



Nonpoint Source News-Notes

*The Condition of the Water-Related Environment
The Control of Nonpoint Sources of Water Pollution
The Ecological Management & Restoration of Watersheds*

Commentary

Public Participation — Afterthought or Priority?

by James Meek, former U.S. Environmental Protection Agency liaison to the U.S. Department of Agriculture

The goal of public involvement is to develop a spirit of stewardship for the watershed. We want the involvement to lead to ownership of the problem and action. Too often, however, public participation is treated as one among many project elements — the last one to be considered in the thought process and the last one listed on the written plan. In other words, too many of us still wait to bring the public in after plans (and sometimes their implementation) are well in hand. This is short-sighted and relegates the public's role to buying the product.

This misplacement of priority happens, I believe, because many project engineers (myself included) were trained in an era when projects involved costly and complicated waste treatment plants. We had to go through the initial design process to ensure that we knew what we were talking about. The top-down approach was logical and yielded the illusion, if not the security, of being in control.

Today, we know better. We know that the public has to be involved from the start to ensure that projects will reflect the needs, concerns, and choices of those living in the watershed project area. On one level, my insistence on this point may strike an idealistic and impractical tone

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where rigor and objectivity are most expected. But watershed projects require behavioral changes that will not happen until the public is actively involved in identifying which water quality problems to address.

How can we improve public involvement when most project staff are busy with technical tasks? One approach is to relinquish the public participation operations to another organization — an interested third party with the energy and credibility to provide a focused educational effort. A nongovernmental organization such as a “Save the Bay” or “Friends of the River” alliance would fit this need and free the project staff to focus on technical work, such as generating information that will guide the public’s choices. In some watersheds, an existing grass-roots organization could pick up the educational role. If there is no group suitable or willing to take on public awareness and involvement, efforts could be made to develop one.

Another important focus of watershed project management that involves the public is the institutional arrangements for directing and coordinating activities. Here the public is represented through its elected and appointed representatives. Advisory committees encompassing a variety of interests can react to proposals and communicate the public’s needs and concerns. Institutional arrangements are as important as public participation; together they make a working whole. When both are working effectively, managers can loosen their control over the agenda (though such openness may be unsettling for some).

Public involvement in setting project objectives and goals is critical to success. A major educational program may be necessary since members of the public need to see how harmful some of their choices can be and the benefits they will reap in return for the things they have to give up.

In my view, there is no win/win situation. We make decisions, and each choice involves giving up something to get something else. It’s not fun; it is a sobering process that brings us back to reality. And, ultimately, it is these demanding trade-offs that make getting public support so difficult. But we have no alternative; without public involvement we’ll have some action toward improving water quality perhaps, but few, if any, genuine results.

Notes on the National Scene

Federal Agencies Support Volunteer Moves on Marine Debris — Coastal Cleanup Program Gets New Name

For over ten years, federal agencies have been supporting the International Coastal Cleanup program. In 1995, 134,929 volunteers across the nation collected 2,544,009 pounds of debris on beaches in 43 states and territories. Now, with leadership from a range of federal agencies and support from a five-year Environmental Protection Agency grant, the National Marine Debris Monitoring Program is applying science to marine debris.

Jill Goodman Bieri of the Atlantic Regional Office of the Center for Marine Conservation in Hampton, Virginia, manages the cleanup program now called the National Marine Debris Monitoring Program. According to Bieri: “The Coastal Cleanup was more a snapshot of the marine debris problem — a public awareness and education campaign. The Marine Debris Monitoring Program takes a more scientific approach.” The new program kicked off on Earth Day 1996 in the Gulf of Mexico and will soon expand to the East Coast.

The new program expands activities from a single, yearly cleanup to monthly monitoring excursions, uses monitoring protocols that standardize debris collection across the country, and sets guidelines for quality assurance and quality control in data collection. A volunteer training component supports the new program and draws participation from the established network of cleanup volunteers,

By Land and By Sea

The Third International Conference on Marine Debris reports that land-based sources account for 60 to 80 percent of marine debris — most of it from antiquated sewage systems, inadequate waste disposal, and littering. Land-based debris is carried by storm drains, sewers, creeks, streams, and rivers into coastal areas.

Other debris is attributed to ocean-based activities such as recreational and commercial fishing and boating. Ocean-based debris includes food packaging, bait and tackle supplies, fishing line, crab and lobster traps, wooden pallets, and galley wastes such as plastic trash bags, milk jugs, and egg cartons from commercial cruise operations.

Marine debris, whether land- or ocean-based, has a significant impact on marine life. In 1995, volunteers participating in the Coastal Cleanup encountered 159 animals entangled in marine debris — and plastic debris was the culprit more than half the time. Plastic ranked second only to cigarette butts in the 1995 collection.

Marine debris also plays an important role in identifying water quality impacts. The presence of feminine products in coastal areas, for example, may indicate a sewage overflow and accompanying water contamination. Identifying such sources and exploring their connection to water quality is one of the primary objectives of the new program.

Working Together to Address Marine Debris

Another federally-sponsored effort to address marine debris, the Sea Keepers Program, employs Coast Guard reservists in a nationwide education and outreach program to increase public awareness of marine environmental protection issues. The reservists work with marinas, boaters, school children, and others to prevent the discharge of marine pollutants and to promote detection, reporting, and cleanup of discharges when they do occur.

This past June, 14 federal agencies met to better coordinate these and other federal efforts in this area. The agencies will meet annually to seek out creative solutions to marine debris and to strengthen cooperative efforts among industry; environmental organizations; and federal, state and local governments.

With improved coordination among federal agencies and the ongoing support of volunteers who aren't afraid to get sand in their shoes, the nation's approach to marine debris is maturing. This approach — and the increasing recognition that marine debris is an indicator of water quality — is leading the way to a future of cleaner beaches and coastal waters.

[For more information, contact Randy Burgess, National Marine Debris Monitoring Program Project Manager, Center for Marine Conservation, Atlantic Regional Office, 306A Buckroe Avenue, Hampton, VA 23664. Phone: (757) 850-0754; fax: (757) 851-4183; e-mail: burgessr@hampton.mhs.compuserve.com.]

National Environmental Performance Partnerships — States and EPA Try a New Way of Doing Business

Since the 1995 creation of the National Environmental Performance Partnership System (NEPPS), many EPA regional offices and states have adopted this new approach to environmental management. NEPPS gives states more responsibility and more choice in how they meet environmental goals while deemphasizing traditional prescriptive management approaches and embracing the philosophy of managing for environmental results.

States that choose to participate in NEPPS work with their EPA regional offices to customize Performance Partnership Agreements (PPAs) to fit state priorities, problems, and resources. (See article on page 15.) Performance Partnerships help states and EPA identify and establish common ground on several issues:

- the allocation of federal and state resources to address environmental problems;
- the selection of appropriate national and state-specific environmental goals, indicators, performance measures, and programmatic elements or activities;
- the role of public outreach and involvement; and
- scope and methods of federal and state oversight and program evaluation.

A Range of Funding Choices

Under NEPPS, states have several funding options. They may continue using traditional categorical grants, or they may choose Performance Partnership Grants (PPGs) that combine EPA grants for two or more programs.

PPGs allow states to address their most pressing environmental priorities across some or all media (water, air, etc.) and programs and establish resource allocations based on those priorities. In addition, PPGs help reduce administrative burdens and costs by reducing the number of grant applications, workplans, reports, and certifications associated with traditional "single-media" or single-program federal grants.

Few states attempt to combine all of their EPA grant programs. Most states electing to use PPGs start out modestly, linking a few programs under a PPG and using categorical grants for the rest.

A Learning Curve

So far, about half the states have entered into Performance Partnership Agreements with EPA and about half of those have opted incorporate Performance Partnership Grants into their agreements. In 1997, EPA expects to approve agreements and grants for more states. Current efforts to develop PPAs and PPGs will help other states and regions learn how they can make this system work for them.

Many participating states see benefits to the process. Says Donna DeLeon of the New Jersey Department of Environmental Protection, "Before NEPPS, New Jersey was not doing any formal strategic planning. NEPPS has been a great tool to enable us to do this type of planning and move toward improved environmental results." She cautions, however, that "NEPPS is just getting off the ground. We need to emphasize that we are still in the early stages and learning how to make the system work for us and the environment."

[For more information, see EPA's National Environmental Performance Partnership System Homepage at <http://www.epa.gov/regional/pps/index.html>.]

National Watershed Awards Honor Local Partnerships

EDITOR'S NOTE: This article is adapted with permission from September/October 1996 *Runoff Report*, 4(5):1-2.

The Boquet River Association, the French Creek Watershed Advisory Group, the Cheney Watershed Program, and Monsanto Corporation's Operation Green Stripe are the winners of the first-ever CF Industries National Watershed Award. This award recognizes "outstanding individual and corporate efforts to protect America's watersheds."

CF Industries, one of the nation's largest interregional cooperatives cosponsored the award with the National Geographic Society as an outcome of the National Forum on Nonpoint Source Pollution.

■ **The Boquet River Association**, located in New York's steepest watershed, organizes landowners, farmers, businesses, industries and local government agencies to help prevent nonpoint source pollution in the watershed. Among its projects are cost-effective collaborative partnerships to control erosion, build community sewer systems, and improve rural septic systems. And, says Robin Ulmer, the group's executive director, "we work hard to educate and train citizens."

■ **The Cheney Watershed Program** in southcentral Kansas knows firsthand the benefits of intertwining economic growth and water quality protection. The goal of this unique urban and rural partnership between citizens and federal, state, community, and private organizations is to double the life of the Cheney Reservoir and preserve Wichita's drinking water supply. Lyle Frees, project manager, and Howard Phillips, president of the Citizens Management Committee, accepted the award for Cheney.

■ **The French Creek Watershed Advisory Group**, a voluntary consortium of timber interests, government agencies, and other community stakeholders in Hilt, California, pitted its efforts against sedimentation from unpaved roads — and credits its success to local initiative. "Less than 20 percent of the \$500 thousand we spent on road improvements came from government grants," said Tim Lindgren, president of the Fruit Growers Supply Company, who accepted for French Creek.

■ **Operation Green Stripe** encourages the planting of grassy buffer strips along streambanks and rivers. Seed retailers donate grass seeds that are compatible with

wildlife, and Future Farmers of America do the legwork. Monsanto Corporation provides each FFA chapter involved with education grants — \$100 for each strip installed, to a maximum of five per year. More than 80 chapters are now active in the program.

Each of the community winners received a citation and a check for \$1,000. Deputy Secretary of Agriculture Richard E. Rominger presented the awards September 25, 1996, praising each winner for showing “that we can, as a nation, improve water quality through innovative, nonregulatory methods.” In all, 63 programs competed for the award, and winners were chosen from 10 community and five corporate finalists. For more information on the winners, see Terrene Institute’s web site at <http://www.terrene.org>.

[For more information on Operation Green Stripe, see *Nonpoint Source News-Notes* #39, p 12.]

Draft TMDL Implementation Program Strategy Encourages Focus on NPS

The *Draft TMDL Program Implementation Strategy* released November 18, 1996, presents EPA’s TMDL vision and priorities, explains how the agency will help states and tribes meet TMDL program requirements, and identifies issues that may require additional guidance or regulatory action.

The strategy recognizes the vital role that nonpoint source pollution plays in the future of the program. It also fulfills a commitment EPA made during an earlier June meeting with environmental litigants — to refine and clarify the TMDL process. (TMDL-related litigation is taking place in 16 states and Notices of Intent have been filed in six more. Plaintiffs are questioning the adequacy and timeliness of state 303(d) lists and the pace of TMDL development.)

Establishing TMDLs

Section 303(d) of the Clean Water Act establishes the Total Maximum Daily Load (TMDL) program to address water quality in areas where pollution control requirements are not stringent enough to achieve water quality standards. Most TMDLs developed so far have focused on waterbodies where there is a single point source discharger. However, as EPA’s 1994 Section 305(b) Report to Congress shows, runoff from agricultural and urban areas, not point sources, is now the leading source of water quality impairment in assessed rivers and lakes.

