Top 10 Watershed Lessons Learned
Developed with Partners Across the Nation

"A very helpful document and is the kind of EPA publication that would be most helpful for us."
—Frederick, Sustainable Regions Coordinator, Maine State Planning Office

"Fantastic. This is...a really useful and insightful document, with practical advice and clear examples."
—Douglas Kennedy, University of Colorado - Boulder, Natural Resources Law Center

"Excellent resource guide for all watershed programs."
—Bob Adair, Utah College of Law, Salt Lake City, Utah

"Full of information."
—Jill Davies, Adopt-A-Stream Project, Elk Creek Watershed, Montana

"A good resource for initiating watershed work. I am planning on contacting some of the project contacts whom I have not met yet."
—Tom Davis, Brazos River Authority, Texas

"Good information. Good referrals."
—Robert Levite, Natchez River Watershed Association Land Protection Director

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For the past six or so years, EPA, in partnership with many others, has been pursuing a watershed approach to protecting our lakes, rivers, wetlands, estuaries, and streams. For a federal agency with a strong regulatory tradition, this is a new way of doing business. Taking on the role of community helper and partner has been a challenge. As with any change of this magnitude, there has been a lot of trial and error, and important lessons have been learned by us, and our many partners, that are worth sharing. Often times, these lessons have been shared informally through networking at conferences, by phone, or over the internet. This series of Watershed Lessons Learned is an attempt to identify the top lessons and present them in one place.

The target audience for this publication is what I call “watershed practitioners and those who support them.” By this, I mean anyone who is trying to make watershed work happen or support it, including concerned citizens, scientists, government employees (at the local, state and federal levels), corporate sponsors, nonprofit groups, among others. The publication of these lessons is timely given our celebration of 25 years of progress associated with the Clean Water Act. This publication addresses the next generation of protection: working by watersheds.

We believe this document meets two real needs. First, it will help readers learn what works and what does not based on past experience. Second, it will assist people in reaching important resources and contacts that exist across the nation that can help them. The need for such information was pointed out in the conclusion of a presentation made by Robert Nunn, Manager of Natural Resources, at East Bay Municipal Utility District in Oakland, Ca.

After working on a watershed plan for four years, he said that if he had to do it over again, he would spend more time educating participants on “what works” and “what doesn’t” prior to beginning his watershed planning effort.

As for how this product was developed, a focus group comprised of 20 members of the target audience was assembled.

This included representatives from River Network, Know Your Watershed, Center for Watershed Protection, Maryland Office of Planning, EPA Regional Offices, among others. This group reacted to the idea, refined it, and developed the “top 10” watershed lessons learned. That list was circulated and improved with the insights of approximately 100 watershed coordinators and their supporters across the nation. These practitioners helped to identify the best examples to illustrate each lesson and the resources that have worked for them. Such testimony is very powerful.

In terms of using this piece, each lesson is stand-alone and contains a short description of the lesson, a few examples to illustrate it (with a contact where more...
The Best Plans Have Clear Visions, Goals, and Action Items. Powerful visions make plans come alive and can stimulate action.

Environmental, Economic, and Social Goals are Compatible. Watershed approaches are a way to make the concept of sustainability a reality on the ground.

Partnerships Equal Power. Rather than putting up fists, watershed groups are sharing hands with all stakeholders, including industry, to remedy the major problems.

Measure, Communicate, and Account for Progress. Delivering meaningful information to the public and key decision makers is critical so that they can monitor progress.

Education and Involvement Drive Action. Well-designed education programs lead to tangible results when they involve people and encourage reflection.

Build on Small Successes. Starting small and building incrementally creates momentum toward larger goals and visions.

Plans Only Succeed if Implemented. Successful plans—one that do not collect dust—focus on a manageable scale and assign action items to individuals.

Good Tools are Available. Powerful tools such as workshops, guides, internet sites, and geographic information systems exist to support watershed groups.

Having a Coordinator at the Watershed Level is Desirable. A coordinator based in the watershed provides a focal point and helps build relationships and establish trust.
The Best Plans Have Clear Visions, Goals, and Action Items

Visions can rally individuals to take action and to focus their efforts on specific goals. The best visions are graphic in their descriptions and relate to human experience. Bernie Fowler, for example, former Maryland state senator and a leading voice on environmental issues, brought instant attention to the problem of sediment in the Patuxent River when he stood chest high in the river and declared: “I want to be able to see my feet.” At the very least, visions must be scientifically accurate — represent the facts — and be understandable to the general public.

So how does a watershed group come up with powerful visions? Experience suggests that before a group can develop visions and goals, there must be a clear and widely recognized problem statement. This statement helps to establish a common understanding of the conditions that warrant a watershed protection effort. The term “problem” does not mean that a water body has to be actually damaged before action can be taken. Just the threat of damage in a pristine watershed may prompt a group to take action.

Clear visions help watershed groups understand, relate to, and support protection and restoration efforts. And, when framed well, they can also help the general public, elected officials, business, the press, and community leaders understand.

In addition to visions, groups usually develop goals, objectives, and action items. The difference among them is as follows.

A. Visions - general statements of where the effort wants to go and what it will accomplish over a given time span (usually 5 to 10+ years). Visions should be comprehensive enough to capture the thrust of the efforts overall mission.

B. Goals - less general than visions, describe what is needed to obtain vision, refer to components of overall effort, sometimes quantifiable.

C. Objectives - elaboration of goals, describe types of management or activities and are quantifiable where possible.

D. Action Items - explain who is going to do what, where, and when; they generally articulate how to implement the objectives and should be quantified if possible; benchmarks of existing conditions and/or indicators should be developed for action items.

*Note: Objectives are optional. Some watershed groups may find that additional level of detail confusing.

These four elements are folded into an implementation plan. It is desirable to obtain commitments to as many of them as possible.

Many watershed groups go through a facilitated workshop process in which they develop their statements. A facilitator, as a neutral party, can help people reach consensus and avoid getting bogged down in arguing among interests. It is important not to quibble over whether a particular statement becomes a goal or an objective. What is important is to get issues on the table. Designating them can come later. The below examples illustrate some lessons learned in different regions across the nation.

Chesapeake Bay Watershed

The 40 Percent Nutrient Reduction Goal Was Perceived as Fair

The sum of these options results in a 40 percent nutrient reduction for each bay tributary.

In the 1970’s, it became increasingly obvious that the Chesapeake Bay was degraded. Bay grasses had died back to a fraction of their historical coverage, large parts of the bay were devoid of oxygen, the water was murky, and some species of fish and shellfish had dramatically declined. An extensive series of scientific studies was undertaken to determine the causes of the problem. By the early 1980’s, a scientific consensus emerged that nutrients — both

Top 10 Watershed Lessons Learned October 1997
Nitrogen and phosphorus — were the primary pollution problems in the Bay. Moreover, it was clear that states throughout the Bay's 64,000 square mile watershed were contributing to the pollution problem. In 1985, the first Chesapeake Bay Agreement was signed by the Governors of Maryland, Virginia, and Pennsylvania, the District of Columbia, the Chesapeake Bay Commission (representing the legislative bodies of those states), and the U.S. Environmental Protection Agency. This Agreement represented a vision of creating a regional approach “to improve and protect water quality and living resources of the Chesapeake Bay estuarine system.”

In 1987, the second Chesapeake Bay Agreement was signed, which allowed the regional watershed approach adopted in 1983, and included specific goals to restore water quality. Among the most important was the goal to: “develop, adopt, and begin implementation of a basin-wide strategy to equitably achieve by the year 2000 at least a 40 percent reduction of nitrogen and phosphorus entering the main stem of the Chesapeake Bay. The strategy should be based on agreed-upon 1985 point source loads and on nonpoint loads in an average rainfall year.”

A subsequent agreement specified this load in pounds of nitrogen and phosphorus, and allocated it to the Bay jurisdictions. This goal is Subject to the following reasons:

- It is based on scientific consensus of the most well-studied ecosystem in the world.
- The 40 percent reduction is the key to restoring the Bay but is also linked to many other goals;
- It can be communicated to and understood by the general public, elected officials, and others;
- It is specific, quantifiable, and can be allocated to particular political jurisdictions or river basins;
- It is perceived as fair yet flexible. In order to reach the Bay-wide 40 percent nutrient reduction goal, each jurisdiction was assigned a 40 percent nutrient reduction goal. Yet each jurisdiction was free to develop its own strategy to meet that goal, based on local land use, existing programs, and resources.
- It has the political support of the leaders of the Bay States and the U.S. EPA, as well as the broad support of local governments, the public, and an array of interest groups.

The goals objectives include implementing the conservation practices needed to achieve the 40 percent nutrient reduction goal. This is being done through the development of Tributary Strategies — watershed-based plans to reduce nutrient pollution through wastewater treatment plants, agricultural best management practices, and resource protection, and growth management activities. The sum of these options results in a 40 percent nutrient reduction for each Bay tributary.

The evolution of the Chesapeake Bay Agreement illustrates the progression from a common reason to a specific goal that is implemented through a series of specific actions. In the Bay watershed, the emphasis has evolved from an initial focus on the main stem of the Bay to the actions taken by individuals and local governments throughout the watershed. Other Bay goals have been established, including those for acres of submerged aquatic vegetation, number of fish passes, and miles of riparian forest.

The community is still working on addressing goals associated with growth management, local government involvement, and freshwater streams.

**For more information:**
contact Rich Hart, Maryland Office of Planning, 410-767-4560, 410-225-4400 (fax), Rich@Mail.MD.gov or Lauren Wernz, Maryland Department of Natural Resources, 410-685-2852 (fax).

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**The State of Oklahoma**

Where Visions Must be Embraced by Locals

**The locals were more interested in water for livestock, while the state was more interested in good water quality.**

For the Illinois River in Oklahoma, the Oklahoma State Conservation Commission (Soil and Water Conservation Agency), “the Commission,” which has the legislative authority for nonpoint source issues, came up with a vision that was not embraced at the local level. At the beginning of their efforts in the Peaooter Creek Watershed demonstration project, the State went to the local community and described for them the impression they had of water quality problems in the creek: nutrients, cattle in the stream, and animal waste. They found, however, that when they went out to view the stream with the landowners, the stream appeared clear; only the reservoir way downstream showed the effects of excessive nutrient loads. The locals were more interested in water for livestock, while the state was more interested in good water quality.

The Commission was able to engage local landowners only when they questioned what the stream was like when the landowners were growing up. Together, they discovered that the stream had been deep and had contained a lot of fish. This contrasted with its present state: wide and shallow with few fish. After establishing the difference, the community was able to isolate the reason for the change — removal of riparian vegetation, cattle in the stream, and stream bank erosion.

The Commission learned lessons that it will apply in future efforts in the Peaooter Creek Watershed and when it undertakes another watershed project:

- First, they will identify local people who care to hold a watershed restoration project. If none can be found, then their energy is better spent in watersheds where there is local interest.
- Second, they will ask the landowners to identify the problems (the first step is identifying a vision).
- Third, the State will take on the role of facilitator/moderator at the meetings.
Seagrass (ca 1950)

1980 SWFWMD Seagrass Survey

This dramatic decline in the extent of sea grass beds from the 1950's to the 1980's is a powerful telling force for the need for a concerted approach to protect the Tampa Bay waters.

