option for some parameters, such as dissolved oxygen, that can be first stabilized (usually referred to as "fixed") in the field and later analyzed either in the field or in a lab. Field analysis is also possible for other parameters for which portable analytical equipment is available. Salinity, for example, can be analyzed in the field using a temperature-compensated, hand-held refractometer. Dissolved oxygen, turbidity, pH and salinity can be measured using portable meters and a number of these and other parameters can be analyzed in the field using portable kits containing all the necessary reagents and supplies.

Field analysis has its drawbacks, however. Field meters can be expensive, difficult to operate, and/or less sensitive than equipment found in stationary labs. Kits may not necessarily provide the level of sensitivity, precision and accuracy required by a program's data quality objectives. Weigh such considerations when you

decide whether to proceed with field analysis or not.

Laboratory Analysis by the Group

Some parameters (e.g. fecal coliform bacteria) lend themselves to direct analysis by groups that have set up their own labs or who have access to someone else's laboratory equipment. One advantage of local analysis is the timely processing of samples that have relatively short holding times. Bacterial samples, for example, require analysis within six hours of collection; such analysis may not otherwise be possible if the nearest qualified lab is many miles away.

For a group to perform its own analyses using specialized, non-field equipment requires certain financial and human resources for equipment acquisition and operation. Setting up a laboratory for one's group will likely take cash for equipment, supplies and, potentially, space. The expense can range from hundreds to thousands of dollars depending on the nature of the analytical work and whether a group can make use of equipment already available somewhere (a number of groups have had good luck using high school or university labs).

It will be necessary to have people in your program who want to be involved in the analytical work and are willing to take the time to master analytical procedures. Involving students or adult volunteers as much as possible in sample analysis may be an important goal of your program and can be a way to increase community involvement in your program. Fortunately, it is usually easy to find people with this interest: some community members may not be interested in collecting samples, but they may love the opportunity to learn (or relearn) scientific lab procedures.

If you work with a school, there is typically at least one teacher interested and willing to help. However, a disadvantage of school labs is the need to work around the academic schedule when classes are in season.

A major hurdle to be overcome by groups wanting to perform their own lab work is that of designing and implementing a laboratory quality assurance, quality control (QA/QC) program. This relates to the challenge of establishing the credibility of analyses performed in one's lab. (Chapter 3 on Quality Assurance Project Plans addresses this issue specifically).

Analyses by Professional Labs

For some parameters (e.g. nutrients, toxic chemicals), laboratory analysis is the only method or often the preferred method due to the requirement for specialized equipment, supplies and sometimes personnel. Also, analyses performed at accredited or certified labs carry authority behind them and therefore may be the way to go for certain types of monitoring. For example, if a group is trying to prove harmful effects from a pollution source in preparation for legal action, it may be wise to have all analytical work (and maybe even sample collections) performed by a professional lab.

One disadvantage of this option is that a given lab may not perform analyses on weekends, the time when many volunteer monitors are in the field. Another disadvantage can be cost. A group cannot monitor toxic chemicals without having sufficient funds to pay for the relatively expensive analysis performed by qualified personnel at an accredited or certified lab.

Professional labs will normally require a fee for their work, although in some cases labs may waive or reduce the fees for non-profit groups. Some groups have found water treatment plant labs that have been willing to donate the analysis of a certain number of samples.

Regardless of whether you set up your own lab or work with a professional lab, there is usually an eventual need to engage a professional lab in performing QA/QC-related activities, such as making up known and unknown standard solutions, running duplicate analyses and trouble-shooting problems. (See Chapter 3 for more information on these QA/QC procedures.) Volunteer groups have worked successfully with federal, provincial, state, private and university labs for this purpose.

How Will Samples Be Analyzed?

The basic reference manual for methods of analysis is the American Public Health Association's *Standard Methods for the Examination of Water and Wastewater* ("Standard Methods"). This book describes methods for analyzing virtually any water quality indicator, with often several methods given for a single parameter. The methods chosen will be determined by a group's data

quality requirements and by the limits of its human and financial resources. There are also several manuals available for volunteer monitors that are based on "Standard Methods" but that are more user-friendly. See the resource section at the end of this chapter for more information.

You will need to consider how sensitive, precise and accurate your data must be for each parameter. For example, the sensitivity of benthic macroinvertebrate analysis depends on the taxonomic level (order, family, genus and species) to which the organisms belong. Many volunteer groups perform quick field identification to the level of order. This method, while not highly sensitive, is sufficient to detect relatively dramatic impacts. But to detect subtler affects, organisms must be preserved and identified to the family, genus, or even species level.

When you have identified and selected a method that satisfies your data quality requirements, consider such questions as:

- How much time is needed to perform the method?
- How many people are needed?
- How much skill is required?
- Will relatively small errors have a dramatic impact on results?
- Are there funds to buy the equipment and supplies required by the method?
- Are there funds for replenishing supplies, reagents or other chemicals needed for the analysis?
- Are there funds for equipment maintenance?

Moving On

The study design process may seem like a lot of work. However, the time spent will ultimately save you and the volunteers in the program many hours of wasted effort and frustration by assuring that your monitoring program matches your goals and resources. Remember to:

- Include the volunteers and data users in program design
- Be realistic about what the group wants to and actually can do
- Develop a concise design aimed at achievable results
- Stick to your program's design and reevaluate regularly (e.g. perhaps each year in review of the previous year's experience)
- Change the design when necessary, but through a conscientious process.

Chapter Two was adapted from:

"Study Design, the Foundation of Credibility," G. Dates, *The Volunteer Monitor*, Volume 4, No.2, Fall, 1992.
River Monitoring Study Design Workbook, River Watch Network, G. Dates, 1995.

CHAPTER TWO RESOURCES

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River Monitoring Study Design Workbook, G. Dates, River Watch Network, 1995.

"Study Design, The Foundation of Credibility," G. Dates. *The Volunteer Monitor*, Vol. 4, No. 2, Fall 1992.

An Introduction to Water Quality Monitoring Using Volunteers, K Ellett, Alliance for the Chesapeake Bay, Inc., Second Edition, 1993.

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Clean Water: A Guide to Water Quality Monitoring for Volunteers Monitoring Coastal Waters, E. Stancioff, University of Maine/New Hampshire Sea Grant and University of Maine Cooperative Extension, 1992/1996.

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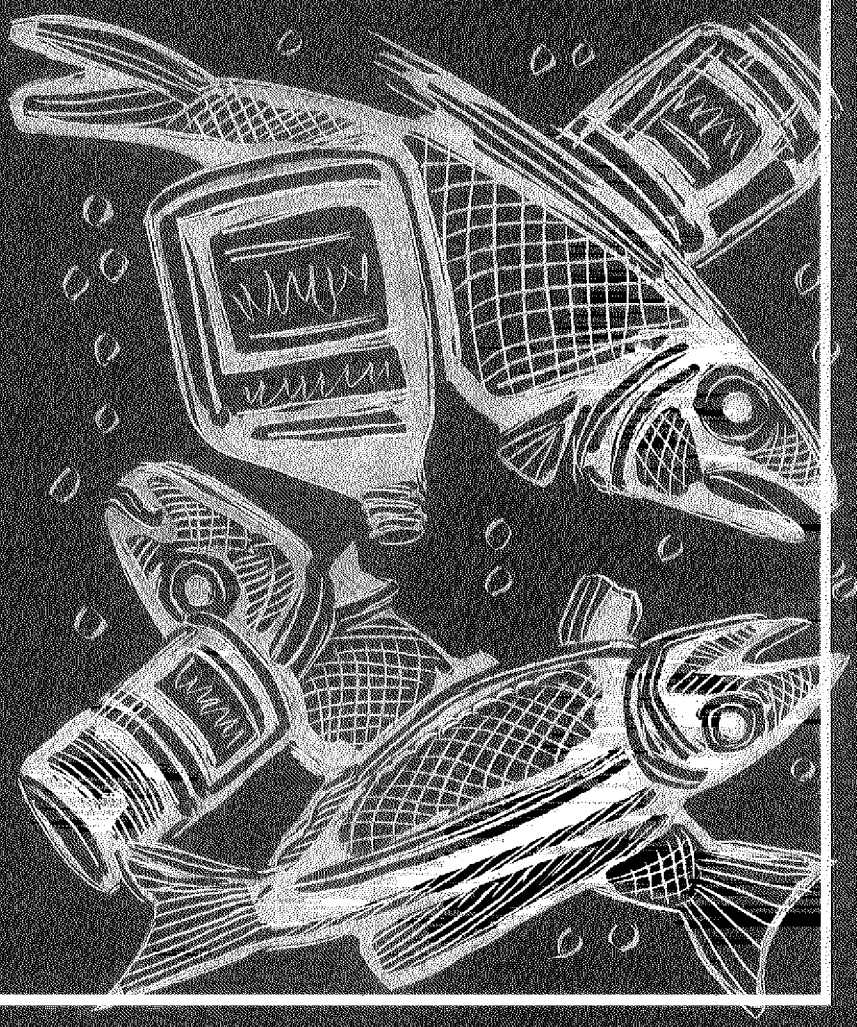
Total Alkalinity and pH Field and Laboratory Procedures, River Watch Network, 1992. (Based on University of Massachusetts Acid Rain Monitoring Project.)

Field Manual for Water Quality Monitoring, 12th ed., M. Mitchell and W. Stapp, Kendall/Hunt, 1999. Available from GREEN, c/o Earth Force, Inc., 1908 Mount Vernon Ave., Alexandria, VA 22301; phone: 703-299-9400; catalog # ISBN-1-6801; Website: http://www.earthforce.org/green/

Chapter 3

Developing A Quality Assurance Project Plan



Chapter Three:

Developing a Quality Assurance Project Plan

Chapter Three will help you:

Start your quality assurance project plan.

Determine the level of quality assurance/quality control you need for work you desire to undertake.

Develop written standard operating procedures.

The written documentation you will need to ensure the data you collect is as credible and reliable as possible is called a quality assurance project plan (QAPP). This plan outlines the procedures to be used for ensuring high-quality data when conducting sample collection and analysis for environmental monitoring. This documentation is important for several reasons:

■
At the program level, a QAPP ensures consistency in sampling and helps all participants understand exactly how to do what is expected of them.

■
At the data level, a QAPP gives the highest level of credibility attributable to citizen-generated environmental data.

■
At the data-use level, natural resource managers will be more inclined to use your data because they are confident sound collection and analytical methods were followed.

■
At the funding level, a QAPP can be helpful in levering financial support. For example, citizen monitoring programs without a United States Environmental Protection Agency (USEPA)-approved QAPP cannot receive funding from the USEPA.

■
Lastly, due to the proliferation of citizen-generated environmental data since the early 1990s, each program that develops and adheres to a QAPP is adding to the credibility of citizen monitoring generated data everywhere.

A QAPP provides specific written information on how quality assurance and quality control (QA/QC) is applied to data collection, handling and reporting. It also includes information on project design, planning, program implementation, and assessment. If used properly, a QAPP is a valuable tool for evaluating the results of your monitoring program.

Note: This chapter is not a step-by-step guide to preparing a QAPP. For such instruction, obtain a copy of EPA's Volunteer Monitor's Guide to Quality Assurance Project Plants or A Workbook for Protecting the Critters in the Gulf of Maine, by Christine Lehnertz. This guide contains simple exercises for creating a QAPP.

For an example of a USEPA-approved QAPP prepared by a citizen's group, obtain a disc copy of the plan developed by the Deer Isle/Stonington Partners in Monitoring Group in Maine. (See Chapter Three Resources.)

Quality Assurance (QA) is a process that ensures that a monitoring program is adequately planned and conducted, in the field and laboratory, to provide data of the highest possible quality. Abiding by QA means to follow a set of operating principles and procedures for sample handling, analysis and data review to provide data of know quality.

Quality Control (QC) is the set of steps taken during sample collection and analysis to ensure that data quality meets the minimum standards established by a quality assurance project plan.

Anatomy of a QAPP

According to the USEPA, a QAPP can consist of as many as 24 different elements. Table 3a illustrates some elements commonly included in a QAPP.

A group should develop a QAPP for its monitoring program and review it annually. If there have been changes to program organization or structure or field and/or analytical methodologies, revise the plan to reflect these changes. Your QAPP must be kept current.

Writing a QAPP and moving it through internal and external approval processes take time. Therefore, plan to work on your group's QAPP months in advance of when you want to be in the field. In the United States, QAPPs

Common Quality Assurance Project Plan Elements (Table 3a)

Project/Task Organization
Identifies the people who will collect or work with data. An organizational chart showing position titles rather than actual names (project coordinator, QA manager etc.) is often used. Narrative explaining the responsibilities of each team member is provided.

Problem Definition/Background
States the reason for the program and includes narrative about 1) background environmental conditions/significant deterioration; and 2) who will use the collected data and how.

Project Task/Description
Describes where, when and how work will be done. Includes the types and numbers of samples, location of sites (include a map), and the importance of parameters to the program.

Data Quality Objectives (DQOs)
Usually organized in a table format, DQOs express the accuracy, precision, completeness, representativeness and comparability of collected data.

Training Requirements/ Certification
Describes the training requirements for program participants to ensure consistency among samplers.

Documentation Records
Includes field or laboratory data sheets and explains how these are to be used, where they are to be filled out, when the data will be entered into a database and how long the field sheets are to be kept.

Sampling Process Design
Describes 1) how sampling locations and frequency will be determined; 2) the types of samples collected; 3) safety plans; and 4) sampling season.

Sampling Method Requirements
Describes the parameters to be measured and sample methodology.

Sample Handling and Custody Requirements
Explains how samples will be handled and documented if transported to a lab.

Analytical Methods Requirements
Identifies reference information for analytical methods to be followed.

Quality Control Requirements
Lists the number and type of field and laboratory quality control samples to be collected and/or analyzed.

Reports
Explains how, how often and to whom data will be reported.

Data Review, Validation and Verification
Explains who will review data and when data will be accepted, rejected or qualified.

Validation and Verification Methods
Explains the methods to be used for data acceptance, rejection or qualification.

Reconciliation with DQOs
Explains how data results will be compared with stated DQOs.

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that must be approved by the USEPA can go through a number of revisions before being accepted by that agency. Expect the USEPA to have specific comments on and requirements for changes to the first QAPP you submit, and be prepared to make one or more revisions.

Standard Operating Procedures
Part of the responsibility of citizen monitors is to follow standard operating procedures (SOPs). These are specific instructions that come with field and laboratory equipment, instructions for the care and use of sample containers and equipment, or specific information on sample collection and handling. Following SOPs ensures that samples handled by each citizen monitor are consistently collected and preserved and are done so using a method that is recognized by monitoring authorities and the scientific community. One resource providing concise SOPs for a variety of coastal monitoring param-

eters is *Clean Water: A Guide to Water Quality Monitoring* (E. Stancioff, University of Maine Cooperative Extension). Many groups in Maine have used or adapted the SOPs described in this manual to fit their specific programs. The resource section at the end of Chapter Two has information for ordering this manual.

Testing the Tests

In addition to following standard procedures for sample collection and analysis, volunteer monitoring programs must also adhere to quality assurance/quality control checks that certified labs and monitoring programs must follow.

There are various ways in which quality control supervisors determine the quality of analysis performed and adherence to accepted analytical procedures. The following is a summary overview of these quality control methods.

Determining Precision

A *split sample* involves taking one sample collected in accordance with standard operating procedures and splitting the sample into two sample containers. The degree of agreement between the samples will represent the precision of the analytical method used. Because the two samples derive from one sample, analytical results should be as close as the degree of precision associated with the analytical method allows.

A *replicate sample* is obtained by collecting two or more samples from the same site, one immediately after the other, and using the same collection methods. Such samples are considered representative sub-samples due to natural variation. However, the degree of difference allows for the assessment of variability caused by field sampling methods. This helps determine the number of samples needed from a site to ensure a representative sample.

Determining Accuracy

A *spike sample* has a known pH or a known amount and concentration of a particular contaminant (e.g. metal, pesticide) added to it. By introducing a known quantity into a regularly collected sample, and determining the percent of material that is recovered in analysis, an evaluation of accuracy can be made. By spiking a sample in the field and determining the percent recovery of the substance added, the results will reflect effects associated with preservation, shipping, laboratory preparation, and analysis. Spiking in the laboratory will incorporate effects associated with preparation and analysis.

A *blank sample* consists of a sample container that is filled with distilled or de-ionized water rather than taken from the water being sampled. A blank can be used to test the accuracy of field or laboratory equipment, or to determine whether contaminants are being carried over from one sample to another through problems with equipment or procedure. If any contaminant is recovered during analysis of a blank sample, it is an indication that some procedure is allowing for cross-contamination and thus data error. Blanks can be prepared before going into the field, while in the field itself, or in the laboratory, depending on their intended use.

Evaluating Equipment Performance

A *calibration check* is used to check equipment performance with laboratory prepared standards, or in accordance with manufacturers' guidelines, to ensure that equipment is operating properly. A reference sample of known concentration is used to measure accuracy. It is important to take into account the fact that different equipment and tests may be designed to be only accurate in certain ranges.

The range of quality control measures your program undertakes will reflect the intended uses of your data and the level of quality assurance/quality control (QA/QC) desired. There are many technical resources for determining what you might do and many methods stipulate what acceptable QC practices are for that specific test procedure. Table 3a illustrates different levels of QA/QC as they relate to intended use of data. This might be of assistance in better defining the needs of your program.

Chapter Three was adapted and excerpted from:

"Study Design: The Foundation of Credibility," G. Dates, *The Volunteer Monitor,* Volume 4, No. 2, Fall, 1992.

Integrating Quality Assurance into Tribal Water Programs, C. Lehnertz *et al.* (eds.), U.S. Environmental Protection Agency, 1992.

CHAPTER THREE RESOURCES

Technical Assistance contacts regarding QAPPs and QA/QC Procedures

Estuarine monitoring:
Esperanza Stancioff
University of Maine Cooperative Extension
235 Jefferson Street
PO Box 309
Waldoboro, ME 04572-0309
Phone: (207) 832-0343
Fax: (207) 832-0377
esp@umext.maine.edu

Region I USEPA
Diane Switzer
(EMS-LEX)
62 Westview Street
Lexington, MA 02173
Phone: (617) 860-4377

River and lake monitoring:
Geoff Dates
River Network
253 State St
Montpelier, VT 05602
Phone: (802) 223-3840
Fax: (802) 223-6227
gdates@rivernetwork.org

Manuals, Disk Copies of Approved QAPPs and Other Resources

U.S. Environmental Protection Agency (EPA) has produced a number of helpful documents to help volunteer monitoring programs develop sound QA/QC programs.

EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, USEPA, Quality Assurance Management Staff, Washington, DC, 20460, 1993.

Integrating Quality Assurance into Tribal Water Programs, US EPA Region 8, 999 18th St., Suite 500, Denver, CO 80202, 1993.

A Workbook for Protecting the Critters in the Gulf of Maine, C. Lehnertz, 1996. (Copies available upon request from Esperanza Stancioff (contact information above).)

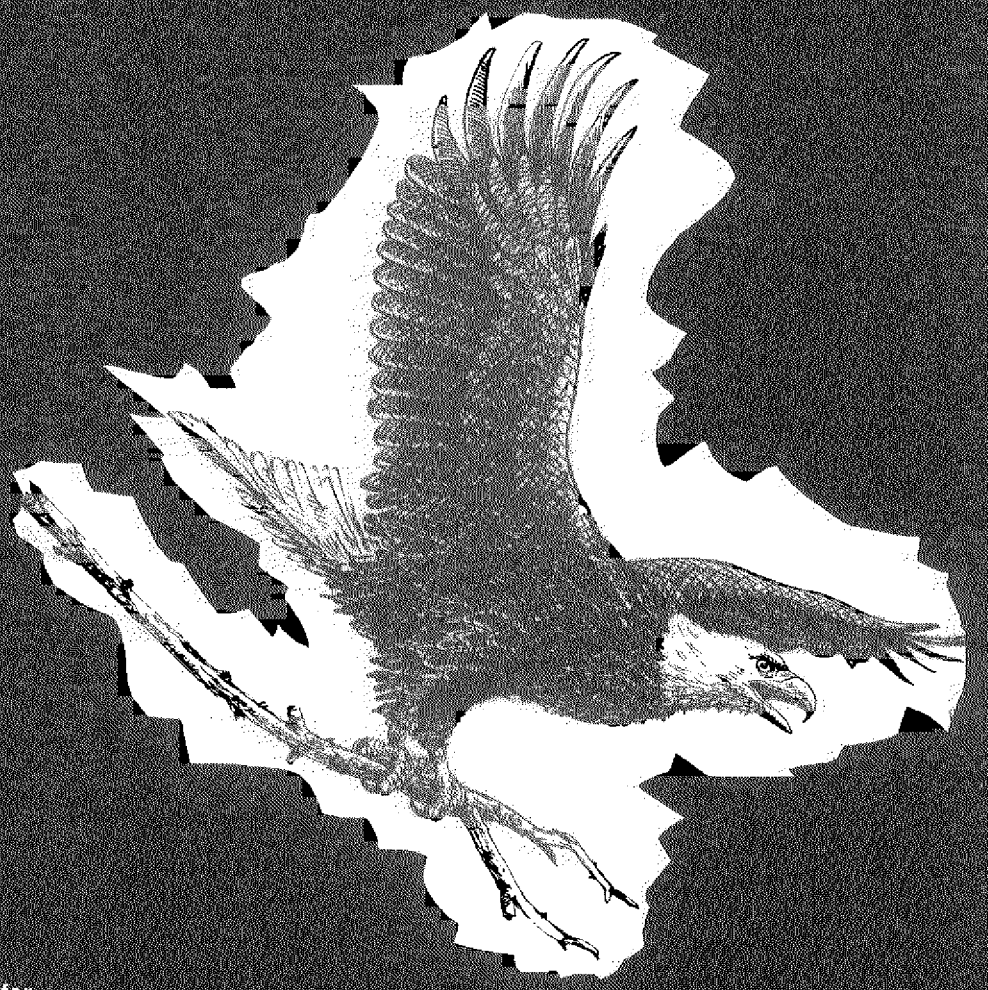
The Volunteer Monitor's Guide to Quality Assurance Project Plans, Office of Wetlands, Oceans and Watersheds, 4503F, Washington, DC, 20460, 1996. EPA 841-B-96-003 website: http://www.epa.gov/**OWOW/monitoring/volunteer/qappcovr.htm**

"Special Topic: Building Credibility," E. Ely (ed.), *The Volunteer Monitor,* Volume 4, No. 2, 1992. 24 pp.

"The Basics of Quality Control," M. Mattson, *The Volunteer Monitor,* Volume 4, No. 2, 1992, pgs. 6-8.

Deer Isle/Stonington (Maine) Partners in Monitoring EPA-Approved Quality Assurance Project Plan. Available from Esperanza Stancioff, University of Maine Cooperative Extension (see contact information above).

Chapter 4
Program Budget and Fundraising



Chapter Four:

Program Budget and Fundraising

Chapter Four will help you:

Draft a budget for your program.

Locate sources of funding.

Solicit local businesses and individuals.

In drafting your study design and thinking about parameters to monitor and people to organize, have you started to wonder just what all of this might cost? Where will this money come from? These are important considerations that have great bearing on your monitoring program.

Estimating the costs associated with your program and pursuing funding to cover these costs are tasks the group must perform. Failure to accurately assess costs could cause team members to be out of pocket for some expenses. Failure to raise sufficient funds could limit your group's accomplishments and damper volunteer enthusiasm. Fortunately, there is plenty of experience to draw upon in developing a program budget and raising money. That's what this chapter is all about.

Developing a Program Budget

As you develop a budget for your program, be thinking about how you might go about finding money for different items. This is a time to be creative in your thinking and planning. For example, is your only option really to buy that brand new incubator bath or are there other ways? Perhaps there is a nearby research lab or university that might have what you need that is willing to donate this item to support your cause. At first glance, it might seem far-fetched, but many places like to donate used equipment for a local cause because it is a nice community service and a potential tax deduction. It might take a little work to research different options or to think differently about meeting financial needs, but if it means you can do more with less, it is worth the effort. So as you prepare the budget, think creatively about how you can meet your money, people-power, goods and service needs.

Costs typically associated with volunteer-based water quality monitoring programs include the following:

- Lab and field sampling equipment and supplies;
- Office supplies (e.g. clipboards, paper, pencils and pens, binders);
- Laboratory space (if you have to pay for this);
- Analytical services (for parameters that have to be analyzed by a professional laboratory);
- Protective clothing and footwear;
- First aid supplies;
- Transportation (costs of collecting samples and transporting samples to laboratories);
- Communication and mailing expenses;
- Special events and program merchandise (e.g. for publicity, volunteer recognition);
- Insurance (for fixed assets and liability);
- Film and development; and
- Legal fees (if your group wants to become formally incorporated).

Each program will allocate funds to such expenses based on unique budget requirements and funding sources. A basic program involving the monitoring of a few parameters at a few sites may not need laboratory space or analytical services, and volunteers may be willing to cover all their own transportation, communication and clothing and footwear costs. A more advanced program, involving annual expenditures in the tens of thousands of dollars, may need to cover all of the above and other expense categories.

Developing an annual budget is a matter of thinking carefully about the costs to be incurred throughout the year and coming up with reasonable estimates for each line item. There will be certain start-up and annual operating costs, as well as special, one-time expenditures (e.g. the purchase of an additional piece of equipment to enable more advanced monitoring). A small program monitoring three parameters at six

sites might have the same start-up equipment expenses as a big program monitoring the same parameters at 30 sites; however, the smaller program will most likely have a tiny supply budget when compared to the larger. Equipment is generally a one-or two-time expenditure, while supplies are figured as an annual operating cost. It is helpful to look at the nature of the expenditure (one-time versus ongoing) to better define your budgetary needs.

One of the ongoing and potentially major expenses is the cost of sampling supplies. If your group is monitoring dissolved oxygen at 20 sites on a biweekly bases for 10 months of the year, you can count on having to purchase reagents at least annually (some reagents have expiration dates anyway). Bacterial monitoring will require ongoing expenditures for plastic bags and the supplies (e.g. media, glassware) needed to perform the analyses. Price lists from water quality monitoring supply companies (e.g. Fisher Scientific, VWR, Hach, LaMotte) will help in figuring how much you will have to spend to cover all of your program's anticipated sampling events, including training and quality control samples (a sampling event is one sample collected per parameter per site).