The strategy notes that “more emphasis needs to be placed on developing TMDLs that address wet weather stormwater discharges and nonpoint source pollution problems.” Because

Committee Looks to Improve the TMDL Program

The newly formed TMDL Federal Advisory Committee, one of many committees authorized by the Federal Advisory Committee Act (FACA) of 1988, is advising EPA on issues surrounding the TMDL program. The committee is helping EPA determine which waterbodies to include on section 303(d) lists, what TMDLs should be established for these impaired waters, and what watershed protection programs should be developed for them in accordance with section 303(d) of the Clean Water Act.

The TMDL FACA Committee has 20 regular members and three ex-officio members, all of whom have broad experience in industry, agriculture, environmental public interest, mining, forestry, and state, tribal, and local government. The committee will recommend ways to

- ✓ improve the effectiveness, efficiency and pace of state, tribal, and EPA TMDL programs;
- ✓ identify barriers to success and recommend ways to overcome them;

- ✓ identify the appropriate roles of states, tribes, federal agencies, and the public in achieving success; and
- ✓ develop criteria for measuring the success of each recommendation.

At its opening meeting, on November 19-21, 1996, the committee discussed EPA’s *Draft TMDL Program Implementation Strategy* and identified issues to address, including the 303(d) listing process, criteria for TMDL approval, EPA management and oversight, and science and technology.

The committee will reconvene in Galveston, Texas, on February 19, 1997, and hold public comment meetings in various locations across the country.

[For more information, contact Corinne Wellish, Designated Federal Officer of the TMDL FACA, U.S. Environmental Protection Agency (4503F), 401 M Street, SW, Washington, DC 20460. Phone: (202) 260-0740; fax: (202) 260-7024; e-mail: wellish.corinne@epamail.epa.gov.]

nonpoint source issues play a key role in national water quality, NPS is addressed by many of EPA's current and proposed activities. For example,

- Modeling software is being developed to better predict the delivery of nonpoint source pollutants and to link these loadings to water quality (e.g., BASINS: Better Assessment Science Integrating Point and Nonpoint Sources).
- Protocols developing TMDLs for sediment, nutrients, bacteria, and other nonpoint source-related pollutants and stressors are being created.
- Additional national criteria are being established to determine whether or not there is reasonable assurance that TMDL load allocations for nonpoint sources can actually be implemented within a reasonable amount of time.
- Additional guidance is being issued on the phased approach to TMDL development, which enables nonpoint source controls to be implemented prior to new data collection and analysis.
- Support is ongoing for habitat restoration efforts linked to TMDLs, such as relating fine sediment conditions along channel bottoms to streambank stabilization efforts.

The goals identified in the draft strategy and the recommendations of the recently established TMDL FACA Committee (see box), along with decisions in the courts, will shape the future of TMDLs, which may become a choice tool for addressing nonpoint source pollution.

[A formal announcement of publication will appear in the Federal Register and provide information on the 90-day public comment period. For a copy of the Draft TMDL Program Implementation Strategy or for more information, contact the Assessment and Watershed Protection Division, U.S. Environmental Protection Agency (4503F), 401 M Street, SW, Washington, DC 20460. Phone: (202) 260-6785 or (202) 260-2708; fax: (202) 260-7024; World Wide Web: <http://www.epa.gov/OWOWwtr1/tmdl/index.html>.]

National Watershed Assessment Project Begins

According to Bob Wayland, director of EPA's Office of Wetlands, Oceans, and Watersheds, the origin last summer of the National Watershed Assessment Project (NWAP) — the first attempt to characterize conditions in more than 2,000 watersheds nationwide — marks "an exciting advance in our national attempts to understand water quality and to protect and improve it."

Engineered with the cooperation of EPA's many public and private partners, the initiative will advance EPA's watershed-based and community-oriented environmental protection efforts. It directly supports EPA's National Water Program by targeting nationwide improvements and advancements in watershed management and protection. NWAP is guided by four key objectives:

- To characterize the condition of the nation's watersheds and identify watersheds at particular risk.
- To stimulate and empower citizens to understand and preserve their watersheds.
- To provide a baseline for dialogue on management priorities among EPA, states, tribes, and other public and private partners.
- To measure progress toward EPA's goal that all watersheds be healthy and productive places.

NWAP Partners Pool Resources

Achieving an accurate depiction of watershed health is a complex task involving many physical, chemical, and biological indicators and calls for the highest quality data available. To achieve this level of accuracy, EPA is collaborating with several key public and private partners who collect and maintain watershed-based environmental data.

States, tribes, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, the U.S. Department of Agriculture, the U.S. Fish and Wildlife Service, the Census Bureau, the Federal Emergency Management Agency, and The Nature Conservancy have all committed to the effort. As EPA's Assessment and Watershed Protection Division Director Geoff Grubbs points out, "No one agency has all of the answers, but working together we can aggregate the needed information to comprehensively characterize watershed health."

NWAP will divide data from EPA and its partners into 15 key data layers or indicators arrayed in three groups. Two groups address watershed conditions and include indicators of public and aquatic health. The third group focuses on watershed vulnerability and includes indicators of pollutant loadings and other stressors. Finally, actual watershed characterizations will be determined through the application of a special index developed by EPA and state and national experts. The index will use the indicator data to place each watershed in one of six categories ranging from "better" to "worse" or a seventh category, "insufficient data."

Internet to Bring Watershed Characterizations Home

EPA is producing maps that will show overall watershed conditions. In the future, people will be able to access NWAP data through EPA's Internet-based interactive index, *Surf Your Watershed*, and display information by watershed using data, maps, and text. (This phase should be complete by April 1997.)

Then, states and tribes will take the lead, working with EPA and other partners to integrate NWAP information into their management processes for implementing prevention and remediation programs. The final objective of NWAP assessments is to improve national, regional, and local watershed management efforts. "NWAP will help inform discussion among EPA headquarters, regions, states and tribes about the conditions of America's waters and the relative needs for restoration, protection and better assessment information," comments EPA's Assistant Administrator for Water, Robert Perciasepe.

And, according to Wayland, "NWAP has already made a significant positive impact on water assessment and management even in this early drafting stage. Data and several of the indicators have been improved in the mere process of using them for NWAP. Agencies are collaborating more closely as the interrelationships among data are highlighted. In addition, the NWAP focus on watersheds is a major step in understanding water quality in a geographic area." Ultimately, NWAP will help improve management decisions and determine whether protective actions are producing the desired results.

[For more information, contact Charles Spooner, EPA Office of Water (4503F), 401 M Street, SW, Washington, DC 20460. Phone (202) 260-7040; fax (202) 260-7024; e-mail spooner.charles@epamail.epa.gov.]

Notes on Riparian and Watershed Management

Record Rainfall Increases Nutrients, Frustrates Bay Partners

EDITOR'S NOTE: This article is adapted with permission from the *Bay Journal*, October 1996.

For the third time in four years, unusually high rainfall levels in the Mid-Atlantic region resulted in high flows and elevated levels of nutrients and sediment entering the Chesapeake Bay.

Remnants of Hurricane Fran, sweeping across portions of the Chesapeake in early September, contributed to last year's high flows. Even before Fran, however, 1996 had racked up the second highest flows on record, according to the U.S. Geological Survey. Only 1972, which included the deluge from Hurricane Agnes, surpassed this record.

The full impact of the high flows won't be fully assessed for months, but many believe that when water quality results are tabulated, they will show that record, or near record, amounts of nutrients and sediments were flushed into the Bay.

Nutrient reduction efforts are a major strategy of plans to restore the Bay ecosystem. Computer models have shown that in an "average" year, 40 percent reductions of nitrogen and phosphorus loadings can significantly reduce algae growth, and, in turn, improve habitat and oxygen levels in the Bay.

The Bay states have made significant progress toward that goal, but the past several years have been anything but average. The high flows occurring during 1993, 1994, and 1996 have checked the improvement. Higher flows wash more nutrients off the land and result in stronger stratification between the top and bottom layers of the Bay — both of which contribute to low oxygen conditions.

"You can't prove that nutrient loads have gone down because of best management practices or new sewage plants when everything is so dominated by flow," said Lawrence Harding, a scientist with the University of Maryland's Sea Grant College.

Nutrients in last year's flow generated record-setting algae blooms. Algae production remained at higher-than-normal levels through August, said Harding, who conducts aerial surveys of the Bay. By summer there is normally little or no algae growing near the mouth of the Chesapeake because nitrogen — the critical nutrient for algal growth in salt water — has already been consumed upstream. This year, however, enough nitrogen reached the mouth of the Bay to fuel algae production all summer.

"It's probably safe to say that this year's growth was the highest phytoplankton biomass that we've observed in recent years," Harding said.

Other impacts, such as the rainfall's toll on Bay grasses, may not be known until next year. These grasses, which are an important habitat for waterfowl, fish and shellfish, require good water quality for survival and have been rebounding from record lows. In the last two years, however, the grasses have suffered back-to-back declines, according to aerial surveys done by the Virginia Institute of Marine Science, probably as a result of lingering stresses caused by high flows in 1993 and 1994.

[For more information on flows, contact Scott Phillips, U.S. Geological Survey, Towson, MD. Phone: (410) 512-4852. For general information about the Chesapeake Bay, contact the Chesapeake Bay Program Office. Phone: (800) 968-7229.]

Coal Waste Pollutes Southwestern Virginia Waterway

A massive coal slurry spill in rural southwestern Virginia on October 24, 1996, blackened miles of mountain streams and killed thousands of fish. It also threatened downstream drinking water supplies and the survival of rare fish and mussels.

The spill occurred when a portion of a holding pond near Pennington Gap, Virginia, collapsed into an adjacent abandoned mine shaft, underground waste into the mine works. The waste traveled underground for about a mile before surfacing through an air shaft. Until the hole was plugged 36 hours later, 3,000 gallons of waste a minute flowed almost directly into nearby Gin Creek.

Contaminated water traveled through several creeks before entering a tributary (North Fork) of the Powell River. Only a small amount of coal fines traveled to and were deposited in the Powell River itself. The spill released an estimated 6.2 million gallons of slurry — 4.2 million gallons of water and 2 million gallons of coal waste. The slurry, a mixture of slate, shale, and coal fragments (fines), also contained residues from chemicals such as sulfuric acid, aluminum hydroxychloride, sodium chloride, and sodium sulfate, used to purify extracted coal.

Arch Mineral Corporation of St. Louis, the owner of Lone Mountain Processing Company, assumed full responsibility for the spill and cleanup efforts. But the Virginia Department of Mines, Minerals, and Energy (DMME) cited the operator of the pond, Lone Mountain Processing Company, with violations for the pond failure and the resulting pollution, and forced the company to halt operations pending investigations. Eventually, the company, which had been disciplined eight times in the past year for similar infractions, was fined \$15,000 under the Virginia Coal Surface Mining Reclamation Act. Lone Mountain could end up paying more if they lose a lawsuit filed by the State Attorney General. State water law imposes a maximum civil penalty of \$25,000 for each violation of a permit condition, and the total number of violations in the case has not yet been established.

Assessing the Damage

The spill severely degraded water quality, but did not impair the drinking water supply of Harrogate, Tennessee, located on the Powell River 50 miles below the confluence of the North Fork Powell. The spill's most damaging effect, however, was a massive fish kill. The Virginia Department of Environmental Quality estimates that 11,200 fish were killed from exposure to the slurry, primarily in the 11-mile stretch of creeks directly downstream of the spill.

By November 26, there was no evidence of discoloration of the water and pockets of coal fines were found only in pool areas, primarily in the creek directly below the spill, according to Michael Abbott of the Virginia Department of Mines, Minerals and Energy.

The Powell River supports a number of threatened and endangered species. Threatened species include two fish species, the slender chub and the yellow fin madtom. Three mussel types — the Cumberlandian combshell, the oyster mussel, and the rough rabbit's foot — are listed as proposed endangered species. Virginia wildlife experts feared the effects of the spill on these species, but in an impact assessment submitted to the state on November 15, Lone Mountain said that the spill did not have observable impacts on these species.

Remediating the Site

Also on November 15, Lone Mountain submitted a spill remediation plan to the state. The first step is the removal of coal fines from the streambed and streambanks, using both manual methods and vacuum trucks. Once the maximum possible amount of coal fines are removed, the company will estimate the amount of waste remaining in the streams (by comparing the waste released to the waste recovered). This determination will then be used to develop a deposition model that will estimate the spread of remaining material over time.

The remediation plan also includes the initiation of a long-term monitoring program to measure the health of the aquatic system and its recovery from the spill.