Credit Photo by Steve Bremer, SWFWMD

Key Contacts and Resources

GUIDES FOR PLANNING AND VISIONING

• Building a Local Watershed Partnership and Putting Together a Watershed Plan, Know Your Watershed. Describes step-by-step process for developing consensus around the purpose statement, measurable goals and objectives, and action items.
Conservation Technology Information Center, 1220 Potter Drive, Room 113, West Lafayette, IN 47907, 765-494-8035, 765-494-8969 (fax), Joyce@ctic.purdue.edu, http://ctic.purdue.edu/ktic/ktic.htm

• Cape Canaveral Plan, Chapter 1: Developing the Cape Canaveral Plan describes the process used to set priorities and develop the plan. Requested by many as a successful process that made use of focus groups and newsletter inserts. Contact: Katherine Grines, Casco Bay Estuary Project, 2402 Deering Avenue, Portland, ME 04102, 207-797-4820, 207-797-9173 (fax), kg@casco-bay.org

• Sourcebook for Watershed Education, provides details on creating or enhancing programmatic support for watershed education and problem solving. It includes information on developing program vision and goals, obtaining community support and participation, program review and assessment, and sharing your story with others. Global Rivers Environmental Education Network, 206 South Fifth Avenue, Suite 10, Ann Arbor, MI 48104, http://www.cree.net.org/grw/313-781-8142


• Community Visioning, video, 2 hours, 1294, 24-56, APA members $95.95, Planner's Book Service, 122 S. Michigan Ave., Suite 1003, Chicago, IL 60603, 312-786-6344, 312-431-0880 (fax), website address: http://www.planning.org/books/leespres.htm

• EXAMPLES OF GOALS AND VISIONS


• Reducing Agricultural Pesticide Use In Sedgwick, Journal of Soil and Water Conservation, November-December 1990, Volume 45, Number 6, describes Sedgwick’s goal to cut pesticide use on farms by 80 percent. Contact: Anne Weinberg, US EPA, 401 M St., S.E. 20460, Washington, D.C. 20460, 202-606-7147, weinberg.anne@ epa.gov

• The Visiting Planner and Its Role in Conservation-Building, Richard Volk, Program Director, Corpus Christi Bay National Estuary Program, Corpus Christi, TX, paper delivered at Watershed ’96, http://www.epa.gov/OWOW/watershed/proceedings/visit.htm

• EPA Region V Chesapeake Bay Program Website, http://www.epa.gov/Chesapeake/cbp/index.htm

• 1995-2000 Vision for the Matanza River Watershed, Harris River Watershed Association, 301 Main Street, Grasonville, MD 21638, December 15, 2002, 508-444-0259, 508-444-0914 (fax). Nice example of a locally-developed watershed plan with three clear goals and discrete action items.


Lesson from the Tampa Bay National Estuary Program

Citizens Relate to Sea Grasses

Chasing the Course, the National Estuary Program’s (NEP) Comprehensive Conservation and Management Plan for Tampa Bay, stresses measurable, resourceful goals that are realistic and achievable. A key goal of the plan is to cap nitrogen loadings at current levels (1992 to 1994 average) to enable the continued recovery of sea grasses, which are important nursery and feeding areas for fish and other marine life. Sea grasses have become a driving force in the bay restoration blueprint because of their importance to the ecosystems. In addition, many citizens can relate to this tangible, resourceful goal.

Since the 1950’s, Tampa Bay has lost about 15,000 acres of sea grass due to excess nutrients, which have fueled the growth of algae and limited the amount of light reaching underwater grass beds. Water quality in Tampa Bay has improved significantly since the 1970’s, largely due to improvements in wastewater treatment which have reduced the flow of nitrogen into the bay. Studies by the NEP indicate that the additional 12,000 acres of sea grass can be recovered by preventing future increases in nitrogen loadings. Achieving that goal will require local communities and industries to offset their nitrogen loadings by about 17 tons each year to compensate for anticipated nitrogen increases from growth.

Local governments have agreed to reduce their future loadings by 6 tons per year, that portion of the load attributed to municipal storm water runoff and sewage treatment plants. The remaining reductions will be addressed by a Nitrogen Management Consortium made up of the NEP’s local government and agency partners, working with local electric utilities and agricultural, and phosphate shipping interests. Instead of allocating specific reductions to each party, the Consortium is working to identify individual or group projects that would achieve the reductions. This innovative approach will help identify the most cost-effective and environmentally beneficial projects.

For more information contact Holly Givens, National Estuary Program, 813-883-2785, 313-932-2767 (fax).

• Moving the Watershed Planning Process from Quagmire to Success, B. Fields Gordon, Vice President & Senior Environmental Planner, CH2M HILL, Oakland, CA, John W. Rogers, Senior Vice President & Senior Environmental Planner, CH2M HILL, Philadelphia, PA, paper delivered at Watershed ’96. http://www.epa.gov/OWOW/watershed/proceedings/gordon.html


• NATIONAL PERSPECTIVE


• The Keystone National Policy Dialogue on Ecosystem Management, Final Report, October 1996, result of a dialogue among 50 high ranking representatives from various levels of government, the private sector and important stakeholder interests. Lists the key aspects of reining ecosystem protection effort, with 36 Regional examples. Keystone Center, CO, P.O. Box 8600, Keystone, CO 80459-7996, 970-488-5622.
Good Leaders are Committed and Empower Others

Leadership is a critical factor in making the watershed approach work. Watersheds can be large or small, urban or rural, degraded or pristine. They can have resources of local or national importance, and they can have little or great development pressure on them. Government may be trusted and relied upon or distrusted and feared. Likewise, the leader that emerges in any given watershed varies. He or she can be a farmer or rancher, coal miner, nonprofit organization member, local council person, or a government person from the state, tribal or federal level. Or, leadership can come in the form of a group or entity, such as a local board, State agency, or the Federal government. Essentially, leaders are individuals or groups who care about the watershed and its future.

As for common characteristics of successful watershed leaders, they tend to reflect the values of the community and to know what works there. They generally are good communicators, have the ability to bring about change and set things in motion, and are committed to making their (or a group's) vision a reality. They also tend to know how to engage, respect, and empower others and are able to find new or leverage existing resources.

Because leadership is so important, many seek to encourage and nurture it. Some states offer grants to budding watershed associations. Several nonprofits maintain lists of watershed leaders who are willing to talk to others about their success. Other groups offer training and leadership workshops.

Napa County Conservation District

How You Get There is Flexible

“A Great Leader is One Whose Followers Say: 'We Did It Ourselves'.”

-Daoism

Dennis Bowker, Resource Conservationist for the Napa County Resource Conservation District (RCD), has worked with several groups in the Napa River Watershed community to address environmental and economic concerns.

These groups have been instrumental in working together to develop and implement a management plan for the watershed called the Napa River Watershed Owner's Manual. Dennis' experience in Napa, as well as with other watershed groups around the country, has reinforced the value of leadership emerging from and driven by the ideas of a community, rather than from any one individual. This view is quite different from the traditional one in which an expert figures out what is needed and then leads the troops. Ideas, developed and embraced by the community are not personality dependent and do not collapse with the departure of an individual. Different people are active at different times and use these community-driven goals to motivate, but the mutual overall effort remains paramount.

Dennis has found in working with community groups that focusing on improving environmental conditions and developing inclusive common goals, rather than on implementing policies and regulations has been vital to the implementation of management activities and the success of community-based efforts. This reinforces the community role. While subtle, it is an important difference that can lead to more effective partnerships. Individuals can work on the environment and can promote the development of common strategies without demanding common values. In fact, involving people with different values in working on a common strategy to implement those values reinforces the benefits of considering different perspectives and value systems from the beginning.

Examples in the Napa Watershed that demonstrate the value of this approach include:

- The Conservation Regulations Community Task Force prepared an ordinance that requires an erosion control and water protection plan for
all development on slopes exceeding five percent. This was in response to an erosion incident that caused a large amount of sediment to enter a local city water supply. The ordinance does not require implementation of a specific set of best management practices, but instead simply requires that the project prevent erosion and protect water quality, with professional review of the plans before permit issuance. The participation of the entire community in the watershed management effort is further demonstrated by this passage in 1986 of a county-wide parcel tax earmarked exclusively for watershed management.

- The Napa Community Coalition for a Flood Plain Management Plan area to take a major role in redefining an often-rejected plan by the Corps of Engineers first proposed over 30 years ago. The Community Coalition stepped forward to take leadership of the project, and formed it into a Corps of Engineers Project to a Napa Community Project with Corps participation as a partner. The Community assumed leadership of the effort in order to clearly state their desire for a living river with ecologically sound methods to address flooding, and participated aggressively in the design of a new program that better addresses community interests in accomplishing flood threat reduction, while maintaining close partnership with the Corps of Engineers.

- The Napa Sustainable Wine Growing Group is working to establish voluntary farm management guidelines to ensure that world quality wine will be made commercially in the Napa Valley 200 years from now. A diverse group of commercial grape growers, agency employees, and university representatives are donating their time to develop a training and assistance program to promote environmentally sound long-term farm management that will support community environmental and public health interests while also developing profitable farm operations.

So where did this philosophy or approach come from? Dennis says this approach is a shift from hierarchical management to more horizontal, network-based management, used in evolutionary biology and in business. The approach increases the emphasis on desired outcomes and measured results in terms of environmental improvement, rather than on adherence to rules or methods chosen to reach those outcomes. In watershed management, the focus becomes the watershed resource, not the policy meant to protect the resource. The purpose of the effort - environmental improvement - is paramount: how you get there is fluid and flexible.

For more information: contact Dennis Beavik, Napa County Resource Conservation District, 707-252-4186, 707-252-4219 fax. 1025303-Adams

The Adams County Conservation District has acted as one of 37 "localarms" for the State of Pennsylvania, Department of Environmental Protection (DEP) which is trying to reduce nitrogen loads in the Chesapeake Bay watershed by empowering local communities. Largely due to the Conservation District's leadership, more than 60 Adams County farmers now participate in a program which pays up to 80 percent of the costs (not to exceed $50,000) of installing best management practices (BMPs) for controlling nutrient problems from erosion, barnyard runoff, and excess manure.

A secret to the District's success is that it has sought and followed the advice of its board which is comprised of people from the area. The board members are the community leaders who understand how the District might be able to get community landowners to participate. The District has used twilight meetings, farm open houses, news releases, and public speaking engagements to reach farmers. Thus far, they have allocated over $1 million for the installation of BMPs by Adams County farmers, and the results have been more than gratifying—expected savings in total nitrogen, alone, amount to over 150,000 pounds over the life of the program. Funding for the program comes largely from EPA and the Pennsylvania DEP.

In terms of lessons learned, Larry Marick of the District explains that he has learned that landowners care about local water quality conservation, and, to the extent he talks about that, it helps sell the program.

For more information: contact Larry Marick, Adams County Conservation District, 717-334-0936, 717-254-5069 fax, adams.conservation@dep.state.pa.us.

Urban streambed of the Adams County Conservation District emphasizes the benefits of a correctly-installed reuses stormwater facility to the Conservation District Board. Photo courtesy of Larry Marick, Adams County Conservation District.

- Adams County, PA Conservation District

Where Locals Guide the Action—expected savings in total nitrogen, alone, amount to over 150,000 pounds.

- Massachusetts

Where Community Teams Make the Decisions

In Massachusetts, there have been leaders on many different levels. For example, Trudy Grieve, Secretary, Massachusetts Executive Office of Environmental Affairs, at the State level, has been instrumental in cohering in fundamental changes in the way the State manages its water resources, aligning it around waterbides. She says that "government's job is to serve the watershed." And she means it. Ed Himan, who has been a leader in an individual watershed, is now with the state-wide coalition of watershed organizations. This coalition is working in concert with state and federal agencies to forge partnerships among government, business, civic, and environmental interests to enable sustainable watershed communities. Through this approach, decisions by informed individuals, organizations, and communities guide the application of local, state, and federal resources for ecosystem protection and management projects. Watershed Community Councils, designed as multi-interest, multi-stakeholder forums, are being established to serve a leadership role. They will provide a local voice for management of the watershed through consensus-based decision making and priority setting.
Having a Coordinator at the Watershed Level is Desirable

The watershed approach to protecting our lakes and streams and other water bodies involves many stakeholders and, as a result, requires a lot of coordination. A good coordinator is key to a successful watershed protection effort.