In preparing budgets, flag those line items that must be covered and others that you would like to have money for. For example, you have a perfectly good refractometer but would like a new one with more features. Purchasing the new refractometer is desirable, but not necessary as you already have one that meets your sampling and data needs. The essential items constitute a core or base budget that must be covered to have a functioning program. The non-essential items may not be covered this year, depending on how much funding you are able to attract, but should remain a part of the budget to reflect the full scope of your intentions.

Finding Money

Successful fundraising depends on having a sound idea of what one wants to do, a compelling rationale for one's project, a good idea of the costs associated with such a project, and a diversified strategy for levering money.

One option for trimming program costs is to purchase monitoring and other supplies (e.g. paper) as well as some types of equipment (e.g. field kits, thermometers) in bulk quantities.

Comparison shopping among supply companies may also result in timely purchasing during a special sale. As well, your group's non-profit status can mean significant purchase discounts. You may also use this status to obtain meeting or laboratory space free of charge.

Employ a variety of means and look for a variety of sources to fund your program. Relying heavily on just one or two options for funding doesn't provide the diverse funding base most groups need to sustain their activities. For example, if a group has been counting on receiving a lone grant from a single foundation year after year, it could be really stuck if that grant doesn't come through. A better strategy might include applying for not only that grant but also grants or donations from other foundations, government agencies, local corporations and small businesses, service clubs and individual community members. There are a variety of options available for community monitoring groups as outlined in Table 4.1. When seeking funding sources, look both to distant sources (such as grant makers) as well as to community sources (such as local residents, businesses and civic groups).

With numerous potential sources of funding to approach, your group may need to carefully plan a fundraising strategy so that various sources are called upon for the right reasons and at the right time. Funding proposals should take into account questions such as these below:

- Are there certain fields of interest that the funder appears to favor supporting? Has this been consistent over a number of years? Does your focus fit with their interests? Some sources will not support general operating funds or equipment purchases, so make sure you know what they will and will not fund and ask appropriately.
- Are there funders with specific focus on your geographic region?

■
Is the amount requested within an acceptable or "comfortable" range for this donor? It might be better to think about breaking a request up into smaller pieces to avoid asking for an amount a donor rarely, if ever provides.
■
Does your application include all the information the source requires? Make sure you follow each donor's application guidelines and meet deadlines.

Some funding sources, notably foundations, will require proof of your not-for-profit status and of your group's ability to issue tax-charitable receipts. If your group doesn't have or doesn't want to go to the time, trouble and potential expense of obtaining tax-charitable status, consider using one or more other organizations as fiscal agents to accept funds on your behalf. Municipalities and larger non-profits with tax-charitable status, for example, may be willing to accept grant monies from foundations for you. Fiscal agents may charge a small fee for this service.

Soliciting Funds from Community Members, Local Businesses and Civic Organizations

Proposal writing is only one way to seek funding for your program. (See next section.) There are plenty of potential funding sources closer to home that should not be overlooked. In fact, local funding sources are the most likely to support your program over the long term as they benefit directly from your monitoring efforts. Local sources of funding can range from individuals who either share the values of your program or who benefit directly from your work, to businesses that have increased economic gain through clean water, to shellfish groups who have greater access to clean clam flats. Although financial contributions from these sources tend to be much smaller than what you might get from a foundation, you will probably be able to obtain many more sources, thereby diversifying the base of your financial dependence.

When approaching local potential funding sources, make sure you are organized and have thought out what to ask from whom. While it might be appropriate to ask a large local business for a few hundred dollars, most individual citizens can probably not afford that. Remember, you can ask for more than just money. A local supply store might

TYPES OF FUNDING SOURCES

Individuals

Individual donations comprise over 90 percent of all charitable contributions in the United States. Many members of a community may be happy to contribute $5, $10, $20 or more to a monitoring program. Membership drives and door-to-door campaigns can be used to attract community support.

Businesses

Businesses within the community area served by a water monitoring program may be willing to provide both financial support and in-kind support (e.g. donation of materials, services, technical support, equipment or use of office or meeting space). Large corporations with ties to the community, but whose head offices may be outside the community, may also be approached for donations in the $500-$5,000 range. Some of these corporations may have their own corporate foundations set up specifically to consider requests for relatively large amounts of money.

Foundations

Numerous foundations located in and outside of the Gulf of Maine provide funding for environmental stewardship activities within the Gulf. Such foundations typically allocate funding as per structured donor guidelines.

Government

Various provincial, state, federal and intergovernmental agencies administer funds that can be accessed by citizen environmental monitoring groups. Larger municipalities may also be in position to provide some support.

Earned Income

Groups can raise money directly through the sale of program merchandise, laboratory services, auctions, raffles, boat tours and other special events.

In-kind

Look to universities or local labs that might donate used equipment to support your cause. Look to local professionals, such as lawyers or microbiologists, who can offer services. In-kind services and goods can help reduce your budget.

donate a box of printing paper, the supermarket might donate the food for your annual appreciation supper, and the marine supply store might have some good safety equipment and clothing to donate to the cause.

PROPOSAL WRITING

Your funding strategy may include more formal requests for assistance. Often, potential large-scale funders will want requests in the form of a proposal. A good proposal reflects the sound sense of what a group wants to do and provides a compelling rationale for a program. It also reflects the degree to which an applicant organization follows the proposal guidelines (if any) issued by a funding source.

There are some general guidelines for writing proposals. First, prior to putting pen to paper or fingers to keyboard, initiate contact with the funding source to give them a sense of who you are (and vice-versa) and to sound out their interest in your program. This is also an opportunity to check on application deadlines and criteria (they may have changed).

Second, include a one-page cover letter written on the applicant organization's letterhead. This letter should be the first thing seen by the person who will initially review your proposal and should be addressed to this individual. (Try to avoid the salutation "to whom this may concern.") Done well, the cover letter will convey a sense of professionalism and purpose while mentioning key elements of the proposal it introduces. These elements include project title; the name of the applicant organization (repeat it in the body of the letter even though the name appears on the letterhead); a summary statement of the project's purpose; the amount being requested; and specifically what the money will be used for. (This financial information should be placed in a prominent and easy-to-find location in the proposal or cover letter.) Have the letter signed by a senior member of your group (either you as program coordinator or perhaps the group's president or chair). Make sure the letter is free of grammatical and spelling errors (including misspelled names). One or two proofreaders can help in this regard.

MAIN ELEMENTS OF PROPOSALS FOR FUNDING

Summary
Clearly and concisely summarizes the project and financial request

Introduction
Can include an introduction to the problem/project and the group seeking support

Problem statement or needs assessment
Documents what needs your project will meet or problems it will solve with the requested funding

Objectives
In *measurable* terms, the objectives identify precisely what your group aims to accomplish

Methods
Describes in specific terms the steps to be taken to meet the objectives

Qualifications
Describes the qualifications of the group and key personnel who will be involved in the project (establishing credibility)

Evaluation
Explains how you will document the degree to which objectives are met and methods followed

Budget
A few narrative lines summarizing anticipated revenue and expenses that support a detailed table of anticipated revenue and expenses; identifies the specific costs that would be covered by a grant from the source; identifies the revenue already secured

Future or other necessary funding
Explains how work will be carried on beyond the grant period (if needed) and/or the availability of other funding sources

Other tips pertain to the proposal itself:

- Be sure your proposal reflects thoughtful planning.
- Tailor your proposal to match the interests of the funding source.
- Be specific and concise.
- Follow application directions exactly.
- Be of reasonable dimension (do not ask for too much).
- Use fact, not fiction, to back the proposal.
- Have evidence of support for the program from others (attach letters of support).
- Use attachments for non-priority information; the reviewer can get to these later and focus on the facts first.
- Have a team of people involved in proposal writing and editing. Cross-input is important. Edit for clarity, conciseness, grammar and spelling.

Whether you receive funding or not, do make follow-up contacts with funders to ask them about your proposal style and content. It is a great way to get professional feedback on your grant writing skills for free. This feedback can help tremendously with future proposals. Well-written proposals take a little practice. Don't worry if at first you find this difficult; with practice the procedure will become more familiar and less daunting. Keep copies of all proposals submitted and maintain them on file regardless of success. New program members and future proposal writers will benefit from this documentation. Those sources that have been successfully approached once will likely be much more open to considering future proposals, especially if your group achieves good results with the funding provided. Good luck!

CHAPTER FOUR RESOURCES

Excellent Resource for Expanding Non-profit Funding Strategies: **Discover Total Resources: A Guide for Non-Profits**, Mellon Bank Corporation, 1991. To obtain a copy, write to: Community Affairs, Mellon Bank, One Mellon Bank Center, Pittsburgh, PA 15258-0001, or call (412) 234-3275.

For Canadian groups around the Bay of Fundy: **Environmental Funding Guide: A Quick Reference of Available Programs in the Atlantic Region**, Community Programs Department of Environment Canada. It is available as a download from http://www.ns.ec.gc.ca/community/resources.html, or contact: Community Programs, Environment Canada, 16th Floor, Queen Square, 45 Alderney Dr., Dartmouth, Nova Scotia, B2Y 2N6. Or General Inquiries: Community Programs at elizabeth.adams@ec.gc.ca or call 902-426-8521 in Halifax or 800-663-5755 toll-free in the Atlantic Provinces.

Fundraising for Social Change, K. Klein, Chardon Press (PO Box 11607, Berkely, CA 94712), 1985.

Grant Writing, A. Robinson, The Grassroots Fundraising Book, J. Flanagan, Contemporary Books Inc., (Dept N, 180 N Michigan Ave., Chicago, IL 60601), 1992.

Fundraising Information Websites:
Catalogue of Federal Domestic Assistance: http://www.gsa.gov/fdac

Environmental Grantmaking Foundations–Resources for Global Sustainability:
http://www.environmentalgrants.com

The Foundation Center: http://www.fdncenter.org/.
Phone: 212-620-4230.
Foundations and Grantmakers Directory: http://www.foundations.org/grantmakers.html

River Network: http://www.rivernetwork.org/fundrais.htm
Who's Who in Federal Grant Management: http://www.os.dhhs.gov/progorg/grantsnet/whoswho.html

To Research Potential Foundation and Grant Opportunities: Visit the Maine Grants Information Center (MGIC) at the University of Southern Maine Library in Portland, Maine. MGIC has computer and hard-copy reference materials that allow you to conduct detailed searches for funding sources that fit your services, geographic region or other parameters. (http://www.megrants.org/index.htm)

Chapter 5
Working with Volunteers

5

Chapter Five:

Working with Volunteers

Chapter Five will cover:

Developing description for volunteer positions;

Recruiting people to fill positions;

Training people to do required work correctly;

Evaluating volunteer effort; and

Rewarding volunteers for their assistance.

Who will collect the samples? Be responsible for laboratory work? Enter field and lab data into a database?

Citizen-based environmental monitoring programs are just that: citizen-based. The time and interest of people in your community or watershed will make or break your program's success. Most if not all of these people will be participating without pay. So let's take a look at working with volunteers and managing their valuable time.

Before we begin, a word about volunteers and volunteer monitoring programs: Although the people you will be working with are not being paid for their time, this does not mean they should be treated differently than paid workers. In short, conducting all aspects of your program with professionalism, including volunteer coordination and management, will help ensure not only a high-quality program with high-quality outcomes, but also a program more respected and enjoyed by those who take part.

As one would for paid employees, ensure that volunteers consider themselves responsible for achieving results rather than merely for performing a set of activities or "jobs." Most volunteers will rise to the challenge of achieving results, so long as the objectives and methodologies they have to work with are clear. Once volunteers become responsible for results, they focus on the end product of their work and gain the satisfaction of making progress toward an important and meaningful accomplishment.

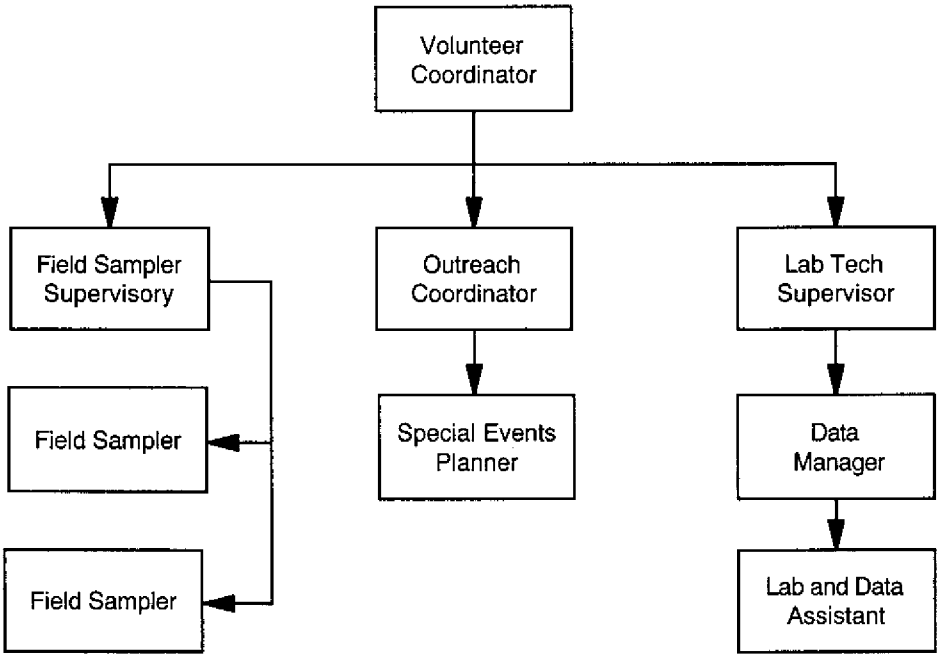
From a program point of view, making it clear the program expects results from each participant has many benefits. When a program is structured with success in mind, individual participants will most likely care about the project as a whole and will provide support for the good of the program. This is critical in volunteer monitoring projects due to an all too common phenomena to rely on one key individual to provide most of the program support. Whenever possible in your staffing of the program, look for special leadership and management skills in all your volunteers and encourage them to use those skills for general program maintenance. Sharing program responsibility will provide consistency and continuity should a key member retire.

DEVELOPING DESCRIPTIONS FOR VOLUNTEER POSITIONS

There are many potential positions within a citizen-based monitoring program: program coordinator, field samplers, sample transporters (i.e. to the lab), a laboratory supervisor, lab technicians, one or more data managers, outreach and publicity people, a group spokesperson etc. As your group works through its study design and quality assurance project plan (QAPP), many of these positions will become obvious.

Organizational charts, which are a required part of QAPPs, are a great way to visually depict the number of and relationship among all positions within your program. Figure 5.1 (next page) illustrates a sample organizational chart for a small water monitoring program focusing on baseline data collection. In a program such as this one, several people cover data collection, analysis and documentation and a few other participants help out with public meetings and outreach. When crafting an organizational chart, refer back to the program's vision, any specific goals and objectives you might have established and the actual sampling work to be undertaken to determine how these positions will perform to achieve the results you desire. Shape this information into a position description using the information in this chapter and in Appendix 5A.

Clear descriptions for each position must be developed and available for potential monitors, *before they are placed in the program.* Such descriptions clarify the roles and responsibilities of different team members, and



Adapted from *Essential Volunteer Management*, by Rich Lynch and Steve McCurley, Heritage Arts Publishing.

should help show:

1. how the work of individuals is linked to the team effort;

2. how the position fits within the group's mission. The position descriptions should be written with results in mind (i.e. producing data that is credible and useful), not simply a list of tasks to be performed.

Appendix 5A provides generic descriptions for the most common program positions. These include project coordinator, technical advisor, volunteer sampler, data manager, data analyst, quality control officer, among others. The actual format of position descriptions is not as important as expressing a well-thought-out purpose. In terms of format, typical elements to include are:

Title
A title should be consistent with the nature of work required and provide identity for the program participant.

Purpose
A purpose statement describes the intent and expectations associated with the position. This is the most important part of the description.

Responsibilities
Explains desired results, the tasks to be done and whom the volunteer reports to.

Qualifications
Identifies the training (if any), experience (if any), skills, attitudes or knowledge required for the position. Key qualifications for volunteer monitor are a desire to be a water steward and the energy, enthusiasm and commitment to do a great job.

Time frame
Estimates the number of hours in a week or month that the position requires, as well as the duration of commitment (i.e. the seasonal nature of your program). Identifies any scheduling requirements.

Site
Identifies the location of work.

Evaluation
Explains reporting procedures and the supervision to be provided. Describes when and how often evaluation will be conducted.

Benefits
Describes the training to be provided and opportunities for volunteer recognition (e.g. awards) and enjoyment (e.g. dinners).

Although descriptions should be drafted before volunteer recruitment occurs, they should not be considered "finished" documents. They may undergo revision during

the volunteer screening and interviewing process and as the interviewer begins to match the position to the needs and interests of the specific individuals. Position descriptions should also be adjusted as volunteers' skills improve and additional responsibilities are added.

RECRUITING PEOPLE TO FILL POSITIONS

Let's look now at the three main questions surrounding volunteer recruitment: Who will be recruited? How will recruitment be done? Where will volunteers be placed within your program?

Who to Recruit?

Who to recruit will depend on the design of the program, the number of people and position types you need to execute your monitoring and outreach plans, and the types of people needed to fill these positions. For successful recruiting, it is important to consider the motivation of potential volunteers. People offer their time and skills for a number of different reasons. Some of the most common reasons for volunteering include:

- having a friend or family member involved
- setting an example for children
- meeting people and gaining experience
- using otherwise unused gifts or skills
- exploring new skills, ideas, etc.
- expressing interest or concern about the issue
- providing a contrast to their paid work
- volunteering as an extension of a job
- testing leadership skills
- gaining recognition
- acquiring self-confidence
- keeping active
- feeling a sense of power and success
- improving a resume
- "testing the water" before making a career change
- gaining knowledge about the waterbody and its problems
- impressing an employer, spouse, parent, etc.
- feeling part of a group or team.

When filling your program's volunteer positions, ask prospective candidates about their motivation to be involved. Although self-interest can be part of it, motiva-

QUESTIONS POTENTIAL VOLUNTEERS ASK

During volunteer interviews or informational meetings, expect and be prepared to answer questions such as those below.

- What do you want me to do?
- What will my specific work assignment be?
- What would my authority be?
- Who/what will I be accountable for?
- How much time will it take?
- How long would I have this position?
- How much flexibility is there in terms of when I do this work?
- What is the need?
- How do you know this is needed?
- Who will benefit and how?
- What is your track record?
- How is your money spent?
- Who do I know that has participated in this program?

tion rooted in some sense of community and wanting to help your group reach its goals is desirable. In assembling your monitoring team, seek diversity within the group. Homemakers, retirees, business people, industrial employees, contractors/builders, developers, teachers, scientists, state or provincial employees and students are examples of people who are involved in monitoring programs around the Gulf of Maine and who can be involved in your program. The greater the participant diversity, the more likely that program results will benefit the entire community, in addition to your target audience. This diversity can also bring innovative approaches and new ideas to your program.

How Will Volunteers Be Recruited?

A monitoring group can proceed to recruit its volunteers in an informal or formal fashion. Informal recruitment can be as straightforward as spreading the word about your program needs and taking on volunteers as they come forward, with attention to placing people in appropriate positions. Formal recruitment, involving handling actual applications and interviewing prospective candidates, is like that for a paid position. Which option your group selects may depend upon the geographic and conceptual scale of your project, as well as the intended purpose of your collected data. A small monitoring group collecting baseline data in a community with a slight population base may rely on an informal approach to volunteer recruitment. A larger program collecting data in a region with a large population base and many sources of potential recruits might rely on a more formal process to ensure both diversity and a good match.

There are many options for finding your volunteers. A logical place to start is to first identify those citizens who are already involved in and concerned about water quality issues in your region. With their interest and commitment already demonstrated, they might jump at the chance to become involved in hands-on monitoring.

Another possibility is to search for volunteers right along the shoreline of your waterbody. Shorefront property owners may want to participate in your program because of the direct benefit in having a clean water body. If you have or can obtain access to property tax maps, you may be able to readily identify and contact waterfront property owners at appropriate sampling sites. Even if they don't want to participate directly in the monitoring, their cooperation in allowing access to the sites will be important.

> Everybody talks about recruitment but, once the group is going, most organizations would be better off concentrating on maintaining and improving their group rather than on recruitment itself. Well-run organizations and volunteer programs recruit automatically. Build a better organization and volunteers will beat a path to your door."
> **101 Ways to Recruit Volunteers**

If you live in a region with a small population base, an alternative approach is to hold public information and volunteer recruitment meetings for the general public, perhaps as part of a town meeting agenda. A special occasion for a targeted audience may require some planning; check school, church and community calendars to avoid scheduling such an event at the same time as another major community activity.

An attractive brochure or flyer describing your monitoring program and opportunities for citizen involvement is an excellent public outreach tool and can provide excellent basic information for potential volunteers. (Friends of Casco Bay, in Maine, have created an electronic brochure designed to be adaptable for citizen monitoring groups to use. See Appendix 5B for obtaining this information.)

A brochure needs to include information on the waterbody; the objectives of and rationale for your program; description of the benefits of participation; and an explanation about what will be expected from citizen monitors. It can also include a tear-off application form if that fits your program needs. For citizens who want more information, for example about proposed monitoring site

> Ideal recruitment lies in only attracting as many of the right volunteers as you need. Problems result either when you accept help and have nothing for people to do, or reject help and have people feel you don't want them. Too few is often easier to deal with than too many.
> **101 Ways to Recruit Volunteers**

locations, project duration and length of commitment required of volunteers, this can be provided either in person or through a letter. Appendix 5B also contains a sample volunteer application.

Such outreach tools can be sent to outdoor organizations, conservation groups, service clubs and others with interests similar to those of your program. The brochure or a program poster can be posted in public buildings, sent out as a bulk mailing, or included as a newspaper or magazine insert. Also, consider making presentations to such groups (with a short slide show or other display), capturing the interest and attention of a live audience. When interested individuals call to volunteer, follow-up promptly with an e-mail or phone call.

"Word of mouth" can do recruiting for your group. Some people may be naturally attracted to the program as they talk with friends or relatives who are already involved. In many ways, your current volunteers, however few in number, can be your most effective recruitment mechanism. A "recruitment packet" for volunteers to carry with them, comprising information (e.g. brochure) that can be passed out to people they know who might be interested in participating, can be prepared. A "Bring a Friend Day," in which volunteers can host a friend, can be sponsored. An "Each One, Recruit One" campaign, in which volunteers are encouraged to be available for answering questions and sharing experiences as part of orientation sessions, is another option. Working through your current pool of talent to attract more participants can infuse new citizen energy into the program.

Remember that everything the group does directly or indirectly contributes to recruitment. A group that carries out its program with a high degree of professionalism and public visibility will find it easy to attract well-motivated, high-caliber volunteers. Recruitment information and appeals can be incorporated in almost any educational or outreach information the group produces or presents.

VOLUNTEER PLACEMENT

Having well-defined positions and a sound organizational structure provides the basis for placing team members.

INFORMATION FOR POTENTIAL VOLUNTEERS

Regardless of the approach that works best for meeting with or interviewing potential volunteers, provide information about:

1. The geographic area and issues your group is interested in

2. The program vision, goals and specific objectives for the current monitoring season

3. What is generally expected of all participants (e.g. "to be enthusiastic and cooperative team members")

4. The specifics of any position in which a citizen is particularly interested (reveal any potentially unpleasant aspects of the position).

At the same time you can:

- Ascertain the nature of the volunteers interest;
- Identify the specific skills and experience the volunteer can bring to your program;
- Determine the volunteer's expectations from his or her participation;
- Gauge how the volunteer's skills and interests can best be matched to the program; and
- Determine if the volunteer is an appropriate member of the team.

Volunteer Interviewing Hints

- Try to let a volunteer do most of the talking. Ask open-ended questions that stimulate conversation, rather than requiring only a yes or no answer.
- Be sure to determine whether the volunteer can meet the time and transportation requirements specified in the position description.
- Make no promises about participation or placement that you cannot follow through on.
- If an individual is thinking of signing on, make an appointment for a final answer or set a time for follow-up.

The scale and nature of your program is another determining factor. A small-scale program (e.g. monitoring temperature and dissolved oxygen in a stream) may require only a couple of positions and hence only a few volunteers; one person may cover numerous responsibilities. A larger and more complex program (e.g. measuring a range of parameters associated with non-point source pollution in a major watershed over five years) can require 10 or more positions and potentially dozens of volunteers.

Each individual will be suited to particular roles; consider personality types as well as interests, experience, and skills in trying to match volunteers with the program's needs. Assign individuals to roles that they are suited for and that will provide the volunteer with some challenge and opportunity for personal growth.

No volunteer should be assigned to the program without first having at least an informal conversation, if not a more formal interview, with the coordinator. The level of formality used will depend on program structure and needs and, perhaps, on the number of interested citizens. For small and informal groups, inviting interested persons to participate in a sample run or a training session may be sufficient to convey information about the program and determine placement. For large and formal groups, interviews at planned intervals may be required (for example, during the winter, one month prior to the beginning of the sampling season, etc.)

Remember that, although difficult, it is acceptable not to offer a position to every interested person. Just as in the work world, you may need to turn a candidate down. A poor match between a potential volunteer and your program may cause some discomfort on both sides. In such instances, try to refer the person to other organizations requiring volunteer citizens. Make an effort to direct such persons to other opportunities – people willing to dedicate time and services should be encouraged to volunteer even if they are not a good fit for your program.

VOLUNTEER TRAINING[1]

Although specific technical instruction sessions are a major part of it, training is really a *process* that flows throughout the life of a program. A group's training system should be reflected in its quality assurance project plan. Training involves continuous learning on the part of both those receiving and providing knowledge and skill development. Everyone learns from everyone else in the training process. At the individual level, the process can be thought of as orientation; instruction; practice; skill application, testing and sharpening; sharing of knowledge and experience; and even mentoring of new participants.

Training is essential to the success of a monitoring program. Properly-trained monitors:

- Produce high quality, credible data;
- Better understand their role in protecting water quality;
- Are more motivated to continue monitoring;
- Become better monitors who need less supervision; and
- Feel like an integral part of the program.

For new recruits, training can focus on program orientation and building skills needed to produce data and then practicing those skills. Once the individual acquires these basic skills, he or she may want to improve on current methods or share knowledge with new participants. In most successful monitoring programs, individuals are encouraged to share their knowledge and skills with newer participants. With this approach, trainees become trainers who provide excellent resources on a specific area they have focused on. There is room for all different sorts of expertise within individual monitoring programs: try not to rely on one individual for all program guidance and nurture individuals to develop their own specialty within the bounds of program needs.

