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EPA News-Notes

The Condition of the Environment and the Control of Nonpoint Sources of Water Pollution

Some Good News and Some Not-So-Good News

EDITOR'S NOTE: The good news is that early in October, the Congress enacted EPA's FY 93 budget and the President signed the bill. Section 319, nonpoint source control, received $50 million, down $2.5 million from FY 92. The appropriation was a compromise. The Administration's budget asked for $26 million. The House bill contained $63.5 million, while the Senate bill had zero. The Conference Committee agreed on $50 million.

The not-so-good news is that the budget-making process took a bit longer than we had figured, so this October Issue (#24) will get to our readers early in November. Sorry we miscalculated.

More good news. This issue marks the completion of three years of publication of *News-Notes*. (Eight issues per FY.) Your editors want to thank our readers for your support and help. Your suggestions, for articles and otherwise, have helped keep us on track and focused. It has been wonderful. Thanks again. We're looking forward to the coming year.

A Water Quality Highlight

SCS Chief Speaks Out on Water Management

EDITOR'S NOTE: Soil Conservation Service Chief William Richards recently issued a statement expressing his views on the role of the SCS in water management. We share here with our readers his cogent concluding paragraphs . . . We thoroughly agree with the Chief's construct.

The cornerstone of our evolving strategy is a process for integrating federal assistance in water management. Basically, it involves building on all those existing programs now used by the federal agencies involved in water management. It involves soil and water conservation districts, which have been the mainstay in bridging local leadership with SCS assistance — and they are supported by state governments. And it involves coordination based on USGS hydrologic area boundaries — and common databases for those areas.

With this process in place, we can focus on interdisciplinary planning, total resource management, and solving local problems related to four major concerns. Those concerns are:

- *water quality,*
- *wetland restoration and enhancement,*
- *drought mitigation and water conservation, and*
- *flood damage reduction and stormwater management.*

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SCS Chief Speaks Out (continued)

But let me emphasize: No single agency has all the resources to solve water management problems, at whatever scale. I encourage us all to work with all our partners within a framework that includes:

- *Shared responsibility . . . coordinated responsibility.*
- *Public involvement.*
- *A local delivery system.*
- *The watershed . . . or hydrologic unit approach.*
- *A total resource-management approach.*
- *Interdisciplinary planning with the best available technology.*
- *And, above all, a commitment to sustaining our natural resources and the productive capacity of our nation and our world.*

A Commentary . . .

The Challenge for Agriculture

EDITOR'S NOTE: The following commentary was written by Barry Tonning, who manages the Nonpoint Source Project of the Gateway District Health Department, which covers five counties in central Kentucky. The project was funded through a CWA §319 grant, the state of Kentucky, and local five-county taxpayers. Barry writes: "The text was written in response to a growing awareness among farmers that environmental issues were directly affecting them and in recognition of the need for accurate, up-to-date information on agriculture-related environmental issues."

We appreciate Barry sending this article to us so we can share with our readers something that is going on at the local level, where the real action is. This article was developed from a series of seminars, workshops, and reports involving a broad range of agencies, officials, producers, and other entities.

Being a farmer these days is tough. Many producers have vacated the occupation during the past three decades, heeding at least the latter part of the admonition to "Get Big or Get Out."

Those few that are left are caught in an incredible squeeze: commodity prices have been stuck in the sixties, while production expenses, health insurance, and equipment costs rocket into the next millennia. Our producers must now compete with Brazilian farm workers who will work for a few dollars a day and with other growers worldwide who are unaffected by our environmental protection and labor regulations. Free trade, as we are finding out, is not necessarily fair trade.

As American agriculture struggles to preserve domestic markets and expand sales overseas, the role of farming in surface and groundwater degradation is coming under more scrutiny. In Kentucky, an overview of agriculture's impact on the land and water can be found in the Environmental Quality Commission's recently issued "State of Kentucky's Environment" (call the EQC at (502) 564-2150; $10). The report notes that agriculture is believed to be responsible for nearly one-third of the nonpoint source pollution of the commonwealth's rivers and streams, making farming one of the biggest single contributors to surface water degradation.

Bacteria and sediment, much of it agriculture-related, account for more than half of the surface water pollutants cited by the study. Farming was blamed for 18 percent of the 134,000 fish killed in 1990-91 pollution incidents, and agriculture is suspected of being a major contributor to water quality problems in eight major river watersheds in the state. And while topsoil losses in the commonwealth have declined somewhat during the past 20 years, farmers are still losing more than eight tons per acre from Kentucky crop land.

But the point of this exercise is not to criticize. For while the impact of farming on the environment is still serious, it is improving. Much progress has been made in reducing the amount of pesticides used in the state, soil erosion does appear to be declining, livestock manure handling systems are improving, and farmers and agricultural agencies are expressing more interest in "doing it right." The present concern regarding agriculture and the environment is that we seem to be approaching the union of the two with much hesitation and trepidation. It is beginning to appear that the wedding, while not yet at the shotgun stage, can at least be referred to as "arranged."

It need not be so. Farmers, of course, have everything to gain from resource conservation. Topsoil washing into creeks is a waste of money; cattle drinking creek water contaminated

The Challenge for Agriculture (continued)

with bacteria from the feedlot upstream represents an unnecessary risk. Fertilizers and pesticides are expensive and are better spread on crops than into creeks. Farmers feel—and, for the most part, demonstrate—a natural affinity for the creation because of their closeness to it and daily dependence on it.

As we approach the marriage between environmentalism and modern agriculture, however, a growing uneasiness seems to be emerging. The public demands that the vows be spoken, even if the couple has to be dragged kicking and screaming to the altar. People are willing to pay more for food—if it means less pollution—and some farmers say a spurt in commodity prices doesn't sound all that bad to them either. There's nothing to be gained from getting cold feet at this point.

The challenge for agriculture lies before us. Farmers don't want to see the heavy hand of conservation regulation, and it wouldn't come if significant progress had been made under the current scenario of voluntary conservation compliance. What of the voluntary conservation plans mandated by the 1985 federal farm bill? Are these plans really used by farmers or are they just shelf documents, cranked out to maintain eligibility with support and cost-share programs?

Are limited cost-share funds for erosion and manure control allocated according to the severity of the problem? Why don't we have more coordination—and resource allocation—between government and private interests to defray the farmer's share of pollution-reducing expenses? Why aren't we providing incentives to move feedlots and milking operations up the hill, away from surface streams? Why are bulldozers busily "cleaning out the creek?" Why are vegetative buffer strips between fields and streams commonly plowed and planted rather than preserved and protected?

There are larger questions, as well. Should we allow the unrestricted importation of agricultural products from countries that don't reflect our conservation and chemical regulations? Will agriculture support better labeling information—especially regarding "organic" and "chemical-free" products? If consumers want these products—and are willing to pay extra for them—who's to say they're silly for being worried about pesticides? Isn't the customer still king?

The courtship between farm and ecology interests has been—shall we say—energetic and interesting, and it is expected that the relationship will continue to be so. Clearly, the burden is not entirely on agriculture to "make it work." Environmental groups must focus on accurate risk communication and target remediation first at the worst problems. Scattergun approaches to corrective and enforcement action only serve to confuse the public and irritate producers.

What is needed is leadership and commitment on both sides. Farm interests, embodied by whole university departments, state and federal government agencies, and the full range of commercial support industries, bring the most resources to the table. Conservation groups have offset this advantage with the weight of their argument and sheer numbers of citizens, but the debate must move beyond the "us-and-them" stage. Indeed, there have been some rustlings in that direction recently, with the Kentucky Farm Bureau sponsoring environmental workshops and state agency people mingling more with those in the field. The grassroots Community Farm Alliance, which is based in Berea, has moved pursuit of sustainable farming to the top of its agenda.

It is important to retain a clear focus on these issues, and continue forward without undue anxiety. Now is the time to willingly accept the challenge of maintaining agricultural production while building on the considerable progress underway in the area of conservation. The goal of building a sustainable agricultural economy will demand much of us all, but the reward is well worth it.

[For more information, contact Barry Tonning, Gateway District Health Department, P.O. Box 555 – Water St., Owingville, KY 40360.]

Notes on Water Quality

New Jersey Proposes a Pollution Prevention Program to Comply with CWA Industrial Storm Water Requirements

The state of New Jersey has modified its NPDES permit program to establish a new statewide stormwater permitting program for the control of rainwater falling on open containers and exposed materials at industrial sites. The state's Department of Environmental Protection and Energy (DEPE) estimates that at least 10,000 facilities in New Jersey discharge stormwater

New Jersey Proposes a Pollution Prevention Program to Comply with CWA Industrial Storm Water Requirements (continued)

associated with industrial activity and will be covered by the new program. Presently fewer than 1,500 facilities are regulated under the state's NPDES program for all types of discharges to surface waters.

Three permits will be available. Two general permits, one for most industrial facilities and the other for certain construction and mining sites, will be used by the majority of facilities.