Having a coordinator based within the watershed is important because it provides a focal point for the watershed effort and helps to ensure that someone is paying attention to moving group activities along. The coordinator’s role varies depending on the needs of the watershed, but generally it includes maintaining contact with members of the watershed group; performing liaison with interested parties beyond the group; celebrating success; calling, facilitating, and summarizing meetings; helping to secure funding and training; and ensuring that watershed plans are developed, implemented, and effective in achieving the desired outcomes.

A coordinator may be a volunteer or a part-time or full-time paid staff person. He or she may be housed in government offices, a non-profit organization, or out of someone’s basement. In general, they should be from a group that is trusted and that has the power to make a difference. The ideal coordinator is one who can commit to spending enough time to really make a difference. Part-time and volunteer coordinators have been able to accomplish a lot for watersheds, as have individuals located outside the watershed. As for funds, securing financial resources to support a staff person is not always easy; fortunately, many groups have been creative in establishing multiple funding sources to support watershed coordinators.

Tensas River Watershed

Benefits from Having a “Homegrown” Coordinator

The Tensas River Watershed, Louisiana, has benefited from the attention of Mike Adcock, born and raised in the area. His position has been funded through the U.S. EPA wetlands and nonpoint source programs, USDA Conservation District program, and the Nature Conservancy. The McKnight and National Fish and Wildlife Foundations have also provided funds.

Mike has been working in the Tensas River watershed for over four years. The major issue is the watershed is the severe loss of wetlands. Originally, 90 percent of the watershed was bottomland hardwood wetlands. Over 90 percent of these wetlands have been lost, resulting in flooding in floodplain and sediment runoff to the river.

Since most of the remaining wetlands are on privately owned farms, landowner involvement is critical to restoring the water quality in the watershed. Being present in the community has helped Mike build trust with the farming community. This has involved a lot of one-on-one interaction. Mike began by identifying farmers in the watershed who were willing to demonstrate the economic benefits of wetlands restoration and conservation tillage practices.

For example, one farmer restored 60 acres of bottomland hardwood wetlands, then arranged for other farmers to visit his farm and see the benefits for themselves. Farmers listen to one another, which is demonstrated by the fact that the demand for enrollment in the Wetlands Reserve Program far exceeded the supply of funds in this watershed.

Duck Hunters Love It.

Mike Adcock emphasizes with farmers that the measures are voluntary, and he sees his role as a supportive one. Many farmers, he says, are interested in the economic benefits associated with good management practices, including such things as precision farming and water quality control structures. Water control structures not only allow for seasonal flooding of farm land, thereby providing increased time for sediments to settle out, but they have the added benefit of providing good habitat for waterfowl. Duck hunters love it, as do the farmers who receive the revenue.

For more information:
contact Mike Adcock, NR Delta RCO, 4274 Front Street, Winnie, LA 71365, 318-425-7226.
Environmental, Economic, and Social Values are Compatible

Stony Brook Watershed, Massachusetts

Where It Was Hard to Sustain the Effort with Just Volunteers

For more information:
contact Virginia Scarlet, 508-263-6710

Ginny Scarlet, member of the Stony Brook Watershed Association in the Merrimack River Watershed, attests to the fact that it is difficult to sustain efforts without a dedicated coordinator. The group had funds to support a part-time coordinator to help develop a watershed "report card." When the funds ran out, volunteers had to jump in and finish the final report. After its completion, the group lost momentum in a large degree, Ginny says that they would like to be able to update the watershed report card and continue the monitoring necessary to assess the status of the watershed's resources, but it is on hold until the Association can get the ball rolling again.

At the national conference Water '96 held in Baltimore, Jonathan Lash, from the President's Council on Sustainable Development, reported on his team's survey of communities across the nation and approaches they were taking to achieve sustainability. In many instances, his group and social values as complementary and interdependent and working to sustain all three over time (typically more than one generation).

Too often in the past, environmental and economic issues have polarized people, making it impossible to achieve a common vision of sustainability. For the watershed approach to become a reality, there must be widespread recognition in the community that people and nature can coexist without conflict. This can pave the way for partnerships of diverse interests to form around a sustainable vision.

Nashua River Watershed, Massachusetts

Can Sustainability Be Achieved Through Management?

The Nashua River Watershed Association (NRWA), in its long-range plan, 1995 to 2020 Vision for the Nashua River Watershed, gives high priority to the need to "support resource-based economic activities, including sustainable farming, forestry and ecotourism." Residents of the watershed recognize that protecting open space will provide positive economic returns. Through environmental education, resource-based community planning, and advocacy for resource stewardship, the NRWA attempts to achieve greater sustainability through cooperative management.

Some farming practices can have severe impacts on water quality by causing erosion, sedimentation, and fertilizer and pesticide runoff. Taking a sustainable approach, the NRWA suggests, means encouraging farmers to use integrated pest management and cost effective organic farming. An important goal of the plan is to seek the enlargement of greenway buffers along wetlands and other water bodies. To achieve this end, the NRWA 2000 Plan calls for a mix of new incentives to farmers and additional support from the state agricultural department, local conservation districts, and extension services.
According to the NRDA, the key to sustainable forests is the involvement of forest individualists who know how to manage forests to help educate landowners who want to learn. Currently, some property owners do not understand measures they could take to preserve high quality trees. Consultations with professional foresters will help fix that.

The NRDA also calls for the cooperation of local Chambers of Commerce, cultural groups, recreational enterprises, and other travel-related businesses to work together to foster “eco-tourism” in the Yasukuni River Watershed. Possible tours themes designed to attract visitors to the region include visits to “pick-your-own” apple orchards, farm stands, wineries, artistic studios, restaurants, and festivals. The tours would be small, utilizing vans rather than buses.

The NRDA developed the 2020 Plan with extensive community input. Conservationists were achieved around an overarching vision for the watershed that was so compelling the NRDA adopted it as its own mission statement in 1996: “a healthy ecosystem with clean water and open spaces for human and wildlife communities, where people work together to sustain mutual economic and environmental well-being.” Throughout all work, the NRDA recognizes that economic, social, and environmental needs are compatible.

For more information: contact Robert LeVine, 508-448-0226, 508-448-0861 (fax), mrae@fas.uidaho.edu

Blackstone River National Heritage Corridor

Water Quality is the Key to Community Development

The Blackstone River located in Massachusetts and Rhode Island is rich in historic and natural resources. The Blackstone River is noted as the “birthplace of the American Industrial Revolution.” In 1790, Samuel Slater established in the valley the first successful water-powered textile mill in America. As a result of new technology, mills and industry flourished - dramatically transform- ing the American landscape. While industrialization of the valley produced economic prosperity, there were adverse side effects.

Over a century of industrial use has taken its toll on the Blackstone River, which had served as a disposal site for polluents incidental to the textile, leather making, woodwoking, and metal working industries. The result was an extremely polluted river, and as industry migrated south, the pollution issues remained.

In 1986, the region’s significance as an important part of America’s cultural heritage was recognized when Congress established the Blackstone River Valley National Heritage Corridore Commission. The Commission consists of federal, state, and local representatives, as well as private citizens. The Commission’s ability to leverage a relatively small federal investment with state and private funds has made it a model for conservation and economic development. Although the Commission owns no land, it is responsible for preserving and interpreting the significant stories and landscape features of the Blackstone Corridor.

The Commission invests in activities such as community and land use planning, heritage tourism, downtown revitalization, river restoration, recreation development along the river, interpretation, and environmental education. Many mills villages and communities throughout the river valley have realized the importance of working together. Many of the old mills have been retooled for a new century, supporting incubate businesses, residential businesses, residential housing, and retail outlets. Mill villages recognize the importance of maintaining their historic character while developing sustainable economies. And the river itself is now looked upon as an asset again. The Blackstone River Valley Explore, a river classroom vessel has carried over 70,000 people on the river for tours and educational field trips.

The great blue heron rules this approved water quality of the Blackstone River. Credit: A. Hoyme 2001

Water quality and flows, and wetland restoration and creation. The Commission understands the need to work at both a grand scale (that will take years and need major investments) as well as at the grassroots level. Most importantly, the river has once again become a focal for communities and businesses.

For more information: contact Michael Creasy, National Park Services, Blackstone River Valley, National Heritage Corridore Commission, One Depot Square, Woonsocket, R.I. 02895, 401-762-0200, michael.creasy@fish.gov or A. Elizabeth Watson, 301-362-5041, 301-305-9595 (fax), watson@nps.gov

Communities throughout the Heritage Corridor recognize that a clean river is critical to revitalization. In a major restoration effort, Federal and state agencies are working with communities and organizations to improve the environment along the riverway. Current planning efforts by the Commission, the U.S. Army Corps, EPA, and others will address issues related to environmental restoration needs: waste water treatment, toxic sedimentation, historic dams, reintroduction of anadromous fish, paper delivered at Watershed ‘96. http://www.epa.gov/OMOW/watershed/Proceed/cabintext.html

LOCAL EXAMPLES OF AND GUIDES FOR SUSTAINABILITY

- Chesapeake Bay Communities: Making the Connection, A Catalog of Local Initiatives to Protect and Restore the Chesapeake Bay Watershed. US EPA Chesapeake Bay Program, EPA 902-R-95-101, April 1996, 1-800-YOUR-BAY. Describes local efforts to protect the Chesapeake Bay, many of which have sustainable development components, including Northampton County, VA Coastal Program Special Area Management Plan for Sustainable Development, Sustainable Technologies Industrial Park, Prince William County, VA.
Watershed Management Project


**ECOLOGICAL ECONOMICS**


- MARKET INCENTIVES


- Golf and the Environment: Creating a Sustainable Future, short pamphlet that describes environmental principles for golf courses in the United States. The Center for Resources Management, 1104 East Avenue, Suite 210, Salt Lake City, Utah, 84108, provides recommendations for environmentally sensitive golf courses. $20. Contact: Ken Doller, 202-506-4024.

- Plans are essential in that they represent the consensus achieved among watershed stakeholders. Techniques of a plan include: vision, goals, actions items, and time frame (see Watershed Lesson #1). Time frames for plans typically range from 5 to 20 years. The best plans allow for the incorporation of new information, reflect the needs of the watershed, and have the commitment of the community behind them.

- The greatest challenge associated with watershed planning is to ensure that the recommendations called for within a plan are implemented and that the plan does not sit on a shelf gathering dust in some office. A key element in implementing a plan is charging an individual or organization with the responsibility to follow through and work with key constituents to take the actions laid out in the plan (see Watershed Lesson #3). It is also important to break things down to a manageable scale. This often involves a “nested approach” in which broad goals are set for large watersheds but subwatersheds are used to implement and achieve those goals.

**An Analysis of Urban Watershed Plans**

Thomas Schueler’s Insights into What Works and What Doesn’t

- Tom Schueler, Executive Director, Center for Watershed Protection, interviewed a number of watershed practitioners from various municipalities or counties that have 10 to 50 subwatersheds to manage.