In light of the Lone Mountain spill and a subsequent similar spill in November at the Consolidation Coal Company's Buchanan No.1 facility, DMME, the Federal Mine Safety and Health Administration, the Office of Surface Mining and Reclamation Enforcement, and mine operators are reevaluating and inventorying all existing or proposed underground mine workings close to coal slurry impoundments. DMME will also be requiring more information from permit applicants and permittees and will set up a geotechnical analysis of impoundments and adjacent areas to locate old, unidentified underground mine workings.

[For more information, contact Michael Abbott, Virginia Department of Mines, Minerals and Energy, Big Stone Gap, VA. Phone: (540) 523-8146; fax: (540) 523-8148; e-mail: mda@bsg1.mmel.state.va.us.]

Sustainable Forestry Initiative — American Forest & Paper Association Takes the Lead

In past years, forest product companies had mostly economic objectives in mind when making forest management decisions, but today, many of these companies are also helping to protect water quality, wildlife habitat, and other forest-related resources.

The American Forest and Paper Association's Sustainable Forestry Initiative (SFI) is largely responsible. It sets forth "eco-principles" that more than 200 companies nationwide now follow; and, in fact, association members who did not agree to comply with the SFI have been expelled from the association.

Exceeding the Measure

Champion International Corporation, an AF&PA member company, is complying with the initiative by further developing a project it had started well before the SFI was proposed. Champion requires that a minimum of 50 feet on each side of all streams located on its forested lands be included in streamside management zones (SMZs). If the state has a larger requirement, Champion raises its standard accordingly; however, most states accept SMZs that are only 25 to 30 feet on each side.

In Maine, where Champion owns over 800,000 acres, the company uses stream size to determine the SMZ. Thus, the company requires a range of SMZs — from a minimum of 100 feet to a maximum of 600 feet per side at its Maine facilities. Champion's Director of Wildlife and Resource Issues Carlton Owen says the SMZ size is not set to meet water quality standards because those standards could easily be met by state requirements. Instead the wider zones protect wildlife habitat and threatened and endangered species, as well as water quality.

Sustainable Forestry Initiative Worth the Cost

For a large business like Champion, a project of this nature can be expensive. "There's no cost in putting the SMZ on a map," said Owen, "but it can be expensive to limit the harvests from those stands." Still, Champion — and other forest product companies — is prepared to incur such costs to protect the natural resources on its lands.

Voluntarily developed by a team of professional foresters and designed to encourage good forest management practices, the SFI emphasizes the sustainable use and protection of all forest resources, not just timber-related resources. Compliance with the initiative is expected to sustain the health and productivity of forests through future generations. SFI goals include ensuring prompt reforestation, protecting water quality, enhancing wildlife habitat, publicly reporting progress, and providing opportunities for public outreach.

The President's Council on Sustainable Development describes the SFI as "a significant development" in private sector efforts to improve the environment. AF&PA members, who own approximately 90 percent of the industrial forest land in the United States, are required to submit annual reports to the association describing their progress in implementing SFI principles. In return, the association works to distribute information on the forest industry to the public, inform members about state regulatory codes, and to encourage legislation of common interest to its members.

[To order a copy of AF&PA's Sustainable Forestry for Tomorrow's World: First Annual Progress Report on the American Forest & Paper Association's Sustainable Forestry Initiative, contact AF&PA, 111 19th Street, NW, Suite 800, Washington, DC 20036, Phone: (800) 878-8878. For more information about Champion International, contact Carlton Owen, Director of Wildlife and Resource Issues, Champion International Corporation, 37 Villa Road, B-141, Greenville, SC 29615. Phone: (864) 370-7206.]

Urban Runoff Notes

Marylanders Confront Urban Sprawl

At its current pace, development in Maryland will devour as much land in the next 23 years as it has since the state was established. It will, if not forestalled, consume 500 thousand acres of forests and farmland.

Urban sprawl not only devours more land, it also depopulates the state's older urban centers and puts pressure on its pocketbook. Between 1970 and 1990, one Maryland county closed over 60 school buildings and built more than 60 new ones at a cost of over \$500 million.

To counter such unwanted outcomes, Maryland Governor Parris Glendening has launched a new campaign to confront urban sprawl. *Neighborhood Conservation Smart Growth* combines the preservation of existing neighborhoods with achieving a better investment of state dollars. At the heart of the campaign is an outreach effort to gather creative solutions to sprawl from Marylanders.

The governor asked Marylanders to make specific recommendations that would help prevent sprawl and make neighborhoods more livable without increasing taxes or requiring new regulations or levels of bureaucracy. The state Office of Planning then organized and compiled the ideas into a report called *Neighborhood Conservation Smart Growth: We Asked, You Proposed, Now We need Your Recommendations*.

The report represents the views of community and housing associations; business, environmental, farm, land trust, planning, and design groups; local government organizations; and many others who express concern. Among other promising approaches, it includes the following recommendations:

- Coordinate with local governments to design a flexible, streamlined permit program based on the quality of the environmental resources being affected. This system creates an incentive for developers to locate projects in designated growth areas.
- Use surplus state property to stimulate development in areas where state and local funds have already been spent to install infrastructure. This approach represents a more productive use of vacant or underused state lands and takes advantage of existing infrastructure.
- Create community restoration teams to provide staff and resources for community improvement work, such as vacant lot clean-up and restoration, low-tech stormwater control measures, and tree and garden planting. Under this approach, local

governments and communities would request assistance and share 50 percent of the cost through dollars or in-kind services. This program would improve environmental quality and enhance recreational opportunities in targeted areas.

- Increase loan amounts and make income limits more flexible to support revitalization of targeted neighborhoods, both existing and new.

Friendly transit systems, telecommuting, income tax credits, and zoning law amendments were among the other recommendations submitted by Marylanders.

Public comments on these recommendations were due in September. The Office of Planning will use the comments, along with the recommendations, to develop its approach. It will also assist Governor Glendening in his review of the comments. Meanwhile, the Governor's legislative package, the *Initiative on Neighborhood Conservation and Smart Growth*, has already gone to the 1997 General Assembly session and incorporates many of the recommendations made by Maryland citizens.

Ronald Young, Deputy Director of the Maryland Office of Planning warns that there is no quick fix to urban sprawl. "We've had policies that led to sprawl over the last 50 years, and its going to take more than a year to make a change." Nevertheless, even a "10 to 20 percent change in the current trend will save thousands of acres of land, tens of millions of dollars, and strengthen the social fabric of Maryland neighborhoods."

[For a copy of *Neighborhood Conservation Smart Growth: We Asked, You Proposed, Now We need Your Recommendations*, or for more information, contact Ronald N. Young, Deputy Director, Maryland Office of Planning, 301 West Preston Street, Baltimore, MD 21201-2365. Phone: (410) 767-4505; fax: (410) 767-4480; e-mail: ron_y@mail.mop.state.md.us.]

Notes on the Agricultural Environment

Conservation Runs in the Family — Elm Creek HUA Gets Boost from Demonstration Farm

Charles Keeney belongs to the fifth generation of a family that has farmed the same 240-acre homestead on the headwaters of Elm Creek in Webster County, Nebraska, since 1878. No doubt that long, intimate history with the creek is part of what motivated Keeney to become part of the solution to the creek's problems.

Nonpoint runoff and sedimentation have been negatively impacting Elm Creek's water quality and flowing downstream to contribute to problems on the Republican River as well. Despite all this, Elm Creek has the potential to support a cold-water fishery.

To work toward that goal, Keeney and 177 other farmers are participating in the USDA's Elm Creek Hydrologic Unit Area Project, installing conservation and sediment control practices on their farms.

The Webster County Natural Resources Conservation Service and University of Nebraska-Lincoln Cooperative Extension have helped Keeney turn his farm into a project demonstration. Using funds from a section 319 grant to the Lower Republican Natural Resource District, Keeney incorporated existing grass diversions and irrigation reuse systems with new grass waterways, two cement block chutes, a corrugated metal drop pipe structure, and a retaining pond.

Hydrologic Unit Area Project Criteria

USDA decided to fund work on Elm Creek as one of 35 national Hydrologic Unit Area projects because it fulfills three criteria:

- the watershed has problems related to agriculture;
- its problems affect surface and groundwater sources; and
- treatment is feasible (i.e., likely to be successful).

Now producers in the watershed (which includes about 36,000 acres) use conservation practices on 70 percent of 11,000 acres of spring-planted crops and on 35 percent of 4,200 acres of fall-seeded crops.

Keeney is no exception. And, in addition to practicing conservation tillage, he has planted 1,750 trees and 13 varieties of shrubs. Some of his farm's acreage remains in native grass planted under the soil bank conservation program of the 1950s.

Other nonpoint source best management practices commonly used on farms in the Elm Creek project are nutrient management, including deep soil sampling, and irrigation water management. Participating farmers have saved about \$45,000 a year and over 82,000 tons of soil since the project began in 1990. The figures are impressive, and Elm Creek now supports a trout fishery; but to Charles Keeney, it just feels right to protect the creek that is, literally, in his blood.

[For more information, contact Scott Montgomery, Webster County NRCS, 20 N. Webster St, Red Cloud, NE 68970. Phone: (402) 746-2268; or Charles Keeney, 15 East 48th St., Kearney, NE 68847. Phone: (308) 237-7004.]

Rescue at Oyster Bay Farm and Hope for Shellfish Harvesting

Since 1983, shellfish harvesting in the southern part of Puget Sound's Eld Inlet has been restricted. Bacterial pollution from human activities is so prevalent that the beds must be closed for three days after heavy rainfalls (1.25 inches or more). Nearby Totten Inlet is also threatened. Indeed, the problem is not unusual; more than 40 percent of all shellfish harvesting areas in Puget Sound are closed or restricted.

Totten and Eld Inlets are, however, the focus of a National 319 Monitoring Program project, and recent successes on one farm — Oyster Bay Farm — are inspiring other farmers to follow suit so that one day the shellfish beds may be permanently opened.

Assessing the Problem

Failing on-site sewage systems and poor livestock management on farms in the project watersheds are major sources of bacteria. The area's characteristically wet and seasonally saturated soils add to the damage, and the 40-acre Oyster Bay Farm on the bank of Burns Creek is no exception.

Established as a working farm in the late 1800s, by 1990, the historic farm was marred by signs of serious neglect. High fecal coliform counts — usually in the thousands — betrayed the damage. Several sources contributed to the decline: a substantial herd of cattle had year-round, unrestricted access to the creek; and gutters and downspouts on the barns were nonexistent. Thousands of gallons of roof runoff and intermingled animal wastes flooded the yard and flowed into Totten Inlet. The pastures were weed-filled, overgrazed, and scarred with bare spots.

Watershed planning aided by the Puget Sound Water Quality Authority and the Centennial Clean Water Fund began the rescue at Oyster Bay. But Pat Labine and Kathleen O'Shaunessy are the real heroes of Oyster Bay. These veteran farmers saw beyond the compacted clay, mud, and manure when they purchased the farm in 1990 and began its complete overhaul. Soon the farm was back in production with organic lambs, a half-acre market garden, laying hens, and free-range chickens.

Meanwhile, the Totten and Eld Inlets Clean Water Projects evolved from the planning process to include local, state, and federal programs designed to reduce water pollution in streams and saltwater inlets. A nine-year monitoring program was set up in six subbasins of the Totten and Eld Inlets using paired watershed and single-site designs to monitor water quality before, during, and after the installation of pollution controls.

The pollution control efforts at Oyster Bay and other project farms focus on developing and implementing farm management plans. Farm plans are developed cooperatively by the landowner and local conservation district; they address property resources and landowner goals

and reduce pollution using BMPs such as stream protection fencing, manure management, pasture and grazing management, and roof runoff management.

Implementing farm plans is mostly voluntary, though education and outreach activities help motivate landowners to participate. A teacher of Ecological Agriculture at Evergreen State College, Labine needed little encouragement to install BMPs at Oyster Bay Farm. Gutters and downspouts now line the roofs of the buildings, pastures are rotated, manure is spread at agronomic rates, and livestock are excluded from the stream. Labine and O'Shaunessy also enhanced wildlife habitat, putting up 40 nest boxes for swallows, wood ducks, barn owls, bats, butterflies, and native orchard mason bees that keep pests in check.