DEPE is using a pollution prevention approach. DEPE Commission Scott Weiner, in announcing the new program, said:

> *The purpose is to prevent contaminated runoff by eliminating opportunities for stormwater to come into contact with potential pollutants. I am enthusiastic about the program because we are addressing a major threat to the state's water quality, and we are making the philosophy of pollution prevention part of the permitting process. For the great majority of industrial facilities, complying with the new regulations may be as simple as moving chemicals indoors, constructing a roof over a loading dock, or throwing a tarpaulin over exposed materials to prevent exposure when it rains.*

The third type of permit, the individual permit, will be used for industries with more complex operations, those that do not lend themselves to "cover-and-move" solutions.

The summary of the regulation, published in the *New Jersey Register* July 6, 1992, expanded on the reasoning behind the pollution prevention approach:

> *In the last two decades, the Department has relied, almost exclusively, on water pollution treatment technologies and numerical effluent limitations for regulating discharges that could adversely impact New Jersey's waters. In recent years, there has been growing public recognition of the limitations of "end-of-the-pipe" treatment and other similar regulatory mechanisms that provide only an after-the-fact attempt at cleaning up contamination that has already occurred. Not only is this form of pollution control expensive and time-consuming for the Department to administer, it is often very costly to the regulated community and does not always provide adequate improvement in water quality. In some cases, a more effective method of environmental protection may be to reduce the amount of pollutants created and to prevent pollution from occurring in the first place through the use of source controls . . . This rulemaking represents the Department's first attempt to incorporate such a pollution prevention ethos into a water discharge permit.*

A department announcement commented further:

> *This program is DEPE's most ambitious effort in making pollution prevention part of the permitting process. In the past, industries usually had to meet stringent pollution requirements that often included water testing and discharge treatment. If the Stormwater Permitting Program is successful at protecting the environment with a minimum of DEPE involvement, we intend to incorporate this concept into other permit programs.*

[For more information, contact: State of New Jersey, Dept. of Environmental Protection and Energy, Environmental Regulation, CN 401, Trenton, NJ 08625-0401. Or call the Stormwater Hotline at (609) 633-7026.]

Office of Wetlands, Oceans, and Watersheds' Director Addresses Nurserymen on NPS

EDITOR'S NOTE: Robert H. Wayland III, Director, EPA Office of Wetlands, Oceans, & Watersheds, was the keynote speaker at the annual meeting of the American Association of Nurserymen (AAN) in Columbus, Ohio, on June 23, 1992. The meeting's theme was "Charting the Course to Water Solutions." The program featured AAN members who have worked to successfully implement partnerships to conserve water and control nonpoint source pollution, along with state and local government officials with whom they have worked. The meeting also marked the release of the AAN's new manual addressing runoff control and water-efficient landscaping and irrigation. (*News-Notes* will review the manual in its next issue.) Below are excerpts from the speech.

I applaud your efforts to grapple with some of the challenging issues of our time, and I hope we can support each other in developing solutions. . . .

. . . I know from your program materials that your association has developed a keen sense of awareness of the problem of polluted runoff. I salute you for stepping forward to address it constructively and aggressively on your own initiative. These problems can best be solved by our working together collaboratively to reach solutions that are practicable and economically

achievable and, at the same time, protect and improve the nation's waters. For most of you, high-value plant material represents your biggest asset, and fertilizer, water, and pesticides are relatively low-cost inputs you use to keep your green inventory from going brown. Intensive use of these inputs at a single site over many years can lead to significant problems —for the environment and for the owners and operators of a nursery.

Fortunately, I can outline some specific and practicable ways to employ these plant protection practices while reducing potential impacts on the environment. Of course, a specific assessment of your operations should be undertaken as part of deciding which actions are going to be most effective and appropriate.

As part of our efforts to work collaboratively with those in the private sector affected by the nonpoint source program, EPA's Dallas Region has for the past couple of years been working with the Texas Nursery Association to identify and document cost-effective pollution control practices and structures applicable to nurseries. Using information they collected from their operations and data gathered by states and federal agencies, nurseries were able to determine the level of pollution control treatment and kinds of management practices needed for their specific locations. This research has shown that rainfall runoff and irrigation return flows from containerized nurseries can often contain pollutants such as nitrogen, phosphorus, bacteria, certain pesticides, various salts, and trace metals. But these nurseries have found that much of this pollution can be prevented through proper planning, changes in nursery management, and/or installing structural BMPs, such as detention basins, filter strips, and treatment ponds.

With respect to planning and management, your options will depend upon whether you are an established nursery or initiating a new or expanded operation. In the case of a new or expanded operation, site selection and proper design of the total drainage system are two of the most important decisions you will make from an environmental point of view. Experience has shown that locating near (within one-quarter mile) of a stream or lake is rarely a good choice for a nurseryman who wants to prevent water pollution from impacting a waterbody and do so economically. Designing a drainage system for growing beds, bath houses, and propagating facilities or greenhouses that ensures that none of the drainage leaves the property without first being tested will save thousands of dollars over re-designing and retrofitting an existing system for pollution control.

But if you are an established nursery, there are a number of things you can do to minimize your impact on water quality. You might add a field border around your operation that includes permanent upright grass to slow velocity and rapidly growing trees to reduce nutrient loadings (poplars have been shown to have the highest nutrient uptake rates). You might berm and vegetate the upslope edge of your property to prevent outside water from flowing across your operation. It is very important to evaluate your fertilization schedule and methods and to use tissue testing to ensure optimum, but not excessive use. Consider a more precise application method such as fertigation or hand application. Evaluate the type of fertilizer you are using and consider using the least environmentally mobile form, such as a slow-release formula. Rearrange your stock on growing beds so that varieties needing the most fertilization and irrigation are located furthest from any waterbody or drainage channel that discharges near or into a waterbody.

Alliances for Water Efficiency

Let me turn now to some opportunities for you. Virtually every outdoor area in the urban environment—including schools, parks, roads, shopping centers, and small businesses as well as large housing and commercial complexes—offers an opportunity to make a difference to the environment as new construction and developments are landscaped or old ones are maintained.

Attractive urban landscapes can be designed to use water efficiently; minimize the runoff of fertilizers, pesticides, and sediments; produce little or no wastes for landfills; and provide habitat for plants and wildlife. At the same time, quality landscaping can also reduce long-term maintenance costs.

Careful planning of a building site to minimize hard, open surfaces likely to promote stormwater runoff may permit a builder to convert areas now required for stormwater retention ponds into additional homes, buildings, or garden areas. The location of trees and

Office of Wetlands, Oceans, and Watersheds' Director Addresses Nurserymen on NPS (continued)

other vegetation around a home or building will affect how much heating or cooling may be required for that structure, thereby reducing energy demand and associated air pollution and greenhouse gas emissions. In addition, water demand can be reduced. Also, reduction, treatment, and pumping costs can be saved, additional energy savings realized, and water supply impoundments—which often inundate valuable wetlands and other habitat—can be averted.

Water Utilities and Water Conservation

The amount of water used to maintain urban landscapes varies a great deal depending upon climate, soils, and rainfall. While on the whole it constitutes a small percentage of total urban use, it may account for 40 to 80 percent of a utility's peak summer use. This time period also coincides with the peak demand for energy. Many water utilities have been in the forefront promoting water conservation, including xeriscape-type landscaping (see box on pg. 7) because of its economic benefits. Water utilities—ranging from the obvious ones in the west (such as the L.A. Department of Water and Power) to those in many eastern and southern areas—are increasingly recognizing the benefits of demand management. Managing the demand for water allows them to reduce costs for the size of the facility needed to meet that two-day to two-month peak demand period as well as the costs for treating and pumping the water. In many ways, water conservation is a way of creating additional supply without the adverse environmental consequences.

In 1987, the Massachusetts Water Resources Authority began an aggressive water conservation campaign that has reduced overall water usage from a high of 345 million gallons per day (mgd) in 1980 to a low of 280 mgd in 1991. This has been done through intensive education/outreach and awards programs, including one for garden and landscape water conservation.

Interesting partnership arrangements—alliances—are occurring in Connecticut and California under the auspices of both water and energy utilities. They are pooling their finances and management skills to promote residential water efficiency. Water utilities are curbing inefficient water use and energy utilities are saving costs on heating, treating and pumping water. These utilities are distributing free information on water-efficient landscapes to their customers—and in the process creating new customers for you. In some cases, the utilities are paying the installation costs of water efficiency retrofit kits.

Other Public-Private Alliances

In many areas of the country, communities are pursuing common goals through public-private partnerships. One excellent example is in Georgia where per capita water use rose from 50 to 200 gallons per day between 1965 and 1991, much of which is used for recreation, gardening, and landscaping. In some areas, summer household water use increases as much as 100 percent above winter levels.

Many individuals in the public and private sector recognized that Georgia is facing severe constraints on its future growth and quality of life if water demand issues were not addressed. Through the initial efforts of the University of Georgia Cooperative Extension Service, the Georgia Water Wise Council was established in 1989. The Council now has 140 members from water and energy utilities, the "green industry," the development community, homebuilders, and federal, state, and local governments. The presidency alternates between the public and private sectors. The Council recently published a 40-page guide to "Xeriscape" for Georgians to help curb the growing demand for outdoor water. Related efforts include a free landscape audit program available to homeowners, which is paid for by the water utility, and a program with the Greater Atlanta Homebuilders Association to develop standards for a "water small house."