- Based on their analysis of these first-generation watershed plans, the Center has proposed a dozen elements that every plan should incorporate. Chief among them, the plan should be developed around the subwatershed unit—one having a drainage area of 2 to 15 square miles. Due to their size, many subwatersheds are entirely contained within a single political jurisdiction, which helps to establish a clear regulatory authority. A typical municipality or county might have 10 to 50 subwatersheds to manage. On a small scale, such as this, subwatershed mapping, monitoring, and
other study tasks can be completed relatively quickly (6 to 12 months) and the entire management plan completed within a year.

The Center also underscored the need to create an authority, either at the watershed or subwatershed level, that is vested with the primary responsibility for implementing the plan. Perhaps the greatest reason cited for consigning plans to the bookshelf where they languished in obscurity was that no one was required to pull them down and use them as a routine part of the land development process.

For more information:
contact Thomas P. Schmelter, 301-495-1500, 301-586-0743 (Ext).

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Cedar River, Washington

Local Government Is Not a Missing Piece

Jean White, project manager for the Cedar River Basin Plan in Washington State and with the King County Water and Land Resources Division, has been charged with implementing the plan that was developed for Cedar River by a variety of interests including state, local, and tribal governments, business and community representatives. Essentially, her goal is to make the plan's recommendations a reality on the ground. Part of this includes having it formally adopted by King County as policy; the other part is getting projects in place called for in the plan. In addition, the leadership of Larry Phillips, chair of the Cedar River Council, has been critical, especially in helping to obtain funds to support plan implementation.

Demonstrating success has also been important. For example, it is very persuasive to be able to talk residents in one of the stream restoration sites and show the progress that has been made.

As for lessons to share, Jean, who has worked with nonprofits as well as at the State level, feels that getting the local government involved is often a missing piece. Given the fact that local government controls land use and has access to funding and decision-making authority, she believes they are critical players in making the watershed approach a reality.

Another thing that has worked well for King County is their River Basin Stewards. A Basin Steward acts as a community contact who answers citizen questions and requests and organizes volunteer stewardship events.

For more information:
contact Joan White, Project Manager, Cedar River Basin Plan, Staff for Cedar River Council, Surface Water Management Division, 500-306-0170, 306-295-0110 (Ext), joan.white@metro.nw.gov.

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McKenzie Watershed Council, Oregon

Action at the Subwatershed Level

Over 200,000 residents of Lane County, Oregon, depend on the McKenzie River watershed for their drinking water. They also use the river for fishing, rafting, and other recreational activities. Agricultural and other industrial uses rely on the river to supply them with large amounts of high quality water for their operations.

Development in the McKenzie Watershed and other pressures have in recent years threatened the capacity of the river to sustain the quality of its water.

A partnership of two local government led to the creation of the McKenzie Watershed Council. Lane County and the Eugene Water & Electric Board acted as convenors to organize, seek start-up funds, and provide early support and direction. The Council's mission statement reads: "To foster better stewardship of the McKenzie River Watershed resources, deal with issues in advance of resource degradation and ensure sustainable health, function, and uses." The 20-member council was formed in 1993 and is made up of private citizens, public interest groups, locally elected officials, representatives of state government, as well as representatives of the Bureau of Land Management, Army Corps of Engineers, and the U.S. Forest Service. EPA provided start-up funds and the NRCS and EPA (Bonneville Power Administration) have contributed funds for completing the action plans and public outreach.

The Council adopted a work program focused on four topics: water quality, fish and wildlife habitat, recreation, and human habitat. The Council has adopted Action Plans for all four work program topics and has begun implementing several of the described actions, including three key programs: watershed-wide water quality monitoring, citizen water quality monitoring, and restoration and enhancement projects.

Watershed-wide Water Quality Monitoring Program

With the Eugene Water & Electric Board, a local utility, taking the lead, the Council worked with a team of technical advisors to put into place a coordinated approach to long-term water quality monitoring. The Oregon Department of Environmental Quality conducts the monitoring at seven stations in the watershed as well as providing part of the funding. Other funding comes from council partners Eugene Water & Electric Board, Army Corps of Engineers, Bureau of Land Management, and U.S. Forest Service. Since its inception in November of 1995, the monitoring program has expanded cooperation among the council, the Oregon Department of Environmental Quality, and technical advisors from both the public and private sectors.

Citizen Monitoring Program

A partnership with RGE (Resource Assistance to Rural Environments, part of the President's Americas Program) has been critical to the success of the McKenzie Watershed Council's Citizen Monitoring Program. This volunteer program engages students throughout the watershed in the
Partnerships Equal Power

Cheat River, West Virginia
Where Partnership Improves Everyone’s Quality of Life

"The ‘River of Promise’ is a perfect example of [a] partnership approach in action."

—Joe Piotrowski, Associate Director
Office of Watersheds, U.S. EPA Region 3

When a major acid mine blowout turned the Cheat River orange, concerned stakeholders in the watershed mobilized to form Friends of the Cheat. Water quality had been bad for many years, but now it was much worse and time to address the runoff from over a century of coal mining. “We could have focused all of our energy on confronting the parties responsible for the degradation, but we recognized that this was just one part of a much greater issue,” says Dave Bausage, FOC Executive Director. “Acid mine drainage is a huge problem in the Cheat, and we knew we would need to tap into every possible resource to address it.”

Friends of the Cheat brought together over 20 groups to restore the Cheat watershed by collaborating, sharing information, and building on each other’s work. The various interests developed and signed a payday called “River of Promise: A Shared Commitment for the

Watershed work is about partnerships. Essential ingredients for effective partnerships include: focusing on common interests, respecting each participant’s view point, thanking each other, being willing to learn about others’ needs and positions, and building trust. The important thing is to pull together a partnership that is of manageable size, creates synergy, and represents the key interests in the watershed.

No one entity can solve all the issues in any given watershed. Watershed partnerships come in all shapes and sizes, with each partner having a different interest. Some partnerships are loosely structured, while others are quite formal. Some groups are open, while others are closed — meaning they do not allow anyone else to join. Regardless of how they are structured, making partnerships work is challenging, and takes commitment. Common issues that partnerships face include selecting a leader, ensuring that all the right people are involved, and moving beyond any hostility that may exist among members. If a group is able to develop a strong core, they can be quite effective. To get past the “forming and storming stages,” some groups have set ground rules under which individuals can complain for only a certain amount of time, after which they must move on. Some groups have decided to say that issues that are too divisive are not to be discussed.

Partners can include anyone who has an interest in the watershed. This ranges from conservation groups, local elected officials, chambers of commerce, environmental education organizations, local military bases, farm groups, students, senior citizen and religious organizations, financial groups, credit unions, and land developers, among others. The important thing is to include all the key interest groups so that you can tap into their strengths, increase your credibility, reduce duplication of effort, and make optimal use of limited funds.

In terms of lessons learned, experienced watershed practitioners say that one-on-one contact is most effective in eliciting support. Further, building partnerships takes time and commitment, and once built they need to be nurtured. However, their benefits are clear as they can lead to wider acceptance and quicker implementation of projects.

**FINANCING PLAN IMPLEMENTATION**
- Beyond SRF: A Workbook for Fleeting
  CCOMP Implementation, US EPA, EPA 822-R-96-002, August 1996. Guide designed to provide innovative financing ideas for implementation of plans under the National Esplanade Program. 1-800-446-9136. Ideas are transferable beyond the HEP program.

**EXAMPLE PLAN**
- McKinzie Watershed Council, Action Plan for Recreation and Human Habitat and Summary and Highlights of Accomplishments, March 1997, John Runyon, Coordinator, McKinzie Watershed Council, 541-755-9947, 541-796-0338 (fax) 541-745-6455, 541-645-6483 (fax), bill@kwbinc.org

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**Key Contacts and Resources**

**IMPLEMENTING URBAN PLANS**

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**Evaluation and Monitoring of Water Quality Parameters, and has been a very effective outreach tool. Started with a grant from the state in 1995, the program now involves over 200 students from six schools monitoring fire sites on a weekly basis. RARE teachers have been involved as the beginning—from designing the pilot program to training students and working with them on a weekly basis to do the sampling over the last two years.**

Riparian: Education and Enhancement Projects in the Mohawk Watershed

The East Lane Soil and Water conservation District, with funding and technical assistance from the Natural Resources Conservation Service, targeted the Mohawk subwatershed, the largest tributary to the McKenzie, for establishing demonstration projects and conducting outreach. They have been assisting the Mohawk Watershed Planning Group, comprised of local landowners, in developing and implementing a plan at a subwatershed level. The Council serves as an umbrella organization for the Mohawk group and others like it, providing broad direction, support, and assistance in seeking resources for implementation.

The efforts in the Mohawk have resulted in over two dozen local landowners coming forward to enhance their own stream banks. The projects have ranged from fencing cattle away from streams to planting riparian areas on golf courses. In addition, over 5000 native trees and shrubs have been planted in partnership with several programs, including the Youth Corps, the Jobs-in-the-Woods distributed timber workers program, students from the schools, and innumerable community volunteers. Students at Mohawk High School have planted an arboretum, and a local science teacher and garden club have adopted a Native Plant Salvage Nursery.

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For more information:
John Runyon, Watershed Coordinator, McKenzie Watershed Council, PO Box 1105, Corvallis, OR 97339, 541-755-0947, 541-796-8338 (fax), runyon@kwbinc.org; Laurie Power, Environmental Manager, Eugene Water & Electric Board, PO Box 10148, Eugene, OR 97440, 541-341-8526, FAX 541-341-4724, Laurie.power@web.eugene.or.us; Megan Smith, RARE Coordinator, UO Community Planning Workshop, 1200 UO, Eugene, OR 97405, 541-346-3899, FAX 541-346-2045, smith@bio.uoregon.edu; Lisa Baldwin, Watershed Planner, East Lane Watershed Soil and Water Conservation District, 541-465-6483 (fax), bill@kwbinc.org

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Cheat River, West Virginia
Where Partnership Improves Everyone’s Quality of Life

"The ‘River of Promise’ is a perfect example of [a] partnership approach in action." —Joe Piotrowski, Associate Director
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When a major acid mine blowout turned the Cheat River orange, concerned stakeholders in the watershed mobilized to form Friends of the Cheat. Water quality had been bad for many years, but now it was much worse and time to address the runoff from over a century of coal mining. "We could have focused all of our energy on confronting the parties responsible for the degradation, but we recognized that this was just one part of a much greater issue," says Dave Bausage, FOC Executive Director. "Acid mine drainage is a huge problem in the Cheat, and we knew we would need to tap into every possible resource to address it."

Friends of the Cheat brought together over 20 groups to restore the Cheat watershed by collaborating, sharing information, and building on each other's work. The various interests developed and signed a partnership called "River of Promise: A Shared Commitment for the..."
Restoration of the Chest River, West Virginia. Signatories included federal and state agencies, environmental groups, local government, and a coal company.

The Chest River Promise Task Force meets quarterly to monitor progress and coordinate future projects. In 1996, restoration projects funded at a total of more than $1 million were initiated; the state took on a comprehensive water quality assessment, the USGS installed a critical sampling station, and EPA made available $200,000 for Friends of the Chest to implement projects in the watershed under the direction of the Chest River Promise Technical Committee.

“We’ve got a long way to go,” says Bassage, “but water quality has already started to improve. By focusing on partnerships and including a broad range of interests, we have eliminated hurdles and opened doors. We’ve rather shake hands than raise our fists, and that strategy has really paid off.”

The key to effective partnerships, he feels, is to get all potential interests in a room together and work towards consensus, rather than trying to coordinate from a goal (clean water) that benefits everyone and improves the quality of life.