So far, the project is responsible for installing 130 agricultural best management practices on more than 16 farms, including Oyster Bay. The rest of the watershed needs time for education, BMP installation, and monitoring. Residents are still getting the message, either through example or from the project's extensive outreach programs. Still, more time is needed before the results will be obvious on a watershed level.

Area Farmers Impressed

Although all BMPs will have been implemented by 1999, monitoring will continue for two more years. "The variability of fecal coliform bacteria in these streams supports the need for a long-term monitoring effort that can detect improvements in water quality and link those improvements to pollution controls installed in the watersheds," says monitoring project manager Keith Seiders of the Washington Department of Ecology.

While the watershed project has a long way to go, says Thurston Conservation District Resource Technician Marilyn Mead, Oyster Bay Farm has become one of the most beautiful, productive farms in the area. It elicits a common refrain from farmers in the county: "You know that farm over on Oyster Bay Road? I want my place to look just like that. What can I do?"

[For more information about the monitoring program, contact Keith Seiders, Washington Department of Ecology, 300 Desmond Drive, P.O. Box 47710, Olympia, WA 98504-7710. For more information about farm planning activities, contact Marilyn Mead, Thurston Conservation District, 6128 Capital Boulevard, Olympia, WA 98501-5217. Phone: (360) 754-3588.]

Maryland Cows Get Wired — Invisible Fences May Be Newest BMP

Allegheny County dairy farmer Bob Greise recently updated his cows' wardrobes with electronic collars. Now, if the cows walk near a buried radio signal at the edge of Pea Vine Run, they are quickly jolted into turning away from the stream, thus reducing the amount of animal waste and sediment entering the creek.

Pea Vine Run, located in a mountainous area of Cumberland, Maryland, near the Pennsylvania border, feeds into the Potomac River. The Allegheny County Soil and Water Conservation District sponsored the project as part of a stream stabilization effort. Three concrete bridges were installed over the stream as cow crossings, and bioengineered plants and riprap were installed to stabilize the eroding banks.

The Off Limits invisible fence system, experimental as a pollution control device, cost an estimated \$11,000 to equip and install, but Craig Zimmerman of the Allegheny County Soil and Water Conservation District thinks that it will prove cost effective over time because it will reduce the maintenance costs associated with conventional fences in this hilly, frequently flooded area. When streambanks wash out and undercut the boundaries, conventional fences often have to be repaired or replaced.

Clark Distributors, the Mid-Atlantic distributor of the equipment, installed the system: 6,500 feet of radio signal wire approximately two feet from the edge of the streambank. A subsoiler was used to place the wire eight to ten inches underground. The machine causes little damage to the area and involves no digging. The cows wear leather collars containing small receivers powered by three-volt batteries. When a cow wanders within 10 feet of the fence, it gets a shock from two metal prongs protruding from the receiver.

But Does It Work?

Greise says the fence "worked great" initially but not so well lately. He found that each battery needs to be changed at least every six months, and the metal shock prongs break off easily when the cows rub against the bars on their feed troughs. "The technology needs to be improved," said Greise, before he would recommend the system to others.

But Greise also believes that heightened interest in such projects can result in competition between different companies that may lead to technologic advances. Craig Zimmerman agrees: "Some problems need to be addressed before the fence can be used on a large scale as a cost-effective pollution prevention mechanism."

From Dogs to Cows

Jim McKenzie of Clark Distributors has installed Off Limits systems to prevent dogs from wandering off the job while working in pairs to protect orchards and nurseries from the ravages of deer. However, the dairy farm project is the first time the system has been used as a pollution prevention measure.

McKenzie plans to continue to monitor the system's effectiveness. He stresses that the system should be considered experimental. After all, "a 1,200-pound cow takes a greater toll on the equipment than a 40-pound dog," he said.

[For more information on the project, contact Craig Zimmerman, Soil Conservation Associate, Allegheny County Soil and Water Conservation District, 11602 Bedford Road, NE, Cumberland, MD 21502. Phone: (301) 777-1494. For more information on the Off Limits system, contact Jim McKenzie, Clark Distributors, 14018-E Sullyfield Circle, Chantilly, Virginia 22021. Phone: (703) 502-8550.]

West Virginia Poultry Industry Looks for Clean Water and New Market Products

Since its creation in 1993, the West Virginia Poultry Water Quality Advisory Committee has been part of a number of exciting projects that advance the cause of clean water.

Formed through an agreement among federal, state, and local sponsors of the Potomac Headwaters Water Quality Initiative to address nonpoint source impacts in the state's easternmost counties, the committee encourages all of the poultry growers in the Upper Potomac area to develop nutrient management plans. To date, nearly half of the area's 340 growers have attended nutrient management training sessions sponsored by the Potomac Valley Soil and Water Conservation District. The sessions emphasize soil testing, litter nutrient analysis, spreader calibration, mortality management, litter application rates, and appropriate storage methods.

Another outgrowth of the Poultry Advisory Committee is a unique composting demonstration. According to Ken Haid, USDA NRCS Resource Conservationist at the Potomac Interagency Water Quality Office, the project — begun to demonstrate production of high quality, value-added compost from poultry litter — has yielded an "unexpected but pleasant surprise." The local forestry industry has joined with the poultry growers to test the effectiveness of mixing varying amounts of poultry litter and forestry by-products such as sawdust, shavings, and bark. In the project area, the mixture is cost-effective because there are limited markets for many of the forestry process residues.

Enthusiasm for the composting project has been contagious, sparking interest in the neighboring Greenbriar Valley Soil Conservation District. Greenbriar is now developing a mortality and nutrient management plan for a large turkey breeder operation located in an area of karst terrain.

Another project is the Potomac Toll-Free Litter Marketing Hotline. With financial support from the Potomac Headwaters Resource Conservation District and the Potomac Valley Soil and Water conservation District, a hotline (1-888-3-LITTER) assists growers with marketing litter, thus keeping excess nutrients out of state waters. A database is maintained to keep market postings current.

[For more information, contact Ken Haid, Resource Conservationist, Potomac Interagency Water Quality Office, phone: (304) 538-7581; fax (304) 538-7676.]

News From the States, Tribes and Localities

Eighteen States Meet to Discuss Nonpoint Source Pollution

EDITOR'S NOTE: *NPS News-Notes'* Elaine Bloom attended the eighth annual Tri-Region Nonpoint Source Program Meeting and came away impressed with two things: the work being accomplished on the state and local NPS front, and the value of a face-to-face meeting with counterparts in other states. More than an exchange of information, such "face time" affirms one's work and inspires greater resolve to keep on tackling all nonpoint sources. This issue's "News from the States" are proceedings from this meeting.

Controlling NPS is a big job with many little solutions. No magic. No glitz. Just lots and lots of education and demonstration projects and proposals and grant applications and seine nets and permits, and endless meetings, and endless mud.

On September 3-6, 1996, busy, dedicated (and oft-muddied) members of the NPS community from the 18 states in EPA regions 3, 4 and 6 stopped to catch their breath at the eighth annual Tri-Region Nonpoint Source Program Meeting. This now-traditional assembly was held in Bandera, Texas, at the Mayan Ranch.

Unfortunately, the occasion brought those who attended no relief from mud. Almost a week of rain coincided with the conference, temporarily breaking the long drought afflicting the Texas Hill Country. But a little mud didn't spoil the opportunity for attendees to share successes, disappointments, ideas, and a few good laughs.

"The annual Tri-Region Nonpoint Source Program Meeting evolved from a need to meet collectively to discuss national and regional issues, report progress in addressing past issues, and above all, highlight advances in achieving the goals of Clean Water Act section 319," said Brad Lamb, NPS coordinator for EPA Region 6, which hosted the gathering. The three regions take turns sponsoring the meeting.

Informal presentations and discussions ranged from federal legislation impacting NPS programs to on-the-ground innovations. Two themes that appeared to emerge spontaneously throughout and which reflected concurrent trends in state and federal thinking were the overwhelming importance of partnerships in the control of NPS and the drive to replace programmatic goals with environmental goals and results.

Partnerships and Section 319 Revision Keeps NPS Programs Alive

Bill Hathaway, director of EPA Region 6's Water Quality Protection Division, kicked off the meeting by urging Tri-Region participants to forge links with other water programs to ensure the long-term survival of NPS programs. He noted, for example, that the powerful new farm bill makes partnering with agriculture agencies crucial. Hathaway encouraged state agencies to explore the use of Performance Partnership Agreements and Grants to maximize NPS funding and support. But accompanying the grants, Hathaway warned, is the obligation for the NPS community to take the lead in directing where such funding goes and to make sure it does not get diverted from NPS activities.

Performance Partnerships Agreements

Several speakers recounted their experiences in fashioning state and EPA environmental partnerships. Chief of EPA's Nonpoint Source Control Branch Dov Weitman suggested that such partnerships be viewed as an opportunity to strengthen NPS programs and to access more support. In fact, partnerships — with EPA, other state programs, federal agencies, and interest groups — are as critical as convincing decision makers that NPS is a high priority and demonstrating environmental results.

Delaware's Bob Zimmerman described his state's partnership document as a comprehensive report that includes an account of environmental conditions and programs in Delaware. It is also the strategic plan for the state's environmental agency. Delaware based its plan on its priorities (e.g., public health, water quality, fish and wildlife), rather than its programmatic structure. Its \$3.5 million Performance Partnership Grant (PPG) combines a number of programs, including 319, other Clean Water Act programs, and nonwater programs, said Zimmerman.

EPA's Region 6 Nonpoint Source Project Officer Len Pardee and Texas Natural Resources Conservation Commission (TNRCC) Nonpoint Source Program Team Leader Arthur Talley worked together to iron out the wrinkles in Texas' PPG for 1997. The TNRCC applied for a one-year grant combining its air, water, and waste programs, but Pardee and Talley found that trying to get a one-year PPG to accommodate the three-year contracts TNRCC makes with other groups was like trying to get a round peg into a square hole. This year, the state is using categorical grants to fund those projects and reserving the PPG to fund TNRCC's "internal" projects. Meanwhile, Texas is working toward a multiyear PPG in 1998.

Based on the state legislative planning and appropriations request, TNRCC's Environmental Performance Partnership Agreement package describes activities, goals and objectives, and sets out budget details as well as indicators, measures of progress, and a reporting process. A "Letter of Understanding" serves to indicate NPS commitments within this larger plan. It contains measures of short-term outputs and environmental outcomes, and the commitments the state is making to achieve these. Most important among these, Pardee said, are the outcome measures, which ideally meet three criteria: each one is environmental, quantifiable, and capable of being evaluated.

Both Pardee and Talley agree that the PPG process, while challenging, demonstrates the potential for better state/federal relationships and increases the focus on environmental goals.

Pennsylvania did not negotiate a PPG for fiscal year 1997, but it is developing an Environmental Partnership Agreement (EnPA) for its water programs. Said Vic Funk, chief of Pennsylvania's Division of Nonpoint Source Management: "The process and the concept on which it is based may be helpful to other states," especially those in which large environmental agencies operate mainly through regional field offices.

Funk, a veteran of all eight Tri-Region meetings, explained that representatives of all stakeholders in the state's water management programs (including EPA Region 3) worked as partners to develop the document, which includes purpose, scope, responsibilities, environmental indicators, objectives, implementation strategy, and public participation. The EnPA is big a step toward a comprehensive, cross-media PPG in Pennsylvania's future.

Revised 319 Guidance

Last year's revision of the 319 grant guidance offers still more options for state NPS agencies, said Dov Weitman, chief of EPA's NPS Control Branch. A workgroup comprised of representatives from the states and EPA (including regional and headquarters' staff) helped strengthen and streamline the grant process. Weitman emphasized that partnerships with commodity groups, other agencies, and environmental groups are powerful tools at both federal and state levels — so much so that EPA has given the Association of State and Interstate Water Pollution Control Agencies (ASIWPCA) a grant to sponsor a national meeting with potential partners in nonpoint source control.

ASIWPCA was instrumental in keeping a state perspective in the 319 revision process, said ASIWPCA member Bob Zimmerman of the Delaware Department of Natural Resources and Environmental Control. The revised guidance will help states revamp NPS programs in terms of developing measures of success, building partnerships, and using Performance Partnership Agreements and Grants. Zimmerman told attendees that currently, a workgroup composed of state and EPA representatives is working with national interest groups to pool their ideas for implementing revisions to the NPS grant program.