Although some orientation information is provided when volunteers are recruited, a more comprehensive orientation is necessary for new volunteers and as a refresher for the group as a whole. Always allow plenty of opportunity for questions from new participants and pay attention to overload situations in which you might have to break an orientation down into comprehensible parts. Topics to

cover during orientation should include the following:

- Information about the environmental history of and current issues in the watershed;
- Information about the program vision, goals and objectives;
- An introduction to key personnel and organizational leaders;
- An overview of the program's organizational structure and lines of authority;
- A recap of the general expectations for all volunteers;
- Instruction on completing certain forms and records, for example a form that enables volunteers to document their time spent in the program (this may be important if the group has to document what are know as in-kind (non-cash contributions); and
- Information on important upcoming events.

A sample time-keeping form is included in Appendix 5C.

For many groups, technical monitoring instruction usually comprises an initial training session followed by a follow-up session during the monitoring season. The purpose of each is a little different. The initial training is meant to introduce monitors to proper technique and data recording. The follow-up is a quality assurance/quality control (QA/QC) check, since it involves observing monitors as they collect and handle samples and record information on field sheets. Feedback is provided on technique and suggestions are made on how to do things better. If necessary, an additional training session is arranged for anyone having problems following protocols. Such QA/QC checks can be conducted with individual monitors or small groups at actual monitoring sites, or with the entire group at a centralized location.

Some groups also opt to include a third session that combines a meeting with training to go over the past season, discuss past problems and possible solutions in preparation for the following season. It is good to have such a recap while information is fresh in everyone's memory. This is the time to get feedback from field people concerning how they like protocols, sampling equipment, and whether improvements need to be made for next season.

ELEMENTS OF A SUCCESSFUL INITIAL TRAINING SESSION

- A location that is comfortable and has good acoustics.
- An agenda and timeline that is followed.
- Enthusiastic and knowledgeable trainers who are also effective presenters.
- A low ratio (e.g. 1/8) of trainers to trainees.
- Short presentations that encourage audience participation but do not exceed attention spans.
- Opportunities for all trainees to handle equipment, view demonstrations of sampling protocols and practice sampling to meet their individual learning needs.
- Instruction on field safety and proper handling of any chemicals.
- Refreshments, adequate breaks, and the opportunity for trainees to meet one each other, socialize and have fun.

For technical training sessions:

- Plan well ahead (several weeks in advance), and tailor training sessions to meet current needs with the help of your trainer.
- Depending on the size of the group to be trained, let your qualified trainers know so that they can arrange for the appropriate number of co-trainers to provide needed technical information and guidance. Personnel on your technical committee may be able to help here; other qualified individuals may be affiliated with government agencies, universities or other citizen monitoring groups;

- Identify a day and a time suitable to your monitors, and be realistic in terms of how much time will be required to provide the training.
- Choose a training location similar to sites where monitors will sample, keeping in mind the safety and comfort of attendees.
- Organize the equipment and compile handouts to be distributed at the session.
- If borrowing or purchasing equipment, make sure it will arrive on time.
- Allow plenty of time for receipt and calibration of equipment prior to the session.

When notifying monitors about a session, be sure to inform attendees how long the training will last, including breaks. Trainings should last no longer than five hours. Provide the written session agenda to attendees so they will be aware of the material to be covered. A typical training agenda is included in Appendix 5D.

Depending on the number of parameters a group intends to monitor, more than one type of training session may be needed (introducing too many protocols in one session can be overwhelming). For example, many groups in Maine that do phytoplankton and local water monitoring have separate trainings for each program type.

VOLUNTEER EVALUATION

All workers, whether paid or volunteer, should receive evaluation feedback for the tasks and services they perform. Like interviewing, evaluation can be informal or formal but, in all cases, should be done in confidence. Informal evaluations occur when, for example, you as program coordinator observe someone carrying out a procedure incorrectly in the field, make a mental note of this, and provide gentle words to help the person improve their technique. Formal evaluation may consist of reviewing a volunteer's position description with him/her, asking if the volunteer feels he/she is doing what is expected, asking if there are any problems the volunteer is having, and providing constructive, positive feedback (e.g. "You are coming along with the procedure, but need to make an adjustment at this point.").

In most cases where problems are occurring, additional training or supervision should be provided to correct the situation. Occasionally, it may be necessary to have regular follow-up with a volunteer or even to reassign the monitor to a different position. There may be rare situations in which a participant is not living up to expectations and whose work, despite attempts at improvement, is beginning to seriously detract from the program. This is a sensitive situation requiring tact on the part of the program coordinator. If retraining, reorientation and redirection have been tried without success, you may have to ask the volunteer to leave the program. In a situation such as this, thank the volunteer for all they have done and kindly retire them with honors.

VOLUNTEER RECOGNITION

People who volunteer tend to do so with little or no thought of being recognized by others for their contributions. Nonetheless, volunteers like to be appreciated for their contributions to a cause they believe in. Thus, an important aspect of working with your volunteer team is finding ways to say thank you for a job well done.

Recognition can cover all participants regardless of level of involvement or overall time spent with your program. Recognition can also be based on some established benchmarks, such as number of sample runs conducted, number of samples analyzed, years of involvement, etc. How recognition is provided depends on the nature of work volunteers have provided, the depth of commitment involved, the preferences (if any) certain volunteers may have for recognition and the money your group can afford for recognition. Methods of recognition include providing volunteer recognition certificates and program mementos, such as T-shirts, ball caps, pins, and decals; holding volunteer appreciation events, such as banquets; the sponsoring of a river boat day-trip for volunteers and their families; and many others. Gulf of Maine examples of recognition include the following:

- The Kittery Conservation Commission holds an annual pizza party for all its water monitors and invites speakers to address topics related to water quality.

■

The coordinators of the Deer Isle-Stonington Partners in Monitoring Group hold a season-end luncheon to thank monitors, present and discuss findings, and share experiences.

■

Great Bay Watch in New Hampshire gives out pens and buttons, emblazoned with the words "Great Bay Watch," to volunteers once they have completed their initial training. Certificates of recognition are also provided once volunteers demonstrate mastery of QA/QC procedures.

■

New Hampshire Lakes Lay Monitoring Program has developed a recognition system based on the total number of sampling trips performed by individual monitors. At annual meetings, monitors are recognized in the "Distinguished Service Recognition Flyer" which lists the names of monitors in the "50 Club," "100 Club," and so on.

■

The Maine Department of Marine Resources holds an annual volunteer day to recognize citizen participation and also creates written appreciation forms to mail out to all participants. At volunteer day, department water quality staff brings and serves a buffet lunch.

Some volunteers may prefer not to have any formal or public recognition at all. Respect such preferences and don't put on a show that would make such people uncomfortable. For these folks, a heart-felt thank you may be all they need in return for their hard work. For others, celebratory events may be important. It is likely that your group will have both types of people. You may not recognize all volunteers in the same way; be prepared to use a variety of means. And remember, for some – if not all members – the greatest form of appreciation might be to receive regular updates on progress being made and timely reports on monitoring results. People are participating in this project because they believe in the cause. Seeing the result of their work is a wonderful form of recognition.

[1]Adapted from **An Introduction to Water Quality Monitoring Using Volunteers**, Kathleen K. Ellett, Alliance for the Chesapeake Bay, Inc., 1993, and **Volunteer Stream Monitoring: A Methods Manual,** US Environmental Agency, 1997

CHAPTER FIVE RESOURCES

Excellent Volunteer Management Materials:

Evaluating for Action, L. Bassett, Family Community Leadership, 1985.

No Excuses: The Team Approach to Volunteer Management, ENERGIZE INC. Books.

101 Ideas for Volunteer Programs, S. McCurley and S. Vineyard, Heritage Arts Publishing Co., 1986.

Essential Volunteer Management, R. Lynch and S. McCurley.

Evaluating Volunteers, Programs and Events, S. Vineyard, Heritage Arts Publishing Co., 1988.

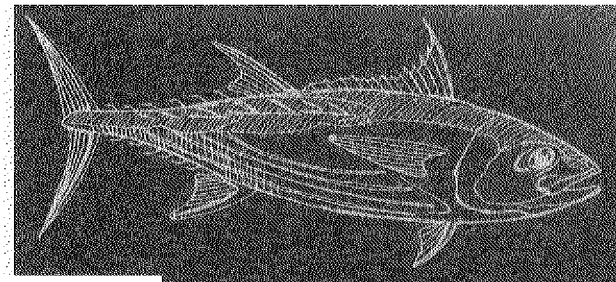
Beyond Banquets, Plaques and Pins: Creative Ways to Recognize Volunteers, S. Vineyard, Heritage Arts Publishing Co., 1982.

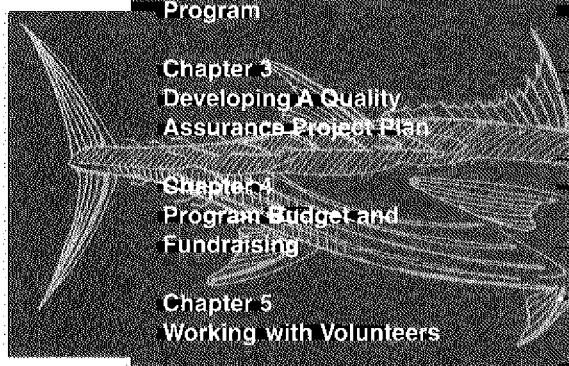
The Maine Commission for Community Service has just published the following document, posted at: http://www.VolunteerMaine.org. Go to the link below the title. It is a PDF file because of the length.

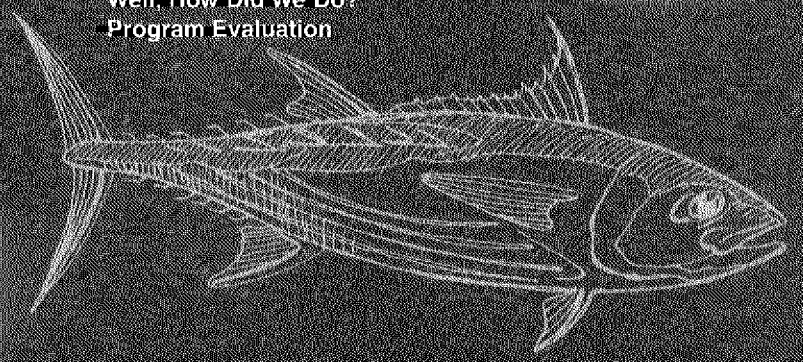
"Calculating the Value of Volunteer Services: 2001 Edition"
http://www.state.me.us/communityservice/volunteermaine/pubs_pdfs/01CalVolServ.pdf

Chapter 6

Starting To Monitor







Chapter Six:

Starting to Monitor

Chapter Six will help you:

- Conduct a preliminary survey of the study area.
- Develop a pilot program (starting small for manageability).
- Develop a risk-reduction strategy.
- Decide whether or not to invest in liability insurance.

Now your group is ready to start a monitoring program. After sound preparation, your group has accomplished the following, all of which are necessary before getting into the field for the first time:

- Defined a group vision and stated the goals and objectives of your monitoring program
- Identified data users and included them in the study design process
- Prepared a written study design
- Prepared a written quality assurance project plan
- Developed a budget, secured funding or prepared a fundraising strategy
- Obtained equipment
- Recruited volunteer monitors and provided them with appropriate program orientation and training, including an explanation of expected results.

Great! Your team will soon be monitoring and gathering the information your group wants to pursue. The next steps are to:

1. Conduct a preliminary survey of your study area; and

2. Conduct a test run of your program to hone your systems, procedures and teamwork.

The Pre-Monitoring Survey

Prior to the first field-monitoring day, it is wise to have your team conduct a preliminary survey to assess firsthand the environmental conditions in your study area. Such a survey can be repeated annually but, at the least, should be done every three years.

This is a chance for your team to start working together in the field and to get to know their watershed, lake, river, estuary or bay a little better. Perhaps program planning took place over the winter, largely preventing the group from really seeing the area. Perhaps you are working within a large watershed and with a large group of people with varying familiarity of the study area. The initial survey provides the opportunity to heighten everyone's awareness of local environmental conditions and check a number of program details, such as access to monitoring sites (e.g. maybe a site that seemed accessible in the winter is difficult to access in the summer brambles).

Some or all members of your team can be involved in this survey, depending on what information you want to collect and how many people are needed. Consider inviting others along who may not be part of your regular monitoring team but who may have much local environmental knowledge to share (e.g. town officials, representatives of environmental agencies and conservation organizations).

Depending on what you may wish to observe, you can travel by car, bicycle, foot, boat or a combination thereof. It may even be worthwhile to spend a few hundred dollars to gain an aerial view; this is optimal for observing such activities as forestry, road and highway building and others involving land use change. (You might also be able to obtain copies of current aerial photographs of your study area.) All these modes of travel may help visualize and further plan the project, including fine-tuning some logistical considerations.

Bring marine charts, enlarged topographic maps that show the entire shoreline of the waterbody to be studied, a camera and other documentation tools. Perhaps start with a strictly observational tour to get a feel for the overall ecosystem and then go back to document information that will help with achieving results. Place geographic information directly onto maps and record

more detailed information on paper or with cameras. If a global positioning system (GPS) unit[1] is available, take readings for later mapping uses. Although accuracy of GPS units vary partially due to cost, a natural resource agency in your area might have a better unit and may have personnel who could help you obtain good readings.

The types of information that can be documented during this survey include:

- General land uses (e.g. urban, suburban, rural and industrial development; roads and highways; cropland and pastures; forestry operations; parks and other protected areas; landfills, dumps and other disposal areas; sand and gravel pits, etc.);
- The location of sanitary and storm sewer discharge points and associated receiving waters;
- The location of any other pipe discharges and associated receiving waters;
- The location, extent and possible causes of observable erosion and siltation;
- The location, types and number of livestock that are or may have direct access to rivers and streams;
- The density of rural dwellings located near waterbodies, the proximity of these to the water, and other type of substrate upon which the dwellings rest (e.g. bedrock, till, etc);
- The location and nature of any major structures blocking river or stream flow;
- The location of wildlife habitat of known or potential significance that could be negatively impacted by poor water quality (e.g. wetlands, salt marshes, salmon and trout habitat);
- The location of wildlife that, itself, could affect water quality (e.g. beaver, large geese populations); and
- The amount and nature of discarded plastic and other debris found along shorelines.

PILOT PROGRAMS

Implementing a pilot program is a way to:

- Check your study design to make sure it is as conceptually and logistically sound as possible
- Check that the training volunteers received is sufficient for them to carry out correct sampling and analytical procedures (the data arising from the trial runs should be separated from the data stemming from your full-scale program)
- Hone the skills and raise the confidence of your volunteers
- Make logistical changed to run the full-scale program with greater efficiency and fewer hassles
- Examine preliminary results to assess whether chosen methodologies will consistently provide data to meet stated data quality objectives (DQOs) (if not, alter either the DQOs or methodology)
- Know how things work in practice; this should lead to better program coordination and leadership when monitoring starts in earnest and data is streaming in.

At this point, you probably will not want to collect very detailed information on all of these above considerations. Instead, plan on using this survey as a real orientation to your study area and enjoy getting to know the finer points of the region. Later, when your group is skilled at monitoring work and the program is running smoothly, you might want to consider collecting the above information by conducting a more formal and rigorous watershed survey, which requires advanced training and offers your volunteers a great opportunity for expanding their skills.

Depending on the size of your study area, the types of information you want to pursue and the number of people involved, the survey can take one, two or more days. One or two persons can be assigned the job of collating the collected information and writing the summary report, complete with maps and photos if desired. This document will provide some environmental history that could be of considerable value later on.

Starting Small: The Pilot Program

Once you are more familiar with the study area, you are ready to give your sampling program a try. At this point a number of sampling sites (or potential sites) have been identified, photographed (if possible) and marked on maps. (For information on site selections, refer to Chapter Two). Your team is familiar with the basic process you will be following to collect, transport and analyze samples. The team is also more familiar with the local ecosystem and its land uses and environmental setting. Team members may be anxious to get the monitoring underway.

Although it might seem appropriate to start monitoring all sites at once, it is advisable to choose only a few sites, perhaps two to six, to begin with. Conduct some trial sampling runs (two or more; some groups implement a whole sampling season on a trial bases, depending on how many kinks need to be ironed out). Running a pilot program might seem like one more step keeping you from doing the real thing. However, such a program can reveal sampling, analytical, equipment, logistical or other problems that are better resolved when the program is small-scale rather than large-scale, thereby potentially saving time, money and frustration.

Expect to make a number of program adjustments following the field trials. Having done so, your group is ready to begin monitoring!

Liability Insurance for Your Volunteers

Related to safety guidelines and procedures is the issue of whether to provide liability insurance for your volunteers. Liability insurance can cover two types of things: damage to private property by a volunteer (such as backing into a landowner's fence by accident); and injury to the volunteer when conducting work for the program. Each state has different liability laws for volunteer efforts. The best place to obtain such information is from your jurisdiction's attorney general's office.

Each program will need to decide whether to purchase specific liability coverage. Some programs opt for this as a necessary cost of having a volunteer effort, while other programs opt not to have such coverage. Some programs have volunteers sign liability waivers annually to be kept on file in case of an accident. If you chose this option, keep in mind that waivers are not foolproof and that you should consult a lawyer for assistance in designing your waiver.

FIELD SAFETY NOTES

Before sending people out in the field, make sure to explain any program field safety suggestions or requirements. Consider these common field safety rules:

- Have volunteers work in pairs, particularly at sites that may have one or more hazards (e.g. swift currents).
- Have volunteers check in before leaving for the sampling site and upon returning, or let someone know where and at what time they will be sampling, and at what time to expect them back.
- Explain to monitors that if conditions are unsafe, based on their own judgment, they should not sample (e.g. severe rain with associated bank destabilization/erosion or flooding; high winds with big waves; icy or snow- covered banks and beaches; severe fog for safe boat travel).
- Provide each team of monitors with first aid kits to carry with them to sampling sites.
- Provide appropriate training to monitors and written field information regarding first aid procedures associated with the spillage of any field kit chemicals on skin (the actual incidence of this happening are small, but safety procedures still need to be available).
- Take sufficient fresh water into the field for use in rinsing in case of chemical spillage.
- Have personal health data on file and available in the field in case of an emergency.
- Make sure samplers know where the nearest hospital or medical facility is located.
- Avoid driving on certain roads or driveways where there is a possibility of getting stuck (i.e. in ground made soft by heavy rain or melting snow).

Regardless of whether you choose to obtain insurance or not, every program is strongly encouraged to have a sound risk reduction strategy to minimize the risk of injury from occurring. For volunteer monitoring programs, some risk reduction measures include:

- A thorough review of safety guidelines (such as those outlined above) at least annually.
- Explanation of chemicals used in any analyses, providing proper safety equipment for such chemicals, and having emergency information on chemical treatments on hand at all times.
- Setting a sampling policy that asks the volunteers to cancel sample runs on days that they feel are a safety risk.
- Assuring that site access has been obtained from landowners and that no major geographic changes have occurred over the winter that might make the site a high safety risk.

When considering options for insurance coverage, be sure to talk to other monitoring groups who have addressed this issue. They will probably have some good advice and contact information for you as you think this through for your own program.

1 A global positioning system unit is a device that enables one to identify, with a high degree of precision thanks to satellite technology, one's exact geographic position, as determined by coordinates. These hand-held units are essential for environmental work requiring high geographical precision.

CHAPTER SIX RESOURCES

Information on Pilot Projects and Preliminary Surveys

Volunteer Water Monitoring: A Guide for State Managers, U.S. Environmental Protection Agency Office of Water, Washington, DC, EPA 440/4-90-010. August 1990, 78 pp.

Resources on Liability

Contact your State Attorney General's Office.

Nonprofit Risk Management Center, 1001 Connecticut Ave., NW, Suite 900, Washington, DC, 20006; ph 202/785-6891.

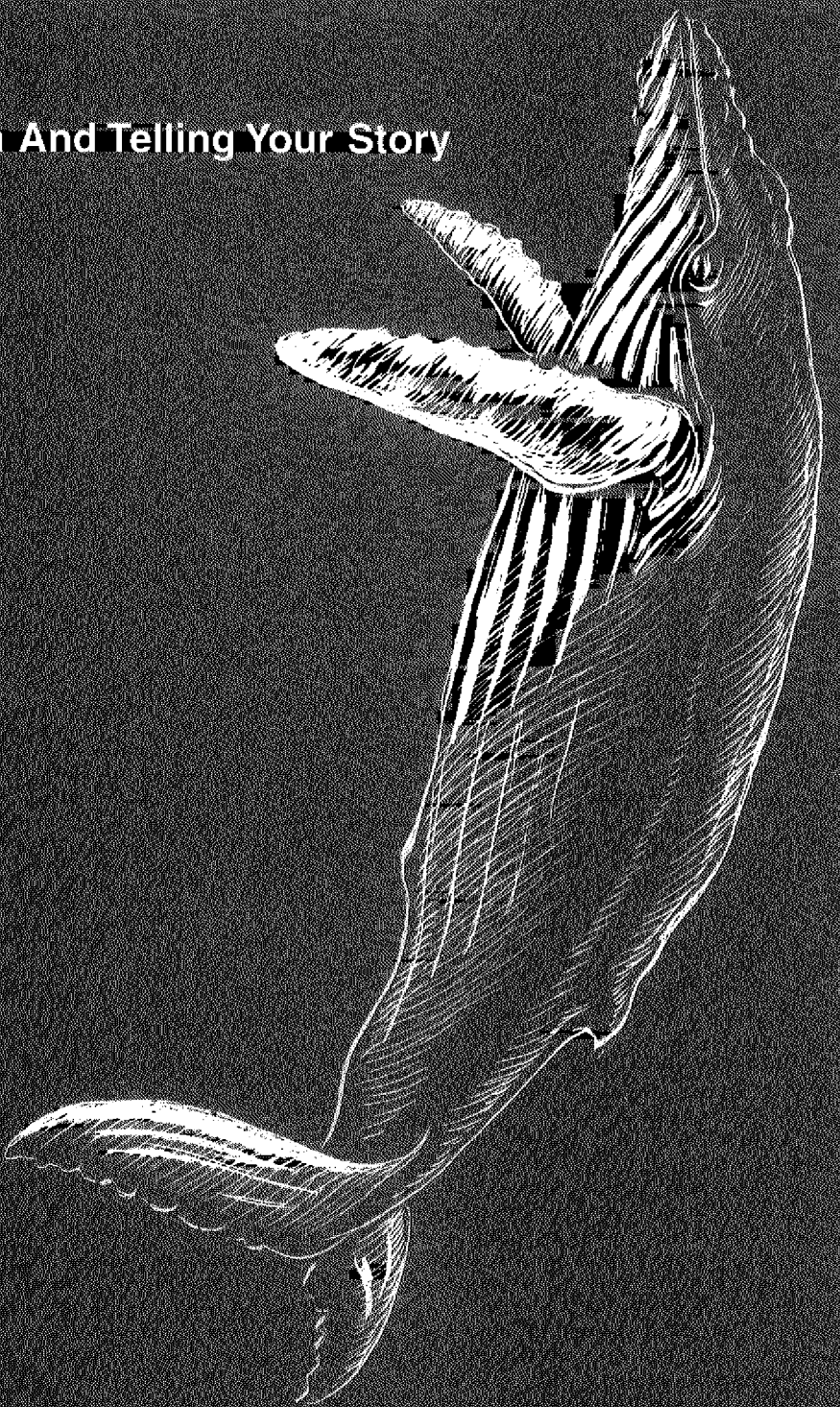
"Are You Covered", E. Ely, *The Volunteer Monitor,* Volume 8, No. 1, Spring 1996.

The Maine Commission for Community Service has just published the following document, posted at: http://www.VolunteerMaine.org. Go to the link below the title. It is a PDF file because of the length.

"What Volunteer Coordinators Need to Know ... Volunteer Liability in Maine"
http://www.state.me.us/communityservice/volunteermaine/pubs_pdfs/mainevol.pdf

Chapter 7

Managing Your Data And Telling Your Story



Chapter Seven:

Managing Your Data and Telling Your Story

Chapter Seven will help you better understand how to make your data tell a story and find the perfect reference to make your data work for you.

This section is meant to introduce you to the process of data management. It is a critical part of your monitoring effort. To more effectively look at your data, contact the University of Maine Knox-Lincoln County Extension Office, and request a copy of **Data to Information: A Guide Book for Coastal Volunteer Water Quality Monitoring Groups**, by Geoff Dates and Jeff Schloss. (See Chapter Seven Resources.)

When your group collects field information and records it on field data sheets, do these sheets stay in a pile or a box somewhere, or are you using the data to tell a story about the watershed you are studying? In the study design process, time is spent defining the parameters you want to monitor and how often and from where you need to collect samples to get the data you need. The process does not end there, however. The next step is to turn this raw data into a story.

The process of data management appears to be simple. Data is collected, entered into a computer database, and then validated for accuracy. A preliminary summary of the findings is created, conclusions are made and recommendations are considered. The information is then presented to different audiences who may use the data. Sounds simple. Yet data management can be a stumbling block for many programs, large and small.

How to use the data gets back to why your group is monitoring. You are interested in protecting some aspect of the environment. Great! But the actual monitoring part (the data collection) is only one part of the overall process. Without DOING something with the information you collect, you run the risk of not knowing what is really going on in your study area.

Consider this example. Suppose a group collects dissolved oxygen samples twice a month from April to October and that the results seem the same from one sampling period to the next. Information is recorded on data sheets, which quickly mount into an intimidating pile. No one is inputting any data because the results do not appear to warrant data management. Finally, someone crunches the data into a database and begins analyzing the information. Surprisingly, a steady decline in dissolved oxygen at two adjacent sampling sites is revealed. This decline would otherwise not have been noticed without putting the numbers together.

THE IMPORTANCE OF LONG-TERM BASELINE DATA COLLECTION

Although long-term monitoring for basic parameters might lose its appeal on occasion, there are many important reasons to continue collecting this information:

1. Chances are, you are the only organization collecting this information. Most state/provincial monitoring programs have been severely cut back in the past decade, leaving large holes in data concerning many environmental parameters.

2. Your data might be the only information available to planners should a big development project get proposed in your study area. Without sound and available information, your planning board may not be able to make a decision that is good for the environment. You could save your community environmental degradation or be able to document environmental changes associated with development so that remediation can occur.

3. Collectively, Gulf of Maine (GOM) citizen data could aid scientist in getting a better understanding of coastal habitat health.