For more information: contact Steve Bassage, Friends of the Chest, 304-284-2141, 304-379-3142 (fax), dbassage@access.mountain.net.

Fish Creek Watershed, Indiana and Ohio

Can Partners Look Beyond Their Individual Interests?

The effectiveness of stakeholder partnerships is well illustrated in the work being done at the Fish Creek Watershed, which drains 110 square miles of agricultural land in northeast Indiana and northwest Ohio. The creek is noted for having the most diverse assemblage of freshwater mussels in the Great Lakes Basin. 51 species inhabit the creek. Of these, three are endangered. Soil erosion and loss of wetlands and forest land threaten the system.

Together, partners from a multitude of public and private organizations have succeeded in reforesting land along the creek, fencing livestock, restoring wetlands, and creating a nature reserve. Larry Clemens, of the Nature Conservancy, attributes the success of the project to the fact that each partner is able to look beyond his or her organization’s “traditional” interest and focus on the needs of the watershed.

The partners share a vision that water quality should be protected in a way that allows for economic development. Implementing the vision requires a lot of “cold calling” on the part of the local advisory group to solicit the input of local citizens in individual projects.

The project manager shared this information with the partners, who then stepped forward with the funds.

For more information: contact Larry Clemens, 219-665-9141, 219-665-9141 (fax) or visit the Nature Conservancy’s home page and see the Indiana subscription, www.tnc.org.

Know Your Watershed

A Key Resource for All Partnerships

Know Your Watershed, a public-private partnership operating out of West Lafayette, Indiana, supports existing watershed partnerships and helps in the creation of new ones. Its goal is to have 2000 watershed partnerships in the nation by the year 2000. As of mid-1997, it had identified over 1000. Know Your Watershed supports watershed-in-watershed networking, technology transfer efforts, and capacity building at the regional, state, and local levels. Their Starter Kit (see Lesson 7 under Key Contacts and Resources) hashes on in on the keys to making watershed groups work. Project Manager Carol Keppe explains, “Lack of funds and lack of a full-time watershed coordinator are often excuses. The real problem usually lies deeper. It centers on fear of conflict, fear of working with the ‘opposition,’ lack of secure understanding of all the sides of issues.”

Know Your Watershed works with national and state partners to multiply the watershed approach message. For example, partners like Tennessee Valley Authority, River Network, North American Lake Management Society, and others joined together in 1995 to sponsor a Southeast Regional Watershed workshop in Chattanooga, TN. Another example is a Farmer-Led Watershed Initiatives Conference.
sponsored by the National Pork Producers Council, Dupont, Novartis, the Institute for Agriculture and Trade Policy, and the McKnight Foundation in Minneapolis, Minnesota. Further, in the Elk Creek Watershed in Montana, the MopA-Stream project and the local conservation district worked with the Montana-based Know Your Watershed, an independent state effort that utilizes materials created by the national partnership, to hold a workshop at which local residents decided to establish a watershed council. A 20-year vision was also developed: the creek was to be “running full length with good water” and was to have “numerous fish” and “happy neighbors.” The new council wanted to correct the severe erosion problems in the creek that had begun with a 1995 flooding. This new partnership has been successful in securing a State 319 grant and State Fish grants to help support their pilot restoration project.

For more information:
contact Know Your Watershed, 765-494-3559, 760-688-5060 (fax), kyer0litical.purdue.edu or Jim Davis, 14 Old Bull River Road, Nis Bet, MT 59063, nuci220@montana.com (e-mail)

Key Contacts and Resources

PARTNERSHIP SUCCESS STORIES AND INITIATIVES

• Watershed Management: Four Examples, 60 minute video featured at Watershed ’96 conference satellite down load, $34. Great partnership examples, especially Henry’s Fork, ID. Other case studies are Green River, RI, Miccosukee River, FL, and Edgewater Aquifer Source Creek, TX. Produced by Department of Soil and Atmospheric Sciences, Cornell University and Cornell Cooperative Extension. Cornell University Resource Center, 7 Biologists/Technology Park, Ithaca, NY 14850, Phone: 607-255-2000, Fax: 607-255-9966, e-mail: Dat.Center@cornell.edu

• Mark Tewin Water Quality Initiative: an alliance of farmers, soil and water conservation districts, government, agriculture, business communities, educators, schools, financial institutions, health department, private industries, real estate boards, trade and commodity organizations, and special interest groups to safeguard the water quality of Mark Tewin Lake and six other public water supply reservoirs. This 19,600 acre lake is an important drinking water source in Northwest Missouri being threatened by ag-chemicals, nutrients, and sediment. Contact: Ray C. Archuleta, Water Quality Project Manager, Mark Tewin Water Quality Initiative, USDA- NRCS Macon, IL 618-365-0350 for additional information.

• Coastal America: A Partnership Paradigm for Protecting and Restoring Ecosystems and Waterheds, Virginia Tipton, Director, Gulf Upland, Deputy Director, Coastal America, Silver Sping, MD, paper delivered at Watershed ’96, http://www.epa.gov/OWOW/watershed/Proceedings/tipton.htm


• McKenney Watershed Council’s Water Quality Partnership, (funded by several Council partners) has been instrumental in developing and implementing a long-term water quality monitoring program that will assist in monitoring the health of the river over time. Coordinator, John Reisman, 541-752-0647, P.O. Box 1025, Corvallis, OR 97333, 541-766-5300 (fax), runpod@pod.com


• National Nonpoint Source Forum, Larry Seale, Conservation Fund and Chair of Forum, remote at Watershed ’96 http://www.epa.gov/OWOW/watershed/weiter/etcet/Excellent example of broad-based partnerships involving the public and private sectors. Tangible result is the National Watershed Awards. EPA Contact: Carl Myers, 202-363-7040, myersc@epa.gov


• Ruthian Land and Water Alliance, broad-based alliance, established as a non-profit, working to protect the drinking water supply in south central Iowa (rural community). Contact: Jim Cooper, 515-437-4576.

• Chino Lake Watershed Restoration Project Alliance, established in 1994 as a regional nonprofit corporation to protect their drinking water and other uses of the lake. Involves five lake associations, three towns, a water district and a lake water utility. Contact: Tony St. Peter, Main Department of Environmental Protection, 207-287-3091, or Norms Marchett, 207-287-7777, www.state.ca.us/dep/dpib.htm

• Golf and the Environment: Creating a Sustainable Future, Environmental Principles for Golf Courses in the United States, short presentation developed by The Center for Resource Management, 1104 East Ashton Avenue, Suite 210, Salt Lake City, Utah, 84106. Provides recommendations for environmentally sensitive golf courses. EPA Contact: Phil Ortt, 303-200-6615.

• PARTNERSHIPS WITH CORPORATE AND FARMAERS

• Wildlife Habitat Council, has succeeded in putting on the ground, in partnership with corporations and others, enhancement projects on over 400,000 acres in 41 states. 1010 Wayne Avenue, Suite 200, Silver Spring, MD, 20910, 202-388-8964, 301-986-4029 (fax), whc@cw.com, http://www.wildlifehabitat.org/About Us. Regional offices located in South Carolina, Michigan, and Kentucky. Robert Johnson, Vice President. The Cooper River Corridor Project Community-Based Planning Initiative is a key example of the power of partnerships to achieve sustainable development within a watershed context.

• The Pork Industry’s Environmental Partnerships, Environmental Services, National Pork Producers Council, paper delivered by Jeff Gall, California at Watershed ’96, http://www.epa.gov/OWOW/watershed/Proceedings/gall.htm


GENERAL PARTNERSHIP NETWORKING TOOLS AND MODELS


• Water Valley Watershed Network coordinates financial and technical assistance to local watershed associations, including newsletters to groups, statewide networking. Contact: George Constantz, West Virginia DNR, 304-856-9391, 304-856-5589 (fax).


• Sourcebook for Watershed Education provides details on creating or enhancing programs. Support for watershed education and problem solving. It includes information on developing program vision and goals, building community support and partnership, program review and assessment, and in your story with others. Developed by Global Rivers Environmental Education Network, 200 South Fifth Avenue, Suite 150, Ann Arbor, MI 48104, www.ecoweb.net/owov-network/greennet/100-4-781-816-4.

• 1996-1997 River and Watershed Conservation Directory, River Network and the Department of Interior National Park Service. Includes approximately 3,000 organizations whose missions directly or indirectly involve river and watershed conservation. RiverNetwork, P.O. Box 8678, Portland, OR, 503-241-3500, rarev@fsr.ars.gov, 503-241-1056 (fax).

• Missouri Watershed Information Network, cleanhouse for watershed information in Missouri. Jerry Carpenter, University of Missouri Extension, 573-882-0085, jerry_d_carpen@uc.missouri.edu, Chris Bronkley, administrative assistant, Chris.Bronkley@mcc.missouri.edu. Partnership of state and federal agencies, non-governmental organizations, rural resource interest groups, and private industries.

PARTNERSHIP GUIDES AND RECOGNITION PROGRAMS

• Using Nonprofit Organizations to Advance Estuary Program Goals, EPA/838/930050, November 1993, 1-800-493-9188. While designed for estuarine, this document examines non-profit organizations can fulfill the role of attracting and receiving funds as well as carrying out implementation and oversight. This document may be useful to watershed groups who are considering working with or setting up a nonprofit. Contact: Betsy Tam, EPA, 202-680-6650.


• 1996-1997 River and Watershed Conservation Directory, River Network and the Department of Interior National Park Service. Includes approximately 3,000 organizations whose missions directly or indirectly involve river and watershed conservation. RiverNetwork, P.O. Box 8678, Portland, OR, 503-241-3500, rarev@fsr.ars.gov, 503-241-1056 (fax).
Good tools are essential to the success of the watershed approach. Tools are broadly defined to include geographic information systems, "how to" guides, funding sources, regulations (when appropriate), and monitoring and modeling programs. The sources of funds and technical assistance vary widely, from corporate, government, to nonprofit organizations.

In many watersheds, technical advisors are critical to the effort as watershed residents need a sound, scientifically-based understanding of the resource in order to make good decisions. Some studies suggest that one of the biggest challenges for watershed groups is securing funding. Many states have special funds to support watershed groups, but using creativity in finding other sources is always needed. GIS maps have been very helpful to watershed efforts and have served to educate constituency groups such as town councils and landowners. Fortunately, many tools are available to assist watershed groups.

**Project NEMO**

**Impervious Surface Analysis Can Be Startling**

The Nonpoint Education for Municipal Officials (NEMO) Project of University of Connecticut Cooperative Extension is demonstrating the power of using Geographic Information Systems (GIS) to advance watershed protection. And, while NEMO uses GIS and remote sensing (RS) for limited watershed analysis, NEMO Project Director Chester Arnold stresses that the most important — and most often overlooked — use of these high-tech tools is for education.

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**One aspect of NEMO that really gets people’s attention is the project’s analysis of impervious surfaces.**

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NEMO uses the power of computerized GIS maps to educate busy local land use decision makers on the complexities of the land use/water quality connection. The maps help to graphically and simply illustrate the concept of watersheds, the role of land use in determining water resource health, the relationship between watershed boundaries and political jurisdictions, and the location of key natural resources. Arnold emphasizes that the maps are not complicated, and are combined with local photographs and computer graphics to make them as simple and understandable as possible. The idea is catching on — adaptations of NEMO are springing up around the country.