Partnership Agreements Dovetail with Environmental Indicators

The proposal of national environmental indicators of water quality is of considerable interest to conference participants. Hank Zygmunt, NPS coordinator in Region 3, sketched the structure of the 18 indicators and their relationship to major water quality objectives, noting that they will be useful in many contexts, including PPGs and other cross-media planning.

Terry Fabian, deputy secretary of field operations in Pennsylvania's Department of Environmental Protection told attendees that he considers environmental indicators critical to a holistic, comprehensive approach to solving air, land, and water problems. "Pennsylvania is now undergoing an institutional/cultural change in the way we approach problems," he said. Environmental program structures still largely reflect the environmental problems of 25 years

ago, when point sources were the most urgent water issues. "Most water pollution in Pennsylvania is now from nonpoint sources, but the bulk of our environmental agency's people and resources are invested elsewhere. We can't transfer resources to where they are most needed with the current compartmentalization of programs and funds," Fabian said.

To create the new mechanisms that will allow a holistic approach, indicators need to be developed across the board, recognizing the interplay between media; for instance, how air pollution affects nutrient loadings to waterbodies. In this way, environmental indicators can help guide the move away from prescriptive solutions toward achieving environmental results.

NPS Monitoring

Charlie Howell, water quality monitoring coordinator at U.S. EPA Region 6, spoke about a perpetual dilemma of NPS managers — monitoring NPS. State NPS control agencies face a number of monitoring challenges, Howell said. First, differences between state approaches to monitoring affect what states report as water quality problems and their 319 project proposals. These differences include monitoring frequencies, spatial coverage, varying intensities of assessment, and whether monitoring is based on water quality standards or involves best professional judgment.

Second, EPA funds for monitoring are limited; much is allocated to the information needs of specific programs, and little is left over for assessment work or development of environmental indicators that can be used to track environmental progress over time.

And third, the ideal time frame for documenting environmental results in NPS projects is 20 to 30 years. Obviously, 319 grants don't accommodate these long time periods. NPS managers need tools to help them gauge results over three to five years or five to ten years. As an *implementation* program, 319 is not set up to fund long-term monitoring efforts, so states may need to look elsewhere for this kind of support, Howell said. Performance Partnership Grants may provide a mechanism to combine monitoring and 319 monies.

Amid these constraints, states need to make decisions about the kinds of monitoring necessary. There are basically three levels of NPS monitoring:

- overall program effectiveness monitoring should be used to direct state environmental programs;
- effectiveness monitoring or BMP monitoring is more difficult, expensive, and requires extended periods of time; and
- monitoring for project success measures how effectively all stressors have been addressed. It involves lower cost, a longer time frame, and a larger scale.

The establishment of reference conditions for biological criteria, habitat, and other watershed indicators provides one way for NPS programs to measure the effectiveness of their projects.

On March 3-5, 1997, in Austin, Texas, EPA Region 6 will hold its second annual Nonpoint Source Conference for the states of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

"This conference will be an excellent opportunity for the states in Region 6 to cooperatively continue their efforts in improving their nonpoint source programs," said James Moore, of the Texas State Soil and Water Conservation Board, which is hosting the meeting.

For more information, contact TSSWC, phone: (817) 773-2250.

Looking Ahead

Despite the rain, the 1996 Tri-Regional was anything but a washout. Said David Harding, one of North Carolina's representatives at the meeting, "I find it very helpful to personally know my counterparts within the region and in other regions so that we can interact to develop more effective NPS programs. The meeting provides "seed-thoughts" and motivation to improve the way we do business."

Van Buren County, Arkansas, Soil and Water Conservation District's Eric Stagg commented that the meeting fosters "a partnership relationship between the landowner, the conservation district, state and federal agencies and regulatory entities [that] can serve society well in addressing mandated regulations."

Terry Fabian of Pennsylvania echoed that concept, saying, "It was worthwhile to exchange ideas and hear how other states are addressing similar issues to ours. If EPA truly listens to the states, I think we can move state and national environmental protection to a higher level."

In 1997, people from the three regions will again meet for what Texas's Arthur Talley referred to as "one of the most valuable training opportunities available." The Tri-Regional NPS Conference of 1997 will be held in Virginia or Maryland sometime during the first two weeks of September. "We would like to get as much input as possible regarding the agenda," said Brad Lamb, one of the coordinators of the 1997 conference.

Topics suggested by participants of the 1996 meeting for the next meeting include land planning, sociological aspects/behavior modification, environmental indicators, project results, evaluation techniques for water quality, effluent trading, NPS watershed models, TMDLs, and how to measure success. The two-to-three hour roundtable open forum discussions of previous years may be resurrected by popular demand, when the planning process for the 1997 meeting begins among EPA NPS coordinators and state representatives.

Kentucky's Agricultural Water Quality Act

presented by Corrine Wells, Environmental Control Supervisor, Kentucky NPS Program

In 1994, despite a somewhat unfriendly environmental climate, the Kentucky legislature passed the Kentucky Agricultural Water Quality Act. The Farm Bureau Federation sponsored this bill in response to proposed groundwater regulations.

The Act will require BMPs for all logging and farming operations larger than 10 acres. The Act established a 15-member panel representing ag commodity groups, ag and forestry agencies, environmental organizations, and academia. The panel examined water quality data, evaluated BMPs, and developed a statewide BMP manual to be used by all state agencies.

Developed with input from 250 producers and commodity groups, the manual's 58 BMPs span livestock, crops, pesticides/fertilizers, farmstead situations, and silviculture, with a special category for stream protection. Farmers and loggers must develop and implement a plan based on this selection of BMPs. A producer's notebook has been devised to accompany the manual. It uses a series of questions (e.g., do you have cows? do you have more than 10 cows?) to help the farmer choose an array of appropriate BMPs.

With education, technical assistance, and possibly financial assistance, producers have five years to implement their plans. Based on a "bad actor" protocol, enforcement will rely primarily on complaints or documented water quality problems. At the end of five years, if a watershed is still impaired, all operations in the watershed will be checked for BMPs. Then farmers in the watershed who have not implemented appropriate BMPs will have another chance to do so or risk receiving a notice of violation and a loss of cost-share opportunities.

The bottom line intent of the Act, however, is to help provide consistent information to landowners and improve the mechanism for technical assistance. In five years, Kentucky may still face ag-impaired waters, but farmers and loggers will have been introduced to BMPs, and water quality improvements must eventually follow.

Low-cost Alternatives for Dairy Waste Management

presented by Bob Morgan, Engineering Supervisor, Arkansas Soil and Water Conservation Commission

Dairies are not a major portion of Arkansas agriculture, but they do significantly impact water quality. Arkansas has moved to clean up this problem through an innovative low-cost, low-tech dairy waste management strategy for its dairies, which are mainly small family operations. Most of the 650 dairies in Arkansas can't afford the \$20 to \$50 thousand it can cost to install and permit a traditional waste management system.

The NRCS, Extension, and the Arkansas Soil and Water Conservation Commission (SWCC) have joined forces to develop a system that takes small dairy farmers out of the permit system. They have created an alternative system that keeps manure dry by diverting runoff and covering and curbing loafing and holding areas. The manure is then stacked in a roofed structure with a minimum 45-day holding capacity. Because the manure is kept dry, it does not have to be permitted.

Milking parlor waste remains a problem, however, because farmers must wash out their milking parlors to retain a grade A status. Normally, any manure mixed with water is considered liquid waste and requires a permit in Arkansas. However, the alternative waste system will direct all milking parlor waste into septic tanks, and then into a wet wells for land application.

Although 15 demonstration projects were set up, farmers initially did not respond well to the opportunity. When the partner agencies looked closely, they found they were giving farmers contradictory messages about the program. The result was an innovative agreement among agencies. The state Pollution Control and Ecology Department (PC&E) agreed to waive permits for small dairy farms that use the alternative system. To qualify for the waiver, the farmer must commit to whole farm management, not only of manure, but of nutrients and pastures as well.

NRCS agreed to notify PC&E at every step, such as when farmers apply for assistance, complete their whole farm plans, or complete construction of the system. Farmers receive technical assistance from SWCC and training from the Extension Service. Cost-share is provided by SWCC and USDA. With this agreement, SWCC hopes to have all 650 dairies managing their waste properly within three years.

Regionally Coordinated Composting

presented by Jim Wimberly, Winrock International

Is regionally coordinated composting the wave of the future? Maybe. According to Jim Wimberly of Winrock International, it takes the burden of manure disposal off the farmer's shoulders and turns a farmer's technical challenge into a marketing and organizational challenge. Some on-farm manure management is still needed, of course, but the regional framework involves a service that removes manure from farms in an economically viable "cluster" area, brings it to a central composting facility, and, after composting, markets the product.

The key here is a cooperative, medium to large-scale, centralized enterprise. Besides its obvious benefits to the farmers, regionally coordinated composting

- produces an odor-free, stable, marketable soil amendment that is more valuable and transportable than raw manure;
- reduces the potential for water quality impacts;
- opens up a market for other agricultural residues and municipal wastes than can be co-composted with manure; and
- creates new rural jobs.

In addition, regionally coordinated composting may be fundable by EQIP, which seeks innovative strategies for managing livestock waste.

Lagoon Breaks Result in Positive Legislation in North Carolina

presented by David Harding, Nonpoint Source Planning Group, North Carolina Department of Environmental Management

North Carolina's well-publicized lagoon breaks and fish kills of 1995 focused the state's attention on nonpoint source pollution. Sullied waters were not the only result; the problem also generated much positive action.

For instance, in 1996, the state passed an animal waste management law requiring a tiered permitting procedure. A new general non-discharge permit requires animal waste management plans, setbacks, nitrogen management, mandatory operator training, inspections, and fees. All dry poultry litter facilities with over 30,000 birds must develop waste management plans.

Other recent legislative initiatives include the establishment of a wetland restoration program with mitigation banking, studies on atmospheric deposition of nitrogen, a straight-pipe elimination amnesty program, and the Clean Water Management Trust Fund, which could provide up to \$40 million annually for restoring and protecting state surface waters and establishing riparian buffers.

The North Carolina legislature also ratified a bill mandating an overall 30 percent nitrogen load reduction in the Neuse River basin. The Environmental Management Commission (EMC) and the Division of Water Quality (DWQ) are revising the Nutrient Management Strategy for the Neuse River to achieve this goal.

A voluntary approach is also underway. In the Neuse basin, a nonpoint source team including the NPS agencies, Environmental Defense Fund, Sierra Club, Pork Producers Association, poultry producers, and citizen groups drafted and agreed to 300 commitments. The DWQ is

also coordinating efforts in a partnership with NRCS and the state Division of Soil and Water Conservation to develop joint projects using EQIP.

In addition to these voluntary efforts, the EMC has proposed mandatory management measures in the Neuse River Basin, including 50-foot riparian buffers on all perennial or intermittent streams, stormwater management for all new development, and nutrient management plans for all agricultural and recreational lands above certain sizes and on all land fertilized by commercial applicators. These new rules, if adopted, would become effective in August 1998.

Highway Construction Evaluation

presented by Carlos Swonke, Water Quality Coordinator, Texas Department of Transportation

In 1995, it was not unusual to find staff from the Texas State Department of Transportation and the Texas Natural Resources Conservation Commission on the site of new highway construction, talking to workers, slogging through mud, peering at silt fences, and examining ground cover. As the Texas Stormwater Advisory Team, staff from both agencies visited over 50 highway construction sites to evaluate stormwater control practices.

They discovered that the most widespread problem was that construction projects routinely disturb more ground than necessary or larger areas than can be controlled. Failure to revegetate or stabilize soil quickly was another recurring problem, and there were numerous problems with silt fencing — its use was widespread, but it was often poorly maintained and inappropriately placed. The good news was that the use of mulch and erosion control mats appeared to be increasing and the mats work well.

The team concluded that more training of construction contractors and inspectors is needed, particularly on keeping the soil in place and understanding the combined impacts of agricultural and construction runoff. As a result of the evaluation, research is now underway on uses and alternatives to silt fences, alternatives to channel modification, and the constituents of highway runoff.

Southern Nurseries — Allies in BMPs

presented by Charles Gilliam, Professor of Horticulture, Auburn University, Alabama

In 1993, growers of container nursery plants in the southern United States recognized the potential environmental and perceptual difficulties inherent in practicing a trade that generates substantial amounts of runoff and nutrients. Their response exemplifies how a cooperative effort among multiple organizations and states can transcend economic competition to benefit the environment and the industry.