4. Collectively, GOM citizen data could point to the top potential polluters to the coastal area.

The list goes on. Baseline data collection is important. Before you decide to give it up, make a thorough and honest assessment: are we doing everything with the data we collect to ensure it is its most useful? If you are not managing your data or sharing it with appropriate end-users, perhaps this should be tried before switching to something new.

THE DATA MANAGEMENT, INTERPRETATION AND REPORTING PROCESS

There are five steps to turning your raw data into useful information.

Step 1. **Data entry and validation:** In this step, data is entered into a computer database program for storage and information retrieval. Entry involves that actual task of entering the data from field or lab sheets; validation refers to checking the entered data against field and lab sheets and checking whether recorded numbers seem reasonable.

Step 2. **Data summarization to help with interpretation:** The entered data is arranged in a format that allows for the dataset to be viewed as a whole in interesting and/or informative ways. Summarization might include simple statistical analyses, summary tables or graphs.

Step 3. **Data interpretation:** The summarized data is looked upon in the context of study design questions. The answers to these questions become findings and conclusions, from which recommendations for action or for further study can be developed. This is where you take the "raw facts" and turn them into the story you think these facts tell.

Step 4. **Data summarization to tell a story:** Data is arranged to highlight findings, conclusions and recommendations. Tables and graphics with accompanying text are created and presented orally or in print to explain the study, methods and results. Information presented is geared to the nature of one's audience (i.e. perhaps more technical for data users, more general for the public).

Step 5. **Create written reports:** In writing, summarize the monitoring program and your findings and conclusions. Make recommendations for future study or action.

One of the most commonly asked questions by citizen volunteers is "What happens to my data?" Paying attention to data management not only helps minimize participant frustration and dropout but also has the reverse effect. It generates excitement in your group's valued volunteers.

THE BENEFITS OF DATA MANAGEMENT

- Participants can see results of their work.
- Environmental trend information is revealed, sometimes enabling preventative action to be taken before a trend worsens.
- You are discovering findings that may lead to action.
- Expressing data through tables and graphs helps ensure interesting presentations.
- In sharing your findings, your community will learn about local water quality.
- In presenting your findings, you generate publicity for your group.
- Findings that lead to recommendations can boost funding for further action and study.

Although all people in your group should be aware of the critical role data management plays, it is helpful to have one person with oversight responsibilities for the process as a whole. Find someone with interest in this aspect of the project and get to work. And remember, it is easier to deal with data as it comes in than to be faced with a full day of doing nothing but number crunching. Once data starts to pile up, it is easy to find ways to avoid the data management task.

Your group's chief data management person should also conduct data validation *and* make sure that the results meet your stated data quality objectives (DQOs). The DQOs you developed during the preparation of your quality assurance project plan need to be regularly met. If they are not and you've tried to correct the problem, you probably need to revisit the DQOs you created. Check the methodology and equipment to make sure they're capable of meeting stated requirements and, if necessary, adjust your DQOs to meet the capabilities of your program team, sampling and analytical methods and equipment.

CHAPTER SEVEN RESOURCES

To fully explore the data management process and apply it to your program, obtain a copy of:

Data to Information: A Guide Book for Coastal Volunteer Water Quality Monitoring Groups, G. Dates and J. Schloss, University of Maine and New Hampshire Cooperative Extensions, 1998. To receive a copy, contact Esperanza Stancioff, UMCE, PO Box 309, Waldoboro, ME 04572.

The Volunteer Monitor, Volume 7, No 1, Spring, 1995, which is dedicated to the subject of managing and presenting your data.

"The Basics of Quality Control," M. Mattson, *The Volunteer Monitor*, Volume 4, No. 2, 1992, pgs. 6-8.

Data Quality Objectives Workshop, 1987, U.S. Environmental Protection Agency (USEPA), Washington, DC.

Ready, Set, Present! A Data Presentation Manual for Volunteer Water Quality Monitoring Groups, J. Schoen, M-F. Walk, and M.L. Tremblay, Massachusetts Water Watch Partnership, University of Massachusetts, Amherst, 1999, Website: http://www.umass.edu/tei/mwwp/datapresmanual.html.

Metadata Information

Federal Geographic Data Committee: http://www.fgdc.gov/metadata/
U.S. Geological Survey: http://geology.usgs.gov/tools/metadata/tools/doc/faq.html#1.1

"Study Design: The Foundation of Credibility," G. Dates, *The Volunteer Monitor*, Volume 4, No. 2:1, 1992, pgs. 13-15.

"Interpreting Your Data," G. Dates, *The Volunteer Monitor*, Volume 7, No. 1, 1995.

"Designing a Data Management System," F. Lease, *The Volunteer Monitor*, Volume 7, No. 1, 1995.

"Special Topic: Managing and Presenting Your Data," E. Ely, ed., *The Volunteer Monitor*, Volume 7, No. 1, 1995.

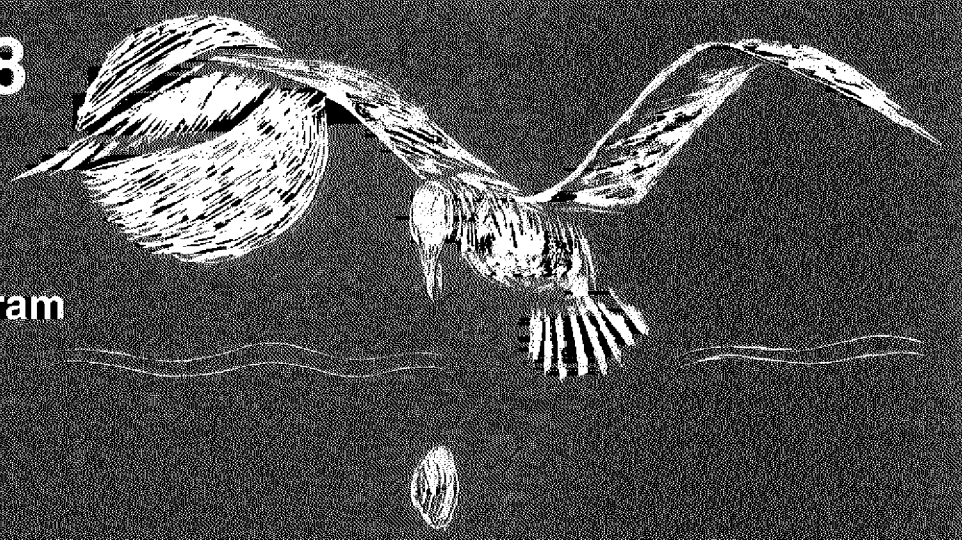
"Seize the Data," S. Hubbell, *The Volunteer Monitor*, Volume 7, No. 1, 1995.

"Data Screening and Common Sense," J. K. Miller, *The Volunteer Monitor*, Volume 7, No. 1, 1995.

"Variability Happens: Basic Descriptive Statistics for Volunteer Programs," J. Rector, *The Volunteer Monitor*, Volume 7, No. 1, 1995.

Chapter 8

Options for Implementing a School-Based Monitoring Program



Chapter Eight:

Options for Implementing a School-Based Monitoring Program

Chapter Eight will help you:

Start to plan for a school based monitoring program

Decide an approach (curriculum based or after-school club)

Student as Educator

A Mount Desert Island (MDI) High School senior student was at the Bar Harbor, Maine town dock collecting a phytoplankton sample for part of her school's water quality monitoring project, "Sophomores for Cleaner Shores." While she was collecting a sample, a man walked up with a net and asked her what she was doing. She explained that she was collecting a phytoplankton sample to look for potentially toxigenic phytoplankton. When she stood up, he saw an ID tag with a state agency and university logo.

The man exclaimed, "So you work for the state?"
The student answered, "No, I am from the high school."
"So you teach at the high school?" the man asked.
"No, I am a student," the student replied.

The next thing MDI biology teacher Jane Disney knew, the man was asking her and her students for everything they knew about phytoplankton. He was very excited to learn of their program and work with phytoplankton.

The man turned out to be a professor who, after several years, returned to teaching a phytoplankton ecology course at a local college. He invited the student he met on the dock to teach a section of his college course.

This is just one example of the unusual and extremely enriching benefits that a school-based monitoring program offers to students and, in this case, a local college. Students from communities around the Gulf of Maine participate in such programs and many go on to environmentally oriented college programs or pursue a marine science career. Participation in a "real" community science project, where students learn about study design, data quality issues, sample collection and analysis, data management and report and presentation creation, provide students with skills and knowledge that they can take with them to college and/or work.

Environmental monitoring allows students to see the real world application of things they previously only learned in the classroom. It gives students a hands-on experience in real life science and problem solving. Educators, school administrators and communities who currently support such projects in their Gulf of Maine classrooms should be commended for taking on something so valuable to our children and communities.

Considerations for Starting a School-Based Program

Implementing a school-based water quality monitoring program offers both unique challenges and unparalleled opportunities for educators and students. For educators, it means finding a way to fit a non-traditional teaching program within an established curriculum style. For students, it offers an experiential, relevant community-learning project. With few exceptions, both educators and students feel such a program is rewarding and adds a great deal to classroom-based learning.

There are a few approaches one can take to implement a school-based program. It can be incorporated directly into the curriculum of an existing class (usually a science class); it can be the basis for forming or becoming part of an existing environmental club; and it can be student-organized and run or teacher-directed. Each option differs in delivery. The approach that works for you will depend on the support of the school, the community and flexibility of existing teaching styles at a given school system. The following chapter offers examples of two such alternative styles of incorporating monitoring programs into school activities.

Regardless of approach taken, two things are critical: to involve school officials and administrators in the planning process and to invite local organizations to participate or become a partner in the program. Having community support can be critical to the teacher and students, and might influence administrative support; having administrative support helps with funding, curriculum options and school scheduling.

Implementing a School-Based Program as Part of a Current Course Curriculum

Many school systems have adapted very well to the unique needs of incorporating a community science

project into a regular class. Classes that most frequently include water quality work are biology, chemistry, marine biology, marine resources and environmental studies. In a few instances, water quality monitoring programs are incorporated into history or social studies classes or into a combination of classes, such as biology and speech or social studies.

If you're thinking of starting a school-based program, the information in this manual concerning study design, data quality and program organization applies. However, funding and human resource issues might differ. Many school-based programs must obtain funding or approval for funding through established school channels. Human resources will be primarily students and committed parents or community members. Several considerations unique to a school-based program include transportation to and from school, scheduling of sample collection during the school day or after school, and managing equipment and data while keeping 20-30 students organized and focused. When considering a program:

- Find out what options exist for transportation: will the school supply you with a bus to transport students? Will you need to organize community members to do this?
- Is there a day of the week that works best in terms of scheduling (for example, does one day have longer class periods)? Is this day conducive to handling samples 24 hours later?
- Is there a segment in the existing curriculum under which monitoring is justifiable, or does a new segment need to be created?
- Does the school system tend to support and encourage community outreach projects?
- Will the students be able to monitor during the summer or will the group need to involve more community volunteers?
- Will the current system of student performance evaluation work for this project, or will a new method need to be designed and approved?
- Will the school support teachers in obtaining the extra training required to run such a program?

Other questions might concern fitting the project in, or whether the project enhances educational opportunities for the students. The answers to these questions can be gathered from experience: teachers throughout the Gulf of Maine region have successfully implemented school-based monitoring programs, which provide excellent interdisciplinary learning experiences for their students. (For resources on starting a school monitoring program, see the resource section at the end of this chapter.) The examples in this chapter offer insight into two approaches to involving students in environmental monitoring projects.

Reach out to other teachers who have been involved in water monitoring, and ask how they do it and what works and what does not. Other teachers will have great insights on stumbling blocks and successes. They can also remind you that while you may be isolated at your own school, there are many others out there doing the same in their school. Regardless of the approach that seems to work best in your school environment, be assured that you are venturing into a very fun and rewarding educational experience for you and your students.

Organizing a School Based Program into an Environmental, After-School Club

Another approach used in several schools is to either incorporate the monitoring program into an existing environmental club or to start a club to support monitoring activities. This approach is most useful in systems that do not have long class periods or in which justifying inclusion of the monitoring program within the existing curriculum is difficult. This approach might also draw more diverse students since it is not class specific. One drawback to this approach however, is that it might conflict with other after-school commitments such as sports, drama, or work. Perhaps students with free or study hall periods could get involved in such a program. Again, the options will depend on individual school structures and scheduling flexibility.

Example of a School-Based Curriculum Program: Mount Desert Island High School's Sophomores for Cleaner Shores

Background

In partnership with Frenchman Bay Conservancy, which conducts monitoring on the other side of Frenchman Bay, Mount Desert Island (MDI) obtained a Shore Stewards Grant in 1993 to begin a long-term monitoring program. Part of the Clean Water/Partners in Monitoring Network, MDI began monitoring for fecal coliform bacteria, dissolved oxygen, pH, temperature, salinity (in 1993), chlorine (in 1996) and phytoplankton (in 1997). In addition, students have been trained to conduct shoreline surveys by the Maine Department of Marine Resources and are in their third year of a survey of Somes Sound to identify sources of fecal contamination to the Sound. In 1996, a second teacher was trained for the water monitoring project, and as a result, every sophomore who takes a biology class now is involved in water quality monitoring. In the winter of 1997-98, the school agreed to fund the purchase of a second lab set-up and field equipment for this teacher.

Project Organization

The two teachers do not incorporate the monitoring program in the same way. However, they do share common objectives and goals. The method the first teacher started with was not necessarily a good fit for the teaching styles of the second teacher. The project organization highlighted here is an approach used by a sophomore biology teacher at an MDI high school.

Class Structure

MDI high school has alternating day schedules so that each biology class has one long class on one day and a short one on the next day. Two sophomore biology classes are involved in the program. The students sample on their long day and leave their samples in the classroom. The other class analyzes them later in the morning. On the next long day, the class that previously analyzed samples now collects them and the other class analyzes. This system makes both classes interdependent and offers some organizational challenges. This was the solution however, for how to share equipment and analyze samples within holding time limitations. It has worked well. The school provides a bus for this program and the teacher accompanies students to the field to collect information. In the past two years, the program has gained support in the form of College of the Atlantic (a 4-year college located in Bar Harbor, Maine) students involved in community education projects.

Project Structure

In the spring of 1996, the delivery structure of the monitoring program was changed. Instead of having a large number of students do everything, the teacher broke the components down into monitoring subcommittees and had fewer students do more in-depth work in one aspect of the monitoring program. Students all received introductory lessons in water quality monitoring research study design and field and lab techniques and were expected to learn the science of this work just like any other section of biology class. However, each student was allowed to choose from the below subcommittees:

- Sampling on Western Bay
- Shoreline Survey on Somes Sound
- Telecommunications with other Shore Stewards Programs
- Community Water Monitoring Fair
- Alternative Waste Water Treatment vs. Traditional Waste Water Treatment
- Non-Point Source Pollution
- Public Relations: Newsletters, Press Releases, Final Report of the State
- Chlorine Study in Seal Harbor
- Classroom Data Organization

This list was presented along with a paragraph description of each subcommittee and work to be done. Students were encouraged to pick a subcommittee based on interest and not just presence of friends. Students learn, through experience, that a successful monitoring project entails many different components working together towards a common goal.

Such an approach might be more appealing to a teacher who does not want the program to bend to meet curriculum guidelines or who wants more freedom in his/her approach to the program. Such programs tend to encourage greater student leadership and direction, as there are no classroom constraints on the program (for example, the stress of being graded).

CHAPTER EIGHT RESOURCES

"School Based Monitoring", The Volunteer Monitor Newsletter, Volume 5, No. 1, Spring 1993.

Example of an After-School Program: Camden Partners in Monitoring Program

Camden Regional High School, in Maine, has had an after school club-based monitoring program since 1993. It is of interest due to the high level of student decision-making and management of the program. The students are studying the entire Megunticook Watershed from the ponds to the lake to the river and into the harbor.

Each week organized teams conduct field sampling and lab analysis for the watershed. On the following day the student volunteers gather to finish the analysis, enter data and have a pizza party!

They conduct all the field monitoring and laboratory analysis on 40 sites, presenting their results to various groups including the Coastal Mountains Landtrust, the town of Camden and the Penobscot Bay Stewards. The level of commitment and success of the group has been due to the ownership felt by the students of the program and the dedication of the teachers involved.

"Water monitoring is a way for me to see my friends, be outside, listen to music, and learn about water quality. I am proud to know what's going on in our watershed. I am lucky to be able to teach people about something that affects each of us."

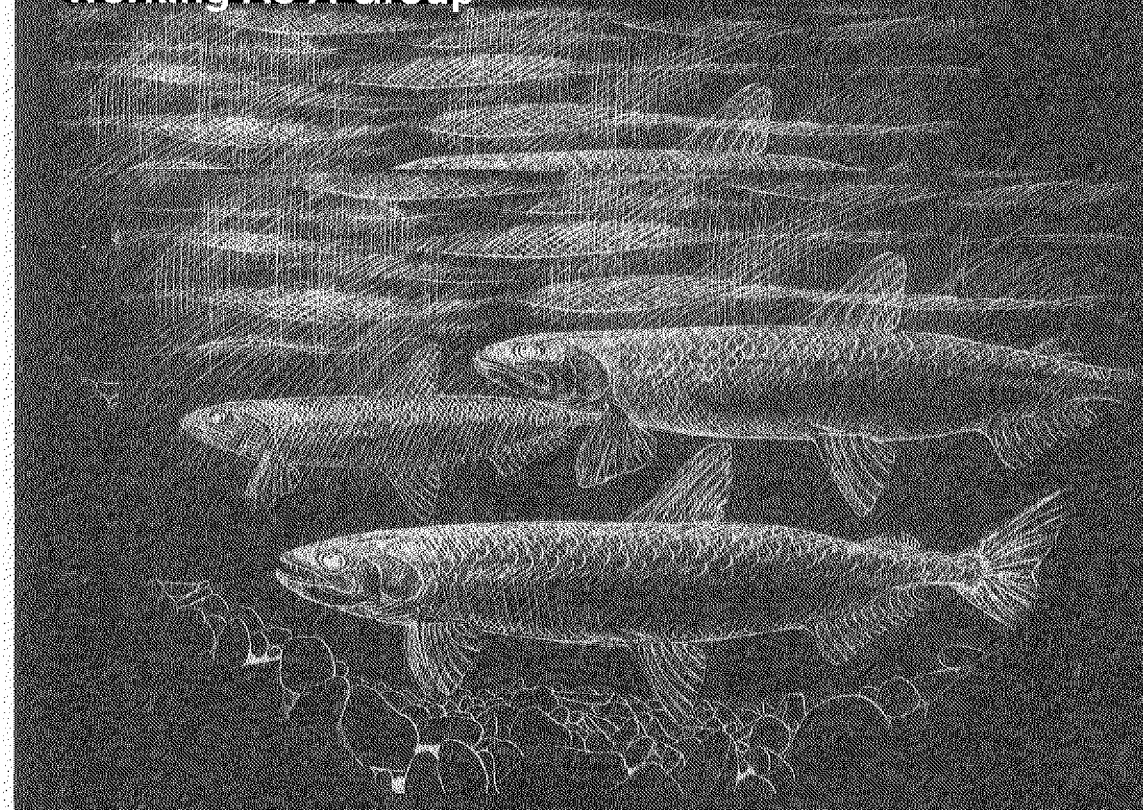
Sarah Mattox, Camden High School student.

"Water monitoring allows me to be able to use and expand my knowledge, in the service of a beautiful place that I love, in the company of dedicated people of all ages who are fun to be around—it just doesn't get any better than this."

Sue Klemmer, teacher and program facilitator, Camden High School.

Chapter 9

Working As A Group



Chapter Nine:

Working as a Group

Chapter Nine offers some guidelines and suggestions for:

Assessing your role as a leader or co-leader of the group.

Building a group.

Recognizing group stages.

Identifying tasks and matching skills with responsibilities.

Delegating responsibilities.

Becoming an effective group.

Communicating effectively in the group.

Managing conflict within the group.

Participants bring diversity to a group with their individual values, beliefs, education, personal experience and motivation. These variables will affect the dynamics among members of the group and for the group as a whole. Working in a group setting is not always easy, particularly when a group is striving to accomplish ambitious things. Successful volunteer monitoring programs depend on good group dynamics, with each person doing his/her part to achieve results. The system must run smoothly.

YOUR ROLE AS AN EFFECTIVE LEADER/CO-LEADER

The word "leader" connotes power, prestige and authority to many people. However, there are many competent leaders who do not have these characteristics or do not value them. A better understanding of leadership is to view leading as an interaction between designated leaders and group members. The group-centered approach to leadership is based on mutual responsibility and includes sharing power and authority. It is an activity, not an attribute. Most importantly, it can be learned.

Leadership is
a shared function of the group;
service and assistance to the group.

QUALITIES OF A SUCCESSFUL LEADER

The good leader helps the group examine the situation, the task and the skills needed to work together. He/she acts in a manner that will help accomplish the group's goals and objectives. A good leader:

- Is willing to work.
- Cares about others.
- Recognizes the need for goals and helps the group establish meaningful goals.
- Maintains a flexible and open atmosphere.
- Asks questions which stimulate group members to participate.
- Obtains maximum participation from each member.
- Keeps group members on track.
- Is open-minded.
- Is a good listener.
- Assists the group in managing conflict.

Closes discussions effectively.

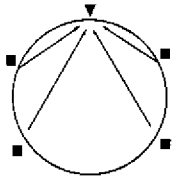
Leadership requires
active listening by both leaders and members;
attention to what is happening in the group.

Leadership involves
building a highly functioning group, not a collection of individuals.

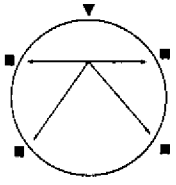
An important key to successful leadership is to know *how, when and how much* of what leadership style is needed in a particular situation. The choice depends on the judgement of the individual in the leadership role. To work effectively in a volunteer monitoring group, it is important to know the different leadership styles available to you in any given situation.

TYPES OF LEADERSHIP STYLES

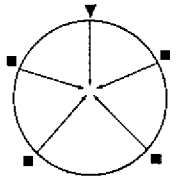
The following illustrations show how styles or leading must change depending on the purpose of the meeting or upon the particular task. The leader is designated by the triangle; members are indicated by small dots around the table.



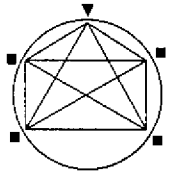
Information Giving: The leader shares information with all the members.



Information Collecting: The members of the group give information to the leader.



Decision Making: All members and the leader give their individual ideas.



Problem Solving: The communication channels are open and all members of the group can share information with all other members.

Effective leaders are familiar with all types of leadership styles and match their style to the specific needs of the group. A leader attempts to foster a climate for critical, creative and reflective thinking. In other words, the effective leader can identify and select the best types of leadership for the situation. Which is your preferred style?

It takes continual practice and effort to develop your leadership skills. You might want to take a look at the knowledge, skills and abilities that you currently have. The worksheet in Appendix 9A, "Leadership Competencies" can help you identify what you bring to your role. It will also help you know which skills you want to deepen and develop. Starting with the tool, you can outline steps to take so that you can enhance your leadership skills.

BUILDING A GROUP

A collection of individuals is not a group at its first meeting. It takes time to build the cohesiveness and team spirit that characterize a group. The group knows it has become a unit working together when:

- Members interact freely.
- One common purpose or several goals has emerged.
- Each person has a role within the group.
- Synergy occurs (the value of being part of the group is greater to the individual than being separate).

When a new group is formed, members find themselves in a strange and unclear situation. Each feels uncomfortable. Each knows who they are as individuals but not in relation to the others in the group. Members may not be certain of their role within the group. In previous groups, they understood their role—chairperson, committee member, or financial advisor, for example. What will it be in this new group? Time will tell.

New group members have fears of not being accepted and of being left out. Some fears grow out of being liked or disliked and uncertainty of how to present oneself to be liked and not rejected. Other fears come from wanting personal ideas to be accepted by the group. Concern about acceptance and identity create tensions and uneasiness.

To facilitate cohesiveness, a leader plans team-building activities. These activities help establish a climate of trust and reduce the level of fear within groups. It can reduce tension and increase acceptance levels. Members begin to establish their group identity. It is fun when done with enthusiasm and purpose.

People work together better when feelings are recognized and validated. The first crisis most groups face involves the ability of two members to trust each other. Here trust means "I have faith in your ability to do well the job you agreed to do." When individuals learn to trust each other, progress is made on the important tasks. Trust builds the hope of support and acceptance.

24 Things That Build a Group

1. Humor
2. Starting on time
3. Short meetings
4. Fun
5. Compromising
6. Common goals
7. Enthusiasm
8. Cooperation
9. Assigning a leadership role on a temporary basis (rotation facilitator)
10. Having clear goals that are understandable by all
11. Alternative ideas
12. Consensus decision-making
13. Respect
14. Defined roles
15. Commitment
16. Flexible structuring
17. Support from others
18. Shared leadership
19. Initiative
20. Sensitivity to people's differing needs
21. Trust
22. Balance between task and relationship
23. Listening
24. Follow through and accepting responsibility

25 Things That Block A Group

1. Not listening
2. Unclear issues
3. Disorganized
4. No facilitator role
5. No defined goals and objectives
6. Not buying into the goals and objectives
7. Not being involved in decision-making
8. Impatience with the group decision-making process
9. Being afraid to speak up at a meeting because of what others might say
10. Using words/ jargon some members might not understand
11. Lack of information
12. Suppressing conflict
13. Rejecting other's ideas without hearing them out
14. Animosity and dislikes in the group
15. Time pressures
16. Outside pressures
17. Ego
18. Pushy behavior
19. Hidden agenda/self interest
20. Lack of well-defined roles
21. False humor or too much humor
22. Inflexible group structure
23. Self-interest
24. Lack of planning
25. No prepared agenda

It is important to start team-building activities immediately and continue them throughout the life of the group. Effective groups and group members understand their identity, accept each other for who they are and trust each other to do the tasks needed to carry out the group's vision, goals and objectives. Appendix 9B offers several team-building activities that you can easily incorporate into your meetings. Familiarize yourself with one of them so that you can easily carry it out at your first meeting. Use others as you continue to meet and work together.

In the early stages of development, teams may also need some added structure. This may involve:

- Deciding how long meetings will last.
- Development of agenda of items to be covered.
- Develop priority in which items will be dealt with.
- Assignment of other team roles, such as facilitator and decision recorder.
- Determine how decision-making will take place (consensus or voting).
- Develop evaluation of the group process and leadership.