One aspect of NEMO that really gets people’s attention is the project’s analysis of impervious surfaces, which is recognized as a key indicator of watershed health. NEMO conducts an impervious surface “build-out” analysis, which compares current levels to future levels projected from local zoning regulations. The difference is often startling to local officials, and can help direct changes to land use policies and management that are more protective of water resources. In partnership with The Nature Conservancy, the Environmental Protection Agency, and the U.S. Fish and Wildlife Service, the UConn NEMO team has been working on two pilot watershed projects in the lower Connecticut River valley. These projects use additional GIS data layers, like soils and parcel (property line) information, to lend more in-depth educational and analytical assistance to the watershed communities. For instance, GIS is used to target high priority large woodlot and stream side property owners for educational programs. In addition, maps of priority conservation areas and areas best suited for development are being prepared.

**For more information:**
contact Chester Arnold, 800-345-4511
(complete listing under Key Contacts and Resources in this lesson)
Save Our Streams, Izaaq Walton League

Stream Restoration Services for Local Watershed Projects

Some groups are able to get enough outside funding support that they can restore a stream with as little as $500-$1000 of their own money.

SOS encourages local groups to partner with federal and state agencies and private sector sponsors to bring costs down. Some groups are able to get enough outside funding support that they can restore a stream with as little as $500-$1000 of their own money. This partnering can pay off in other ways: in several states, like Virginia and West Virginia, data collected by volunteer monitors has been used in the State’s official water quality reports.

The typical SOS workshop lasts 1 to 2 days and covers materials developed by SOS and others. For example, besides using the Global Rivers Environmental Education Network’s teacher manual, they also use the SOS wetlands assessment handbook that they developed with the aid of citizen’s groups. Save Our Streams always takes time to learn the watershed’s history before they go into a community to conduct a workshop system to other training opportunities.

Contact: Doug Norton, 205-346-7017, http://www.epa.gov/OWD/watershed/ wacodony.htm, provides training for the watershed managers based on local, state, tribal, and federal experiences in implementing the watershed approach throughout the past decade.

For more information:
contact the National Save Our Streams, 301-548-0110, 301-548-2166 (fax), http://www.nss.org, 1-800-824-NASA. Ask for a copy of their excellent summary of stream restoration resources.

Key Contacts and Resources

TECHNICAL ASSISTANCE

- Watershed Protection Techniques, periodic bulletin on urban watershed restoration and protection tools, Center for Watershed Protection, 8737 Greeneville Road, Suite L-100, Silver Spring, MD 20910, 301-540-1850, 301-540-1874 (fax), http://www.greenewatershed.org/.
- “Volunteer Monitoring” Thomas Schlesner, Editor-in-Chief and Julie Bethel, Managing Editor. Many watershed practitioners find this useful as a source of information for local management practices information and case studies. Subscriptions are $40 or $80 for students.


Watershed Academy, watershed training for watershed managers and planer...
the National Watershed Network on the same web site.

- Water Environment Federation Technical Chut Area on Watersheds,

- Starting Up: A Handbook for New River and Watershed Organizations, covers the basics including by-laws and how to get grants. Watershed practitioners have found this very useful. Also have a list of useful issues on "Bay It with Pictures," "Developing Your Message," and "Media Matters" are very popular and useful (see Appendix 3).


  -grants. Internet tool for managers and citizens to locate watershed information.

- Index of Watershed Indicators Project, Chuck Sorensen, 302-860-1314, EP's effort, in partnership with many, to describe the condition of watersheds nationwide. Available at http://www.epa.gov/ios/1/1999/06/01.html.

- Massachusetts' watershed modeling lead, Andrew Gathoni, MA DEP 19 Winter St, Boston, MA 02109, 617-290-5500.


- FINANCIAL

- Watershed Protection: Catalog of Federal Programs, US EPA, EPA-416-B.
  -00-002, March 1993, Contact: Joe Warren, 202-260-7166. Describes federal programs that provide funding or technical assistance for watershed projects. 107 pages.

  This page includes guidelines to traditional alternative financing programs. Note: EPA grants information web page is located at http://www.epa.gov/epagrants.html includes information on EPAs wetlands, grants, nonpoint source grants, and National Estuary grants. Also, visit the page on tools to finance community-based environmental protection at http://www.epa.gov/etl/efpages/epa/grants.html. The Clean Water State Revolving Fund Program has been made more flexible to allow states to focus on their highest-priority issues, 202-260-7360.


- Measure, Communicate, and Account for Progress

- Hasting systems in place to measure and communicate progress is a critical part of watershed work. Appropriate measures not only keep watershed issues on people's radar screens, but, as they are met, allow stakeholders to share successes and to highlight new challenges to the watershed.

- Progress can be measured in many ways and communicated through meetings, brochures, internet sites, annual reports, news releases, and other ways. The important thing is to make sure that the appropriate measures of progress (often referred to as indicators) are selected and that information on these indicators is shared with relevant stakeholders. Measurements of progress should be associated with achieving goals set for the watershed effort (see Watershed Lesson #1). Depending on the goal, groups may choose water quality measurements (e.g., dissolved oxygen, bacterial levels, local collin), or less directly water quality based results (e.g. number of trees planted, number of watershed groups in a state, pounds of trash collected, number of canoe rentals, number of miles protected from erosion).

- To make sure that progress does indeed occur, most watershed groups spell out who is responsible for what in their watershed plans. Some go so far as to establish agreements that commit groups to certain actions within certain time frames. Spelling this out can help with accountability.

- In terms of groups to whom progress should be communicated, county committees, elected local and state officials, watershed residents, and major companies in the watershed are at the top of the list for most watershed practitioners. Over time, as updates on progress are made, practitioners have found that some constituencies will begin to ask for them — a sign that awareness has been raised.

- Tennessee Valley Authority Data Collection is Not Enough

"The Tennessee River is Tennessee Valley Authority's (TVA) special responsibility and reason for being. The people of our region expect us to serve as the river's manager and caretaker."

According to Wayne Poppe of the Tennessee Valley Authority's Clean Water Initiative, that acknowledgment of stewardship drives the organization's commitment to accountability through good stakeholder communication.

- The "front lines" of interaction with the public are TVA's River Action Teams — water resource professionals and education specialists assigned to work in specific watersheds across the Tennessee Valley. Their mission is to build partnerships with local residents, business and industry, and government agencies and to foster public responsibility for watershed protection and improvement. This watershed management strategies for individual hydrologic units all across the Tennessee Valley are based on both a scientific assessment of resource needs and an assessment of local community needs. The objective is to make sure water resources are in good enough condition to provide the benefits important to local citizens. Team members work side-by-side with watershed residents to accomplish these objectives, and Poppe feels this partnership approach is critical: "Our on-going presence in the field is a key component of our efforts to establish the dialogue that will help to improve and protect the river. No matter how good we..."
are at data collection and reporting, we ultimately miss the mark if we fail to provide this interaction with the river’s users.”

Telling the story is important too. Communication products that illustrate progress achieved should be tailored to fit the audiences they’re trying to reach. As an example, a new series of attractive and user-friendly watershed brochures profile the residents to see at a glance what conditions are like in the lakes that matter most to them. The information in the brochures is presented with a river user’s perspective in mind, taking into account the varied interests of local residents — everything from whether it’s safe to eat the river’s fish or swim in the lake. For more than just a “report card” on ecological health, the brochures serve in raise awareness among communicating both progress and the need for improvement. Helping watershed residents use this information to make changes that will ultimately lead to the fulfillment of most of their goals for the river’s use. That’s the kind of accountability that can serve as a benchmark for substantive, long-term improvements in water quality.

For more information: contact Wayne Poppie, 423-451-7330, 423-751-7648 (fax)

**Brazos River Authority, Texas**

**Progress Doesn’t Happen Overnight**

Tom Conry, from the Brazos River Authority in Texas, stresses that the results of watershed work do not come about over night. It may take 5 to 10 years of sharing information to achieve substantial progress. For example, in the Oyster Creek watershed, data collected by volunteer monitors was shared with industry and others in the community. The data suggested an impact on the system by the industry’s discharge. After working together for two years, industry came to understand that they were impacting the stream. Similarly, the authorities realized that industry was only responsible for part of the problem: non-point source pollution was responsible for up to 50 percent.

**Industry decided to re-engineer their discharge system to remedy the situation when they realized that (1) the data was good and (2) the monitors were not pointing fingers exclusively at them. At a result, the partnership has continued to grow. In fact, the industry has supported the volunteer monitors with chemical supplies and monitoring kits. In addition, they are**

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**Key Contacts and Resources**

- ***Key Ingredients To Address Accountability in Watersheds***
  - **Watershed Education and Restoration**, Dean Grover, Forest Fisheries Biologist, Ochoco National Forest, Prineville, OR, David A. Nutter, Bring Back the Natives Project Coordinator, Trout Unlimited, Redmond, OR, paper delivered at Watershed ’96, http://www.epa.gov/owow/watershed/Proced/grover.html
  - **Maryland’s Trilimentary Strategies: Statewide Nutrient Reduction Through a Watershed Approach**, Lauren Werneck, Roger Barding, and Danielle Lurie, Maryland Department of Natural Resources, Annapolis, MD paper delivered at Watershed ’96, http://www.epa.gov/OWOW/watershed/Proced/werneck.html

**Watershed Goals and Indicators**

- **Index of Watershed Indicators Project, Check Spennes, 202-260-1234, EPA’s effort, in partnership with many, to describe the condition of watersheds nationally. Available at http://www.epa.gov/owow/watershed/index.html**
"Education can help create support for the watershed effort...landowners would have been more receptive to the watershed effort and more involved in projects if there had been better education."

— *The Watershed Source Book*
*University of Colorado*
*Natural Resources Law Center, 1-43*

Earth Day, 1970, and the resulting actions taken by government demonstrated that public support is the engine that drives protection of the environment. But public support depends upon public awareness, involvement, and education. Watershed awareness campaigns and education programs can help people who live, work, and recreate in a watershed understand what the problems are and how they can help remedy them. Based on lessons learned by watershed educators, effective watershed communication involves:

- understanding one's audience, being careful with terms, and knowing how the target audience likes to receive its information. Further, one should be ready to explain how that particular audience can help remedy the problems—what actions they can take.

When it comes to creating awareness in the general public, watershed coordinators have used many different mechanisms, including highway signs, bumper stickers, billboards, awards, field trips, newsletters, and newspaper inserts as well as cutting edge approaches such as the internet. A large number of people have also been reached through public service announcements, license plates, storm drain stenciling, peer to peer communication, and community events.

Educating a community for the purpose of stimulating voluntary action means targeting groups from all walks of life: farmers, businessmen, school children and teachers, local government officials, homeowners, and the like. Well designed education programs can lead to tangible results, especially when they get participants out in the field, are delivered in an effective way, and encourage action and reflection. Some local watershed groups have had a lot of success in awarding small contracts to key constituency groups under which they themselves are charged with carrying out education programs. Such programs have been quite effective in encouraging the voluntary adoption of best management practices.

Watershed practitioners have learned that who delivers the information is important, as well. In general, peer to peer communication or communication by a neutral source is best. Community members, such as students, are often better received than a government official.

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**Lake Pontchartrain Basin Foundation, Louisiana**

Alligators Are Part of the Lesson Plan

Anne Rheams, Education Coordinator of the Lake Pontchartrain Basin Foundation, has developed a strong education/outreach program which consists of field trips, festivals, videos, and an excellent curriculum guide. Based on her experience, she believes that getting people out in the field is the key component of watershed education.

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Students have stenciled storm drains to educate citizens about the biggest source of pollution in the watershed, urban runoff.