The Alabama Nursery Association sparked the process in 1993 when it began to develop a list of BMPs. Despite the association's good intentions, the reaction from another organization, Southern Nurseryman's Association was less enthusiastic. Nurseries growers in other southern states expressed concern that site-specific BMPs could give Alabama growers an unfair advantage in the marketplace. Finally, when EPA, nursery, and university representatives gathered in 1994 to discuss nursery BMPs, all parties realized that if the industry did not self-regulate, government probably would do it for them.

With self-regulation established as a common goal, the Southern Nurseryman's Association agreed to provide leadership in developing a regional BMP manual. Beyond the actual listing of regionally acceptable BMPs, the process involved close contact with state agencies, industrywide review and input, and an EPA review. Each state nursery association will sign off on the document and distribute it to their members. The manual's projected publication date is January 1997, but already the southern nursery community can boast a growing awareness and voluntary implementation of BMPs.

Watershed Partnership

presented by Eric Stagg, District Manager, Van Buren County Conservation District

Several years ago, a study sponsored by Arkansas's Caldron Creek watershed conservation districts showed that dairies in the watershed have major potential for adversely affecting water quality. Yet only seven of 171 dairies had livestock waste permits, largely because permitting entails a financial burden. Today, farmers, the conservation districts, and state and federal

agencies in the five counties that drain into Caldron Creek have found a way to help farmers meet state regulatory standards.

With EPA 319 funding administered through the Arkansas Soil and Water Conservation Commission, the Van Buren County Conservation District took the lead and purchased equipment to pump out and irrigate the animal waste stored on farms. The districts converted the equipment into a mobile pump-out and spray application system that now serves 35 producers.

The Farm Service Agency and the Arkansas Soil and Water Conservation Commission provided 50 to 75 percent cost-share assistance in the construction of on-farm waste handling facilities, and a water quality technician helps farmers develop dairy waste management plans. The mobile unit visits participating dairies, charging a \$250 to \$400 set-up fee, \$65 an hour to spray, and \$20 an hour to agitate.

In Van Buren County alone, the project is responsible for 14 or 15 functioning animal waste management systems, and another five are under construction. The mobile system evolved largely through trial and error, but it has paved the way for similar projects. After three years, the project is not yet financially self-sufficient; however, it has provided valuable lessons, and its partners stand ready to assist others considering similar endeavors.

[Following his presentation at the NPS Tri-Regional NPS Program Meeting, Eric Stagg was honored with an EPA Region 6 Environmental Achievement Award for his work with the conservation district.]

Lake Martin Lake Watch

presented by Dick Bronson, President, Lake Martin Lake Watch

Residents of Alabama's Lake Martin know a good thing when they see it: They have a clean lake and are determined to maintain it. The Lake Martin Watch, a volunteer monitoring group that is part of the Alabama Water Watch Program keeps a watchful eye over the lake's shimmering depths.

The state program is sponsored cooperatively by the Alabama Department of Environmental Management and Auburn University and funded through 319. The Lake Martin Watch, which began in response to a point source problem, now samples five or six permanent sites on the lake monthly. With its ranks bolstered by the talents and time of many retired professionals who live in the community, Lake Martin's volunteer force uses a Lamot test kit to measure six chemistry parameters. It also samples macroinvertebrates and does "first-alert" bacteriological analysis using "Redi-gel" petri dishes.

The group also adheres strictly to an EPA-approved quality assurance and control manual, certifies volunteer monitors annually, and employs much cross-checking of results. The procedure results in credible data that is used in the Alabama's 305(b) report.

The group also conducts educational programs and publishes a biyearly newsletter, an NPS bulletin, and a brochure. It hopes to develop a water quality index of the lake's condition and use it to inform the public by regularly publishing its results in the local paper. All told, the sentries of Lake Martin can boast a healthy lake, accurate data, long-term trend information, informed citizens, excited students, and a concerned electorate.

The Muddy Waters Project

presented by John Brunner, Perkiomen Valley Watershed Association

In Pennsylvania, where responsibility for land-use planning and implementation is vested in municipal governments, it seems reasonable to assume that townships, boroughs, and cities are responsible for watershed protection. But the Delaware Riverkeeper Network and the Perkiomen Valley Watershed Association believe that decision makers frequently lack an adequate understanding of watershed management. Together they have launched the Muddy Waters Project, a unique approach to educating municipal and county government officials about nonpoint source pollution, stormwater management, and riparian conditions in the watershed.

The innovative effort concentrates on photographing conditions in area streams to create a powerful visual presentation of the effects of pollution and habitat degradation. The group hopes to stimulate municipal and county action to enact and enforce ordinances that address stormwater, erosion and sediment control, and provide riparian and wetland buffers.

Gallinas Watershed

presented by Cy Sokoll, District Conservationist, NRCS, Las Vegas, NM

The Gallinas Watershed in northern New Mexico presented some unique challenges to managers attempting to safeguard the public water supply and control NPS pollution. The economy in the watershed is sluggish, the terrain steep, and rainfall sparse. To make the situation even more difficult, the public water supply takeout for the city of Las Vegas is at the bottom of the watershed.

The Forest Service owns over half the land in the watershed, making it an important stakeholder in helping the conservation district and many other partners develop a Natural Resources Management Plan in 1992. The impetus for the plan was the need to replace a circa-1850s dam that was on the National Historic Register. The dam was ordered breached, but after being breached, a torrential storm washed out much of the sediment behind the dam. The Interstate Stream Commission funded dredging operations, while 319, Forest Stewardship Incentive, and Water Quality Incentive grants are funding land-owner assistance, road BMPs, revegetation, and education.

Technical Notes

New Stormwater Retrofit Technologies May Extend Life of Urban Developments

Runoff from urban areas — especially from areas constructed before the late 1980s — continues to affect downstream waters. Streambanks erode, habitat is lost, and flooding goes uncontrolled. As water quality managers look for innovative ways to address these and other impacts of urban runoff, many individuals and companies are also responding with new ideas and new tools to help overcome the obstacles.

In a recent front-page article, *Runoff Report* (July / August 1996) previewed six stormwater retrofit products and the enterprising companies that are involved in researching and developing new ways to help clean up urban runoff — and the heavy metals, oil, grease, and sediments that it contains. The following profiles were included in the article:

■ **Landscaper Jim Hutter's invention of the Enviro-Drain®.** Enviro-Drain® filters urban runoff through three trays. The first tray filters out sediments and debris, the second retains oil, the third neutralizes fertilizers and pesticides. The trays are conveniently designed to fit into storm drains and require little maintenance. In large storms, the first flush is treated, and excess runoff overflows between the filter trays and their casings. Installation runs about \$400. The filters need to be replaced monthly at a cost of \$3 to \$10 and, because they are classified as hazardous waste, they must be disposed of properly. [For more information, contact Enviro-Drain®, 13226 97th Avenue, NE, C208, Kirkland, WA 98034. Phone: (206) 820-1953; fax: (206) 820-8364; e-mail: nvirodrain@aol.com; World Wide Web: www.cyberspace.com/~filters.]

■ **KriStar Enterprises' development of the Fossil Filter™.** Also a storm drain attachment, the Fossil Filter™ captures petroleum-based hydrocarbons and other contaminants in a metal trough containing a filter cartridge. Installation runs \$500 to \$600. The company recommends frequent street sweeping to prevent clogging. The filter cartridge must be cleaned at least every six months (filter material costs \$23 for a 10 pound bag). Used cartridges are disposed of similarly to oily rags. [For more information, contact KriStar Enterprises, Inc., 422 Larkfield Center, Suite 271, Santa Rosa, CA 95403. Phone: (800) 579-8819.]

■ **Stormceptor® Corporation's Larger Retrofit.** The Stormceptor® retrofit offers a more permanent structure. Environmental Engineer Vince Berg saw the need for such a system during his tenure with Maryland's stormwater program. A precast concrete system fitted underground in the vicinity of stormwater inlets, Stormceptor® traps petroleum and suspended solids. Although the initial cost of installation (\$7,600 to \$33,500) is higher than the Enviro-Drain® and the Fossil Filter™, maintenance requirements are less demanding. Vacuum trucks remove sediment and oil from the structure about once a year for about \$40, plus disposal costs. Sediments are dewatered and solids are landfilled. (For more on Stormceptor®, see *News-Notes*,

#44.) [For more information, contact Vince Berg or Deborah Crutchfield, Stormceptor® Corp., 600 Jefferson Plaza, Suite 304, Rockville, MD 20852. Phone: (800) 762-4703; fax: (301) 762-4190.]

As different as these products may be, each is the result of creative companies and individuals who recognize the need to give water quality managers the tools they need to meet complex nonpoint source challenges. It is encouraging — and a credit to those involved — to see water quality managers and corporations extending their reaches.

[For more information on Runoff Report, contact the Terrene Institute, 4 Herbert Street, Alexandria, VA 22305. Phone: (703) 548-5473; fax: (703) 548-6299; e-mail: terrinst@aol.com. Please note that mention of these products does not constitute endorsement.]

Notes on Education and Outreach

Educational Resources

Books

■ **Marine Science Career Guide.** The Sea Grant Program of the Woods Hole Oceanographic Institution has published *Marine Science Careers: A Sea Grant Guide to Ocean Opportunities*, which features 38 marine scientists and professionals representing a wide range of specialties, geographic locations, employment situations, and educational backgrounds. Directed to junior high and high school students, the guide is also useful for college undergraduates and the parents, educators, and guidance counselors who help them plan their futures. To order, contact the Sea Grant Program at the Woods Hole Oceanographic Institution, Sea Grant Office, Woods Hole, MA 02543. Phone: (508) 289-1665.

Experiments/Tools

■ **Aquifer in a JUG.** A new, make-your-own-aquifer kit, "Just Understanding Groundwater," or JUG, is 8.5 inches tall, made of durable plastic, and comes with accessories, detailed activities, and instructions for experiments that will help the user understand such aspects of groundwater as aquifer geology, water movement and pumping, and contamination and cleanup. Lessons are based on the Groundwater Foundation's Discovery TV segments. Available for \$18.95 from The Groundwater Foundation, P.O. Box 22558, Lincoln, NE 68542. Phone: (800) 858-4844.

■ **Returning Paradise to Paradise Valley: A Groundwater Protection Role-Playing Activity.** Also from the Groundwater Foundation, but for an older audience, Paradise Valley is a problem-solving scenario designed to promote dialogue about difficult water issues and build consensus among different interests. Written for high school and college classes, professional associations, local government groups, governmental agencies, local businesses, and citizen groups, it is available for \$13.95 from the Groundwater Foundation, P.O. Box 22558, Lincoln, NE 68542. Phone: (800) 858-4844.

Videos

■ **Clean Water — What's It Worth?** The value of America's most precious resource is vividly captured in this two-part program by the National Water Research Institute and cofunded by the U.S. EPA. It includes case studies on the Cuyahoga River, Tampa-Hillsborough Bay, the Potomac River and Chesapeake Bay, and the western United States. For more information, contact NWRI, 10500 Ellis Avenue, P.O. Box 20865, Fountain Valley, CA 92728-0865.

■ **Water and the Human Spirit.** Only informed, citizen-led change will achieve sustainable water quality, says this Bullfrog Films video, which was recently honored with a North American Outdoor Film and Video Award. It may be purchased for public showing for \$195 or rented for \$45. Groups may inquire about a discount. To order, contact Bullfrog Films, Inc., P.O. Box 149, Olney, PA 19547. Phone: (800) 543-3764.

Cooling Down Hot Topics

Trying to balance environmental protection with economic growth can lead to heated confrontations. Sometimes quite basic information is surrounded by political controversy. But groundwater educators agree that, with careful planning, successful education and information programs about controversial water issues can be achieved.

Thomas Hoban, an associate professor at North Carolina State University, introduced a five-step approach to managing conflict with controversial environmental issues. In a guide published by the Conservation Technology Information Center called *Managing Conflict: A Guide for Watershed Partnerships*, Hoban suggests (1) analyzing the conflict, (2) defining the management strategy, (3) setting the groundwork for negotiation, (4) negotiating, and (5) implementing or acting on the groups' decisions. Knowing what the conflict is and devising possible strategies are key elements of conflict resolution.