Another alliance is that of the Florida Nurserymen and Growers Association and the South Florida Water Management District. They have produced a half-hour television program, "Plant It Smart with Xeriscape." The program shows homeowners how they can retrofit or improve their existing grounds to make a new xeriscape landscape that saves time, energy, and money. For those of you who don't distribute Naturescape literature along with your free pest control and planting tips, consider doing so for the customer goodwill you could generate. Also consider contacting your state or local garden club with an offer to support a prize category in the annual garden show or tour for a Naturescape or Xeriscape Garden.

What Is Xeriscaping?

Xeriscape-type landscaping is quality landscaping that conserves water and protects the environment. It includes the seven principles or practices discussed below:

Design—
Landscaping that conserves water and protects the environment does not mean urban landscapes with only rocks and cactus. Through careful planning, landscapes can be designed to be both pleasing to the senses and kind to the environment.

Plant Selection—
The landscape design should take into account the local climate and soil conditions. It should also focus on preservation of as many existing trees and shrubs as possible because established plants generally have lower water and maintenance requirements. Pick local or regional plants with a proven track record for beauty, water efficiency, disease, and pest resistance.

Soil Analysis and Improvements—
Soils vary from site to site and may be improved to provide more nutrients to support the plants and retain water. Your county Extension service and your local nursery or garden centers can assist customers and clients with their soil analysis and improvements.

Efficient Irrigation—
Much of the water applied to lawns and gardens is not absorbed by the plants but is instead lost in runoff and evaporation because it is applied too quickly to be absorbed or is evaporated from exposed, unmulched soil. Watering only when plants need water and watering deeply promote deeper root growth to support the plant when less rainfall is available. Grouping plants (such as trees, shrubs, and groundcovers) with similar water needs makes watering easier and more efficient. Trying to grow lawns in densely shaded areas is much less effective than growing other plants. Many trees, shrubs, flowers, and groundcovers can be watered efficiently with low-volume or drip-type irrigation.

Use of Mulches—
Mulches allow greater retention of water, reduce the growth of weeds, prevent erosion, and can improve the condition of the soil.

Practical Turf Areas—
How and where turf is placed in the landscape can result in significant reductions in the water needed to support the landscape. Lawns are major users of supplemental water and require greater maintenance than other vegetation.

Proper Maintenance—
Water and fertilize plants only as needed; excessive amounts promote weak growth and increase pruning and mowing requirements. Cutting grass only when it reaches 2 to 3 inches promotes deeper root growth.

The Future

I hope our discussion this morning has contributed to your awareness of our shared responsibility to protect water quality, and that the possibility of new or strengthened alliances, together with the business opportunities I've mentioned, allays your concerns about affordability. Whether the future holds the prospect of greater regulatory accountability will likely hinge on the progress that we make in the next few years . . .

The answer is in our hands. We are charting a course for the kind of world our grandchildren will live in. I hope that, by working together to minimize the dangers and realize the opportunities, it will be a legacy with which we earn their gratitude.

[For more information on xeriscaping, contact your state or local Cooperative Extension Service, or contact: National Xeriscaping Council, P.O. Box 767936, Roswell, GA 30076-7936. Phone: (404) 998-0621.]

Coastal America and Connecticut to Restore Salt Marshes

During the last century, development of transportation systems near Long Island Sound greatly reduced the acres of land affected by tidal flow—changing plant and animal systems and the landscape. In 1991, the Coastal America program identified the loss of salt marsh habitat along the Connecticut coast as an issue of concern about which Coastal America partners could focus their combined mandates and functions.

As a partnership of ten federal agencies, Coastal America integrates and leverages agencies' efforts with the resources of non-federal partners into action-oriented habitat and coastal pollution projects. (See *News-Notes* issue #14.)

Now, the state of Connecticut and Coastal America have launched a project to restore Connecticut's coastal marshes. The Connecticut Department of Transportation has decided to apply some of its future trust fund dollars from the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) to salt marsh restoration when making improvements to the state's transportation infrastructure. ISTEA provides new flexibility to the states in their use of federal surface transportation trust funds. States can now use this funding for a wide variety of transportation-related improvements, including wetlands restoration.

In Connecticut, the U.S. Army Corps of Engineers is the lead Coastal America partner on the project. In March 1992, Corps staff visited 19 Connecticut salt marshes (approximately 1,000 acres) to evaluate whether increased tidal flow could enhance marsh productivity. They concluded that in many instances it could. Because they also recognized that greater tidal flow might have adverse effects, Coastal America and the state of Connecticut decided that more detailed site studies were needed to decide which marshes would be the best candidates for restoration, determine the risks of flooding and adverse ecological impact (particularly to shellfish beds), and estimate costs for restoring each site. The Corps will provide $70,000 (under Section 22 of Public Law 93-251, Planning Assistance to States) and the Connecticut Department of Environmental Protection will provide $30,000 to support the study.

After preliminary screening of all sites, aerial photography for vegetative mapping, existing flood plain map review, and site inspection will be conducted. The Coastal America's Northeast Regional Implementation Team will assist the Corps and Connecticut in evaluating sites and will work with transportation agencies to coordinate review of any assessments or permits required for specific restoration sites.

On July 20, Connecticut and its Coastal America partners signed a resolution pledging to work together over the next several years to restore several thousand acres of the state's endangered tidal wetlands. Federal signatories included U.S. Deputy Secretary of Transportation Arthur Rothkopf, NOAA General Counsel Thomas Campbell, Corps of Engineers (New England) Colonel Brink Miller, and EPA's Office of Wetlands, Oceans, and Watersheds Director Robert Wayland. Transportation Commissioner Emil Frankel and Commissioner of Environmental Protection Timothy Keeney signed for Connecticut.

[For more information, contact: Coastal America, 722 Jackson Place, NW, Washington, DC 20503.]

News From The States

New York State Schedules Four Statewide NPS Partnership Meetings

EDITOR'S NOTE: Marilyn Stephenson, USDA-SCS detailee to New York State's Department of Environmental Conservation and Water Quality Liaison to New York NPS Coordinating Committee, sent us notice of four statewide *New York NPS Partnership Meetings*. We have duly entered the information in the *DATEBOOK* and publish here her accompanying description of the Partnership Meetings.

The Challenge

Nonpoint source issues require a coordinated, interdisciplinary, interagency approach to successful implementation of the state's NPS Management Program.

New York State Schedules Four Statewide NPS Partnership Meetings (continued)

The Problem

Except in crisis situations, few opportunities exist in New York state for staff to interact across agency and discipline lines. Often, questions arise about agency roles and responsibilities in NPS water quality areas. To date, there have been no informal opportunities for staff to gain greater understanding of agency perspectives on water quality or to participate in crosstraining on watershed planning or NPS implementation.

The Solution

To solve this problem, a series of NPS Partnership Meetings will be held for representatives of federal, state, and local agencies working on county-level NPS implementation activities in New York State.

Partnership Meeting Goals

GOAL: Clear definition of agency roles and responsibilities in NPS.

GOAL: Establish local, interagency communication channels.

GOAL: Build effective interagency work teams.

GOAL: Increase understanding of NPS watershed planning and implementation processes.

Nonpoint Source Partners / Audience Members

NYS Department of Environmental Conservation (state water quality agency)
County Soil and Water Conservation Districts / NYS Soil and Water Conservation Committee
USDA Soil Conservation Service
USDA Agricultural Stabilization and Conservation Service
Cornell Cooperative Extension / New York Sea Grant Extension
NYS Department of Health / County Health Departments
NYS Department of State, Division of Coastal Resources
County Planning Departments / County Environmental Management Councils / Regional Planning Boards

Locations and Dates

- Newburgh (Ramada Inn) October 27
- Glens Falls (Glens Falls Ramada) October 29
- Canandaigua (Sheraton) November 5
- Syracuse (Holiday Inn) November 5

[For further information about the New York State NPS Partnership Meetings, contact: Marilyn Stephenson, Water Quality Liaison, NYS DEC, 50 Wolf Road, Room 201, Albany, NY 12233-3508. Phone: (518) 457-6761.]

Kansas Beefs Up Nonpoint Source Staff

In an all-out effort to fight nonpoint source pollution and improve water quality, the Kansas Department of Health and Environment's Bureau of Environmental Quality (KDHE-BEQ) has hired six new guns, reports *Water Watch*, a technical bulletin published by the state's NPS program.

Five of the new hires joined the bureau's NPS Pollution Section during the spring. The new positions were created partially to meet EPA requirements and to fulfill obligations of existing grants.

Since April, Richard Davis, a landscape architect, has been developing guidelines and educational media to promote the use of permanent vegetation in riparian corridors as NPS controls. Davis is developing brochures and technical materials to help farmers, landowners, developers, and local governments understand the importance of riparian corridors in protecting water quality. It is critical, he says, to lay a foundation of understanding before trying to push technical assistance and management alternatives. "People have a hard time understanding *why*. I hit that component hard," says Davis.

Initially, he will stress the protection of existing riparian strips, later introducing the idea of reconstructing what has been lost or degraded. Davis also lends technical assistance to Kansas' 105 counties, many of which are in the process of developing county-wide NPS pollution plans.

Kansas Beefs Up Nonpoint Source Staff (continued)

Davis works with the Kansas Water Office, Kansas Department of Wildlife and Parks, State Conservation Commission, State and Extension Forestry Department, and the SCS in developing an overall wetland and riparian area protection program for the state. Davis' emphasis is on the pollution control or water quality protection aspects of riparian area management.