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The Foundation does a lot of work with inner city children, who have very little experience with nature. “When they see a wetland system for the first time,” Rheams says, “they are a little scared..."
Raising Awareness in the Community

Students Travel Down the Kingsfisher Canoe Trail

In addition to carrying out less strenuous awareness-raising activities (such as slide shows), the Anacostia Watershed Society offers a "Day on the River" learning program to Washington, D.C.'s metropolitan area youth. The watershed covers 170 square miles and includes portions of two Maryland counties as well as the eastern half of the District of Columbia. In 1996, 376 students from eight different schools in the watershed took part in the program.

"Day on the River" begins with an introductory slide presentation. Students then embark on a five-mile canoe trip down the Anacostia's "Kingsfisher Canoe Trail.

They disembark twice along the way, at the recently restored 60-acre Kenilworth wetland and at the National Park Service's Kenilworth Aquatic Gardens. Here, they engage in identifying the flora and fauna and in monitoring water quality. They discuss their observations with the group and consider what effects land use practices have had on the river. Journal writing is featured during the expedition.

The program provides teachers with classroom follow-up activities that reinforce lessons learned on the river. Both classroom and outdoor activities are designed to exercise students in science, math, English, and history.

For more information:
Contact Anacostia Watershed Society, 201-433-6284, 301-490-3317 (fax), http://www.anacostia.org

Students Taking Action in Detroit

GREEN Students Uncover a Malfunctioning Pump

Volunteer monitoring presents a great opportunity for people of all ages to learn more about their watershed. Students in the Global Rivers Environmental Education Network (GREEN) program at North Farmington High School near Detroit analyzed data that they and students from other schools had collected and discovered bacterial contamination downriver from a city sewage pumping station. They presented their findings to the City Engineer, who then took action — he repaired a malfunctioning pump. The students not only honed their skills in various disciplines, such as language arts, civics, science, and math, but they linked data to a process for effective problem-solving.

For more information:
Contact David Schmidt, GREEN, 313-761-2142, 356 South Fifth Avenue, Suite 150, Ann Arbor, MI 48104, www.acornet.org/green

and think that alligators will eat them. However, over time, they come to understand that wetlands are beautiful systems that need to be protected.

The foundation's work has also led to action. For example, Holy Cross High School students have pulled together a collection center where residents can bring their empty oil cans for recycling. In addition, students have stenciled storm drains to educate citizens about the biggest source of pollution in the watershed, urban runoff.

A key component of the foundation's education effort is a curriculum guide, "Lessons on the Lake," designed specifically for Lake Pontchartrain. In developing the guide, the Foundation assembled a group of teachers to advise them on how to best reach youth ages 4-18. Every effort was made to assemble the best and most committed teachers — one of them, Sue Ellen Lynn, was selected in 1996 to receive the National Wetlands Award for her outstanding work. Most importantly, the curriculum accounts for the different ways that youth learn: some through visual means, others through music, and still others through touch or action.

Another component of the Foundation's outreach effort is a grants program under which teachers can receive up to $500 for implementing watershed projects in their classrooms. The Foundation has also awarded a grant to the Louisiana Children's Museum for an exhibit on the impact of urban runoff on the lake. An estimated 225,000 people visit this local museum annually.

For more information:
Contact Arne Wrems, 504-936-2238, 504-936-2783 (fax)

The Global Rivers Environmental Education Network
Tihuron Golf Course, Omaha, Nebraska

Novel Approach to Reach Busy People

The Wehrspan Lake Watershed Project has organized several “Water Quality Opens,” at a local golf course in Omaha, Nebraska. Entrants enjoy 18 holes of golf for a modest fee while learning about measures the golf course is taking to protect water quality in the Lake and about related steps being taken elsewhere in the watershed.

Clergy, elected officials, farmers, and developers overwhelmed by a desire to leave the cattails in place.

Key Contacts and Resources

FINANCIAL SUPPORT

National Fish and Wildlife Foundation, 1120 Connecticut Ave., NW, Suite 300, Washington, DC 20036, 202-657-0166, 202-857-0162 (fax), www.nuff.org. Contact: Kathleen Pickering. Since 1985, this group has invested more than $1 million in federal matching funds toward formal and informal watershed education programs for youth, teachers, and other community members. They also hosted in 1989 Watershed Education: Goals and Strategies for Training, Communication and Partnerships where approximately 60 key watershed educators gathered. Summary of session is available.

National Environmental Education and Training Foundation, offers federal funds to award one-year competitive challenge grants for educational projects that are scientifically and educationally valid, permanently improve a recipient organization’s ability to achieve its mission; and work through trusted local public/private partner- ships. The program is currently focused on public health, air, water, and environmental education excellence. In the area of water, The Foundation supports environmental education projects that help people make the connection between their water source and their water faucet. Programs that promote community wide understanding of water sources, quality, treatments, purification strategies, costs, options are a priority. The Foundation annually awards $500,000 - $500,000 in matching grants. Kevin Coyte and Michelle Harvey, 734 19th Street, N.W. Suite 420, Washington, D.C. 20009-1013, 202-638-4300, 202-688-2024 (fax). Note: Kevin Coyte was the principal author of the Swift River Principles (see Appendix I).

CURRICULUM AND ACTIVITY GUIDES

Lessons on the Lake: An Educator’s Guide to the Pochterchais Rainbow is a good example of a locally-based education guide — grades 5-12. Developed by Lake Pontchartrain Basin Foundation, 3547 Lakeshore Dr., Suite 207, 3883 N. Caussée Boulevard, PO. Box 695, Metairie, LA 70009-0690, 504-436-2336, 504-436-7125 (fax), Anne Rhenius, Education and Outreach Coordinator.


Sourcebook for Watershed Education contains examples of watershed curricula as well as select watershed activities from across disciplines. It is based on the collective experience of watershed educators and community leaders from five watershed education programs. Developed by Global Rivers Environmental Education Network, 206 South Fifth Avenue, Suite 150, Ann Arbor, MI 48104, sourcebook@earthernet.org; http://www.earthernet.org/ 313-781-8142.


VOLUNTEER MONITORING

A Citizen’s Streambank Restoration Handbook is available for $15.95. http://www.lrc.org/docs/meric/meric.html. Developed by Bars Our Streams, Izak Walton League, 727 Conservation Lane, Galturien, MD 20878-2933, Karen Fawcett, 301-548-0150, 301-548-0146 (fax). Also, see the macro invertebrates on dry resources. Kids love it! Click on “the SOD Macros Invertebrates” key.


EDUCATIONAL TOOLS

Water Quality Standards Academy, key educational workshop that helps managers, staff and citizens understand the commen- tators authority of the Clean Water Act. Contact: Frances Deissle, 202-383-1302, dassles/lfanco@epa.gov. Note: 10+ videos have been developed on various topics of water quality standards and are available on loan from the EPA’s Water Resources Center, 202-383-7706. The on line catalogue is available at the EPA WettlandsHotline at 1-800-438-7000.


Terrene Institute Educational Products Catalog, 4 Hurtbeat Street, Alexandria, VA 22303, Judy Taggert, 703-546-5753, 703-546-5799 (fax), www.tereme.org contains many useful watershed-based school items including a Citizen’s Guide to Watershed Protection and the popular ENVIRONMENTAL table-top watershed education model (many States have purchased and lend this out to watershed groups).

USGS Water Poster Series, Box 39046, MS 406, Denver, CO, 80201-3946, Steve Vander, contact, http://usgs.gov/pubs/project/ExtendsOutlet.html. Developed by Bar’s Our Streams, Izak Walton League, 727 Conservation Lane, Galturien, MD 20878-2933, Karen Fawcett, 301-548-0150, 301-548-0146 (fax). Also, see the macro invertebrates on dry resources. Kids love it! Click on “the SOD Macros Invertebrates” key.

What is a Watershed? NRCS Pogram AID-120, 1-800-456-4LR, to obtain a copy. Watershed practitioners have found this piece useful in explaining the basics of watersheds.

SPASHL CD-ROM, interactive, multi-media educational tool on nonpoint source pollution.
Includes "voices of the community" and allows users to enter urban, rural, and suburban environments and see the difference between what it rains with and without best management practices in play. Produced by Diana Allen, Lower Potee South National Resources District, 3102 Polka Street, Box 3558, Lincoln, NE 68501-3558, 402-476-2202, 402-476-6054 (fax), dallen@lrdresources.unl.edu.

Farm-A-Spot/Home-A-Spot, Gary Jackson, 552 Babcock Drive (B142), Madison, WI, 53791-1350, 608-265-2713, 608-265-2715 (fax), http://www.wisc.edu/farmspot/, sell-assesessment programs for homes and farmsteads. Most states have modified the program for their purposes.


- Project NEIMO (Nonpoint Education for Municipal Officials) uses GIS technology to educate landowners and municipal officials about nonpoint source pollution and watershed protection. University of Connecticut Cooperative Extension, Chester Arnold, 1085 Saybrook Road, Box 70, Old Saybrook, CT 06471. 203-486-5200, www.extension.uconn.edu/"CA/CA2000/CA2000.html

- Getting in Step: A Pathway to Effective Outreach in Your Watershed, workshop that provides the building blocks to develop an outreach strategy, tips and tools to produce eye-catching materials, and methods to effectively use the media to get your message out. Kristen Martin, U.S. EPA, 414 Mill Street, S.W., 40208, Washington, D.C. 202-503-2710. www.epa.gov/nfme/step/step.html

- Chesapeake Bay Communities: Making the Connection, A Catalyic of Local Initiatives to Protect and Restore the Chesapeake Bay Watershed, EPA 903-R-98-100. April 1998, presents any outreach examples including “Landscrapes” Public Awareness Program in Charler County Pennsylvania where public support was solicited regarding the issue of sprawl. The results showed an overwhelming desire to change the current pattern of sprawl. 1-800-YOURBAY.

- Nonpoint Source Pollution Information/Education Programs: National Conference Proceedings, October 22-24, 1996, includes over 30 papers many of which include lessons learned. Copies of proceedings can be obtained from Hirek Environmental Protection Agency, Division of Water Pollution Control - Planning Section, P.O. Box 19276, Springfield, Illinois 62794-0276, 1-721-782-3062, 1-721-782-1225 (fax).

- Groundwater Guardian focuses on recognizing community efforts to protect the resources. Started in 1984, and as of June 1995, had 153 communities in 43 states participating. Developed by the Groundwater Foundation whose goal is to educate and motivate people to care about and for groundwater and wetlands. They have activity and community guides related to groundwater, Susan Searle, President, P.O. Box 22558, Lincoln, NE 68524, 402-434-0743, 402-434-2742 (fax), www.groundwater.org


**Build on Small Successes**

**Morro Bay, California**

Where Starting Small Has Paid Off
Carol Arnold, with the California State Coastal Conservancy, went to work to protect Morro Bay back in 1986 after becoming aware that the community perceived the Bay and citizens were concerned that the Bay was filling and becoming shallower, which eventually would be detrimental to navigation, tourism, migratory birds, endangered species, and the surrounding community. The Conservancy started small by talking to citizens about the resource. Long time residents in the community explained how parts of the bay had once been open

Commitment to the watershed is key, and a small group’s passion for its improvement can catch fire. Practitioners also say over and over that it’s important to “Celebrate Success” as it occurs.

Small successes fuel future, larger ones. It is important, according to watershed practitioners, to start small and demonstrate success before working on a larger scale. For this reason demonstration projects are often a popular choice in watershed work. In some states, small victories have been instrumental in prompting the implementation of watershed approach statewide.
mentals and business people gathered to discuss the Bay. The consensus of the participants was that, while there were many issues of concern, such as public access, water quality, and development, the predominant concern was sedimentation.