Conflict Resolution — Ingredients for Success

- ✓ A neutral forum
- ✓ Involvement of the media
- ✓ Early involvement of all perspectives, especially those expected to oppose each other
- ✓ Shared ownership of the meeting and the problem
- ✓ Inviting stakeholders to provide displays
- ✓ Free food

When dealing with controversial issues, it is important to separate people from the issues at stake. Some conflicts are based on differences in thinking and perceptions. If, however, you focus on the facts at hand, no one should be offended by the information you are trying to relay, says Hoban. He also suggests that educators focus on interests, not positions. "Even when people stand on opposite positions, they usually have a few shared interests," he believes. Before selecting a method to present information on controversial topics, organizers should try to view the issue from each party's perspective.

[To order copies of *Managing Conflict: A Guide for Watershed Partnerships* (\$2 per copy), contact Conservation Technology Information Center, 1220 Potter Drive, Room 170, West Lafayette, Indiana 47906. Phone: (317) 494-9555.]

With a Water View — Real Estate Agents and Developers Return to the Classroom

Real estate agents and land developers in the state of Washington are learning how to protect the environment — and how to advise their clients about shorelines and wetlands before the bulldozer starts and they find themselves in court.

For the second year, Washington State University Cooperative Extension and the Washington Association of Realtors have cosponsored five two-day workshops: Salmon and Streams; Shorelines; Wetlands; Nonpoint Pollution; and Landscape: A Watershed Perspective. Each one features experts in the field who are also familiar with the real estate community. Realtors themselves often present part of the program.

Program organizers hope to multiply their success by developing a "Welcome to Your Watershed" program in which realtors would distribute information on BMPs and Cooperative Extension services to new home-buyers and schedule follow-up site visits from trained extension volunteers to help new residents make informed decisions about the natural resources on their properties.

All workshops are fully accredited by the state Department of Licensing. Realtors and appraisers can earn up to 15 continuing education hours for each workshop.

[For more information, contact Lela Hilton, Jefferson County Cooperative Extension, 201 West Patison, Port Hadlock, WA 98339. Phone: (360) 379-5610, ext 207.]

Boating Industry Puts the Message Where the Stakeholders Are

Last November, the 32,000 subscribers to *Boating Industry* magazine received something extra with the monthly issue of their national trade journal. A special supplement, "Clean Marinas — Clear Value," profiled 25 award-winning marinas and boatyards that improved business by cleaning up the environment.

"This [supplement] went to every boat manufacturer and almost all boat dealers, marina or boatyard owners, and marina suppliers in the United States," said marina consultant Neil Ross. Ross researched and wrote the piece to demonstrate to the industry that a clean environment and healthy profits are not mutually exclusive. "I'd guess that 25 percent of marinas and boatyards have made major environmental improvements [based on management measures

developed by EPA for controlling coastal nonpoint source pollution]. We're trying to help the rest understand that clean water is good for business," he explained.

Ross reported very positive feedback from readers, especially from those who wanted their stories included in a future edition. "I'm finding that when marina and boatyard operators start making environmental improvements, they tend to just go ahead and implement most of the applicable marina BMPs." And most do so voluntarily, spurred by customer response and believing, as Ross says, "that environmental protection is just part of the cost of doing business today along the waterfront."

Ross originally developed the 25 case studies for an EPA report by the same name. *Boating Industry* magazine was intrigued by the success stories. "I'm surprised at how rapidly the marina industry is grabbing onto environmental information," said Ross. "The fact that one of the trade's leading publications not only liked the idea, but essentially reproduced and distributed the material at their own cost suggests that this is of profound interest to the marina industry."

The 25 marinas and boatyards featured in the supplement and the EPA report received achievement certificates during the Clean Marina Educational Forum at the International Marine Trades Exhibit and Convention last September 27. The recognition was welcome, Ross said, but "these marina owners were excited by what they were doing." Ross hopes that recognizing them and publicizing their stories will spread that enthusiasm throughout the industry.

[The supplement may be obtained while supplies last from any of the following: American Boatbuilders and Repairers Association, P.O. Box 1236, Stamford, CT 06904; International Marina Institute, 35 Steamboat Ave., Wickford, RI, 02852; Marina Operators Association of America, 150 E. Huron St., Ste. 802, Chicago, IL 60611; Marine Environmental Education Foundation, P.O. Box 56, Kingston, RI 02881; Marine Retailers Association of America, 150 E. Huron St., Ste. 802, Chicago, IL 60611; SeaGrant MarinaNet, c/o URI Coastal Resources Center, Narragansett Bay Campus, Narragansett, RI 02882; and Boating Industry, 13 Century Hill Drive, Latham, NY 12110-2197.]

The complete 125-page EPA report, Clean Marinas — Clear Value (EPA 841-R-96-003), is available from NCEPI, P.O. Box 42419, Cincinnati, OH 45242. Phone: (513) 891-6561; fax: (513) 489-8695.]

Reviews and Announcements

Best Management Practices — Are They Cost-Effective?

Although numerous studies in recent years have supported the water quality value of best management practices, a different but equally important angle for BMP studies concerns their cost-effectiveness. Maine's Casco Bay Estuary Project has produced a new guide that tackles this important issue. Its newly released *BMPs: Cost-Effective Solutions to Protect Maine's Water Quality* focuses primarily on cost-related questions — and comes up with affirmative answers.

This 21-page guide compares the cost of BMPs to the cost of conventional construction practices. It presents carefully selected case studies and cost comparisons for BMPs installed at residences, along a roadway, during a business expansion, on a dairy farm, in a demonstration forest, in a town, at a lakefront club, and at a campsite.

Each case study includes an introduction to the problem, explains the BMP used, and provides a cost analysis of the BMP versus other practices. Text boxes accompanied by graphics illustrate how the BMPs protect water quality, and frequent quotations from homeowners, town managers, and others on their BMP experiences provide additional insight.

An Exemplary Case

One case study presents the challenge faced by Charles and Louise Day, who needed to replace a failing retaining wall located on the bank above their pond. Rather than construct another wall, the Days installed a BMP that combined plantings at the top of the bank with a stone structure to stabilize the slope and an intermediate terrace to break the grade of the slope and prevent erosion.

Cost-wise, the BMP system used by the Days was more effective than building a conventional wall using pressure-treated lumber or concrete. Based on their experience and other case studies, the guide concludes:

- BMP costs are low compared to the costs of conventional practices
- BMP costs are relatively small when compared to overall costs; and
- BMPs provide additional aesthetic benefits that cannot easily be assigned a dollar value.

In targeting nonpoint source pollution, it is always easier to win support for options that benefit water quality and control costs. BMPs have been a powerful tool for water quality, but their cost implications have often been elusive. This booklet offers tangible evidence that BMPs are sound for the environment and soft on the pocketbook.

[For a free copy of BMPs: Cost-Effective Solutions to Protect Maine's Water Quality, contact the Casco Bay Estuary Project, Room 408, Law School Building, 246 Deering Ave., Portland, ME 04102. Phone: (207) 780-4820; fax: (207) 780-4913.]

NOAA Report Addresses Atmospheric Inputs to Coastal Waters

A new report from the National Oceanic and Atmospheric Administration's (NOAA's) Coastal Ocean Program indicates that large nitrogen contributions to coastal waters from atmospheric deposition are not uncommon along the East Coast.

According to *Atmospheric Nutrient Input to Coastal Areas: Reducing the Uncertainties*, between 10 and 45 percent of nitrogen loadings in coastal and estuarine areas are the result of atmospheric deposition. NOAA's most recent foray into deposition takes a look at the history of deposition control, the science behind atmospheric loadings, and recommendations for minimizing atmospheric inputs to coastal areas.

Atlantic Ocean — A Common Destination for Airborne Pollutants

Atmospheric loadings are common in estuaries from the Albemarle/Pamlico Sound region to the Gulf of Maine. For example, the Chesapeake Bay Program recently estimated that 27 percent of total nitrogen loadings to the Bay come from the atmosphere. During the 1980s, NOAA's Air Resources Laboratory conducted a study of the fate of windborne air pollutants carried out to the Atlantic Ocean. Most of these pollutants are deposited in the ocean, primarily near the shore. About 30 percent of total U.S. nitrogen emissions are deposited in the Atlantic.

These loadings have significant water quality implications. According to a 1994 National Research Council publication, atmospheric loadings result in nonpoint source impacts to coastal waters, including habitat losses from eutrophication, widespread contamination by toxic materials, changes in riverborne sediment, and alteration of coastal dynamics.

Assessing Air Pollutants

To address this issue, the 1990 Clean Air Amendments authorized EPA and the Under Secretary of Commerce for Oceans and Atmospheres to develop a program for identifying and assessing the extent of atmospheric deposition to the Great Lakes, the Chesapeake Bay, Lake Champlain, and coastal waters. The outgrowth of this charge was the Atmospheric Nutrient Input to Coastal Areas (ANICA) program created by NOAA's Coastal Ocean Program. ANICA developed a methodology for assessing deposition to coastal waters and reports its findings in *Atmospheric Nutrient Input to Coastal Areas*.

Although some of the report's discussions (e.g., on modeling) are quite technical, this publication does provide a valuable overview of the atmospheric deposition problem. It is an excellent resource for those interested in gaining a better understanding of the sources of deposited chemicals, the differences and importance of wet versus dry deposition, the distinction between direct and indirect loadings, and more.

[For a copy of *Atmospheric Nutrient Input to Coastal Areas: Reducing the Uncertainties*, contact NOAA's Coastal Ocean Office, 1315 East West Highway, Silver Spring, MD 20910. Phone: (301) 713-3338; fax: (301) 713-4044; e-mail: isheifer@cop.noaa.gov.]

New EPA Website Helps Surfers Catch the Watershed Wave

EPA's Office of Water is adding a new tool to its box of over 1,000 informational products on the Internet. Federal, state, local, and private partners are developing *Surf Your Watershed* to help citizens and decisionmakers locate, use, and share water quality and environmental information on their watersheds.

Surf Your Watershed allows web surfers to find their watersheds, request maps, and access information on their watershed organizations. *Surf* also provides a link to the Conservation Technology Information Center's National Watershed Network. *Surf* will host an interactive forum and will provide information about the water resources, current population, land uses and land cover, and causes and sources of pollution for each watershed (from state and tribal 305(b) assessments).

Next time you're surfing, point your board to <http://www.epa.gov/surf> and catch the watershed wave!

[For more information, contact Karen Klima, U.S. Environmental Protection Agency (4503F), 401 M St. SW, Washington, DC 20460. Phone: (202) 260-7087; fax: (202) 260-7024; e-mail: klima.karen@epamail.epa.gov.]

A New Era for Irrigation

The Future of Irrigated Agriculture is now available from the National Research Council. It examines many factors that may affect the future of irrigation, such as competition for declining supplies of water and concerns over environmental impacts. The report includes case studies representing the four principle areas of irrigation in this country — California, the Great Plains, the Pacific Northwest, and Florida.

[For more information, contact Chris Elfring, National Academy Press, 2101 Constitution Avenue, NW, Lockbox 285, Washington, DC 20055. Phone: (202) 334-3422.]

New EPA Video Attests That Seeing Is Believing — Merits of Wetlands Water Quality Standards

For over two decades, states and tribes have recognized the merit of establishing water quality standards to protect the physical, biological, and chemical integrity of rivers and lakes. The question of water quality standards for wetlands is newer, and EPA's Office of Wetlands, Oceans, and Watersheds has produced a video that vividly captures the essence and merit of wetlands standards. Spectacular photography and compelling interviews with key players make *Wetlands Water Quality Standards* a fascinating journey.

The video makes its case for wetland standards early, using the voice and wisdom of John Bender of Nebraska's Department of Environmental Quality. One of the developers of the Nebraska water quality standards, Bender is no stranger to the topic. "Water quality standards are the base," he says, "for any state's water pollution control and water quality program. That is the foundation on which everything else gets built — your nonpoint source program, your Clean Lakes program, your wastewater treatment program — everything flows back to the standards."

The video discusses all three elements of wetlands water quality standards — identifying designated uses, developing water quality criteria to protect those uses, and using the antidegradation policy. For example, Minnesota found that restoring and protecting wetlands in St. Paul was more cost-effective than a filtration system to treat sediment and nutrients in runoff before it is discharged to the city's drinking water reservoir. The designated use criteria has helped the state protect water resources, preserving the wetlands and avoiding additional treatment costs.