Also in a new position, Philip Brink examines and reviews stream, lake, and groundwater quality data, preparing water quality assessment reports for use by county conservation districts and others in preparing local nonpoint source management plans. Brink works closely with the state conservation commission, SCS, and city and county engineers, providing technical assistance in the interpretation of data. Working county-by-county on a request basis, Brink has prepared data for six counties since coming on board in May.

Another aspect of Brink's position is coordinating the water quality monitoring component of EPA-funded monitoring projects, although he rarely gets to go out in the field himself. In addition to taking on a challenging new job, Brink is finishing up a master's thesis on the influence of land use on nitrate concentrations in the Tuttle Creek watershed.

The third new addition to the NPS section is Judith Scherff, the NPS program's consistency reviewer. Scherff reviews selected state and federal programs and projects to make sure they incorporate implementation policies consistent with the Kansas Nonpoint Source Pollution Control Plan. She said she looks for common sense practices for avoiding surface water pollution. If she finds plans with inadequate protection of water quality, Scherff suggests BMPs be incorporated in the project. The response has been "mostly cooperative," Scherff said, although a couple of phone calls she received have consisted largely of "long, loud sighs."

Don Chisam and Bob Hipple have been hired for the Local Environmental Protection Program. Chisam and Hipple help local agencies prepare local environmental protection plans. These plans may include sanitary or environmental codes, subdivision water and wastewater plans, plans for solid and hazardous waste management, and nonpoint source pollution control. KDHE gives local agencies financial assistance in preparing and implementing the plans.

Finally, Bryan Bain was hired by KDHE's Science and Standards Section to manage the state's brand new groundwater quality monitoring program.

[For more information, contact Richard Davis or Philip Brink at (913) 296-5573, or Judith Scherff at (913) 296-5582. Their address is KDHE-BEQ, NPS Section, Forbes Field, Bldg. 740, Topeka, KS 66620-0001.]

First Year Data from Indiana Ecoregion Study Available

The report on the first year of data from the Indiana Ecoregion Study for fish assemblages is now available. (See *NPS News-Notes* issue #18 for details of the study.) Entitled *Development of Index of Biotic Integrity Expectations for the Ecoregions of Indiana*, the report features data on the Central Cornbelt ecoregion. Subsequent studies focused on the Huron-Erie Lake Plain, Southern Michigan/ Northern Indiana Till Plain, Interior Plateau, and Interior River Lowlands ecoregions.

This cooperative study with EPA's Region 5 Environmental Sciences Division and the Indiana Department of Environmental Management (IDEM) is scheduled for a total of five years.

[For more information or to order a copy of the report, contact Thomas Simon at (312) 353-5524.]

Agricultural Notes

ACE Stands For: Agriculture in Concert with the Environment

ACE is a new and unique interagency grant program established by the U.S. Department of Agriculture and the U.S. Environmental Protection Agency. The program is administered jointly by EPA's Office of Pollution Prevention and the Sustainable Agriculture Research and Education Program (SARE), formerly Low Input Sustainable Agriculture (LISA) of USDA's Cooperative State Research Service.

ACE Stands For: Agriculture in Concert with the Environment (continued)

The primary goals of the ACE sustainable agriculture research and education grant program are to promote the adoption of sustainable agriculture practices and to reduce the misuse of nutrients and pesticides.

In FY 1991, the first year of the program, a total of 27 awards were made to 15 private organizations or firms and 22 universities in 24 states. For FY 1991 and 1992, funding totaled $2 million annually, with $1 million contributed each year by both EPA and USDA. ACE's 1992 annual report, which detailed its 1991 grants, has this to say about its grants:

> *ACE gives preference to projects that will identify, evaluate, and interpret indicators of agroecosystem health. In addition to the commonly used indicators of productivity, projects supported by ACE must consider indicators of the function or dysfunction of agroecosystems, including measures of environmental quality, ecological soundness, and species diversity, as well as socioeconomic viability. Indicators of structural properties (such as species composition or attributes of communities) are encouraged where this type of indicator is more sensitive to ecosystem stress than are the indicators of functional processes such as productivity, nutrients cycling, etc. This research may be conducted at scales ranging from an individual field or farm to an entire agroecosystem.*
>
> *Priority issues and activities for ACE funding include, but are not limited to, the following agriculture pollution prevention activities:*
>
> ***Nutrient Management** — Develop/refine calibration techniques to reduce the excess use of N and P fertilizers to protect ground and surface waters.*
>
> ***Environmentally Sound Multiple Land Uses** — Research and demonstrate the compatible interaction of agricultural requirements and ecological/environmental values, such as:*
>
> - *Conservation Reserves*
> - *Riparian Zones*
> - *Wetlands*
> - *Water Quality and Quantity*
> - *Fish/Wildlife Habitat*
>
> ***Animal Waste Management** — Research and demonstration of alternative scenarios for management of waste from animal confinement operations that:*
>
> - *Do not adversely impact surface or groundwater quality and impair drinking water;*
> - *Maintain aquatic habitats (nutrients, sediments); and*
> - *Demonstrate new and beneficial uses for animal wastes.*
>
> *ACE is one of the first interagency cooperative grant programs in the federal government. The program signifies the leadership role that EPA and USDA are taking in representing the environmental perspective in agriculture policy. Building on the ACE program, EPA and USDA are working in close coordination to develop a comprehensive agricultural pollution prevention strategy that will adapt and apply a pollution prevention approach to the American agricultural sector with a goal of protecting human health and natural ecosystems while assuring the economic viability of food and fiber production.*

The program operates out of its four Regional Administrative Councils (Northeast, South, North Central, and West), located at host institutions. The councils manage the evaluation, project selection, and distribution processes for projects. Technical review committees in each region include representatives from government (including EPA), academic and other research institutions, the farming industry, the environmental community, and other private and public organizations.

[For a copy of the ACE grants report, Agriculture in Concert with the Environment, and for further information, contact: Harry Wells, Coordinator, ACE Program, (MC-7409), U.S. EPA, 401 M Street, SW, Washington DC 20460. Phone: (202) 260-4472. Or, contact George W. Bird, Director, SARE, USDA/CSRS, 342 Aerospace Center, Washington, DC 20250-2200. Phone: (202) 401-4640. FAX: (202) 401-5179.]

Society for Range Management Asks for Help in Establishing Video Library

The Society for Range Management (SRM) is in the process of cataloging and establishing a video library of available videos (VHS format) relating to grazing, the management of rangeland and grazing lands and their impacts on water and air quality, and natural resource conservation. *News-Notes* readers are asked to help out. If you know of such videos, please let the society know. They are especially interested in the application of recent or "leading-edge" technologies that have improved the management of grazed lands and provide environmental benefits.

The society asks readers to provide the title and a one-paragraph narrative description of the video. If possible, they would like to receive a copy of the tape and a copyright release for the SRM to make additional copies for the lending library. If this is not possible, they would like you to provide the name and address of the copyright owner to contact. The society's address is: Society for Range Management, 1939 York Street, Denver, CO 80206.

Roger Dean of EPA Region VIII has advised *News-Notes* that the grazing video library project is supported by a §319 grant from EPA. SRM hopes to have a draft catalog, including brief summaries, target audiences, running times, etc., by their annual meeting early in February 1993. Dean said, "The Society already has 74 videos, but is is apparent that they are missing several key areas that we hope *News-Notes* readers can tap."

The Society for Range Management is a professional organization of over 5,000 members, international in scope, representing individuals and groups with a common interest in the study, management, and prudent use of public and private rangelands and related ecosystems.

Notes on Riparian & Watershed Management

Some Notes on Grazing in Riparian/Wetland Areas on Public Lands in Montana

EDITOR'S NOTE: The June issue of the *Montana Riparian Review*, the newsletter of the Montana Riparian Association, recently came to our attention. Two articles, written by Bureau of Land Management and Forest Service staffers, speak directly to *News-Notes'* on-going discussions of the environmentally sound management of the public lands, while a third note deals with riparian workshops for landowners. To cast additional light on this complex subject, they are reprinted here with permission. We feel that these stories provide2 a fine example of how to resolve differences in an open and aboveboard manner — by exchanging views, experiences, and knowledge. The Montana Riparian Association directly addresses the issue of the management of these fragile areas. The association is an interagency cooperative that provides an open forum for the promotion of the scientific understanding of Montana's riparian and wetland areas.[1]

BLM Promotes Grazing BMPs for Riparian-Wetland Areas in Montana

— by Tim Bozorth, Montana State Hydrologist, BLM

The Bureau of Land Management (BLM) is working with Montana's Water Quality Bureau, other state and federal agencies, conservation groups, and the livestock industry to reach an agreement on grazing best management practices (BMPs) for riparian-wetland areas that will protect water quality.