Getting the group to discuss and agree on team meeting guidelines or group rules gives them experience in working as a group, and also helps members feel that they are really an important part of the team. (See the Appendix 9C for a beginning list of guidelines and ground rules.) Sometimes, groups will need extra help. If your group isn't beginning to work well together by the second or third meeting, it might be helpful to do some additional team-building exercises or devote some time at the meeting to talk about what is going on in the group.

Group Stages

Just as individuals go through predictable stages of growth depending on age and experience, groups go through predictable stages. Awareness of these stages can help groups work better. Listed below are short descriptions of five stages of groups. Also included are characteristics of each group and strategies to help navigate through them.

Stage 1: Gathering

The first stage is when group members begin to get comfortable and feel included. Gathering sets the stage for psychological membership and connecting with others.

Gathering Stage Characteristics	Skills Needed
No cohesion as a group.	Able to facilitate introductions and team-building activities.
People will have different histories, backgrounds, agendas and interests.	Able to research local background and history, and be able to speak the language of the group.
People may assume that they are more different than alike.	Good listening skills.
People may not know each other.	Able to help people form relationships.
People who know each other may cluster together.	Able to help people examine and relate to their similarities and differences.
Genders may tend to stick together.	Able to put people at ease and draw them out.
People will vary in their levels of comfort with the group and their participation in the group, anywhere from feeling warm and open to cold and distrustful.	Able to help people build trust. Set a warm, inviting tone.
No shared vision, goals or objectives.	Use methods suggested in Chapter 1 to gain consensus on the purpose of the group.

Stage 2: Groping

This is an awkward time. Questions are plentiful. What's OK here? What's not? Why are we here? What are we going to get done?

Groping Stage Characteristics	Skills Needed
People select in or out of the group.	Clear communication.
Inquisitiveness.	Review agenda.
Sub-alliances are formed around similar interests.	Listening.
People want to know expectations, roles and responsibilities.	Clarify expectations.
Need for guidelines/ground rules.	Establish guidelines/ground rules.
Conflict between lofty ideas and action-oriented ideas.	Clarify issues.
Trust begins to develop.	Define what one brings to the group and to the issue.

Stage 3: Griping
Every group, especially a new one, goes through a period of struggle before they really can get to the work.

Griping Stage Characteristics	Skills Needed
Power groups form.	Share power, co-lead and/or rotate leadership.
History comes out.	Ensuring everyone is heard and affirmed.
Unloading.	Clarify and remind people of guidelines/ground rules.
People may tune out or even drop out at this stage.	Clear structure, agendas.
Power struggles.	Active listening and reflection.
Not so polite as in earlier stages.	Model honesty.
Expressing dislikes more often.	Directness and openness.
Boundaries and conditions are being stated.	Take risks.
Factions, cliques, alliances forming.	Ensure safety of group members.
Hidden agenda come up.	Use a "storage bin" for things not directly related to agenda.

Stage 4: Grasping
This is the stage where one takes a deep breath and decides to live with some things. Grasping is the good feeling stage. People look forward to seeing each other.

Griping Stage Characteristics	Skills Needed
Acceptance of members.	Facilitation skills.
Openness.	Stick-to-itiveness.
Group is moving into the work.	Staying on task.
Re-focusing.	Management skills.
Re-assessing.	Strategic planning.

Stage 5: Grouping

The group is ready to take on issues, define and solve problems. The group tackles ways of implementing and evaluating solutions.

Grouping Stage Characteristics	Skills Needed
Personal alliances/relationships formed.	Good communication skills.
Ability to compromise.	Maintenance of process and guidelines/ground rules.
Clear and common understanding of issue.	Awareness of what is needed at any point in time.
Sharing power and leadership.	Good conflict management skills.
Willing to take on new challenges.	Self-awareness. Intuitive sensitivity to group members.
Each person contributes according to strengths and is supported in "growing edge" work.	Acknowledgement of endings. Celebrating accomplishments.
Feel good about accomplishments and each other.	Acknowledge Accomplishments.
Diversity accepted.	Acceptance of all members.
High energy.	Enjoy the flow.
Humor.	Use appropriate humor.

IDENTIFYING TASKS AND MATCHING SKILLS WITH RESPONSIBILITIES

Once the monitoring program has a clearly defined purpose (as expressed in your vision statement), a list of goals, and an idea of how to realize these goals, create an action agenda for the group to follow. Based on the interest, skills and experience of each group member, the agenda needs to invite group members to volunteer for discrete, obtainable project tasks.

Responsibility for completing various tasks can be delegated to one or more individuals. Shared leadership becomes possible when group members develop a sense of trust and collective responsibility. Team members must be allowed to give and seek information and to express ideas and opinions. In the absence of this, information, ideas and energy that would otherwise benefit the group are lost. Members need to be encouraged to assume leadership roles based on program needs, the individual's awareness of those needs, and their ability to fulfill those needs. Leadership in this sense is a function of what a person does and not a reflection of their position or title.

It is difficult for one person to try and meet all group needs on a regular basis (nobody should even try!). By encouraging group members to share this responsibility, their experience in the group will be more rewarding and the group will benefit. To create an atmosphere of shared responsibility, encourage all group members to do the following:

- Hear and accept other points of view (listen).
- Be friendly and praise others (encourage).
- Seek common ground (promote harmony).

- Reduce formalities and differences in status; see humor in a situation (a spilled sample, forgotten sample, for example); put others at ease (relieve tension).
- Add facts or give examples (elaborate).
- Maintain a code of conduct (set standards and expectations).
- Enable everyone to have a say; to feel part of the group (help).

Creating an atmosphere of trust that encourages people to adopt such behavior fosters cooperation and cohesiveness within the group. People will tend to put their best efforts forward because they feel connected to the group, its members and the vision. Lastly, they will feel appreciated in such an atmosphere.

After making sure each individual understands their role, bring all volunteers together and have them introduce themselves and explain their respective roles. Use your organizational chart to show participants where they fit in the overall program. Keep a copy of current position descriptions on hand so that everyone can refer back to them on occasion. If there is confusion or straying from assigned responsibilities in the group, find out why this is occurring and talk with individuals about their specific role. Reinforce the importance of teamwork by reminding participants that it takes all of them to produce credible data.

THE ART OF DELEGATING

Delegating is a critical element in accomplishing the goals and objectives of the project. Successful delegating helps to involve all members in the activities of the group. Delegating is critical in accomplishing a variety of group activities, yet it is a difficult concept to implement.

Benefits of Delegating

First, let's look at the two major benefits of delegating:

1. Members feel they are a vital part of the group. People join a group to contribute something to the organization. If they have a part in the actual implementation of the work that needs to get done, they feel they have contributed something worthwhile to the effort. Often, people have a limited amount of time and are willing to do part of a task. This makes them feel they are contributing to the whole.

2. The group can accomplish more. Delegating also allows the group to accomplish more tasks than would be possible if only one person did them alone. Getting more done makes the group members feel good about their input and about their program. They continue to make the program a success.

Difficulties in Delegating

Leaders may have difficulty delegating responsibility for these reasons:

- They may feel they are slighting their jobs as leaders/chairpersons if they delegate tasks to others.
- They may feel members don't have enough information to do the tasks adequately.
- It is easier for them to do it themselves than to ask someone else how to do it and then follow up to see that it is done.
- They may want recognition for doing it themselves.
- They think they have all the good ideas.

On the surface, these seem like selfish reasons for not delegating tasks. However, many leaders may not be aware of the benefits of delegating or may not know how to delegate.

Ten Steps to Delegating Effectively

The following 10 steps will help any group multiply the effectiveness of the project:

1. Define responsibilities clearly.

2. When delegating, delegate complete segments rather than bits and pieces.

3. Maximize strengths by matching the skills of the volunteers with the tasks that need to be done.

4. Provide adequate feedback. Be honest and accurate in the assessment of how the task is being completed.

5. Set goals and performance standards together.

6. Provide support through sharing knowledge, information and plans with the volunteers.

7. Share decision making with those who will have a role in accomplishing the task.

8. Encourage and reward accomplishments.

9. Let go! Fully delegate and allow for personal success or failure. Delegation involves the transfer of power.

10. Say thank-you after the job is done.

Remember: Delegation does not eliminate work, it changes it.

BECOMING AN EFFECTIVE GROUP

Successful groups concentrate on tasks and relationships alternately throughout the life of a project. Tasks and relationships, the two main components of group functioning, need to be in balance (see Diagram 2a). Each aspect must be emphasized if groups are to function effectively. If emphasis on task accomplishment results in the neglect of the people involved, the outcome will not be satisfactory nor will all group members support the solutions. On the other hand, if the majority of attention is given to group relationships and relatively little to the task, a productive outcome may never be realized.

Group members choose various roles while they are in a group. Their behaviors (including conversations, discussions, ideas presented, comments, silences) move the group closer or farther away from their responsibilities.

Group roles can either be functional or non-functional. Functional roles contribute to the work or task the group is doing. These roles can be such things as initiating, informing, clarifying, summarizing and testing the idea for reality. Each of these roles can help the group accomplish its tasks.

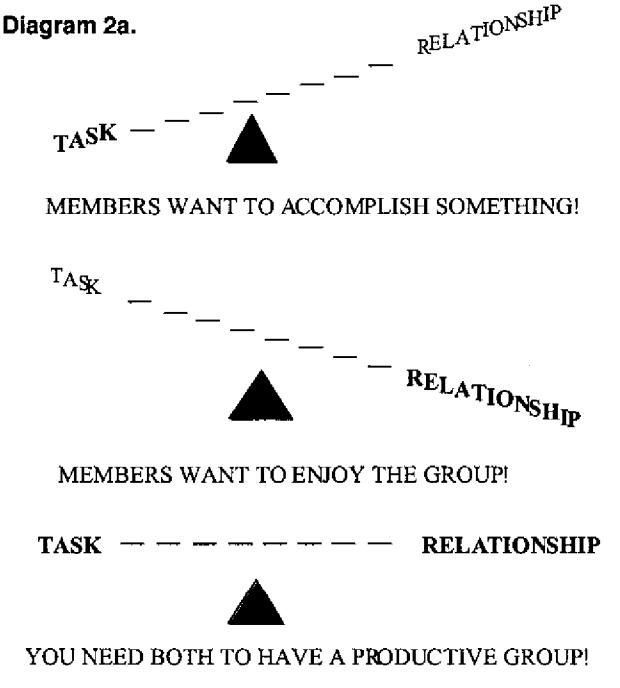
Group roles can be functional when they help the group with relationships or maintain the spirit of the group. These functional roles can be harmonizing, gate keeping, consensus testing, encouraging and compromising. All of these help establish an atmosphere that is productive.

Non-functional roles are those that interfere with the work or task the group is doing. These behaviors are aggression, blocking, domination, out-of-field actions and avoidance. There is more information about these functional and non-functional roles in Appendix 9D.

Productive Groups

A group can lose focus and get off track during a monitoring season or over the course of several seasons. This may be especially true for larger groups and long-term programs. Volunteers may forget their original roles or start to cross over into other roles. Volunteers may lose sight of the purpose of it all. Others may suffer from burnout due to the repetitive nature of some tasks and the fact that meaningful analytical data may not be revealed until many sampling seasons have passed.

Diagram 2a.



All of these situations pose a challenge to keeping a group on track. Options for dealing with these situations include:

- Holding regular (e.g. monthly) meetings throughout the sampling season to keep everyone informed and offer a chance for group discussion;
- Providing opportunities for many, if not all, volunteers to assume positions of leadership within the program (e.g. taking turns organizing and chairing meetings). Most monitoring programs need a point person to coordinate the overall operation of the project. However, that does not mean that one person should be responsible for all group leadership. The strongest groups are those in which many participants provide leadership;
- Celebrating (e.g. barbecues, picnics, parties) in mid-season to re-energize monitors and foster positive group dynamics; and
- Holding pre-and-post-season meetings for the group to review program ideas, events and accomplishments.

Communicating Effectively In the Group

Ever get the feeling after being in a meeting that it's all been said before? Working within the project requires that group members both listen and speak effectively. They're keys to successful collaboration. In fact, difficult issues require much more listening on our parts than speaking. You don't have the time you say? Not the case. Active listening saves time because defenses are cut through and you get more information out about issues of concern. Active listening is a five-step process: Acknowledging, inviting, clarifying, paraphrasing and acknowledging again.

Step 1: Acknowledging

What are the ways we acknowledge? By starting where the other person is. Matching some of their:

- Energy level/mood
- Posture
- Facial and body movements
- Style of communication
- Topic of discussion
- Words, images, metaphors
- Space
- Speech tone/rate/loudness

Acknowledge with "uh-huhs" and nods.

Step 2: Inviting

Encourage others to tell their story. For example, ask questions like "Tell me more." "What else?" and "Go ahead." Invite members to provide more information about what is going on for them.

Step 3: Clarifying

Ask for help when you get confused. "I didn't follow what you are saying, would you say it again?" Check out your interpretations. Don't get hung-up on being right. Be tentative. The other person is the author of his or her own experience.

Step 4: Paraphrasing

Stop for a moment and repeat in your own words what you have heard the other person say. Ask the person talking for confirmation or clarification. "Paraphrasing" lets the other person know you're trying to understand. It also clarifies communication, slows the pace of interaction, reduces intensity, helps gather more information and facilitates the conversation.

Step 5: Acknowledge Again

This doesn't mean agreeing, it simply means acceptance. Active listening is the only way we have to really understand another person. It requires patience and self-discipline on the listener's part; you really have to focus on the other person.

Speaking Effectively

As the leader of the group, you also need to be able to speak effectively. Successful collaboration requires speaking for yourself. It requires speaking from both your

head and heart to deal completely with an issue—managing yourself, not manipulating others. Speaking for yourself allows you to move to the core of an issue and deal with tension and differences without blaming, demanding, defending or deceiving. It is straightforward, honest and respectful. Using "I" messages is a way to take responsibility for your awareness, feelings and action: it differentiates your experience from the experience of other group members.

The second aspect of speaking effectively is preference stating. Preference stating is making clear statements about your choices and desires. It eliminates assumption and guesswork; and opens the way for negotiation within the group. Be careful that preferences are not presented as demands.

The last aspect of speaking effectively is purpose stating. Purpose stating makes known your intentions for actions so that others are not unknowingly operating at cross purposes with you. It invites others to respond more readily and helps them determine what they can or cannot do to help you achieve your purpose.

As mentioned earlier, collaboration requires speaking from both the head and heart. Yet this is not as easy as it sounds. Most groups are plagued with communication problems. However, these problems can be diagnosed and dealt with as members make an honest effort to communicate effectively. Appendix 9E lists some common communication problems in groups and provides guidelines for group communication. Appendix 9F provides you with a self-checklist for communication skills. Take a few minutes to answer the questions and reflect on your communication skills in the group.

Managing Conflict within the Group

As groups move from the gathering and groping stages to the griping stage, conflicts are bound to arise. Knowing that it's likely to get prickly—that it's normal for this stage—is helpful, but so is having a technique or two for dealing with problem behavior.

Although circumstances vary, there are several actions you can take in response to problem behavior.

- First, accept what the person is doing. Acknowledge the person's behavior by describing it. In your description of the behavior, however, do not evaluate or make assumptions about it. Make sure to check your perceptions of someone's behavior with them. For example, when a person acts in a way that indicates strong disapproval of an idea, try "Thomas, looks like you don't believe that we'll be able to reach consensus on this. Am I correct?"
- Next, legitimize the feelings behind the behavior. You do not have to agree with the person's position, but you need to acknowledge that the feelings are legitimate. In fact, they may be contributing to the group's process by providing a different perspective on an issue. For example, "Susan, I know you're concerned. This process can be frustrating. And you may be right."
- Decide whether the issue can be dealt with now or whether it is more appropriate to defer. If you are inclined to defer, you need to get agreement for that action and make sure all relevant concerns are recorded in the minutes of the meeting. Begin by explaining why you would like to defer, and ask if members are comfortable with the alternative approach. If you cannot get agreement to defer and the person's problem behavior persists, you will need to take more direct action. While it is always preferable to take a more subtle and less threatening approach, if it is not effective you will need to address the behavior more directly, resorting to confrontation only when all else fails.

For more information, Appendix 9G identifies 12 common difficult behaviors and gives specific guidelines on how to handle them.

As the leader of the group you might find it might helpful to know your preferred style of conflict management. Appendix 9H has a "Conflict Style" worksheet that you can use to determine your preference as well as some suggestions about when to use each style.

Chapter Nine was adapted from:
Facilitator's Guide to Participatory Decision Making, S. Kaner, Gabriola Island, BC, 1996.

Family Community Leadership Program, Oregon State University, Corvallis, 1990.

Manual for Volunteer Water Quality Monitors, K. I. Pelto, ed., Massachusetts Water Watch Partnership, 1994.

On Common Ground, National 4-H Council, Chevy Chase, MD, 1992.

Working Together: A Manual for Helping Groups Work More Effectively, B. Biagi, Citizen Involvement Training Program, University of Massachusetts, 1978.

Chapter 10

Conducting Effective Meetings

Chapter Ten:

Conducting Effective Meetings

Chapter Ten offers guidelines and suggestions about:

Preparing for meetings.

Facilitating and participating in meetings.

Evaluating meetings.

Following through after meetings.

As much as participants in a monitoring program may wish to avoid them, there is no way around the need for meetings. In some programs, meetings may be the only time in which the whole group comes together. The importance of meeting preparation and facilitation cannot be overstated. Proper preparation will lead to greater participant interest, sharper group focus and a sense of excitement and momentum. Moreover, well-run meetings should ultimately help minimize the need for additional meetings!

PREPARING FOR MEETINGS

Preparing for a meeting involves defining its purpose, establishing guidelines for discussion and participation, creating an agenda and ensuring notification of desired participants.

All meetings need a clear purpose. Those who convene the meeting (an individual, a few members or the entire group) are responsible for defining this purpose. Depending on the type of meeting, it is desirable to try and incorporate input from all participants about what they want to accomplish. An example of this is a public forum in which community members will attempt to prioritize local environmental issues and actions.

The purpose of one meeting is often the result of the outcome of the previous meeting. Some agenda items dealt with initially at one meeting will be carried over to another meeting due to the need for more discussion or reports on follow-up activity.

Establishing Meeting Guidelines

Meeting guidelines describe the communications process and group behavior that participants want to follow. These should be developed, set down in writing and adhered to by all. Participants may be more willing to take part if they understand the guidelines from the outset.

Typical meeting guidelines include:

- The meeting will start and end on time.
- We will stick to the agenda and keep discussions on track.
- Any new items that come up will be placed at the end of the agenda and dealt with if there is time but if not, will be on the agenda of the next meeting.
- We will be courteous and let each other complete their input before responding or adding further.
- We will rotate the role of meeting facilitator and will choose the next facilitator at the end of each meeting.

Note: For more meeting guidelines see Appendix 9C, Guidelines and Ground Rules.

Developing and distributing agendas beforehand helps people prepare and send in suggestions. In some cases, agendas can be created on the spot. This allows the ability to respond to the most immediate issues. Regardless, agendas must be prepared with attention to:

1. Creating a logical flow for information sharing, discussion and decision making; and

2. Allowing time for the possibility of information (and time) overload.

Generally, meetings begin with a welcome and introductions, followed by the reading of the minutes or following up on the action plan of the previous gathering. Any business arising from that meeting is addressed first or shifted for later consideration. Financial reports often come next followed by reports from any others. The meeting then shifts to what is often its primary purpose, the consideration of new or outstanding business. Light-hearted, team-building activities at the start of a meeting can be used as an icebreaker, a way to put participants at ease with one another.

It can be helpful to suggest time limits for each agenda item right on the agenda sheet itself. This helps ground participants in just how much time is likely to be allotted for each item. Getting sidetracked in discussion can quickly eat up the two to two and a half hours that a typical meeting lasts; the facilitator must closely monitor the time and progress the group is making on the agenda as a whole.

Also note on the agenda which items are information only and those that will require discussion and decision-making. This will alert participants to those parts of the meeting where their input may be most needed. Appendix 10A offers a sample agenda format.

FACILITATING AND PARTICIPATING IN MEETINGS

Skilled facilitation often makes or breaks a meeting in terms of keeping the discussion on track, maintaining participant interest, being able to make decisions, and finishing with a sense of accomplishment. One becomes better at facilitation with experience, learning from past mistakes and from watching others.

One of the key challenges facing all facilitators is ensuring healthy group discussion. In virtually all groups, there will be those who are more gregarious and outspoken and those more reticent and quiet. It is important for the facilitator to allow each person to speak and to manage interruptions. Encourage everyone to speak, but point out when someone has taken more than a fair allotment of time.

During the meeting, go over the information items first. These can usually be done at a rapid pace with little or no discussion needed. Questions for clarification can be fielded, but if any discussion is required, add the subject to the list of discussion items. Prioritize items requiring discussion and decision-making. This may have been done in advance by the facilitator but can be revisited at the meeting itself. If participants take part in prioritizing at the meeting, ask each to select their top three items.

Invite the group to set a time limit for each item. Ask the originator of each item how much time he or she thinks it will take to discuss the item. Total up the time estimates to be sure the total fits the remaining time available. The group may choose to shorten discussion times, table items, delegate items to a subgroup, or drop items if necessary.

There is no assumption that all items will be covered completely; the group takes up the items in the established order and uses the time available as efficiently as possible. The facilitator keeps time as the group discusses the first item; at the end of the allotted time the group is hopefully ready to make a decision. Vote or consensus can do this. Voting enables the group to end discussion and move on. If the decision was contentious, voting can leave bad feelings among the group members. Alternatively, the group can try to resolve the matter by consensus, which has the advantage of greater participant buy-in to the final decision, but consensus takes more time. Consensus does not mean that everyone is necessarily satisfied with the outcome, only that there is no one who cannot live with the decision that has been reached.

ROLE OF THE FACILITATOR

Primary function: To act as a neutral servant of the group, focusing the group's energy on a common task.

The facilitator:

- deals with meeting logistics;
- remains neutral;
- keeps the meeting on-task;
- helps set the guidelines/ground rules; and
- deals with problem behavior.

The facilitator does not:

- participate in meeting discussions in a substantive way;
- show bias; or
- attempt to dominate the meeting.

For more specific techniques on facilitation, see Appendix 10B.

Figure 10a: Sample Meeting Action Plan Record Form

(See Appendix 10C for actual form.)

MEETING ACTION PLAN RECORD FORM

Meeting Date, Time and Place:

Present::

Absent::

Summary:

	Decision Taken	Next Step	By Whom	By When
1)				
2)				
3)				

It is important to record the essential elements of each meeting. However, traditional minute taking has lost most of its usefulness. Most people dislike taking minutes, reading minutes and having to maintain them on file. Many forget to bring minutes to meetings while, at the meetings themselves, the minutes are often rubber-stamped. This can represent a lot of wasted time and effort.

So why not record the dynamics of your meetings in a more interesting way? One method is to use an Action Plan Record Form (Figure 10a). This can serve as the group's memory, and it can also eliminate recording information that is not needed. It provides basic meeting information such as meeting date, time and place, who attended and who couldn't be there. The decisions taken along with next steps, including when and by whom, are recorded on the form.

After the welcome and introductions, begin each meeting by reviewing the next steps and the progress made against them. If action has not been taken, why not? End each meeting by reviewing the new action items and checking to see if everyone is in agreement with these steps. In this way, accountability is built in, team members can chart progress and a sense of achievement is engendered.

Those present at and those absent can use both this type of meeting record from a meeting. Sub-committees can forward copies of their meeting action records to the volunteer coordinator. The record forms also provides a very accessible way to track the decisions made, the actions taken and by whom and when.

EVALUATING MEETINGS

Evaluate your meetings at each meeting. Make it a regular agenda item. Keep the questions simple, and use feedback to make future meetings more effective. Participants are usually willing to give feedback if it's taken seriously and leads to positive changes.

Evaluation can happen orally (i.e. structured group discussion) and/or in writing (use of forms). Either way, strive to:

■

Keep questions simple and short. Phrase them in a manner that allows an easy response.

■

Ask for information that will be useful, not just interesting, in helping structure and facilitate the next meeting.

■

Give an opportunity for the group to spot and avoid potential problems.

■

Provide an opportunity for participants to consider and rate their performances and to express their opinions. If using a form, customize it for each presentation, and distribute it in advance. Be sure to include a clear explanation on how the forms should be completed and collected.

Appendix 10D offers several examples of meeting evaluation tools you can use.

FOLLOW THROUGH AFTER MEETINGS

Whoever is responsible for filling out the meeting action record form or minutes should try to do so as soon as possible following the meeting, while information is still fresh in the mind. It is usually wise to have one person draft the record form or minutes and another double-check it for accuracy. Then, get the record form or minutes out to all participants as soon as possible. For a given person's copy, use a highlighter to accent any action items to which that person is responsible.

Between meetings, encourage the timely completion of action items. Contact those responsible for certain actions and ask if assistance is needed. Provide recognition by acknowledging progress made and action items completed.

Put unfinished business on the agenda for the next meeting. Even if an item was dropped from the agenda but remains important to at least one person, that person will be looking for discussion on the item at the next meeting.

KEY FACILITATION GUIDELINES

■

Intervene when the discussion has gone off the desired track. Ask the individual or group to relate the discussion to the agenda item at hand, or step in and re-focus the group on the decision to be made. Remind them how much time remains for the item.

■

Lead the discussion toward resolution when that is the desired outcome.

■

Once a decision is made, do not move to the next topic without also determining what next steps are needed to act on the decision, who is going to take the necessary action, and when the action is to be done.

■

Summarize agreements reached. Repeat all the decisions made and responsibilities assigned at the end of the discussion stage.

■

Set your next meeting at the end of each. Thank everyone for attending and for all their work. Agree on a process for notifying everyone, particularly people who were not at the meeting.

■

Close the meeting at or before the time limit. Get into the habit of doing this all the time. Fringe members will not return if meetings ramble on.

CHAPTER TEN RESOURCES

Running More Effective Meetings, University of Massachusetts Cooperative Extension.