Given this focus, the Conservancy went to the Coastal San Luis Resource Conservation District and entered into a six-year partnership to reduce sedimentation of Morro Bay. The District worked with landowners to manage grazing through the use of fences, to plug gullies, and to implement erosion control solutions so that no one area was overgrazed. The Conservancy with matching funds from other farmers and the Natural Resource Conservation Service paid for these improvements. The Conservancy also secured the assistance of a technical consultant who found that the average loss of open water over the past 100 years had been 25 percent overall and 66 percent in some parts with critical habitat. This was 5 to 10 times the normal rate of filling. Responding to these findings, the Conservancy issued a grant to the Resource Conservation District, which worked with the Natural Resources Conservation Service to analyze the erosion problem and to help remedy it.

The Conservancy then turned its attention to restoring the floodplain in the lower drainage area and to restoring habitat. With the help of the Coastal Conservancy, the Resource Conservation District purchased agricultural land in the lower watershed and is in the process of restoring parts of the floodplain to its natural condition.

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**So much interest grew out of these activities that local residents decided to apply to become part of the National Estuary Program.**

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At the same time, the Conservancy was helping to organize groups to increase community awareness, education, and involvement. Friends of Morro Bay was established for advocacy, the Morro Bay Foundation was formed to support research and education, and a Morro Bay Task Force was set up to help involve local residents. So much interest grew out of these activities that local residents decided to apply to become part of the National Estuary Program. In the early 90s, a local assembly person helped get the bay designated as a “State Estuary,” and shortly thereafter the Bay was accepted into the National Estuary Program.

Carol Arnold believes that part of the reason for Morro Bay’s designation was strong community involvement. She believes that it is important to have the support build up from the community and not be imposed from the outside. In addition, she believes that it is important to focus on manageable issues that are meaningful to people and provide a focal point around which action can occur. Over time, other issues can be addressed after a commitment and networks have been established.

For more information: contact Carol Arnold, 619-286-4173, California Coastal Conservancy

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**Lower Paint Creek Association, West Virginia**

**It’s Amazing What A Small Number Can Accomplish**

The first clean-up that Dwight Serniaclu, President of the Lower Paint Creek Association in West Virginia (he is also a townie), ran involved only five or six people. Despite the small turnout, it was a huge success. The West Virginia Division of Environmental Protection was a partner; the fee they paid for the tipping at the land fill was critical.

The word got out about the first clean up, and by the time the Association hosted its fifth one, 25 people participated and 600 tons of trash were collected. A key to their success is the fact that they built incrementally, had strong leadership, and were passionate in their effort. Rather than tackling the entire 43 mile stretch of river, which would in Dwight’s eyes have set them up for failure, they focused initially on the lower 14, with the intention of moving up incrementally over time.

The work of the Association has stimulated the interest of other groups.

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**Santa Ynez Watershed**

The Willow War is Only One of the Conflicts

Carolyn Barr with the Land Trust for Santa Barbara County tells this story of an unsuccessful watershed planning effort.

Along the Santa Ynez River, farmers who grow vegetables and flowers in the rich soils of the floodplain have been pleading with the county for flood control. They fear that the river may jump in basins because dense growths of willows impede peak storm water flows. The county says it cannot help unless it receives funds to mitigate the riparian habitat damage that would occur if the willows were removed or cut back. The willow war is only one of many conflicts in the 900 square mile Santa Ynez River watershed.

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In 1994, politicians, planners, and farmers enlisted the Coastal Conservancy’s help in resolving the flood control issue. The Conservancy agreed, on condition that the problem be considered within a watershed-wide plan. They invited the Land Trust to coordinate the planning process.

“Our naive notion was that we could get everyone with a stake in watershed issues to listen to each other, study the issues, and eventually come to understand that all would...
benefit from a resolution. But as property rights advocates, farmers, environmentalists, and resource agency staff sat down together, it soon became clear that we were rowing upstream in a class-five rapid without a paddle. The three sponsoring agencies—the California Coastal Conservancy, the U.S. Environmental Protection Agency, and Santa Barbara County—and the project manager pulled the plug on the project at the fourth steering committee meeting, in February 1996, less than a year after the process began.

"We realized that we had not done enough groundwork and were proceeding on the mistaken assumption that there was broad support for a watershed plan. On the Santa Ynez, no single problem required watershed-wide attention. The need for planning was apparent only to farmers on the main river channel, and to a handful of others who were losing access to unstable stream banks and gulch erosion. The fatal mistake we made was in rushing the process and telling the landowners, water districts, and special interest groups that they were going to have to work together and develop a watershed plan. We did not take the time to understand their interests and fears, and we tried to impose a process that was not appropriate for the place and time."

For more information: contact Rock Holstman, 510-296-4103, rholsman@ucdavis.edu (See Appendix 1 for Lessons Learned).

Upper Arkansas Watershed Council, Colorado

Can a Citizen’s Law Seminar Get the Ball Rolling?

Hasing a wide diversity of interests represented in a watershed organization is good. Being inclusive and open is necessary. Operating with a consensus-based decision-making process honors everyone. As important as all these things are, they often limit what can actually be done by a watershed group. Education-related projects often provide the first easy step that sets the foundation for trust and group cohesion.

The Upper Arkansas Watershed Council in Colorado is made up of 25 organizations with very different values regarding the use of water. There are historic conflicts between those groups that are deeply rooted in these value differences. During their planning process, the Council brainstormed and scored a wide array of possible actions. To our great surprise, the highly contentious issues scored low, while the education items scored high.

One of the first agreed-upon actions was a Citizen’s Water Law Seminar. In the West, the Prior Appropriation law, which is based on the idea that water in a private property right, has evolved into a complex and often mystifying tangle of rules. Additionally, water quality, in-stream flows, and recreation issues complicate the understanding of water law. Many of our community leaders (county commissioners, planning and zoning boards, etc.), several of whom are new to Colorado, admitted to little understanding of the law, yet recognized its importance in their work.

The Council agreed that it did not matter which side of a water issue anyone represents—agriculture, development, environmental, recreation—the law is the law, and the more citizens that understand the water law, the better.

In brief, the seminar was held and was a wonderful success. It was planned in three months, was low-budget, gave the Council strong local credibility, and provided an early success upon which to tackle tougher issues.

For more information: Jeff Kudla, Coordinator, Upper Arkansas Watershed Council, PO Box 508, Buena Vista, Colorado 81211, 719-396-6599.

Key Contacts and Resources

SUCCESS STORIES AND NATIONAL PROJECT Summaries


- Global Rivers Environmental Education Network (GREEN) Success Stories, http://www.epa.gov/green/success.html, people learn a lot by sharing stories and this is a site designed to provide an opportunity users to share stories about successful efforts their organization, school or community has made to research, educate about, or improve their local watershed — and to see what others have done.


- The Watershed Sourcebook: Watershed-Based Solutions to Natural Resource Problems, University of Colorado School of Law, Natural Resources Law Center, Campus Box 491, Boulder, Colorado, 80309-0491, Doug Kenney, 303-492-1388, 303-492-1291 (fax), Douglas.Kenney@Colorado.EDU; concise case studies of 76 watershed initiatives in the western United States. Center is also examining the state and federal roles in implementing watershed groups.


LOCAL EXAMPLES

- "How the Mississippi Watershed Council Got Started," May 1985, describes the story of the formation of the council and provides advice to others. Lake Council of Governments, 125 E. 8th Avenue, Eugene, OR 97401, 503-687-4293

- California Coast and Ocean, Volume II, Numbers 354, Fall 1992, pages 12-20 discuss Miami Big, Carol Ann, Program Manager, 1300 Broadway, 11th Floor, Oakland, CA 94612-2500, 510-285-4173, 510-285-0410 (fax), cannon@nrgs.org

APPENDIX
Tips from Practitioners

Know Your Watershed's Top 10 Hint List
(see Lesson #6, Know Your Watershed)

1. Include All With a Stake
2. Think Large, Work Local
3. Ask Not “Do You Like It?” But “Can You Live With It?”
4. Respect the Four Stages of Building Partnerships (Forming, Storming, Norming, Performing)
5. Just Do It
6. Celebrate Early Successes
7. Clear, Measurable Goals Must Be Locally-Driven
8. Ask for In-Kind Services
9. When Stuck, Ask Seven Times “Why?”
10. Focus on the End, Not the Process

Reed Holdeman’s Lessons Learned
(California Coastal Conservancy, 510-286-1015 - see Lesson #10, Santa Ynez Watershed)

1. Be sure that a watershed planning process is needed and if it is, build community support for it before proceeding.
2. Invite everyone into the process and ask political leaders to select the steering committee. Otherwise, people will ask: who appointed you?
3. Don’t be presumptuous. On the Santa Ynez River, we assumed everybody would appreciate a well thought out scope of work, budget, and schedule. WRONG! They said it only proved that the whole thing was a set-up. Do yourself a favor, next time, let them figure it out!
4. When the majority of stakeholders tell you that they want to deal with their issue first, believe them. I remain convinced that our failure to sustain interest in the Santa Ynez River plan was primarily because we were not willing to assist the County in carrying out its proposed channel clearing activities in the Lompoc valley as a separate and distinct project.
5. Do whatever you can to break down barriers and perceptions people have of each other. Be creative. Family BBQs, soft-ball games, and parties have done wonders to improve relationships among stakeholders and build trust.
6. Maintain constant communication among stakeholders throughout the process and especially in the beginning to pass information along, answer questions, or deal with rumors. Whether it’s through regular meetings, newsletters, web sites, phone trees, or all four, good communication is a must.
7. And finally, line up your money and in-kind services in advance of starting your watershed project or else two bad things will happen: (a) your stakeholders will buy into a process and scope of work only to find out they can’t afford it; and (b) you will spend more time looking for cash than participating in the planning process. Either way, you lose.

Swift River Principles
Contact Pat Munoz, River Network (see Lesson #7 - Key Contacts and Resources) or Kevin Coyne, National Environmental Education and Training Foundation (see Lesson #9 - Key Contacts and Resources).

1. Include a mixture of top-down and bottom up strategies.
2. Encourage consensus approaches, not bomb-throwing.
3. “Reinvent” ways to conserve resources.
4. A one size fits all “cookie-cutter” approach will not work.
5. Involve key “stakeholders.”
6. Focus on individuals and work on “retail” approaches.
7. Be creative about who foots the bill.
8. Take advantage of emerging science - but don’t expect it to be perfect.
9. Remember the need for watershed education.
10. It’s about brokerage and gap filling.

Dennis Hall’s Observations from Darby Creek, OH
(see Lesson #2 - Key Contacts and Resources)

1. How to fail in watershed management: demonstrate disrespect for watershed residents and the natural resource.
2. Promote “learning” and “understanding” as opposed to “educating.” Do not assume that people will protect the stream if “educated.” Consider canoe trips or other creative educational settings to help clientele understand the watershed issues.
3. Recruit opinion leaders from the community, especially if they have challenging points of view. Sometimes these individuals are not in the local leadership positions, but have a lot of credibility with neighbors and friends.
4. Consider fear and pride as sources of motivation. Fear of regulation may bring some audiences to the table, but pride will generate longer lasting protection.
6. Clarify areas of conflict. View conflict as an opportunity to learn.
7. Promote the positive. Beware the double negative. We learned it was important to show that farmers are “doing good things” to protect Big Darby Creek, instead of “not doing bad things.”
8. In community development, fast is slow and slow is fast. Take time to grow slowly.
9. Value resistance for there is much to understand.
APPENDIX
Advisor E-mail List

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