1 Members of the Montana Riparian Association include the following public and private organizations and agencies: USDoI (Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, National Park Service), USDA (Forest Service, Soil Conservation Service), US Environmental Protection Agency, Montana (Departments of Health and Environmental Services; Fish, Wildlife, and Parks; Natural Resources and Conservation; State Lands; and the Natural Heritage Program), Montana State University, University of Montana, Montana Association of Conservation Districts, Montana Association of Grazing Districts, Champion International, Plum Creek Timber, The Nature Conservancy, and Western Energy Corporation. The members of the Riparian Education Committee include American Fisheries Association – Montana Chapter, Montana Association of Conservation Districts, Montana Association of Health and Environmental Services, Montana Extension Service, Montana Farm Bureau, Montana Logging Association, Montana Public Lands Council, Montana Stockgrowers Association, Montana Water Resources Association, Montana Women Involved in Farm Economics, Montana Woolgrowers Association, and Trout Unlimited.

Some Notes on Grazing in Riparian/Wetland Areas on Public Lands in Montana (continued)

The BLM feels that more specific grazing BMPs in riparian-wetland areas are necessary for several reasons:

1. To ensure compliance with state water quality standards both by private individuals and land management agencies.
2. To allow agencies and individuals to monitor the BMPs to meet state water quality standards.
3. To avoid having mandatory BMPs forced on Montanans by outsiders. An effort coordinated by EPA is underway to develop grazing BMPs within Coastal Zone Management Areas. While BLM has limited public land that falls within the coastal zone, this effort is viewed as a prototype for grazing management on public lands administered by BLM elsewhere.
4. To work together on developing BMPs for livestock grazing in riparian-wetland areas to reach a consensus on practices that will continue livestock grazing on public land. To the extent possible, the public wants agencies to have consistent grazing standards for riparian-wetland areas that can be used as BMPs to meet the state's water quality standards. If this cannot be done as a group, the state will continue to see a wide variety of riparian-wetland standards with little consistency among agencies. This will cause confusion and frustration for livestock operators and interest groups concerned about proper riparian-wetland management and water quality.

To protect water quality on the land it administers, BLM conducted riparian-wetland training in Lewistown for 70 of its resource management specialists April 27-30, 1992. Training instructors included Paul Hansen, the Montana Riparian Association's principal ecologist; Dan Hinckley, BLM's Montana riparian coordinator; and Tim Bozorth, BLM's Montana state hydrologist.

This training combined BLM's Clean Water Act responsibility with the Montana Riparian Association's (MRA) classification and management of riparian and wetland sites and BLM's riparian-wetland inventory and monitoring procedures, along with how to develop riparian-wetland grazing management objectives.

The training course discussed how properly selected riparian-wetland grazing BMPs can protect water quality and improve riparian-wetland area health. It also emphasized that good riparian-wetland management practices protect water quality for everyone in Montana.

From June 25 through 26, 1992, BLM held its National Riparian-Wetland Coordinators Meeting in Lewistown, shortly after the MRA-sponsored fifth Riparian-Wetland Management Workshop was held on June 22-24.

Salmon Listing Will Affect USFS Riparian Activities

— by Rick Stowell, Wildlife and Fisheries Management Unit, U.S. Forest Service Region I, Missoula, Montana

Effective May 20, 1992, the federal listing of the Snake River sockeye salmon (endangered) and the Snake River chinook salmon (threatened) required that all Forest Service-funded or permitted activities within the anadromous fish habitat in the Snake River basin be assessed to ensure that these activities do not jeopardize the salmon habitat.

To do this, the Forest Service must review all ongoing activities such as livestock grazing, road construction and maintenance, dispersed recreation, timber sales, and mining.

The Forest Service and the National Marine Fisheries Service (NMFS) are developing a process to review all ongoing projects on national forest land in the Snake River basin. Management responsibilities for migratory or commercial endangered species such as the salmon fall under the jurisdiction of the NMFS rather than the U.S. Fish and Wildlife Service.

Many organizations are concerned that the Forest Service may not be in compliance with Section 7 of the Endangered Species Act. This section requires federal agencies to ensure that any action they authorize, fund, or carry out will neither jeopardize the existence of any listed species nor result in destroying or adversely modifying any critical habitat.

The Forest Service is vulnerable to litigation if it does not promptly comply with Endangered Species Act requirements. According to these requirements, a federal official who knowingly

authorizes any action that "may adversely affect" a listed species without formally consulting the NMFS personally is liable for up to $50,000 in damages.

The affected Forest Service Regions 1, 4, and 6 are developing strategies to handle the massive task of compliance. Considering the tremendous number of activities authorized, carried out, or funded by the Forest Service within anadromous fish habitats in the Snake River basin, this workload and its complexity may prove to be somewhat overwhelming for everyone involved.

In [Forest Service] Region 6 (Washington) alone, 554 range allotments must be evaluated for their potential to affect anadromous fisheries. Since a great deal of concern has been shown in regard to livestock grazing and compliance with the Endangered Species Act and Forest Plan standards and guidelines, it is essential that the Forest Service comply with forest plan utilization standards on all allotments in the anadromous fish habitat during this grazing season.

What Will This Mean in Montana?

Because Montana has no anadromous fish habitat and because none of Montana's water flows into the Snake River basin, Forest Service activities in Montana will not be directly affected. However, since both the Snake River basin and Western Montana's river basins (Clark Fork, Flathead, Kootenai) flow into the Columbia River basin, a proposal has been made to use some of the water from the Flathead River or Hungry Horse Reservoir to augment some of the power generation capacity that may be lost in the Snake River basin. So far, this suggestion has only reached the proposal stage.

Will the Clark Fork Basin Bull Trout Become "Montana's Salmon?"

[The habitat of another species may soon be the subject of a similar action. *eds.*] The American Fisheries Society's Oregon chapter has voted to ask the U.S. Fish and Wildlife Service (USFWS) to review the status of bull trout in Oregon. When the Oregon chapter submits its petition, the USFWS will have one year to respond. In its response, the USFWS will have to review the status of bull trout in all five states in which the habitat exists, including Montana's Clark Fork River basin.

[For more information on the salmon listing and the Forest Service's response, call Rick Stowell at (406) 329-3287.]

June Riparian Workshops Draw Crowds

More than 130 landowners attended the Lewis and Clark Conservation District's riparian workshop June 11 at the Broken-O Ranch in Augusta. Landowners were especially interested in hearing Wyoming rancher Jack Turnell describe how he reduced his livestock numbers while simultaneously increasing his stock's weight gains and his profits.

Workshop participants also listened to Montana State University associate professor Robin Tierney discuss the ways that healthy riparian areas contribute to "healthy streams." Joan Schumaker from the Department of Natural Resources and Conservation explained "What's The Big Deal About Riparian Areas?," and Pam Hackley from OEA Research in Helena described Montana's forest stewardship program, forestry BMPs, and the new streamside management zone law.

After lunch, participants went to a nearby riparian area to learn how to identify a few riparian indicator species, try a little riparian monitoring, and learn some riparian grazing management tips from Dennis Phillippi, state Soil Conservation Service range conservationist, and Paul Hansen from the Montana Riparian Association.

Carbon County Conservation District's June 12 riparian and range tour attracted about 60 landowners. Speakers Dennis Phillippi, Matt Ricketts, and Mark Majerus (all from SCS) talked about range ecology, range monitoring, and grazing management. The group visited three different ownerships—the Bureau of Indian Affairs, BLM, and the U.S. Forest Service—and compared management perspectives and strategies. The tour ended with a barbecue at the Bridger Plant Materials Center. Both tours were funded by the Montana Riparian Association Education Committee.

EDITOR'S NOTE #2: For more information on the Montana Riparian Association, contact Joan Schumaker, Montana Department of Natural Resources and Conservation, 5115 Hwy. 93 South, Missoula, MT 59812. Phone: (406) 251-5026. Joan is co-chair of the Association's Riparian Education Committee along with Kim Enkerud, who represents the Montana Stockgrowers Association, Montana Association of State Grazing Districts, and the Montana Public Lands Council. Thanks, Joan, for your help on this continuing dialogue.

EDITOR'S NOTE: This article was prepared by EPA Office of Water's Watershed Branch to report on the status of the TMDL program, emerging developments, and current thinking.

Water Quality Planning Regulation Amended

The final rule amending regulations pursuant to the Clean Water Act Section 303(d) at 40 CFR Part 130 was signed by the EPA administrator on July 11, 1992. The regulation was published in the *Federal Register* on July 24, 1992, and became effective on August 24, 1992 (see 57 *FR* 33040). The amendments clarify Section 303(d) list submittal requirements and deadlines. The amendments also establish criteria for EPA review and approval/disapproval.

In the final regulation, EPA has defined the statutory requirement for states to submit lists "from time to time" as every two years coincident with submission of Section 305(b) reports. For the 1992 submission of the 303(d) list, the deadline for list submission is October 22, 1992. Starting in 1994, the April 1 deadline will be reinstated.

The TMDL Process — Section 303(d) of the Clean Water Act

Section 303(d) of the Clean Water Act establishes the TMDL (Total Maximum Daily Load) process to provide for more stringent water quality-based controls when technology-based controls are inadequate to achieve state water quality standards. A TMDL is the estimated assimilative capacity for a waterbody — how much pollution may enter a waterbody without affecting its designated uses. The objective of a TMDL is to allocate allowable loads among different pollutant sources so that the appropriate control actions can be taken, water quality standards achieved, and human health and aquatic resources protected.