In Washington, biologist Klaus Richter is helping to protect wetland values by providing an explicit, scientific basis for regulation. Richter's research shows that normal hydrology is crucial to the proper functioning of wetlands. His findings have helped the state develop science-based regulations that minimize the impacts of hydrologic changes linked to increased impervious

*New EPA Video
Attests That
Seeing Is
Believing
(continued)*

surface. These regulations have helped maintain wetland uses and protected developers from overregulation.

Minnesota is using the antidegradation component of its wetlands water quality standards to protect Savage Fen, a wetland that is home to a unique plant community that includes several threatened species. The fen is vulnerable to runoff from the operation of a gravel pit. With authority from the standards, the state is working with the gravel pit owner to install best management practices such as stormwater ponds to trap sediment before it reaches the fen.

These cases represent only a fraction of the benefits of wetlands water quality standards outlined in the 25-minute video, which, case by case, establishes the capability of wetlands standards to protect both the ecological functions of wetlands and their economic value.

[You can borrow — and copy — Wetlands Water Quality Standards by contacting the U.S. EPA Wetlands Hotline, (800) 832-7828; the Water Resources Center, (202) 270-7786; or any of EPA's regional wetland and water quality coordinators.]

More Ways to Protect the Home Environment

A new publication, *Fifty-seven Ways to Protect Your Home Environment and Yourself*, contains 57 environmental actions for people to do at home. The book, from the University of Illinois, covers topics as diverse as lawn care, drinking water safety, gardening, diapers, and insects.

[To order a copy of 57 Ways to Protect Your Home Environment and Yourself, contact the University of Illinois, Ag Publication Office, 64 Mumford Hall, Urbana, IL 61801. Phone (217) 333-2007.]

EPA Launches Biocriteria/Bioassessment Forum on Internet

"Biocriteria," a new e-mail discussion group sponsored by EPA, invites subscribers to ask and answer questions, discuss issues, or post notices on topics of biological assessment and criteria. To subscribe, send an e-mail message to

listserver@unixmail.rtpnc.epa.gov

Leave the subject line blank, and in the body of the message type: **subscribe biocriteria your name**. You will then receive instructions for participating.

[For more information, contact Alice Moss or Candace Stoughton, U.S. Environmental Protection Agency (4304), 401 M St. SW, Washington, DC 24060. Phone: (202) 260-5390; fax: (202) 260-1036; e-mail: moss.alice@epamail.epa.gov.]

Environmental Essay Contest for College Students

Sponsored by South Carolina's Francis Marion University, the second annual Environmental Essay Contest is now accepting registrations. The contest is designed to stimulate interest in international environmental issues among college students around the world.

Students should (1) describe the most critical environmental issues in their countries in terms that will influence public opinion and (2) articulate how those issues will impact international understanding and the global economy in the next decade. All entries should be in English and contain between 1,500 to 2,000 words. Prizes will be awarded for first through third places and honorable mentions.

The submission deadline is March 31, 1997, and students who plan to participate must register by March 15, 1997. Registrations should include your name, address, phone number, school, and country.

[To register or for more information, e-mail to essay@fmarion.edu or "snail mail" to Lucia Huang, Francis Marion University, P.O. Box 100547, Florence, SC 20501, USA.]

NPS Electronic Information Exchange News

The NPS Information Exchange has evolved from a modem-based electronic bulletin board to a system of Internet resources. The NPS BBS closed December 31, 1995. Documents, including News-Notes issues 1-45, are now located on the NPS Information Exchange World Wide Web site: <http://www.epa.gov/OWOW/NPS/npsie.html>.

NPSINFO is the Information Exchange's e-mail discussion group.

To subscribe to this group, send an e-mail message to listserv@unixmail.rtpnc.epa.gov.

Include the following information in your message: subscribe NPSINFO yourfirstname yourlastname.

After you subscribe, you will receive a welcome message explaining the discussion list and how to post messages to it.

Datebook

DATEBOOK is prepared with the cooperation of our readers. If you would like a meeting or event placed in the DATEBOOK, contact the *NPS NEWS-NOTES* editors. Notices should be in our hands at least two months in advance to ensure timely publication. A more complete listing is available on the NPS Information Exchange World Wide Web Site (see the NPS Information Exchange box in this issue for directions on how to get on).

Meetings and Events

1997

March

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- 2-5 *International Symposium on Waterborne Cryptosporidium*, Newport Beach, CA. Sponsored by 11 regional, national, and international agencies with an interest in water issues. Contact: Brian Murphy, AWWA Water Quality Engineer, 6666 W. Quincy Ave., Denver, CO 80235. (303) 347-6194. Fax: (303) 794-8915. E-Mail: bmurphy@awwa.org.
- 3-5 *Second Annual Region 6 Nonpoint Source Conference*, Austin, TX, on the theme, "Protecting Our Water Resources: Pointed Solutions to Pointless Problems." Sponsored by the Texas State Soil and Water Conservation Board. The conference will focus on partnerships and successes in solving NPS pollution problems in rural and urban settings. Contact: Suzanne Cardwell, Texas State Soil and Water Conservation Board. Fax: (817) 773-2205.
- 6-8 *Watershed Academy: Watersheds 103. "Getting in Step: A Pathway to Effective Outreach in Your Watershed,"* Chattanooga, TN. Sponsored by U.S. EPA Assessment and Watershed Protection Division. Contact: Christine Olsenius. Phone: (410) 849-2975.
- 8-9 *Fourth National Marina Research Conference*, Irving, TX. Contact: Rachel Calabria. Phone: (401) 874-6224.
- 17-18 *Watershed Academy: Local Government Workshop*, Portsmouth, NH. Sponsored by U.S. EPA Oceans and Coastal Protection Division. Contact: Ellen Barros. Phone: (508) 362-5570.
- 19 *Tools for Drinking Water Protection Satellite Presentation*. Sponsored by the League of Women Voters. Topics will include: how to make land-use decisions and identify permitted and prohibited uses within drinking water source areas; how to organize public education and awareness efforts; how to establish and maintain monitoring programs; how to build leadership and secure funding; and more. Contact the PBS Adult Learning Satellite Service, 1320 Braddock Place, Alexandria, VA 22314-1698. Fax: (703) 739-8495 or (703) 739-0775. Or, call the PBS Customer Support Center. 1(800) 257-2578. Internet: www.pbs.org/als/programs/vc/water.
- 19-20 *Watershed Academy: Integrating the State Revolving Fund and the Watershed Approach*, Portland, OR. Sponsored by U.S. EPA Municipal Support Division of the Office of Wastewater Management. Contact: Kong Chiu. Phone: (202) 260-1722.
- 20-21 *Wildlife Habitat Restoration*, Denver, CO. Sponsored by the Society for Ecological Restoration. Contact: Katy Kressin, New Academy Workshops, Society for Ecological Restoration, 1207 Seminole Highway, Madison, WI 53711. Phone/Fax: (608) 262-9547. Website: <http://nabalu.flas.ufl.edu/ser/SERhome.html>.

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March

- 24-26 *Festival Expedition*, Grand Island, NE. Sponsored by The Groundwater Foundation. This workshop offers participants an opportunity to go behind the scenes at the Ninth annual Children's Groundwater Festival to learn how to organize such an event. Two tours, one of the Crane Meadows Nature Center and one of the Mormon Trail, are scheduled. Contact: The Groundwater Foundation, P.O. Box 22558, Lincoln, NE 68542-2558. 1(800) 858-4844 or (402) 434-2740.
- 26 *Budgeting Stewardship*, Denver, CO. Sponsored by the Society for Ecological Restoration. Contact: Katy Kressin, New Academy Workshops, Society for Ecological Restoration, 1207 Seminole Highway, Madison, WI 53711. Phone/Fax: (608) 262-9547. E-mail: ser@macc.wisc.edu. Website: <http://nabalu.flas.ufl.edu/ser/SERhome.html>
- 26 *Watershed Academy: Watersheds 104. "Executive Overview of the Watershed Approach,"* Salt Lake City, UT. Sponsored by U.S. EPA Assessment and Watershed Protection Division. Contact: Greg Parsons. Phone: (303) 782-0390.
- 26-27 *Watershed Academy: Integrating the State Revolving Fund and the Watershed Approach*, Austin, TX. For more information, see March 19-20.

April

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- 1-2 *Watershed Academy: Integrating the State Revolving Fund and the Watershed Approach*, Charleston, SC. For details, see March 19-20.
- 8-9 *Watershed Academy: Local Government Workshop*, Ocean City, MD. For details, see March 17-18.
- 9-10 *Watershed Academy: Integrating the State Revolving Fund and the Watershed Approach*, Ann Arbor, MI. For details, see March 19-20.
- 16-17 *Watershed Academy: Integrating the State Revolving Fund and the Watershed Approach*, Boston, MA. For details, see March 19-20.
- 16-18 *Restoration Planning Introduction*, Dayton, OH. Contact: Katy Kressin, New Academy Workshops, Society for Ecological Restoration, 1207 Seminole Highway, Madison, WI 53711. Phone/Fax: (608) 262-9547. E-mail: Website: <http://nabalu.flas.ufl.edu/ser/SERhome.html>.
- 17 *Watershed Academy: Watersheds 101. "Principles of Watershed Protection,"* Atlanta, GA. Sponsored by U.S. EPA Assessment and Watershed Protection Division. Contact: Keisha Johnson. Phone: (404) 330-6980.
- 18 *Watershed Academy: Watersheds 103. "Getting in Step: A Pathway to Effective Outreach in Your Watershed,"* Chattanooga, TN. Sponsored by U.S. EPA Assessment and Watershed Protection Division. Contact: Keisha Johnson. Phone: (404) 330-6980.
- 21-22 *Restoration Planning*, Denver, CO. Sponsored by the Society for Ecological Restoration. Contact: Katy Kressin, New Academy Workshops, Society for Ecological Restoration, 1207 Seminole Highway, Madison, WI 53711. Phone/Fax: (608) 262-9547. E-mail: ser@macc.wisc.edu. Website: <http://nabalu.flas.ufl.edu/ser/SERhome.html>
- 21-23 *What's New in the Toolbox?: Applied Research for Management of Wyoming's Water Resources*, Casper, WY. Sponsored by the Wyoming Water Resources Center, the American Water Resources Association - Wyoming State Section, and the University of Wyoming Cooperative Extension Service. Contact: Wyoming Water 1997, c/o Chris Goertler, Wyoming Water Resources Center, P.O. Box 3067 University Station, Laramie, WY 82071. (307) 766-6653. Fax: (307) 766-3785. E-mail: goertler@uwyo.edu.

May

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- 7-9 *An American Wetlands Month Celebration: Communities Working for Wetlands*, Radisson Plaza Hotel, Alexandria, VA. Presentations, workshops, and field trips celebrating American wetlands will heighten public awareness of the physical, biological, economic and cultural values of wetlands, provide background information, and foster the creation of cooperative partnerships among governments, corporations, and private citizens. Multiple sponsors. Contact: Stacey Satagaj, Terrene Institute, 4 Herbert Street, Alexandria, VA 22305. (703) 548-5473. Fax: (703) 548-6299. E-mail: terrinst@aol.com.
- 15-16 *Second Biennial Great Lakes Student Summit International Conference*, Buffalo, NY. Sponsored by the County of Erie, Erie County Environmental Education Institute, in cooperation with New York Sea Grant, Great Lakes Program at the University of Buffalo, and the Great Lakes Center at Buffalo State College. Contact: Great Lakes Student Summit, 95 Franklin Street, Room 1077, Buffalo, NY 14202. (716) 858-6370. Fax: (716) 858-7713. E-mail: ecdep@moran.com.

Nonpoint Source NEWS-NOTES is an occasional bulletin dealing with the condition of the water-related environment, the control of nonpoint sources of water pollution, and the ecosystem-driven management and restoration of watersheds. NPS pollution comes from many sources and is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural pollutants and pollutants resulting from human activity, finally depositing them into lakes, rivers, wetlands, coastal waters, and groundwater. NPS pollution is associated with land management practices involving agriculture, silviculture, mining, and urban runoff. Hydrologic modification is a form of NPS pollution that often adversely affects the biological integrity of surface waters.

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