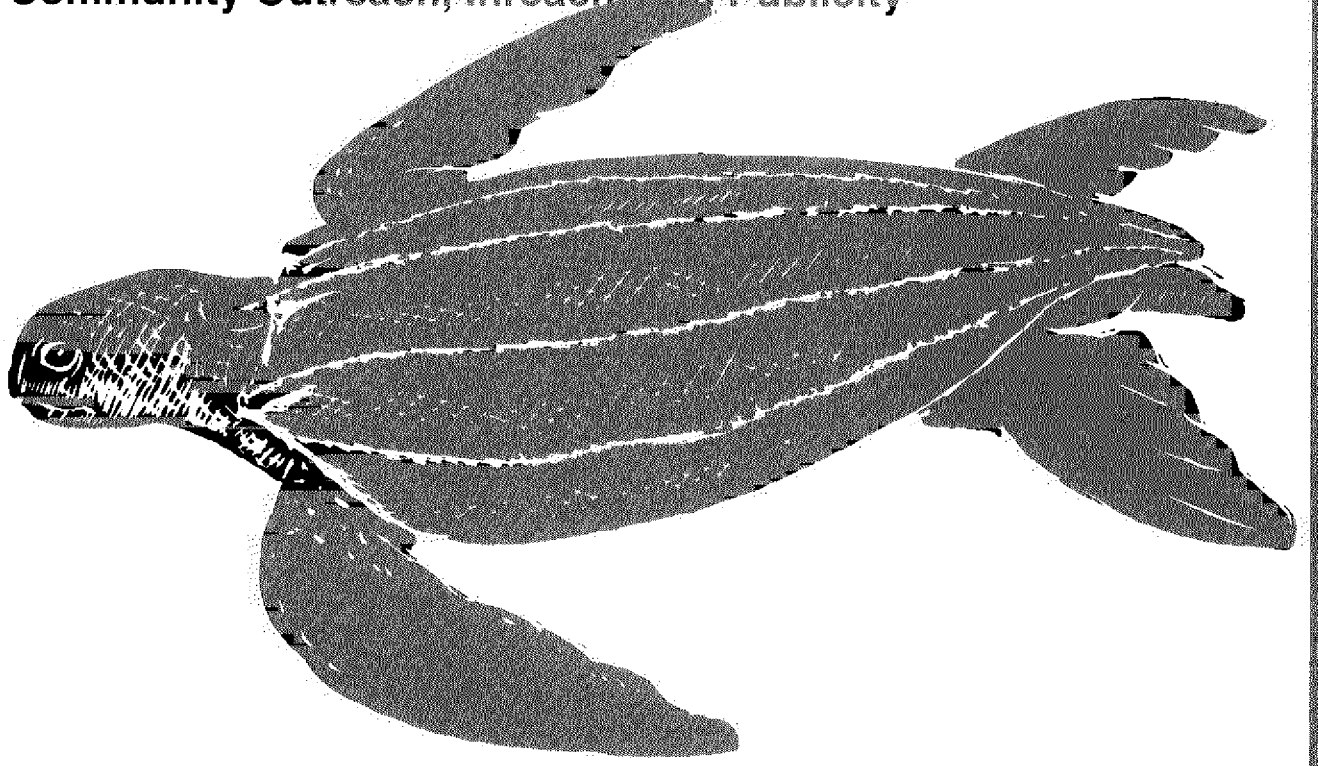
On Common Ground, National 4-H Council, Chevy Chase, MD, 1992.

Great Meetings! How to Facilitate Like a Pro, Kelsey and Plumb, Hanson Park Press, Portland, Maine, 1999, 173 pp. hppress@aol.com

Chapter 11

Community Outreach, Inreach and Publicity

11



Chapter Eleven:

Community Outreach, Inreach, and Publicity

Chapter Eleven will help you:

Develop an outreach plan.

Determine your outreach audience.

Write better news releases.

Interact effectively with the media.

Create interesting outreach programs.

COMMUNITY OUTREACH AND INREACH

Most citizen monitoring groups want to share information with others about the health of local waters and watersheds. Most groups also desire to effect positive environmental change at the local level, for example by encouraging the reduction of fertilizer and pesticide applications to lawns or the replacement or repair of failing septic systems.

To help realize such education and action, groups must first decide on the target audience(s) for and the nature of the information they wish to communicate, and then implement an outreach strategy based on these decisions. Finding messages that will resonate with different audiences (e.g. general public, schools, civic officials etc.), and becoming proficient in specific means of communication (e.g. newsletters, display materials, special events, Internet sites, etc.) are among the outreach challenges most groups face.

In every group, there are those who are naturally a little stronger in communications than others, as well as those who simply have acquired some very valuable communications experience. An eloquent speaker may be the best person to handle media interviews. A person with a flair for writing may craft your media releases. Another with an eye for graphic design might lead the production of your group's newsletter. Tap into such resources to produce the best possible outreach materials for your community.

Also, if other environmental organizations with similar purpose or interests are present in your watershed or an adjoining watershed or bay, consider what they are doing and possibly try to join forces for outreach and education. For example, lake and river groups can partner with estuary and bay groups to compile a "state of the watershed" report. Collaborating in this way not only provides information that may be of even greater interest to your community, but also helps build strong relationships among groups with common interests.

COMMUNITY OUTREACH: A FEW TIPS

- Advertise group meetings, training sessions and special events in newspapers. Post information around the community.
- Try to involve citizens that have an interest in water resources, but have not attended regular meetings of the group.
- Maintain lists of those who express interest in the project or those who have skills that you might want to tap.
- Benefit from word of mouth! Encourage group members to talk freely about the project to neighbors and friends.
- Extend personal invitations to key people to attend group meetings. Keep them personally informed with periodic updates.

Depending on the immediacy, scale and previous history of the issues you are working on, the majority of people may be "tuned out" from what your group considers to be important. Many people have their minds on things other than environmental matters, even though they may be directly affected by local environmental change. Work, personal and family concerns; involvement with other civic organizations; simply relaxing and trying to enjoy life — these occupy people's valuable time, and there may be precious little space for considering what your group has to say or share. Do not expect everyone in your watershed to want to know about or be somehow engaged by your group.

Therefore, avoid the assumption that by reaching out to the public your group is going to gain strong community interest, support, involvement or action. These outcomes should be realized to some extent, but expectations

along these lines are not always met. Patience is needed for the long haul.

Your group may have to practice "reaching in"— going to target constituencies not so much with the idea of "educating them" but, rather, of educating yourselves about the kinds of issues such people are truly interested in. The issues of these targeted groups may or may not overlap with the issues of your group, and even if they do overlap, they may not be of great priority. In time, though, if the issues your group is dealing with are serious enough and if your message is communicated well enough and often enough, sufficient community interest, support, involvement and action can be generated.

PUBLICITY

Publicity is a supplement, not a replacement for program development. Although it won't convince anyone to support a cause that he or she doesn't believe in, visible, effective, positive publicity (good news is good publicity) is still critical to accomplish the mission of a water quality monitoring program. Publicity also helps recruit new members, keeps your group "front and center" in the public eye, and aids your fundraising efforts. Best of all, much publicity, particularly that through the news media, can be free.

Current and General Publicity

There are two kinds of publicity: current and general.

Current publicity
is used to promote something happening presently or that will happen in the near future, such as a public meeting or training session. It is publicity that is time-specific. Groups can often plan such publicity to coincide with special days or events such as Earth Day (April 22), Oceans Day (June 8), Estuary Day, Coastweek and Coastal Clean Up Day in the Fall, river and beach cleanup days and so forth. Action-oriented news about your group and its activities are best done through current publicity.

General publicity
tends to contain information that is not time-dependent. An example would be a background newspaper story on the goals, past successes, future plans and community ties of a group. The objective of this type of publicity is less to announce something happening and more to provide some depth regarding a group and its program. Such publicity tends to interest potential participants by creating positive feelings about the who, what, why and how of a group.

WAYS TO "GET THE WORD OUT"

- The group's logo and letterhead
- News releases
- Press interviews
- Feature media stories
- Posters
- Bumper stickers
- Internet webpages
- Newsletters
- Flyers
- Audio-visual presentations
- Speeches
- Highway "watershed awareness" signs
- Promotional merchandise

Publicity is an ongoing process. It can begin before your first day of sampling and end well after monitors have put away their equipment for a season, reports are completed and results are made public. Implementing a systematic publicity campaign in concert with your monitoring program should contribute to helping fulfill your group's goals and overall vision.

Publicity can have a different focus, depending on the longevity of your program. For example, in the first years of a monitoring program, publicity might focus on building public recognition of and credibility for the program (Phase I).

Later, publicity might focus on data and recommendations and education (Phase II).

For such an approach, Phase I would consist of the following: Early in program implementation, begin a campaign of general publicity focused on promoting the organization, its unique role in the community and the importance of its vision. There are many ways to advance such publicity: public service announcements via radio or television (commercial radio stations and cable television companies normally run public service announcements (PSAs) free of charge as a public service. PSAs must be very brief and communicate essential information); articles in newsletters (your group's and others'); speaking at meetings or conferences; word of mouth; bulletin boards at local businesses, schools, interviews; creative posters posted in public buildings and storefronts.

As your group gains momentum and gets information from the monitoring process, start integrating general publicity with current publicity. News releases and interviews are key means for this, along with initiating or responding to requests for speaking engagements.

Phase II of publicity occurs when the group has built a certain level of public acceptance and credibility. Much of what a monitoring group will have to communicate at this point will revolve around some of the general trends or long-term findings the data suggests. Of course, by now you are aware of the importance of:

1. following quality assurance, quality control procedures to ensure credible data and

2. getting help in interpreting data before coming out with conclusions.

Be aware that it may take many seasons of monitoring to uncover meaningful trends, depending on the parameter or situation you are examining. Understand the implications, or lack thereof, of your data. Avoid making unqualified generalizations (e.g. "water quality is poor"). Stick to facts and well-reasoned arguments and positions.

For example, here is a sample publicity schedule publicity for a group entering its second (or greater) year of monitoring. Not all suggestions are relevant for all programs. Try a few, and note what is most successful for your program.

Sample Publicity Schedule

March: Pre-monitoring season news release to reintroduce the program and mission and to invite citizens to join.
Pre-season flyer distributed to households summarizing last year's activity, the work being planned this year, and opportunities to get involved.

April 22: Special event to recognize Earth Day and give attention to the group's interests (slide show/film festival on the water environment).

May-October: Monitoring season news releases for current events (e.g. training session) and water quality discoveries based on the data obtained by the group. Special events (e.g. Coastweek and Coastal Cleanup, harbor tour for civic officials; presentation on pollution prevention).

November: Post-season news releases highlighting accomplishments. Annual dinner to publicly thank monitors and program sponsors.
Compilation of report, accessible to a lay audience, with accompanying charts, tables and graphs.

February: Release of "state of the water(shed)" report, with news release; Interviews.

Working with the Media

Sometimes, the media will follow not what's important but what's interesting, the "new" in "news." Fortunately, what many monitoring groups do is news. The hands-on field work, the data and trends revealed, the pollution prevention and remediation actions being pursued, all these are potential news items. Moreover, many community monitoring efforts around the Gulf of Maine take place in small town settings served by small community newspapers and other media. Often, these media outlets are starved for good stories. In many cases, groups are almost guaranteed publicity on almost any aspect of their programs they wish to convey. Thus, it should not be difficult for your group to generate as much publicity as it would like.

Lists of media contacts are usually available through public information offices at government agencies, or other volunteer organizations. Make a permanent list of these contacts and keep with your group's other reference material.

Two specific means of working with the media are news releases and interviews. Appendix 11A contains guidance for writing effective new releases and contains a sample news release. Appendix 11B contains guidelines for better interviewing with the media.

Using Photography for Publicity[1]

Photographs can be an important part of a successful water quality monitoring program. Not only can they document the status of an area, they can boost publicity efforts. Photographs can accompany news releases, dress up newsletters and be used for volunteer recognition.

The value of good photographs to newsletters, posters, presentations and press releases should not be underrated. If you are short on reading time, do you read an article or skim the pictures, graphs and captions in your available time? If you are short on writing and production time, pictures with good captions can save paragraphs of written text. The following guidelines might be helpful the next time you take your camera out into the field:

- Take action shots
- Get up close to your subject
- Take lots of pictures to get the one you want
- Be sure the center of interest of the photo is in focus
- Check for shadows that might obscure a face or action
- Use your frame to edit your pictures.

When selecting photos to use in a newsletter or news release:

- Use only good photos—avoid blurry or incorrectly exposed pictures
- When using digital images, resolution should be 250 dpi or higher
- Use interesting photos – people like pictures of other people doing something
- Make sure the picture matches the story
- Always include a caption.

Pictures are also a great form of recognition for your volunteers – use pictures that flatter.

OUTREACH IDEAS

Here are some other examples of outreach events your program might try:

- Sponsor a local beach Clean-Up Day.
- Hold a canoe race.
- Have students conduct an oral history of your watershed by interviewing older community members.
- Sponsor an adult-education class at a local school.
- Host a nature walk.
- Organize a speaker series or film festival.
- Develop a slide show or video of your cause.
- Host a conference.

Organizing a Public Event or Meeting

Hosting a public event that brings your cause to the public's attention in a fun or unusual way is a great method to increase your outreach abilities. Most people will pick and choose formal meetings to attend in their free time, however, offering events that include the entire family become more appealing uses of free time. Such events can also act as fundraisers. Some examples of this type of event include "river days" where community members might take boat rides on the river and attend a cookout. As host, your program volunteers can circulate

information about your work and can talk about water quality and other issues while out touring in the boat.

Another way to be creative in your outreach is to piggyback on a larger festival that has ties to the work you do. Some common Gulf of Maine festivals that could serve this purpose include special boating events such as "Windjammers or Schooner Days," wooden boat festivals, seafood festivals, lobster boat races, etc. Contact your local chamber of commerce about upcoming events and contact people. Call these people to see how you can participate.

Special events require extra work in terms of planning, organizing and staffing the event. Make sure to have these extra activities covered or seek help from others. Also, be sure to check that the dates you choose do not conflict with other big local events (graduations, public hearings, etc.).

Outreach is a powerful tool for citizen monitoring programs. Most forms of outreach — media coverage, news articles, public presentations — can be free or of little cost. As with fundraising, try to develop a diverse strategy for outreach, and involve those group members with special skills in public relations, speaking and writing. Lastly, outreach can be a lot of fun, so develop a good plan, create your outreach materials and enjoy the experience.

[1] From: "Creating Super Newsletters," M. Spencer, University of Maine Cooperative Extension, Orono, ME, 1997.

CHAPTER ELEVEN RESOURCES

Creating Super Newsletters, M. Spencer, University of Maine Cooperative Extension, Orono, ME, 1997.

Getting in Step: A Pathway to Effective Outreach in Your Watershed, US Environmental Protection Agency Assessment and Watershed Protection Division, Washington DC.

Outreach Publication of the Coastal States Public Affairs Network (no publication information or date provided).

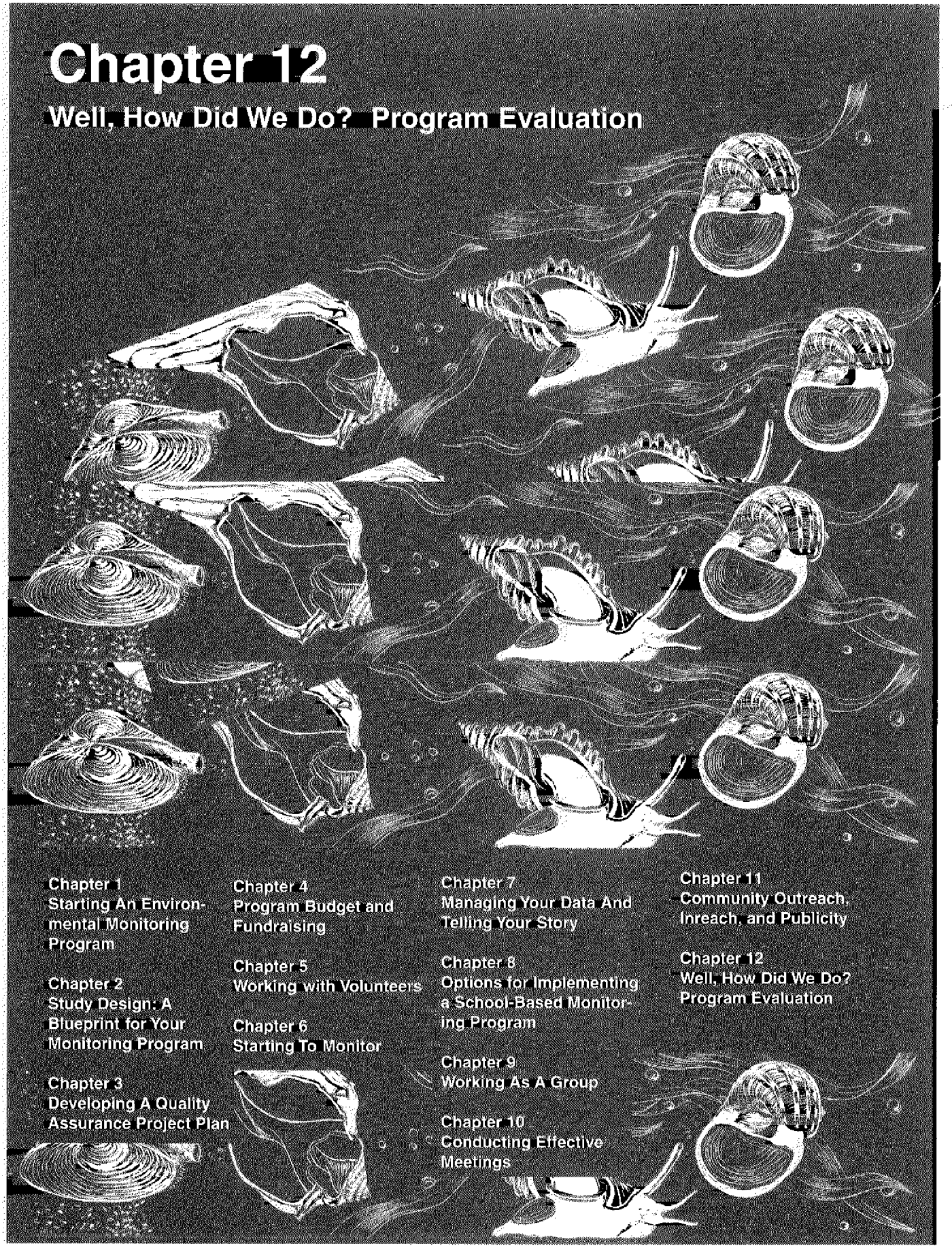
Tips on Working with the Media, Minnesota Clean Rivers Projects.

Writing Effective Press Releases, N. Griffin, Maine Coastal Program, Maine State Planning Office.

Public Outreach Options, Atlantic Center for the Environment, UPRIVER Program, 1992.

Chapter 12

Well, How Did We Do? Program Evaluation



Chapter Twelve:

How Did We Do? Program Evaluation

Chapter Twelve will help you use an evaluation process to answer questions and/or aid the group in preparing for the future.

Change is inevitable in any program. Conditions are not static in your watershed, your budget or your monitoring group. Successful groups learn to change to meet external and internal conditions. To help manage this change, be prepared to evaluate your program's goals, objectives and study design on a regular basis. Otherwise, you and your group might suffer unnecessary frustration and dissatisfaction. You also run the risk of pursuing monitoring that is no longer highly valid or relevant.

An optimal time to evaluate one's monitoring program is at the end of a monitoring season or a few months prior to a new season. The timing of an evaluation will probably be partially determined by the availability of last season's data results and interpretation. Other triggers for an evaluation include positive or negative changes that have occurred within 1) the water(s) or watershed(s) of concern and 2) your group, such as a significant increase or decrease in the number of participants or the acquisition or loss of significant funding.

Working through program evaluation may seem overly time-consuming. but it really is not. You have clear goals and objectives, a written study design and a quality assurance project plan. The evaluation provides a means to check that your monitoring results are aligned with what you set out to do. If aims and results are disjointed, you may want to rework either your goals, objectives, study design, quality assurance project plan, or all of these. Here are some things a good evaluation can do for your program:

- Provide information for future decision making.
- Measure how well your group is doing in achieving its goals.
- Identify places for improvement.
- Help to clarify vague goals or objectives.
- Aid your group in planning for future expansion.

PROGRAM EVALUATION: SOME KEY QUESTIONS

- Is our work answering our study question(s)?
- Are questions we're studying still valid?
- Are we meeting our stated goals and objectives?
- Have environmental conditions in our watershed changed? If so, does our study design address those changes, or does it need to be adapted?
- Has the energy in our group shifted to different interests? If so, are we ready to adjust our focus, or do we need to recruit more monitors to meet some of these new interests?
- Are we visible in our community?

It might be that your work has led to a significant, positive change in your watershed! Take time to celebrate your success. Then consider whether your original plan is still necessary or whether there is another related concern to focus on in the coming season.

The evaluation process should include as many participants as possible from your group. Since each participant brings different experiences and skills to the group, the input from each individual can be of great value.

This is also a good time to assess how the system works for your monitors. For example, they can comment on protocols and procedures required by your study design. If there is a common problem with a methodology or type of equipment, it's time to explore other options.

The end result of an evaluation is to make sure that you are doing what you set out to do and that program is functioning as efficiently and enjoyable as possible. Order in pizza, put some chairs in a circle, celebrate your accomplishments and re-energize each other for the challenging work ahead.

There are many ways to go about evaluating your program. It is important in any evaluation process to involve a variety of people in the process. Who you need

to involve will depend on the type of evaluation you are undertaking. Evaluations might focus on specific aspects of the program, such as "Are our volunteers satisfied with their involvement in this program?" and "Are we impacting the way people use water in our watershed?" In the first instance, program participants will be a vital part of the evaluation; in the second, citizens in the watershed should be included.

Evaluation might focus on the program in its entirety. In this case, you'll want to involve people from a wide range of areas: volunteers, funders, outreach people, community members, and technical committee members, among others. A program evaluation should be done regularly to ensure your program is still on track and still pursuing worthwhile goals. This process can be qualitative (descriptive) or quantitative (number-oriented), or can be a combination of both. It is really up to your group to decide what approach works best. (The River Watch Network uses the evaluation in Appendix 12A for volunteer monitoring programs. This can serve as a good starting point for your program to develop its own evaluation process.)

Using Program Evaluation to Plan for Program Expansion

Over time, a group may broaden its monitoring program in terms of geographic scope, parameters monitored, sampling frequency and/or participants. This might occur as the group gains confidence in its abilities or attracts greater community interest, or as monitoring data leads to new directions for further monitoring.

Expansion can provide new and exciting opportunities for seasoned monitors, attract new members or funders to a program and render greater service to a community. Experienced monitors will appreciate the opportunity to learn a new or advanced technique, thereby increasing their level of satisfaction with the program. Entirely new volunteer positions might need to be created to cover new responsibilities. New monitoring recruits may be needed to fill positions vacated by experienced monitors moving on to the new tasks. This is an excellent opportunity for group mentoring; seasoned samplers can assist new recruits in learning how and where to sample as well as share their detailed knowledge of the watershed.

EXAMPLES OF QUANTITATIVE AND QUALITATIVE EVALUATION QUESTIONS

In programs that have clearly defined and observable objectives, quantitative assessments are possible. When dealing with issues such as changing behaviors, opinions or attitudes, qualitative assessments are usually needed. Here are a few examples to illustrate the difference.

Quantitative

Evaluation question: Are we providing the sampling service we set out to?
Answer: Yes, 92% of sample runs scheduled were conducted and results were within our stated DQOs.

Evaluation question: We had an objective to identify 3 pollution sources in Green Bay and make recommendations for remediation. Did we attain that?
Answer: Three pollution sources have been identified and one is targeted for correction. Two have not had suggested remediation.

In both these cases, referring back to the stated goals leads to evaluation questions. In the first example, the group attained its goals. In the second, it did not and this should be pursued to find out why. Perhaps the goal was unrealistic, perhaps more education needs to happen before the situation will change. Whatever the reason, this information will help plan next year's goals.

Qualitative

Evaluation survey question: As a result of involvement in this program, in the next six months will you:

- Share this information with others?
- Change the way you use water at home?
- Work with town officials to improve stormwater systems?
- Learn more about watershed issues?

The answers to these questions help you know how you are doing. Suppose one part of your mission is community education and increased understanding of watershed issues. If the majority of people check a couple of these topics, your program is effectively reaching out. If not, refocus your outreach methods.

While providing exciting new opportunities, expansion may also require increased funding and special communication and outreach strategies to inform the community about program change. If you've been successful in gaining community support, make sure to bring along supporters in this process. Expansion is a disservice if you have to go back and convince citizens again that your cause is valuable.

Expansion needs to be carefully planned to avoid problems such as loss of focus and direction or increased demands on volunteers not ready to meet expanded workloads. Diffused, understaffed programs run the risk of not accomplishing anything, losing group members due to the shift in emphasis and/or burnout, and losing community credibility and support by not following through on original plans.

If your program is considering program expansion, be sure to think of the following before acting:

- Does expansion fit within the group's original vision and study design, or will these need to be reworked?
- Did the whole group decide to embrace this expansion? Are participants interested in this new monitoring?
- Are present human and financial resources sufficient to keep the original, core program going while broadening the monitoring effort? If not, is it realistic to assume additional human/financial resources are available and interested?
- Do participants have the skills necessary to take on new program components? If not, is training readily available to assist them?

If a program's original focus was on collecting baseline environmental data, than it is generally better to retain and build upon the original, core program than to drop its key elements and start over with essentially new ones. Remember that it takes many monitoring seasons for baseline data to reveal important or useful trends. Also, your community might know and respect you for delivering certain programs, services or accomplishments. Make sure the community will support your changes.

CHAPTER TWELVE RESOURCES

Organizations offering evaluation assistance to Citizen Monitoring Programs:

University of Maine Cooperative Extension
PO Box 309
Waldoboro, ME 04572
Phone: (207) 832-0343
Esp@umext.maine.edu

River Network
153 State St.
Montpelier, VT 05602
Phone: (802) 223-3840

Publications

Program Organizing Guide, Sharon Behar and Geoff Dates, River Watch Network, 1995, 23pp.

Evaluating Volunteers, Programs and Events, S. Vineyard, Heritage Arts Publishing, 1988.

Planning for a Change: A Citizen's Guide to Creative Planning and Program Development, D. Dale and N. Mitiguy, University of Massachusetts (Citizens Involvement Training Project), 1978.

Appendices

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APPENDICES

Appendix 1A: Brainstorming Technique

Cardstorming

1. Ahead of time, prepare the question for the group to brainstorm.

2. Set a short context with the group, indicating why it is particularly relevant to deal with this question at this time.

3. After posing the question, give people time to do their own thinking. That way, both the quick and the careful thinkers have ample time to organize their thoughts.

4. Suggest that teams of two, three or four (depending on the size of the group) talk through some of their ideas. This gives people "air time" in small groups, permitting some early feedback to their ideas and relieving some of the need to use whole-group time to air their ideas.

5. In the small teams, have people write their ideas on the 5x 8 inch cards, one idea per card, using just three to five words per card. Suggest a total number of cards needed from each team.