Mathematically, a TMDL is represented as the sum of the wasteload allocations (WLAs) for point sources, the load allocations (LAs) for nonpoint and natural background sources, and a margin of safety (MOS) that accounts for scientific uncertainty about whether the TMDL reflects the actual assimilative capacity of the waterbody. A TMDL may also incorporate reserve capacity for future sources.

Section 303(d) requires a TMDL for "water quality-limited waters." A water quality-limited water is one that still violates water quality standards even after all of its point source dischargers employ the technology-based controls required by the federal Clean Water Act. In other words, a water is water quality-limited if best practicable control technology, best available technology, secondary treatment, new source performance standards (Section 306), and pretreatment requirements are not sufficient to meet water quality standards. The regulations clarify which waterbodies are "water quality-limited waters still requiring TMDLs" for which listing, priority setting, and TMDLs are required.

The identification of a segment as water quality-limited is not restricted by the source of the pollution. Segments affected by point and/or nonpoint sources must be evaluated for placement on the 303(d) list. A segment with no point sources, for example, in which water quality standards are not attained because of nonpoint sources is still considered water quality-limited. Therefore, all waters in which water quality standards are not attained or expected to be attained, including waters that violate standards solely because of point source discharges, nonpoint source impacts, or a combination of point and nonpoint source impacts, must be considered for the 303(d) list.

As part of the submission of the Section 303(d) list, states should include a priority ranking and identify those waters targeted for TMDL development during the next two years. The 303(d) list, including the priority ranking and identification of targeted waters, is dynamic and may change during the succeeding two-year cycle.

The Phased Approach to TMDLs

Water quality specialists have long grappled with developing TMDLs in cases in which poor information is available about the waterbody itself, pollutant behavior within the water body, pollutant sources, the effectiveness of pollution controls, etc. In such cases, a phased approach may be used. This means that, using the information available, a TMDL is developed and implemented, and then evaluated and revised, if necessary. The phased approach, for example,

may be necessary when nonpoint sources contribute to the pollution problem because of the technical uncertainties of estimating nonpoint source loads and the uncertainties about the effectiveness of nonpoint source controls at a specific site.

The phased approach requires well-designed post-implementation monitoring programs and an assessment of the effectiveness of the control measures. In addition to the allocations for point and nonpoint sources, a TMDL under the phased approach includes schedules for the installation and evaluation of point and nonpoint source control measures, data collection, the assessment for water quality standards attainment, and, if needed, additional predictive modeling. The scheduling with this approach should be developed to coordinate all the various activities (permitting, monitoring, modeling, etc.) and involve all appropriate local authorities and state and federal agencies.

EPA is committed to implementing Section 303(d) as a way to move toward integrated water quality-based controls on point and nonpoint sources, geographic targeting, and watershed-scale assessment and protection. In addition, EPA views the TMDL process as a mechanism that provides the technical foundation to carry out the Watershed Protection Approach[1]. Trading of pollution reductions between sources (e.g., point/nonpoint sources) is also accomplished within the TMDL framework. Finally, Section 303(d) provides a way to address non-chemical stressors, such as habitat degradation, that preclude the attainment of water quality standards.

Amendments to the 303(d) Regulation — What Do They Mean for the Regions and States?

A number of lawsuits have consistently established that EPA has a mandatory duty to establish these lists and to establish TMDLs if a state fails to do so. There have been 12 lawsuits against the agency, with cases currently pending for waters in Alaska, Washington, Florida, and the Columbia River. As of August 1992, 28 states had submitted draft or final lists.

If a state cannot meet the applicable 303(d) deadline, a written agreement that states the intent to submit a 303(d) list within a reasonable time after the deadline (i.e., 30-60 days) should be established between the region and the state. If no such agreement is established and the state fails to submit a 303(d) list, EPA may notify the state that EPA has determined that the state has made a constructive submission of no Section 303(d) waters and that EPA will proceed to develop the state Section 303(d) list.

The public must be given 30 days to review and comment on the EPA-established listing and ranking of waterbodies targeted for TMDL development. Following completion of this period and any revisions, EPA will initiate whatever steps are necessary to assure development of the TMDLs targeted for development during the next two years. If a state fails to initiate development of TMDLs for targeted waters, EPA will proceed to establish targeted TMDLs.

Status of the 303(d) Program — EPA Support for the TMDL Program

Water quality analysts have been doing TMDLs for decades in the form of water quality-based effluent limits, lake protection modeling, nonpoint source control planning, etc. EPA's recent efforts to fully implement Section 303(d) revolve around tackling more challenging problems, such as integrating point and nonpoint controls within a watershed and using the TMDL process as a way to enhance integration of multiple programs through geographic targeting. Recognizing how challenging this will be, the agency has undertaken several support activities.

In addition to issuing program guidance and revised regulations, EPA has focused on maintaining an open dialogue with the states. As a first step in establishing effective communication with the states, EPA held a workshop on TMDLs in each EPA region during the winter of 1992. These workshops provided a forum for the regions and their states to discuss the programmatic requirements of Section 303(d) and identify technical needs. Many regions have held subsequent workshops or formed implementation workgroups.

EPA is encouraging states to experiment with different modes of program operation. EPA is reorienting several of its efforts into the Watershed Protection Approach as a means to develop

1 The Watershed Protection Approach promotes a comprehensive, watershed-based approach to water quality management. It is intended to be a vehicle to promote incremental improvements in the way we approach the task of protecting watersheds. A central feature of this approach is its targeted geographic focus. All water quality assessment, planning, and control tools are brought to bear on a particular water resource.

The Status of the TMDL Program (continued)

new techniques and provide models for other agencies. EPA is allowing flexibility on reissuance of expired permits for states shifting to a watershed approach. Another example is the grant guidance for several independent programs that now stresses coordinating geographic targeting.

To respond to some of the identified technical needs, a TMDL "SWAT Team" was established to assist state and local environmental agencies with the development and implementation of TMDLs. The SWAT Team is a group of experts who are experienced in using particular technologies within the TMDL framework, such as remote sensing, geographic information systems, and computer models. The role of the SWAT Team is to provide immediate short-term technical support to the regions and state and local governments that must perform TMDL analyses. Currently, there are 11 ongoing and 4 completed SWAT Team projects. Requests for assistance from the SWAT Team are made through the EPA regional Section 303(d) TMDL coordinators.

TMDL "Mini" Grants Awarded

In fiscal year 1992, 13 TMDL "mini-grants" were awarded throughout the EPA regions. These "mini-grants" focus on innovative and creative TMDL development projects. Projects include the development of watershed-scale TMDLs, the development of TMDLs that include nonpoint source components, and the integration of point and nonpoint source modeling. The projects also focus on ecological parameters (e.g., habitat and non-traditional, non-chemical stressors) and restoration opportunities. The projects have also been funded with the hope that each may serve as a case study that has applicability across the country.

In addition to the SWAT Teams and the mini-grants, several documents have been developed (or are being developed) to help provide regions and states with information on tools available to facilitate the TMDL process. A series of case studies on TMDLs has been initiated to illustrate how TMDLs are developed in various site-specific circumstances. Several documents have been developed this year specifically to help in carrying out the technical analyses in the TMDL process, including *A Quick Reference Guide: Developing Nonpoint Source Load Allocations for TMDLs* and *A Compendium of Watershed-scale Models for TMDL Development*. Technical guidance development is continuing. Within EPA Headquarters, model development and technical support are managed by the Office of Science and Technology (OST).

[For additional information, contact the EPA regional coordinator for your area or the national managers at EPA Headquarters:

Region 1 David Pincumbe (617) 565-3544
Region 2 Rosella O'Connor (212) 264-8479
Region 3 Thomas Henry (215) 597-8243
Region 4 Jim Greenfield (414) 347-2126
Region 5 Robert Pepin (312) 886-1505
Region 6 Mimi Dannel (214) 655-7145
Region 7 John Houlihan (913) 551-7432
Region 8 Bruce Zander (303) 293-1580
Region 9 David Smith (415) 744-2019
Region 10 Bruce Cleland (206) 553-2600
Office of Wetlands, Oceans, and Watersheds, Bruce Newton or Don Brady (202) 260-7074.
Office of Science and Technology, Russ Kinerson (202) 260-1330 or Jerry LaVeck (202) 260-7771.]

Citizens Employ The Watershed Approach to "Take Back" Lake Waramaug in Connecticut

— Submittted by Terri Hollingsworth, Houston, Texas, formerly with EPA's Clean Lakes Program

In 1975, citizens of the three towns in the watershed of Connecticut's second largest lake banded together to restore the declining Lake Waramaug. Because the lake covers approximately 700 acres in three towns (Warren, Washington, and Kent) using a coordinated basinwide approach to restoring and protecting the lake was, and is, essential for success. The Lake Waramaug Task Force was the first step toward "taking back" the lake. The restoration of Lake Waramaug illustrates how the Watershed Protection Approach works to control pollution

Citizens Employ The Watershed Approach to "Take Back" Lake Waramaug in Connecticut (continued)

and improve important aquatic resources. The three principles of the Watershed Protection Approach are:

(1) The target watershed should be one where pollution poses a risk to human health, ecological resources, desirable uses of the water, or a combination of these.

(2) All parties with a stake in the specific local situation should participate in the analysis of problems and the creation of solutions.

(3) The actions undertaken should draw on the full range of methods and tools available, integrating them into a coordinated multiorganization attack on the problems.[1]

Comprehensive field studies of the lake and its watershed since the mid-1970s indicate that risks to the lake and its uses stemmed primarily from agricultural runoff from the rural watershed. The runoff brought excessive nutrients, organic matter, and sediment into the lake, causing three major problems:

- Sedimentation threatened the natural hydrologic relationship between the lake and its primary tributary.
- Frequent, severe bluegreen algal blooms and poor water clarity diminished aesthetics and made the public reluctant to swim, boat, or fish in the lake.
- Decomposition of organic matter resulted in anoxic conditions that were unsuitable for fish and that allowed phosphorus from the sediment to be released back into the water column and thus become available to promote the growth of algae.

The EPA Clean Lakes Program has been critical to the Lake Waramaug project by providing both cost-sharing funds and a mechanism for the cooperative efforts. When EPA awarded a Clean Lakes Program grant in 1979, the Lake Waramaug Task Force responded by forming a tri-town commission as part of the regional planning agency to finance and maintain restoration operations. The citizen-run task force served as a non-profit organization to educate the public, raise funds, stimulate research, and foster the development of restoration efforts for Lake Waramaug. The task force members included local citizens—a housewife, an inn owner, a coach, a lawyer, a banker, an engineer, and several farmers—who volunteered their time, energy, diverse knowledge, and skills to mobilize the effort to improve the lake.

A comprehensive watershed approach to improving Lake Waramaug required the task force to not only identify causes, sources and solutions, but also to affect the actions of many people and organizations. The task force used a strong education campaign to increase public and government awareness and to solicit funds and expertise from public and private sources.

Participants in the Lake Waramaug watershed protection project included the regional planning agency, the tri-town commission, limnologic experts, Connecticut environmental and agricultural agencies, state and local legislators, University of Connecticut, Kent State University, foundations, EPA Clean Lakes Program, USDA Soil Conservation Service, the Canada Ministry for the Environment, and, most importantly, many private citizens. In essence, the strong local commitment of the task force was both the force that brought it all together and the glue that bound the effort to save Lake Waramaug.

Tools selected to apply to the watershed's problems, as outlined in the watershed management plan and agreed upon by the stakeholders, included

- construction of tributary sedimentation basins;
- stabilization of major erosion sites; and
- agricultural best management practices, including waste management and new crop and land treatment practices.

The in-lake problem of nutrient cycling was controlled by an innovative hypolimnetic treatment. An in-lake system withdraws some of the oxygen-poor hypolimnetic water, manipulates the nitrogen and iron cycles, and reinjects a portion of the water back into the bottom of the lake where it prevents the release of phosphorus into the water. The system also distributes a portion of the water to the downstream side of the dam, providing a cool water habitat for brown trout.

1 *The Watershed Protection Approach: An Overview.* (EPA 503/9-92/002, December 1991.)

Citizens Employ The Watershed Approach to "Take Back" Lake Waramaug in Connecticut (continued)

According to the Lake Waramaug Task Force, the success of the Lake Waramaug restoration efforts has been demonstrated by the following measures:

- The nutrient content of lake has decreased by more than half since 1977.
- Average summer clarity has improved by over 150 percent.
- Severe bluegreen algae blooms are very rare.
- Habitat supporting brown trout has been established.
- The natural hydrologic relationship between the lake and its primary tributary has been restored.
- The public once again recognizes the lake as clean for a variety of recreational uses; swimming, boating, and fishing have increased.

Not only has the Lake Waramaug program restored the lake, it has made significant contributions to the science of lake and watershed management, lending a better understanding of the dynamics of internal nutrient cycling and how the composition of hypolimnetic water can be altered to improve overall lake water quality. The project has also enhanced understanding of the watershed as an integral part of the ecosystem.

To further advance understanding of the complex and dynamic lake ecosystem, the task force has established a cooperative research program to quantitatively document the biological and chemical mechanism of internal nutrient loading as well as researching the use of nutrient cycling in lake management.

The Lake Waramaug Task Force and the local communities are committed to preserving the great strides they have accomplished in restoring the lake. As such, they have revised zoning, land-use controls, and enforcement practices to protect the lake. In addition, the ongoing education program serves to increase public awareness of the problems and solutions and to show how working together can make a real difference.

The citizens of the Lake Waramaug watershed identified the risks to their lake, formed partnerships to restore and protect the lake, and, by using a holistic watershed approach, succeeded at making some real improvements. Not only have the people who use Lake Waramaug benefitted from these efforts—we all have as we recognize watershed management as a way of life necessary to protect aquatic resources.

[Those interested in more information on the Lake Waramaug watershed project should contact Tom McGowan, Executive Director, Lake Waramaug Task Force, Inc., Sackett Hill Rd., Warren, CT 06754. Phone: (203) 567-0555. Those interested in more information on the EPA Watershed Approach or the Clean Lakes Program should contact the Clean Lakes Program, WH-553, U.S. EPA, Office of Wetlands, Oceans, and Watersheds, 401 M St., SW, Washington, DC 20460. Phone: (202) 260-5404.]

Reviews

Surface Water Quality: Have the Laws Been Successful?

By Ruth Patrick, with Faith Douglass; et al. 1992. 212 pp.

Ruth Patrick and her coauthors have taken a careful and scholarly look at the construct of the Clean Water Act (CWA), its goals and its administration, and the results obtained over the past 20 years. In their search for answers, they focused on three watersheds: the Delaware River, (Pennsylvania, New Jersey, Delaware) the Netches estuary in southeastern Texas, and the Flint River in Georgia.

They conclude that . . .

> *Considerable progress has been made, but much remains to be done to attain the goals of the Clean Water Act . . .*
>
> *The goal . . . to have surface waters suitable for the propagation of fish, shellfish, and wildlife in natural or pristine conditions, has not been attained throughout these waters for reasons such as the presence of heavy metals or toxic organic compounds, many of which are pesticides; soil erosion; and modification of river channels.*
>
> *As we look to the future, it is certainly the responsibility of industry to prevent the release of toxic wastes and to mitigate the production of all waste. However, unless we learn how to*

Surface Water Quality: Have the Laws Been Successful? (continued)

greatly curtail the toxicity and volume of nonpoint sources, the goals of the Clean Water Act will not be attained.

Societal values, the way we have lived and used the land, and the population pressures in coastal areas are all matters that the authors cite as factors that have prevented the CWA goals from being realized. They indicate:

The Clean Water Act and its amendments have accomplished a great deal in improving the oxygen content and reducing CBOD (carbonaceous biochemical oxygen demand) in surface waters. But pollution still exists.

If a monitoring program to show changes in the biology and chemistry of the rivers and estuaries had been in place, the identification of heavy metals and organic compounds that are polluting the surface waters would have been recognized much sooner.

The options for the future depend on how much we want to spend, and how we want to live, and what we are going to demand of industry for preserving our lifestyle.

These are all very sobering, but timely, thoughts as the congressional debate continues on the reauthorization of the Clean Water Act.

[The book maybe ordered from: California-Princeton Fulfillment Services, 1445 Lower Ferry Rd., Ewing, NJ 08618. Cost: $35.00 plus about $3.00 handling and shipping. Phone orders: (609) 883-1759. FAX: (800) 999-1958.]

What Makes a Quality Lake?

By the University of Florida Center for Aquatic Plants. 1992. 24 mins.

What Makes a Quality Lake is the videotape for the person who always wanted to take "Lake Management 101." The University of Florida Center for Aquatic Plants has produced this excellent tape to introduce the topic of lake management. The information can be used by anyone who wants to understand lake processes.

First, Dr. Dan Canfield, a limnologist at the University of Florida, discusses the definition of a quality lake. According to Canfield, that definition varies depending on what the users hope to do with a particular lake. Some people want a lake to be a cultivated aquatic garden; others prefer a natural setting with native fish and plants; still others are more interested in recreational activities. . . such as fishing, swimming, or waterskiing.

As in any survey course, defining the vocabulary is a major part of the instruction; in this video, terms like "eutrophication," "nutrient," "trophic status," and "Secchi disk" are carefully explained and illustrated.

Florida lakes are used to illustrate the principles presented in the video. Florida's geology is highly diverse and its varying soils may affect the trophic status of nearby lakes. For instance, Florida's large deposits of phosphorus cause lakes near those deposits to have high levels of phosphorus in spite of measures taken to stem lake eutrophication. Sandy soils allow rapid seepage and clay soils hold the water; lake depth, wind, and aquatic weeds all affect the trophic status. A high flushing rate explains the beautiful spring-fed lakes in Florida that are both clear and nutrient-rich.

Canfield emphasizes that the desired trophic status depends on whether the users of the lake want clear water in their lake, or a murkier but more productive lake. A hopeful bass fisherman needs a different nutrient level than a swimmer seeking crystal clear water. The difficulties of altering natural trophic status are described, and the question of whether lake alteration is necessary or desirable is raised.

The succinct summary leaves viewers with the understanding that eutrophication is a complex issue that requires careful study and that each lake must be considered individually when planning objectives.