6. Ask each team to pass up one or two cards, i.e., "Pass up your most clear card first." Tape these on the wall at random.

7. To get a sense of the breadth of the group's thinking, now ask each team to pass up a card that is the most different from anything on the wall so far.

8. Ask the group if they see connections among the cards. Cluster only the cards the group suggests are connected.

9. When clusters begin to emerge, ask the group to come up with a temporary title for the cluster. For example, if you have cards that say "meetings more organized," "shorter meetings," and "clearer memos," the group may cluster those and assign the title, "Communication."

10. Label the clusters with a number, letter or symbol.

11. Call for the remaining cards, suggesting that people write the number, letter or symbol on the card if it naturally fits a cluster already up front.

12. Cards can be shifted and moved from cluster to cluster as you get greater clarity with more and more cards coming to the front.

13. Once all the cards have been clustered, go back and clarify and polish the title for each cluster.

Hints

- ✓ Tape loops are helpful ways to attach cards to a wall. To save time, prepare some tape loops in advance.
- ✓ It is useful to get 30 to 40 pieces of information all together.
- ✓ Be sure to have group members write in large letters on the cards.
- ✓ If you immediately open the question to the group, bypassing the small-team step, you are inviting only the quick thinkers or those with axes to grind to begin the discussion.
- ✓ Keep 3x5 inch post-it notes handy to jot down the temporary titles for the clusters of cards.
- ✓ Make sure you ask the group where to put a card. It is tempting to place the cards where you as a leader think they should go.
- ✓ Think ahead of time what you need this information for and prepare one more question to help the group use the information that it has just generated. Asking a question about the implications or the next steps gives people a chance to see the value in their thinking together. For example, "What insights has this data generated for you?" "What are our next steps?" "What are the implications for us or for you?" "Which ideas have the most appeal to you?"

Source: More Than 50 Ways to Build Team Consensus, Bruce Williams, IRI/SkyLight Training and Publishing, INC. 2626 S. Clearbook Dr., Arlington Heights, IL. 60005, 252 pp.

Appendix 1C: Form for Recording a Group's Goals and Objectives

Community Group:

Year: to

Goal: Describe an end your group would like to achieve.

Objective: Describe in specific and measurable terms what you want to accomplish.

Action Steps Needed To Achieve the Objective	Time Line	Done By	Completed

Appendix 5A: Sample Volunteer Position Descriptions

(Available electronically from University of Maine Cooperative Extension, Knox-Lincoln Office.)

Title: Volunteer Coordinator

Purpose: To oversee the entire operation of the volunteer monitoring project.

Responsibilities:

1) Facilitating monthly/seasonal meetings of group.
2) Recruiting and assisting with training of volunteers.
3) Communicating with team leaders to assure that sampling runs smoothly.
4) Delegating jobs, such as: sending reminders for meetings, setting up initial schedules for monitoring season, and other jobs as appropriate.
5) Supporting volunteers by evaluating and recognizing their efforts.
6) Training successor to ensure continuity of program.

Time Frame: Minimum of one-year commitment. Hours vary with season.

Qualifications:

1) Need to have basic communication and leadership skills.
2) Able to work with people of diverse backgrounds.
3) Should enjoy working with volunteers and employing basic people skills.
4) Genuine interest in helping to protect the waterbody.

Training: Must attend one-day training session on the program.

Benefits: Opportunity to meet people from your community with similar interests. A chance to participate in a project that will protect the waterbody and to learn about the ecology of the watershed. Opportunity to strengthen skills in leadership, communications and management.

Title: Field Monitor

Purpose: To conduct various types of field-based monitoring in support of the water quality monitoring program.

Time Frame: Beginning in April and ending in November, twice a month, 1 to 3 times per sample day, weather permitting. A schedule is set up at the start of every monitoring season.

Responsibilities:

1) Stay in contact with team leader for your segment of the waterbody.
2) Assist team leader with finding a replacement when you are unable to do monitoring on your scheduled date.
3) Assist team leader with various tasks when able; i.e. pick up equipment, transport samples to laboratory.
4) Attend monitoring meetings held once a month during sample season.
5) Take samples in the field, conduct shoreline surveys, record various parameters (temperature, dissolved oxygen, etc.) and field observations (weather, etc.) on data sheets and give these sheets to the data manager.
6) Help with fund raising and recruit two new volunteers a year.
7) Attend monthly monitoring meetings.

Qualifications:

1) Genuine interest in helping to protect the waterbody.
2) Ability to work in teams.
3) Enthusiasm and energy.

Training:

1) Must attend a one-day training session on the monitoring program.
2) Must attend retraining sessions periodically and Quality Assurance/Quality Control sessions.

Benefits: Opportunity to meet people from your community with similar interests. A chance to participate in a scientifically credible project that will protect the waterbody. An opportunity to be trained in the science of water quality.

Title: Team Leader

Purpose: To provide logistical support to field monitors and/or boat operators.

Time Frame: Beginning in April and ending in November, hours will vary according to the season.

Responsibilities:

1) Stay in contact with Boat Operators and Field Monitors and provide schedule information.
2) Replenish field equipment.
3) Ensure that all transportation needs (including sample transport when applicable) and logistics are taken care of.
4) Work together with the coordinator(s) and other Team Leaders to develop the schedule at the start of the season.
5) Work with your team members to schedule them for sampling times and dates and make sure they complete their sampling.
6) Attend monthly monitoring meetings
7) Help to raise funds and recruit two new volunteers a year.
8) Train successor to ensure continuity of program.

Qualifications:

1) Need to have basic communication skills.
2) Genuine interest in helping to protect the waterbody.
3) Need to have basic organizational skills.
4) Must be punctual.

Training: Must attend one-day training session on the monitoring program.

Benefits: Opportunity to meet people from your community with similar interests. A chance to participate in a project that will protect the waterbody. An opportunity to strengthen communication and organizational skills.

Title: Lab Assistant

Purpose: To assist Lab Supervisor in conducting laboratory analysis for the water quality monitoring project.

Time Frame: Beginning in April and ending in November, one or two times a month, one to four hours per sample day; or as available.

Responsibilities:

1) Assist with lab analysis procedures and clean-up. Assist with maintenance of lab equipment.
2) Attend monthly monitoring meetings.
3) Help the fundraising effort and recruit two new volunteers a year.
4) Train successor to ensure continuity of program.

Qualifications:

1) Must be detail-oriented and responsible.
2) Genuine interest in helping protect the waterbody.
3) Must be punctual.
4) Enthusiasm and energy.

Training:

1) Must attend one-day training session on the monitoring program.
2) Will have additional on-site training as well as ongoing support from lab supervisor.

Benefits: Opportunity to meet people from your community with similar interests. A chance to learn new skills. An opportunity to participate in a project that will protect the waterbody.

Title: Lab Supervisor

Purpose: To oversee the laboratory analysis for the water quality monitoring project.

Time Frame: Beginning in April and ending in November, one to two times a month, one to three hours per sample day; or as available.

Responsibilities:

1) Oversee lab analysis procedures and clean-up. Oversee maintenance of lab equipment.
2) Report findings to data manager.
3) Attend monthly monitoring meetings.
4) Work together with Team Leaders, Volunteer Coordinator(s) and Data Manager for scheduling and organization of analysis.
5) Must adhere to QA/QC practices.
6) Help the fundraising effort and recruit two new volunteers a year.
7) Train successor to ensure continuity of program.

Qualifications:

1) Previous experience with the laboratory techniques involved for water quality monitoring is very useful.
2) Ability to supervise effectively, while ensuring quality control.
3) Ability to learn new skills quickly.
4) Attention to details.
5) Must be punctual.
6) Genuine interest in helping to protect the waterbody.

Training:

Must attend several training sessions until competency is achieved.

Benefits: Opportunity to meet people from your community with similar interests. A chance to practice technical and supervisory skills. An opportunity to participate in a scientifically credible project that will protect the waterbody.

Title: Data Manager

Purpose: To oversee the management of the data of the water quality monitoring project.

Time Frame: From April through December, set own hours as necessary.

Responsibilities:

1) Coordinate the pick-up of raw data from field monitors and the laboratory.
2) Set up spreadsheet programs.
3) Enter data in computer, check for inaccuracies, and carry out any calculations necessary.
4) Graph data in usable forms and present to Data Analyst.
5) Attend monthly monitoring meetings.
6) Learn new data programs as necessary.
7) Help with fund raising and recruit two new volunteers a year.
8) Train successor to ensure continuity of program.

Qualifications:
Knowledge of computers, databases, and spreadsheets is very useful. A personal computer would also be convenient, although access to one would suffice. Most of all, a genuine interest in helping to protect the waterbody is required.

Training:
Must attend a one-day training session on the monitoring program.
Any computer training that the manager needs will be arranged and scheduled with the coordinator(s).

Benefits:
Opportunity to meet people from your community with similar interests. A chance to learn new (or practice old) skills. An opportunity to participate in a project that will protect the waterbody.

Title: Data Analyst

Purpose: To interpret the data, develop findings and draw conclusions.

Time Frame: Throughout monitoring season as the Data Manager coverts data into usable forms.

Responsibilities:

1) Take the data that the Data Manager has produced and determine what it means and what conclusions should be drawn. This will entail working with both the Data Manager and any technical advisors the group has.
2) Attend monthly monitoring meetings.
3) Help with fund raising and recruit two new volunteers a year.

Qualifications: A good understanding of the science of water quality and ability to understand and interpret graphs.

Training:

1) Must attend a one-day training session on the monitoring program.
2) The coordinator(s) will arrange any further training that is necessary.

Benefits: Opportunity to meet people from your community with similar interests. A chance to learn new (or practice old) skills. An opportunity to participate in a project that will protect the waterbody.

Title: QA/QC Supervisor

Purpose: To make sure that the water quality monitoring program adheres to its Quality Assurance Project Plan (QAPP).

Time Frame: Continuous responsibility for the credibility of the monitoring project.

Responsibilities:

1) Work with any technical advisors to devise a QAPP and Standard Operating Procedures at the start of the monitoring project.
2) Schedule QA/QC sessions with the trainer at start of the season and then periodically during a season.
3) Check the monitors' procedures to make sure they are performing them properly, carry out the provisions of the QAPP plan (conducting split samples, etc.).
4) Prepare reports as necessary on the QAPP and update SOPs.
5) Attend monthly monitoring meetings.
6) Help with fund raising and recruit two new volunteers a year.
7) Train successor to ensure continuity of program.

Qualifications:

1) Ability to work with others.
2) Ability or organize well and to take care of details.
3) Must be punctual.
4) Genuine interest in helping to protect the waterbody.

Training:

1) Must attend a one-day training session on the monitoring program.
2) Further training to be scheduled by coordinator with training as necessary.

Benefits: Opportunity to meet people from your community with similar interests. A chance to learn new (or practice old) skills. An opportunity to participate in a project that will protect the waterbody. A chance to learn the science of water quality monitoring.

Title: Photographer

Purpose: To document activities of the group, including field work, lab work, meetings and events.

Time Frame: As needed during monitoring season and associated events.

Responsibilities:

1) Take photographs of people and events for documentation and publicity.
2) Get signed photo releases from anyone you photograph.
3) Attend monthly monitoring meetings.
4) Help with fund raising and recruit two new volunteers a year.

Qualifications: Have a camera or access to one and know how to use it.

Benefits: Opportunity to meet people from your community with similar interests. A chance to practice your photographic skills and to have your pictures widely viewed in publications and presentations. An opportunity to participate in a project that will protect the waterbody.

Title: Group Spokesperson

Purpose: To be a public representative for the water quality monitoring program and to act as the single point of contact for people wanting information on the group and its work.

Time Frame: Throughout the year, but especially when recruiting, having events or presenting reports.

Responsibilities:

1) Speak for the group at gatherings, to recruit volunteers and educate the public.
2) Speak to the press about the program.
3) Work together with coordinator(s) and other group members to present the program in a good light.
4) Attend monthly monitoring meetings and stay well informed.
5) Develop written materials, such as reports and brochures.
6) Solicit media coverage and contribute stories to the local press.
7) Help with fund raising and recruit two new volunteers a year
8) Train successor to ensure continuity of program.

Qualifications: Must be comfortable speaking to groups and to reporters. Excellent written and verbal communication skills needed, an ability to meet deadlines and access to a phone and computer.

Training: Must attend a one-day training session on the monitoring program.

Benefits: Opportunity to meet people from your community with similar interests. A chance to exercise leadership and presentation skills. An opportunity to participate in a project that will protect the waterbody.

Appendix 5B: Sample Volunteer Applications and Brochures

To obtain a disk copy of the Friends of Casco Bay's convertible brochure for volunteer monitoring groups, contact:

Maine State Planning Office
Station #38
Augusta, ME 04333

Sample Volunteer Application

There are many possible variations for a volunteer application form. In fact, not every group uses such a form. It is a good idea, however, because it will provide you with a little information about the potential volunteer that might help you with placement or, if necessary, referral to another organization that might better use the individual's talents.

Date of application:

Name:

Address:

Phone:

Email:

What is the best time to contact you during the day or evening?

How did you find out about our organization?

Please briefly describe why you are interested in our program.

Do you have experience in: (Please circle Y or N for each question.)

Conducting outdoor work? Y N

Working with computers? Y N

Managing data or data entry? Y N

Working with the public through public meetings/arranging special events? Y N

Working as a team member? Y N

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Email:

What is the best time to contact you during the day or evening?

How did you find out about our organization?

Please briefly describe why you are interested in our program.

Do you have experience in: (Please circle Y or N for each question.)

Conducting outdoor work? Y N

Working with computers? Y N

Managing data or data entry? Y N

Working with the public through public meetings/arranging special events? Y N

Working as a team member? Y N

The vision of our program is to improve water quality in Blue Bay through monitoring, advocacy and public participation. Please briefly explain why you believe this is a worthwhile venture:

Monitoring programs require more commitment at certain times of the year, such as summer, will this be a problem for you? Y N

Monitoring requires driving to many different sites to collect samples. Volunteers use their own vehicles for this work. Do you have a reliable transportation for such a purpose? Y N (Answering No does not preclude your involvement in the program.)

Thank you for taking the time to fill out this form. You will be contacted within two weeks by our volunteer coordinator concerning this application. If the program needs someone with your skills, abilities and interests, a meeting will be set up for us to learn more about each other. Please feel free to call us if you do not hear from us within this time period.

Appendix 5D: Sample Training Agenda

Water Quality Monitoring Annual Training
Tuesday, April 29th
Bridge's Point Boat Ramp
3:00 to 6:00 p.m.
(This training is for the field component of monitoring only.)

Please remember to dress for the weather and plan on getting your feet wet, so bring your boots!

3:00	Introduction of trainer and trainees and overview of training session. Overview of program goals, safety, and interaction with public guidelines.
3:30	Overview of sampling techniques to be used.
3:45	Equipment hand-out; explanation of care and use.
4:00	Demonstration of sampling procedure(s).
4:15	Volunteers try sampling technique(s) with assistance of trainers.
4:45	Break (*refreshments will be provided*)
5:00	Question and answer section.
5:15	Practice technique and demonstrate for trainer.
5:45	Wrap-up with recap of what has been learned, answer any additional questions, close.

Before you leave, please take a few minutes to fill out the training evaluation form given to you at the break. This will help us to better meet your training needs in the future!

Thank You!

Appendix 9A: Leadership Competencies

The knowledge, skills and abilities you gain in a position of leadership will help you reach a higher level of competence. It takes continual practice and effort to develop leadership.

Use the following list of competencies to review your abilities. Put a plus (+) on those you do well and a minus (-) on those you could improve. Then choose one or two leadership categories and work toward improving them.

Setting the Example
(Understanding the role of personal leadership styles)

___ a. I use a variety of leadership styles.
___ b. I focus on both process and tasks.
___ c. I help the group determine the purpose or goal of a meeting.

Getting and Giving Information
(Using good communication skills — speaking and listening)

___ a. I encourage introduction and team-building activities.
___ b. I practice good public speaking techniques.
___ c. I use active listening.

Knowing and Using Group Resources
(Accesses and uses resources within the group)

___ a. I encourage all to participate.
___ b. I use small group techniques to stimulate discussion.
___ c. I apply effective meeting techniques.

Planning
(Understanding and applying steps in planning)

___ a. I set an agenda for each meeting with help from others.
___ b. I try to distinguish between long- and short-term goals.

Directing Groups
(Understanding when and how to direct groups)

___ a. I use group-process techniques.
___ b. I know how to manage conflict.
___ c. I try to formulate questions to be answered by the group.

Presenting the Group
(Understanding the responsibility of representation)

___ a. I focus on working towards consensus
___ b. I use negotiation strategies.
___ c. I can prepare testimony for community meetings.

Sharing Leadership
(Using others to get task done)

___ a. I use committees.
___ b. I encourage decision making by the group.
___ c. I spread the responsibility and power around.
___ d. I help others learn by doing.
___ e. I promote new leadership.

Adapted from: Family Community Leadership Program, Oregon State University, Corvallis, 1990.

Appendix 9B: Team-Building Activities

Team-Building Activity #1: Who Are We?

Purpose: Bonding, Self-evaluation

Tasks: Write down personal summaries and expectations for the meeting on cards. Exchange cards with a neighbor, and introduce that person to the group.

Steps:
Group members divide a 5- x7-inch card into four boxes as shown below. *Suggestion:* It may be helpful to draw an example on newsprint or chalkboard for all to see. Write these questions (or others) into the appropriate quadrants:

Who am I?	**What do I do?**
What can I contribute to this meeting (team)?	**What do I expect to gain from this meeting?**

Explain the focus questions and give examples. Then give group members three to 10 minutes to answer the four questions.

Then group members exchange cards with the person sitting next to them. Each person introduces their neighbor to the entire group.

Questions for Discussion:

Was it difficult to explain "Who am I?" Why? Why not?

What did you learn about yourself and others in the group?

Adapted from: Family Community Leadership Program, Oregon State University, Corvallis, 1990.

Team-Building Activity #2: Guess Who

Purpose: Communication, Bonding

Task: Guess who is the author of the self-descriptive statements.

Steps:

Participants write on a 3- x 5-inch card something no one in the group knows about them.

Cards are collected, shuffled and randomly re-distributed.

Each participant reads the statement aloud and lets the group guess who is the writer. The real author should verify or correct guesses.

Discussion:

In this exercise, was it easy for you to communicate with others in the group? Why? Why not?

During the exercise did you find you wanted to talk more with some people?

How did it feel to hear the statement that describes you?

Adapted from: Family Community Leadership Program, Oregon State University, Corvallis, 1990.

Team-Building Activity #3: Coat of Arms

Purpose: Bonding, Value Identification, Tolerance, Trust.

Task: Create a Coat of Arms as a symbol of who you are.
In medieval times, this insignia was embroidered on the light garment worn over armor and symbolized the name, status, the achievement or aspiration of the bearer. Coat of Arms came to distinguish families as well as individuals.

Steps:

Draw a shield on a piece of paper and divide it into six sections.

In one section, draw two pictures. One to represent something you do very well and another to show something you want to do better.

In another section, make a picture to show a value on which you would never budge. (One you feel extremely strong about and would never give up.)

In a third section, draw a picture to show a value your family lives by. (Everyone in your family would probably agree that it is the most important.)

Imagine that you could achieve anything you wanted to and that whatever you tried would be a success. What would you strive to do? Draw this in section four.

Use section five to show one of the values you wished all people would believe in. (It certainly is one you believe in deeply yourself.)

In the last section, write four words, which you hope people would say in describing you.

Explain your Coat of Arms to the small or large group, and hang it up for display.

Discussion:

Was it hard for you to identify your values?

How can the awareness of values (your own and others') help people to work together?

Adapted from: Family Community Leadership Program, Oregon State University, Corvallis, 1990.

Team-Building Activity #4: Sherlock

Number of people: Small groups of 4-6 people each.
Minimum time: 25 minutes.
Materials: Exercise and worksheets, pens.

Purpose: To experience teamwork in problem solving, to recognize benefits of sharing perceptions and to recognize the value of individual contributions to group.

Process: Participants read the text on the next page and answer questions twice in this exercise: the first time individually, the second time in a group.

Hand text and worksheets to participants.

Allow three to four minutes for people to read the text three times. Then ask for sheets to be turned face down.

Allow five minutes for people to mark answers on worksheet. Collect them for tabulation.

Participants form small groups and are given one answer sheet per team.

After reading the text again, groups should formulate team answers without reading the text during discussion. Allow 10 and 15 minutes.

Calculate team scores and compare with individual scores.

Summary: Discuss comparison of answers, changes in responses, and advantages of teamwork.

This key refers to the answers to the questions posed on the next page.
They are all question marks other than #3 which should be false and # 6 which should be true.

Key: 1)?;2)?; 3)F; 4)?; 5)?; 6)T; 7)?; 8)?; 9)?; 10)?; 11)?.

Adapted from: Family Community Leadership Program, Oregon State University, Corvallis, 1990.

Text:

A businessman had just turned off the lights in the store when a man appeared and demanded money. The owner opened the cash register. The contents of the cash register were scooped up, and the man sped away. A member of the police force was notified promptly.

Statements About the Story

Choose True, False or ? (Don't know).

1.	A man appeared after the owner had turned off his store lights.	**T**	**F**	**?**
2.	The robber was a man.	**T**	**F**	**?**
3.	A man did not demand money.	**T**	**F**	**?**
4.	The man who opened the cash register was the owner.	**T**	**F**	**?**
5.	The storeowners scooped up the contents on the cash register, he ran away.	**T**	**F**	**?**
6.	Someone opened the cash register.	**T**	**F**	**?**
7.	After the man who demanded the money scooped up the contents of the cash register, he ran away.	**T**	**F**	**?**
8.	While the cash register contained money, the story does not state how much.	**T**	**F**	**?**
9.	The robber demanded money of the owner.	**T**	**F**	**?**
10.	The story concerns a series of events in which only three persons are referred to: the owner of the store, a man who demanded money, and a member of the police force.	**T**	**F**	**?**
11.	The following events in the story are true: someone demanded money, a cash register was opened, its contents were scooped up, and a man dashed out of the store.	**T**	**F**	**?**

Teams	Team Score	Average Indv. Score	Best Indv. Score	Group Over Ave.	Group Over Best	Range Indv. Score
1.						
2.						
3.						
4.						
5.						

Team-Building Activity #5: Sentence Completion

Number of people: At least eight; up to 40 people.
Minimum time: 45 minutes.
Materials: Newsprint, felt-tip pens, handouts with topic sentences.
Setting: Chairs arranged for groups of four to eight.

Purpose: To experience team building, to learn elements in the team-building process, and to learn to form cohesive monitoring teams.

Process:

1 Introduce the exercise as an experience in team building. Ask small groups to complete sentences, taking no longer than five minutes of discussion for each one. Begin with: "When I first enter a new group I feel...".

2 Check the groups to see whether the discussion deals with the topic. (Sometimes, a group avoids the topic and must be refocused.)

3 Stop the group discussion after five minutes and give four additional incomplete sentences at similar intervals, selected from the following:
   a) On my job, my greatest strength is...
   b) I usually describe myself as being a...
   c) To me, trust is a matter of...
   d) In working with issues relating to the environment and monitoring, my greatest contributions would be...
   e) The hardest kind of person for me to get along with is...

4 Re-assemble in larger groups (eight to 12) and choose a topic from these sentences:
   a) I feel closest to others when...
   b) The thing about myself that I need to work on is...
   c) If I had it all to do over again, I would...

5 Allow about 10 minutes for discussion. The purpose of the larger group is to demonstrate a process, rather than exhaust the topic.

6 Return to small groups for discussion (five minutes). Did you feel differently about working in the large group than in a small group? Will you discuss this difference? What makes this difference? Have each group list items that contributed to the formation of a close team.

Link the sentence completion exercise to these elements necessary for successful team building: 1) talking about feelings; 2) discussing the team's mission; 3) building trust and openness; and 4) providing feedback.

Adapted from: Family Community Leadership Program, Oregon State University, Corvallis, 1990.

Team Building Activity #6: Alphabet Names

Number of people: Five to 15.
Minimum time: 30 minutes.
Materials: Newsprint, worksheets and pencils.
Setting: Chairs in semi-circle.

Purpose: Achieving synergy in task groups.

Process:

1 Distribute paper and pencils to participants, and ask them to list the letters of the alphabet from "A to Z" in a vertical column on the left side of the paper.

2. Randomly select 26 letters from any poem or novel. While reading each letter out loud, ask participants to write letters in a second vertical column on the right side of page.

3. *Working individually*, participants are to fill in the blanks to create 26 words naming famous people, food, past presidents, local political people, articles of clothing, etc, one per line, using the alphabet and random letters.

4. Allow 10 minutes before participants exchange papers to check names and tally points, one point per legitimate name.

5. Record the high score and the group's average on newsprint.

6. Repeat the exercise with the group using a new set of random letters. Use newsprint instead of worksheets. Allow 10 minutes.

7. Review list and check names. Compare team and individual scores (high and average) from both rounds.

Summary: Discuss differences of scores, motivation and frustration. Connect Alphabet Exercise with concepts of synergy, team commitment, competition vs. collaboration, and individual vs. group potential.

Adapted from: Family Community Leadership Program, Oregon State University, Corvallis, 1990.

Appendix 9C: Meeting Guidelines or Ground Rules

Why can some groups pull together, tackle difficult tasks and solve problems, while other groups can't? One reason is guidelines and ground rules. Effective groups tend to have either explicit or implicit rules that guide their behavior. When groups follow guidelines and ground rules, they are better able to communicate, resolve conflicts, solve problems and make decisions by consensus.

Spend some time when the group forms to agree on a set of behavioral norms that members can expect from each other during the duration of the project.

A few examples of guidelines or ground rules that monitoring teams might want to consider are:

1. Agenda and team progress checks at each meeting.
2. Start and stop meetings on time.
3. Don't stop meetings to catch up late members.
4. Rotate taking minutes.
5. Rotate facilitating meetings.
6. Everyone shares equally in assignments.
7. Team members are responsible for briefing absent members.
8. Cooperate, listen, be open-minded.
9. Be courteous — let another finish a thought, even if you disagree.
10. Avoid side conversations. Share your thoughts during meetings with the whole group.
11. Be attentive to the amount of time you are speaking.
12. Commitment to mutual respect of all team members.
13. Make statements, then invite questions.
14. Make decisions by consensus.
15. Stay focused. Discuss a topic enough for everyone to be clear about it.
16. Focus on interests, not positions.
17. It is all right to openly disagree with any member of the group.
18. Each person's ideas carry the same weight/value as anyone else.
19. Each person shares responsibility for following the guidelines and ground rules.

Appendix 9D: Group Members' Roles and Functions

Group members may choose **functional roles** to either complete a task/work or maintain relationships. They might also assume **non-functional** roles, which include behavior that does not contribute to the group. This chart describes the behaviors linked to both functional and non-functional roles.

Functional Roles		
Task/Work	**Relationship/Maintenance**	**Non-Functional Roles**
1. Initiating: Proposing tasks, goals or action; defining group problems; suggesting a procedure.	1. Harmonizing: Attempting to reconcile disagreements; reducing tension; getting people to explore differences	1. Aggression: Defining others; attacking the group or its values; joking in a barbed or semi-concealed way.
2. Informing: Offering facts; giving expression of feeling; giving an opinion.	2. Gate Keeping: Helping to keep communication channels open; facilitating the participation of others, suggesting procedures that permit sharing remarks.	2. Blocking: Disagreeing and opposing beyond "reason," resisting stubbornly the group's wish for personally oriented reasons; using hidden agenda to thwart the movement of a group.
3. Clarifying: Interpreting ideas or suggestions; defining terms; articulating issues before group.	3. Consensus Testing: Asking to see if a group is nearing a decision. Here you are reflecting back to the group what you are hearing might be a decision. So in essence you are checking out what you as the leader are hearing.	3. Dominating: Asserting authority or superiority to manipulate group or certain of its members; interrupting contributions of others; controlling by means of flattery or other forms of patronizing behavior.
4. Summarizing: Pulling together related ideas; restating suggestions; offering decisions or conclusions for the group to consider.	4. Encouraging: Being friendly, warm and responsive to others; responding by facial expression to others' contributions.	4. Out-of-field Behavior: Making a display of one's lack of involvement; "abandoning" the group while remaining physically with it; seeking recognition in ways not relevant to group tasks.
5. Reality Testing: Making a critical analysis of an idea; testing an idea against some data; trying to see if the idea would work.	5. Compromising: When an idea or status is involved in a conflict, offering a compromise, which yields status; admitting error; modifying to promote group cohesion.	5. Avoidance Behavior: Pursuing special interests not related to task; staying off subject to avoid commitment; preventing group from facing up to controversy.

Adapted from: Family Community Leadership Program, Oregon State University, Corvallis, 1990.

Appendix 9E

Common Communication Problems in Groups

- ✓ Poor speaking skills (mumbling, rambling, speaking too softly, little eye contact).
- ✓ Members unwilling to say what they really feel; cautiousness, lots of tentative, conditional statements ("Do you think?" "Maybe..." "Sometimes..." "It might be...")
- ✓ Everyone senses there is more going on than meets the eye: people's words do not match their tone of voice or mannerisms.
- ✓ Plops. Statements that receive no acknowledgements or response. If people keep repeating points, they are probably unsure they were heard or understood.
- ✓ Drops. Discounting someone's statements. ("That's not important", "What's worse is...", "What's really important", "Not only that").
- ✓ Bullying statements ("What you don't understand is...").
- ✓ Discussions in the hallways or during break that are more candid than during the meetings.
- ✓ Simultaneous discussions and side conversations.

Adapted from: **On Common Ground**, National 4-H Council, Chevy Chase, MD, 1992.

Guidelines for Good Communication

Speak with clarity and directness.
Avoid using questions to disguise statements.

Listen actively. Explore rather than debate. Avoid interrupting and talking when others are speaking.

Share information at all levels

- ✓ Sensing statements
- ✓ Thinking statements
- ✓ Feeling statements
- ✓ Wants and intentions (I want to do..., be..., have...)
- ✓ Actions (Is your behavior consistent with your words?)

Listen for these examples of "I" statements. You're likely to hear them as your groups develop their communication skills.

- ✓ "Right now, I want..."
- ✓ "I am troubled by..."
- ✓ "I'm wondering what everybody else is thinking?"
- ✓ "Right now, I would really like a break."
- ✓ "I feel confident about this."
- ✓ "I'm overwhelmed."
- ✓ "Here's how I see the issue..."
- ✓ "Well, I think we disagree on this."
- ✓ "I've noticed when we talk about this subject, you get very quiet, look away...is there something else going on?"
- ✓ "Yes, I wasn't listening, I was thinking about something said earlier, could you fill me in?"
- ✓ "I don't feel competent about this matter."

Appendix 9F: A Self-Checklist for Communication Skills

Developing good communication skills takes time. Take a spot check of your habits. Ask yourself these questions periodically. Pat yourself on the back for the "Nos"; zero in on the "Yeses" by taking steps to change.

	YES	NO
Am I talking *about* instead of dealing *with*? (Am I using abstractions and generalizations rather than speaking for myself?)		
Am I lecturing to the other person about what ought to be, rather than dealing with him or her on what is?		
Am I asking rhetorical questions, pretending I am looking for information, when what I really want to do is make a statement?		
Am I saying "you," "We," "one," etc. when I mean "I"?		
Am I talking about the past when the issue is in the present? (Is there something that in the past I need to deal with before I can move on to what is happening right now?)		
Am I stating a position, when I need to be talking about concerns?		
Do I stop when I am finished talking, or do I go on giving anecdotes?		
Am I broadcasting into the air, rather than talking directly to the person I want to reach?		
Am I sending mixed messages (e.g. expressing anger with a smile on my face)?		
Am I really seeing and hearing what's going on, or is my mind thinking about the future or past, or imagining what someone else is thinking?		

Adapted from: **On Common Ground**, National 4-H Council, Chevy Chase, MD, 1992.

Appendix 9G: Dealing with Problem Behaviors

Behavior	Effective Response
Domination by a Highly Verbal Member	When one person is over-participating, everyone else is under-participating. So, focus your efforts on the passive majority. Encourage *them* to participate more. Trying to change the dominant person merely gives that person all the more attention.
Goofing Around in the Midst of a Discussion	*Aim for a break as soon as possible.* People have become undisciplined because they are overloaded or worn out. After a breather, they will be much better able to focus.
Low Participation by the Entire Group	Switch from large-group open discussion to a different format that lowers the anxiety level. Often, idea-listing is the perfect remedy. If safety is a major concern, small group activities are very important.
Two People Locking Horns	Reach out to other members and say, "Who else has an opinion on this issue?" or "Let's step back for a minute — are there any other issues that need to be discussed?"
One or Two Silent Members in a Group While Other Members Participate Actively	"I'd like to get opinions from those who haven't talked for a while." Breaking into small groups works even better. Small groups allow shy members to speak up without having to compete for "air time."
Whispering and Side Jokes	With warmth and humor, make an appeal for decorum. "As you know, those who don't hear the joke often wonder if someone is laughing at *them*." If the problem persists, assume there's a reason. Has the topic become boring and stale? Do people need a break? Or the reverse – maybe *everyone* needs time for small group discussion.
Minimal Participation by Members Who Don't Feel Invested in Topic	Look for an opportunity to have a discussion on "What's important to me about this topic?" Have people break into small groups to begin the discussion. This gives everyone time to explore their own stake in the outcome.

Behavior	Effective Response
Failure to Start on Time and End on Time	Start when you say you're going to start. (Waiting encourages lateness.) If you must go overtime, call a break so people can "phone home." If going overtime is recurrent, improve your agenda planning.

Quibbling About Trivial Procedures	Have the group step back from the content of the issue and talk about the process. Ask the group, "What is really going on here?"
Someone Becomes Strident and Repetitive	People repeat themselves because they don't feel heard. Summarize the person's point of view until s/he feels understood. Encourage differing views.
Someone Discovers a Completely New Problem That No One Had Previously Noted	Wake up! This may be what you've been waiting for — the doorway into a new way of thinking about the whole situation.

Adapted from: **Facilitator's Guide to Participatory Decision Making** by Sam Kaner, Gabriola Island, BC, 1996.

Appendix 9H: Conflict Management Styles

To determine your preferred style of conflict management, read the following five statements. Rank the statements, giving a "1" to the approach that best represents your style and "5" to the one that is least your style.

A. I am generally firm in pursuing my goals. I try to show others the logic of my position and its benefits. I give in reluctantly.

B. I try to find a middle group solution. I am willing to give up some points if it will lead to a fair combination of gains and losses for both parties. To expedite the resolution, I generally suggest that we search for a compromise, instead of stubbornly hold on to my position.

C. I try to avoid the debilitating tensions associated with disagreement by letting others take responsibility for solving the problem. If possible, I postpone dealing with the problem until I can cool off and take time to think it over. To reduce the likelihood of conflicts, I often avoid taking controversial positions.

D. I try to soothe the feelings of the other party, so the disagreement doesn't damage our relationship. I try to diffuse the conflict by focusing on points of agreement. If the other's position seems very important to him or her, I will probably concede my own to maintain harmony.

E. I attempt to get both parties to air their concerns and discuss the issues, I describe my positon frankly and ask the other person to do the same. I favor a direct discussion of conflicting views as a way of forging an agreement. I try to satisfy the wishes of both parties.

Following is a brief discussion of the different styles. A = Competing style. B = Compromising style. C = Avoiding Style. D = Accommodating style. E = Collaborating style.

Ideally, you will have each of the above styles in your repertoire to use as is most appropriate in a given situation. Such things as the situation's history, the complexity of the conflict, time and resource constraints, and the importance of goals and relationships involved will influence your choice of style.

Competitor: The competitor's focus is on meeting her personal or organizational goals rather than on maintaining relationships. Meeting other people's needs is not the highest concern.

Uses:

- When a quick decisive action is imperative.
- When you have no more energy for relationship work.
- On important issues where unpopular courses of action are needed.
- When you know you are right.

Compromiser: The compromiser's approach assumes that it is not possible to meet fully both the goal needs and relationship needs, so he works to find middle ground.

Uses:

- When two people or groups with equal power are strongly committed to mutually exclusive goals.
- To arrive at expedient solutions under time pressure.
-

Avoider: The avoider's approach to conflict is not to engage in the dispute. The need to avoid the conflict is stronger than the need either to accomplish one's own goals or to preserve the relationship involved.

Uses:

- When the issue is trivial or when the other issues are pressing.
- When you perceive no chance of satisfying your concerns.
- When the potential damage of confronting a conflict outweighs the benefits of its resolution.
- As an interim measure, to let people cool down before confronting them.

Accommodator: The accommodator overlooks his own concerns to satisfy the concerns of other persons. The focus is on maintaining the relationship rather than on meeting one's own goals.

Uses:

- When the issue is much more important to the other person than yourself.
- To build up social credits for later issues that are important to you.
- When continued competition would only damage your cause.
- When you realize you are wrong.

Collaborator: The collaborator works to understand and meet the goals of the people involved in the conflict in a way that maintains, and even enhances, the quality of the relationships.

Uses:

- To gain commitment by incorporating everyone's input into joint problem solving and decision-making.
- To find an integrative solution when both sets of concerns are too important to be compromised.
- To work through hard feelings that have been interfering with an interpersonal relationship.

Adapted from: **Conflict Mode Instrument** by Thomas-Kilmann, XICOM, Tuxedo, NY, 1994.

Appendix 10A: Agenda Format

Group:

Date:

Title of Meeting:

Starting Time: Ending Time:

Place:

Outcomes:

Facilitator:

Recorder:

Please Bring:

Agenda Item	Persons Responsible	Action Needed	Time

Appendix 10B: Facilitation Techniques

- Clearly define your role as the facilitator, so meeting participants know what to expect from you. Indicate what you will and will not be doing and ask people to let you know if you are not being facilitative (e.g. "*If any of you feel that I'm not giving you a chance to participate, or I am becoming involved in the content of the meeting, please let me know.). Being a good facilitator is difficult, so I would appreciate your help.*"

- Get an agreement at the outset of the meeting of an agenda and process(es) for moving through agenda items. This promotes individual investment in, and group ownership of, the meeting.

- Give as few directions as possible at the agenda-setting stage. Give people time to see that you are there to help them and that they need your help.

- Check for agreement with the group whenever you make a statement or propose a process; e.g. *"Do you agree?" or "Are there any objections?"*

- Boomerang questions back to the group; do not get into the position of answering questions the group should be addressing themselves.

- Encourage people to develop their ideas further; e.g. *"Could you say more about that?"*

- Pay attention to the group's process, watching for indications that the group is stuck. If so, determine the nature of the problem that is holding them up, and identify ways to move to a more productive state.

- Be positive and compliment the group, but don't exaggerate. The group can sense when it is in trouble and your credibility will be reduced.

- Silence can be terribly uncomfortable, but do not rush to fill the void. If you ask a question and do not get an immediate response, wait, and then follow with a probe, such as *"What do you think we should do next?" or "Is everything all right?"*

- Help to educate the group regarding process issues and options, offering brief explanations about why you are doing what you are doing. Do not talk too much, however. Allow participants to retain ownership of the meeting.

- Get permission to enforce process agreements, e.g. *"You've agreed to complete this discussion by 11:00. Do I have your permission to work toward a decision at that time?"* Get the group to take responsibility for its actions; e.g. *"It's up to you to decide if you want to change the agenda."*

- Avoid process battles. Help to keep the group from getting into arguments about the "right" way to proceed by highlighting the options available to the group, e.g. *"We can try both approaches. Which one do you want to try first?"*

- Maintain the focus of the group, redirecting their attention when the group has gotten off track; e.g. *"Wait a second. Let's keep a common focus here," or "Just a moment, one person at a time."*

- Regulate traffic by acknowledging people's desire to speak and establishing an order for discussion, e.g. *"Hold on. Let's go one at a time. Why don't you go first, Jean, and then Bill and Andrea."* If someone interrupts, try *"Wait a minute Brad, Andrea and Bill have been waiting to speak, then it's your turn."*

- Distinguish between creative conflict and interpersonal confrontation, supporting the former and discouraging the latter. When destructive arguments start, try to get those involved to focus their energy on problem solving rather than personal attacks.

- Don't be defensive. If a member of the group challenges something you have done, do not argue about it. Rather, thank the person for their comment and boomerang the issue back to the group, e.g. *"You think I'm pushing too hard? Thank you for telling me. How should we proceed from here?"*

- Don't be afraid to make mistakes or to admit them. Acknowledging that you do not have all the answers contributes to your credibility with the group. So if you make a mistake, be the first to admit and correct it: e.g. *"Wait a minute, I forgot something. We should make sure everyone agrees before we proceed."*

- Remember to support the recorder by repeating ideas as they are generated. In addition, find other ways to help the recorder stay in role.

Adapted from: **On Common Ground**, National 4-H Council, Chevy Chase, MD, 1992.

Appendix 10C: Meeting Action Plan Record Form

Meeting Date: Time: to Place:

Present:

Absent:

Short Summary:

Decision Taken	Next Steps	By Whom	By When
1)			
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			

Appendix 10D: Meeting Evaluation Tools

Feedback Form

The first step in building a meeting feedback form is to decide which benefits you want to measure. Next, write a few questions (seldom more than three or four) that will provide the information you desire. Write the questions in a language and style that will be acceptable to your group. Group leaders have found the following questions valuable.

1. What did you like best about the meeting?

2. What did you like least about the meeting?

3. What suggestions do you have for the next time?

4. I felt this meeting was . . .
   (Circle number)

1	2	3	4	5
a waste of time				very worthwhile

5. I felt the facilitation of this meeting was . . .

1	2	3	4	5
not helpful				very helpful

6. Based on my experiences at this meeting, I (would) (would not) (might) come to the next meeting (Circle your answer).

7. Topics that I would like to see included on the next agenda are:

Appendix 10D, continued

Group Process Evaluation

Have each member anonymously rate each variable on the scale from 1 to 5.

5 = Operating Ideally

1 = Missing Completely

1. Listening

Members don't really listen to one another — they interrupt and don't try to understand others.	1 2 3 4 5	All members really listen and try hard to understand.

2. Open Communication

Members are guarded or cautious in discussions.	1 2 3 4 5	Members express both thoughts and feelings openly.

3. **Mutual Trust and Confidence**

Members show suspicion of one and another's motives.	1 2 3 4 5	Members trust one another and do not fear ridicule or or reprisal.

4. Attitudes Toward Differences Within Group

Members avoid arguments, smooth over suppress or avoid conflicts.	1 2 3 4 5	Members search for, respect, and accept differences and differences, work through them openly they are not pressured to conform.

5. Mutual Support

Members are defensive about themselves and their functions.	1 2 3 4 5	Members are able to give and receive help.

6.	**Involvement and Participation**		
	Discussion is dominated by a few members.	1 2 3 4 5	All members are involved, free to participate in any way they choose.
7.	**Control Methods**		
	Subject matter and decisions are control - led by the chairperson.	1 2 3 4 5	All members accept responsibility for productive discussion and for decisions.
8.	**Flexibility**		
	The group is locked in on established rules, and members find it hard to change procedures.	1 2 3 4 5	Members readily change procedures in response to new situations.
9.	**Use of Member Resources**		
	Individuals' knowledge, abilities, and experience are not utilized.	1 2 3 4 5	Each member's knowledge, abilities, and experience are fully utilized.
10.	**Objectives or Purposes**		
	Objectives are not clear or not understood, and there is no commitment to them.	1 2 3 4 5	Objectives are clear, are understood, and there is full commitment to them.

Adapted from: Northwest Regional Education Laboratory, Partnership for Rural Improvement, Portland, OR. (date unknown)

Appendix 11A: Writing a News Release

Press Release Preparation

• Send out press releases four weeks in advance of an event.

• Send a revised version two weeks ahead of time.

• Follow up releases with telephone calls to media contacts to encourage them to run the piece.

Writing a News Release

Most reporters, whether print, radio or TV, are willing to *hear* news stories about a coastal monitoring program by phone or in person, but they appreciate having a *written* article beforehand to give them the important background information they need to understand the issues. The easiest way to do this is with a news release.

A news release is meant to communicate the who, what, when, where and why behind a newsworthy item. One doesn't have to be an expert writer to craft a release. By putting down the essence of your group's message, you are giving an editor something to work with. He or she may write an article based largely or partly on the release, or may simply insert the release verbatim into a newspaper or radio or TV story. Your release might also generate editor interest in writing a longer story or covering one of your events.

Here are tips for an effective release relevant to a monitoring program.

- ✓ Aim for a "slow news day," such as a holiday or the day after. Editors may give your story greater prominence if there are fewer competing newsworthy items.
- ✓ Use 8 _" x 11" paper, leaving wide margins so editors can make changes.
- ✓ Use organizational letterhead stationary.
- ✓ Type "FOR RELEASE" or "FOR IMMEDIATE RELEASE" at the top left hand corner of the page. Put the name of the contact person and his or her phone number (perhaps also a home phone number, as some reporters or radio staff will want to call outside of traditional work hours) below the release information.
- ✓ Type the date at the top right hand corner of the first page.
- ✓ Keep the headlines simple. Try to cover the facts of the lead paragraph, keeping the purpose of the story in mind.
- ✓ Present information in descending order of importance. The very first (*lead*) paragraph should include *what is* happening, *who* is doing it, *when* and *where* it's taking place, and the purpose of the project. Follow this with a middle paragraph that gives a more detailed picture, and then a closing paragraph. Since your objective is to get people's interest, describe how what you are doing will affect *them*; tell them in the first paragraph how *they* can get involved, or what difference it will make in *their* lives. Emphasize how the subject relates to issues of local significance and is timely.
- ✓ Use simple, declarative sentences and be objective.
- ✓ Put each *new* idea in a separate paragraph.
- ✓ Keep paragraphs short.
- ✓ The release should make sense if it were to end after each paragraph (i.e., each paragraph should stand alone, so that if the release is abridged, it will make sense).
- ✓ To attract the most attention, ignore the mundane and pick out interesting anecdotes and stories for your press release.

- ✓ Use quotes. People like to read what others have to say, in their own words. Reporters usually would like to do an actual interview with you or whoever is the key person involved in your event, but they may not have time. By putting quotes in your news release, they can write an article that looks as if they did an actual interview; reporters can also call your designated contact person for more information.
- ✓ At the end of the release, type –30- or ####. These tell the reporter the article is ended.
- ✓ Make sure that dates, times and places are accurate and that names are spelled correctly.
- ✓ Know your audience. Daily papers like releases to be short and sweet, as do radio stations and weekly papers with small news sections.
- ✓ Try to keep the press release to one page, but if you go to two put "MORE" at the bottom of page one and do not exceed two pages.
- ✓ Provide photographs, particularly action shots featuring local people. Daily newspapers may not have room for photos, but weekly papers are much more likely to run a story if there is one or more accompanying photos. This is also true of newsletters published by other organizations. Make sure your photos are clear. Glossy black and white prints in 5x7 or 8x10 sizes are generally best, but call each paper first and find out what they prefer. Write the caption carefully and get the names right. Photo captions are often what people read first so make them informative and interesting.

When you first contact a reporter, find out the date(s) of his or her deadlines. Try to have your release arrive a day or two *before you* want the story to appear. If it arrives too soon, the reporter may lose it. If it's too late, you get no publicity at all. When a reporter calls you for additional information, again ascertain the copy deadline.

Send copies of the press release to relevant agencies and organizations, and make sure that all reporters who cover regional environmental issues receive one. Hand delivery ensures your release makes it to its intended destination but is typically time-consuming. Use a fax machine for greater speed and follow up with a phone call to make sure the fax was received. Don't assume that your faxed release will make it through — all kinds of problems can thwart your communication efforts!

Following the press release, track any resulting news stories and keep written records (listing stations where stories appeared; the time and length of any interviews; the names of reporters who wrote articles using the release). Use your developing rapport with reporters when creating future releases. Don't be discouraged if a given release doesn't generate much coverage overnight: it may be days or even weeks before a reporter picks up on the story. If you live in an area covered by a weekly and are not getting coverage, tighten up your follow-up. If necessary, call the editor and ask if there is a problem with your releases and whether it would help if you did something differently.

Adapted from *101 Ways to Raise Resources and Writing Effective Press Releases, Vineyard, S and McCurley, S., Heritage Arts Publishing, Downer's Grove, IL., 1988.*

Appendix 11B: Giving Media Interviews

Being well prepared for and enthusiastically participating in a media interview can result in very effective coverage of your group's monitoring program. Interviews can also be highly enjoyable. Here are a few tips for getting the most out of every interview situation.

Prepare for the interview. Anticipate the reporter's questions and have written supportive data, background information, or handout materials available if possible. Review any material you feel you are not up to date on prior to the interview.

During the interview:

- ✓ Present your most important points first.
- ✓ Be succinct. Pause briefly to formulate your answer. Then respond to questions in a clear, concise manner.
- ✓ Point out all the benefits to the public of your program.
- ✓ State things in a positive way. There is always a way to turn a negative into a positive for your cause. For example, a closed shellfish bed is a negative thing, so stress the benefits for people and the environment following monitoring, data interpretation, recommendations for action and action implementation.
- ✓ Be friendly, but not too friendly. Call the reporter by his or her first name.
- ✓ Keep your eyes on the prize. Avoid the very human temptation of promoting *yourself* and how hard you are working; the project must come first.
- ✓ Don't let yourself be pressured. Think your answers through before speaking.
- ✓ Be sincere and helpful to the reporter. ALWAYS BE HONEST!
- ✓ If you don't know the answer, tell the reporter you will call back with more details.
- ✓ Exercise restraint in using absolutist phrases (phrases including such words as *always, never, first and worst*). Such words invite challenge and distract from the main point.
- ✓ Avoid using jargon and technical terminology unless it is necessary. In such cases, explain unfamiliar terms to the reporter.
- ✓ Never use off-the-record remarks. Such remarks may send the reporter off chasing some other story and divert attention from your cause.
- ✓ Do not use profanity or a jocular manner during the interview.
- ✓ Stay away from hypothetical questions. Bring the conversation back to the concrete questions on hand. Say something like, "There's not much point in discussing something that might happen. We are faced with the very real problem of..."
- ✓ If there is some possibility in your mind that you have misheard or misunderstood a reporter's question, ask him or her to repeat or paraphrase the question.
- ✓ Seize every opportunity to review the story with the reporter, and correct erroneous information before and after printing or airing. Be certain the reporter understands all statements.

Appendix 12A: Evaluation of Your Program

Annually review your program with your steering committee, volunteers, and others involved with the program. What worked? What didn't? How can things be done better next time? What were your major accomplishments? Using your program goals and objectives, develop measures of success against which you can evaluate your accomplishments.

Examples of Measures of Success:

- Did you meet your program goals?
- Did you meet your fundraising goals?
- Did you establish partnerships with a broad range of interest?
- Did you involve the data users in your program?
- Did the media cover your program?
- Were your data used?
- Did you produce a study design? Did your data users approve it?
- Did you meet your data quality objectives?
- Did you produce a river report?
- How many volunteers did you involve?
- Do you have clearly defined job descriptions for your volunteers?
- Were all your volunteers adequately trained and recognized?
- Were the volunteers satisfied with their experience?
- How does the community view your program?

During this process, set goals and objectives for the coming year. Some goals may change and some remain the same. These should be documented. Your monitoring may also change each year to meet the new program goals and to answer different questions as you learn more about your river. Your study design should be revised accordingly and all changes in procedures, sampling stations, etc., should be documented.

In any case, it's important to recognize that a good monitoring program is not static. It changes to respond to new conditions, questions, problems, and opportunities. An annual evaluation creates a process to make these changes to occur. Monitoring programs may also grow dramatically over time. Programs that begin by sampling at ten locations and analyzing for one or two indicators may grow over time into fairly complex studies.

Program Organizing Guide, Sharon Behar and Geoff Dates, River Watch Network, 1995, 23pp.

Environmental Stewardship in the Gulf of Maine: Manual Evaluation Survey Sheet

We would like to keep the information in this manual current. In order to update the material, we need your assistance. As you read and use **Environmental Stewardship in the Gulf Of Maine: *A Coordinator's Manual for Volunteer Monitoring*,** please answer the following questions giving as much detail as you can.

We value your expertise and time in assisting us with this important task. Thank you for your assistance!

1) What type of group do you represent? (e.g., land trust, water quality monitoring group, watershed planning group, etc.)

2) Where are you located? (Name, address, and email would be appreciated though optional)

3) Is this manual useful to you in doing your work? Please explain.

4) Are the examples understandable and the text clear?

5) Which chapters need more information to be better understood? What is missing?

6) Is there too much information? Not succinct enough? If so, what chapter or section should be shortened?

7) What changes would you make to the format of the manual?

8) Can you provide references for resource materials that would enhance the manual?

9) Any other suggestions that you might have for making this manual more useful would be greatly appreciated.

Please send this completed form to:

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