A neophyte at lake management might be overwhelmed by the large amount of information covered in the video, but for a person with an interest in the subject, the video is an overview of the issues involved and a start on the vocabulary needed to pursue the study more thoroughly.

[The video may be borrowed, or it may be purchased for $15.00 (plus tax for Florida residents). For more information, contact the Information Office, University of Florida, Institute of Food and Agricultural Sciences, Center for Aquatic Plants, 7922 NW 71st Street, Gainesville, Florida 32606. Or contact Sandy Fisher, Volunteer Lake Monitoring Group, LAKEWATCH, at the same address. Phone: (904) 392-9613.]

Notes on Environmental Education

The Living Watershed

An Educational Partnership Between the Lake Tahoe Basin Management Unit and the Lake Tahoe Unified School District

EDITOR'S NOTE: The following article was written by Al Todd, LTBMU[1], South Lake Tahoe (CA), and it appeared in the Summer edition of the Watershed Management Council's Newsletter (P.O. Box 245, Berkeley, CA 94701). We think it is a nifty story about good things happening locally through a working partnership between a federal agency and locals on matters of mutual concern (on-the-ground where the action is). We reprint it here to give the story a broader audience.

The watershed staff of the Lake Tahoe Basin Management Unit (LTBMU) was awarded the USDA-Forest Service's Chief's Stewardship Award in 1990. This prestigious honor recognized the many innovative national and state and private forestry programs successfully implemented by this staff in response to the challenges of land stewardship in the sensitive environment of Lake Tahoe. With the award came another challenge — $50,000 to invest in a stewardship project. This partnership is the result, and we believe it will make a lasting contribution to conservation education commensurate with the unique honor of the Chief's Stewardship Award.

Background

In March 1991, Forest Service personnel met with officials of the Lake Tahoe Unified School District (LTUSD) to discuss the potential for increasing environmental education in the public schools and for building a bond with the Forest Service in the community. Rather than spreading our interests too thin, we focused on sixth graders, an age group well recognized as highly receptive to developing lasting environmental values and making choices about future career interests. The discussions touched on an area of intense interest for Lake Tahoe Middle School Principal Rich Alexander and instantly created an atmosphere of mutual vision and purpose. In July 1991, a participating agreement was signed between the LTUSD and the Forest Service to develop

> *. . . a full year curriculum for sixth grade students that will emphasize the natural environment of the Tahoe Basin within the context of a watershed ecosystem and incorporate basic educational skills, such as math, English, physical and biological sciences, and civic awareness, as well as involve the students in natural resource management activities, disciplines, and potential career opportunities.*

As part of the agreement, the Forest Service is working with sixth-grade teachers to develop a curriculum outline, academic objectives, and a teaching guide with classroom and field activities. This will not be an "add-on" environmental studies program but rather a full-time integrated curriculum in which the students would spend their sixth-grade year learning about the entire spectrum of interests within a specific watershed: from history to land use, geology to aquatic biology, wildlife to forests, and man's interaction with each.

The Living Watershed Project

A major emphasis of the project is to take larger conceptual studies and translate them into local experience—through a "living watershed." The Lake Tahoe Middle School lies within the 26,000-acre watershed of Trout Creek. This watershed offers a wide array of examples for stream and terrestrial habitat types, geology and soils, and land uses as well as human history and environmental concerns. Its proximity to the school also provides ready access for the students. By focusing cases for classroom studies on the activities and resources in this watershed, students are able to make the concepts tangible and thus improve their retention. The watershed also provides examples of resource management on national forest lands.

1 The Lake Tahoe Basin Management Unit was created by the Forest Service to coordinate the policies and activities of the three National Forests located in the Lake Tahoe watershed.

"The Living Watershed" (continued)

The curriculum, which is scheduled for completion by July 1992, follows a hierarchy of objectives:

- **Primary Education Objectives** — mathematics, science, English, social studies
- **Strands** (i.e. study units) — plants, meteorology/weather, animals, ecology, man and environment, history, hydrology, geology/soils
- **Teaching Tasks** — classroom, field activities

Each strand has a set of quantitative objectives, subsections for application to the local area, and a catalog of teaching tasks.

The Future

This partnership has been an invigorating and productive experience for all of us. We look forward to the completion of the curriculum and its acceptance by the school board. Already, sixth-grade teachers are implementing and testing portions of it. We believe that having the programs developed by the teachers themselves and implemented in a thematic education format will ensure its success. Forest Service employees from a variety of disciplines have volunteered to serve as liaisons with sixth-grade teaching teams, thus providing a dimension of greater local resource knowledge and assistance in answering the tough questions posed by forest users.

Certainly, improved land ethics and future career choices can be outcomes of a program such as this. But today, young adults are already influential members of the community and visitors to the national forest. Along with their parents and friends, they represent the public we desire to serve in the next era of land stewardship.

[For more information, call Sally Champion, USFS, Lake Tahoe Basin Management Unit, at (916) 573-2600.]

NPS Electronic Bulletin Board News

Nonpoint Source Electronic Bulletin Board System — (NPS BBS). The *NPS BBS*, through the user's personal computer, provides timely, relevant NPS information; a nationwide forum for open discussion; and the ability to exchange computer text and program files. Special Interest Group Forums (mini-bulletin boards) are dedicated to specific topics and have all of the features of the main *BBS*. The service is free except for any long-distance phone charges incurred by the user.

To access the *NPS BBS*, you will need • a PC or terminal • telecommunications software (such as Crosstalk or ProComm) • a modem (1200 or 2400 baud) • a phone line.

The *NPS BBS* phone number is (301) 589-0205.

For a copy of the user's manual, complete *THE COUPON* on page 27 and mail or fax it in.

NPS BBS Picks Up Speed

We now have new 9600 baud modems on all three *NPS BBS* nodes. If you have a 9600 baud modem, you will find that 9600 baud access will save you a great deal of time in downloading files and performing other *BBS* functions. If you don't have a 9600 baud modem, your *BBS* access will remain the same as it has been.

Connecting to the *BBS* at 9600 baud can be a little tricky. It will probably take a little longer to connect with the *BBS* than it does with 1200 or 2400 baud (it can take up to about 45 seconds to complete the connection at 9600 baud). If you are using a script file to call the *BBS*, you may want to change the length of time your computer pauses while waiting to connect to the *BBS*.

NPS BBS Picks Up Speed (continued)

You may also need to change the baud rate in your script file if you are calling from a 9600 baud modem. If you have any trouble connecting or need help, call (301) 589-5318. If you are calling from a LAN, you may need to have your LAN administrator make some changes to the settings on your LAN.

NEWS FLASH — Watershed Restoration Network Online

In the December 1991 *News-Notes* issue #17, we wrote and printed the following dispatch:

> *The Nonpoint Source Information Exchange has been having some very interesting talks recently with Michael Furniss, who represents the Watershed Management Council, a volunteer, non-profit, predominately west-coast organization whose mailing address is Berkeley, California. Mike wears two or three hats: He is the editor of the Council's lively, quarterly newsletter and earns his living as a hydrologist at the Six Rivers National Forest, headquartered in Eureka, CA, several hundred miles north of San Francisco. Joining us in the discussions was Debra Caldon, formerly the Nonpoint Source Coordinator for EPA's Region IX. The subject matter was the formation of a mini-bulletin board to operate out of our main NPS BBS. The mini would be called the Watershed Restoration Network and would be a place where folks with common interests in restoring riparian, fishery, and wildlife values to impaired watersheds could gather to exchange information and news. It is our very real sense that this area of concern has a high priority for people from all over the country in a variety of public agencies, federal and state, as well as private citizens and environmental, agricultural, and outdoor recreation organizations. The Network would be operated by EPA's Nonpoint Source Information Exchange in cooperation with the Watershed Management Council. We are very excited about this prospect and will keep our readers informed.*

At this writing, about a month before readers will receive this issue (#24), we have been informed that the EPA grant to the Watershed Management Council in support of the *Watershed Restoration Network* has been formally approved. By the time you get this NEWS FLASH this newest SIG should be up and running online! Tune In! Connect! Contribute! Welcome to the *Watershed Restoration Network*! Mike Furniss and Debra Caldon will share the monitoring assignment. Your editor predicts that this will be a very productive idea/experience exchange and a whale of a learning experience.

A Concluding Thought

A Land Use Plan to Protect Water Quality

The following observation was made in the July-August 1992 issue of *Sound Waves*, the newsletter of the Puget Sound Water Quality Authority.

As local governments work to craft comprehensive land use plans throughout Puget Sound, it will become increasingly clear that land use decisions and water quality are closely linked. Moreover, the water quality issues—stormwater management, nonpoint source pollution control, wetlands protection—are related.

Through the comprehensive planning process, local governments have the opportunity to shape these linkages into a single land use plan that protects water quality.

Datebook

This DATEBOOK has been assembled with the cooperation of our readers. If there is a meeting or event that you would like placed in the DATEBOOK, contact the *NPS NEWS-NOTES* editors. Because of an irregular printing schedule, notices should be in our hands at least two months in advance to ensure timely publication. A more complete and current listing can be found on the *NPS BBS*.

Meetings and Events

1992

October

14-15 *7th Annual Groundwater Protection Seminar*, Irving, TX. Contact: Brad L. Cross, Texas Water Commission, PO Box 13087, Austin, TX 78711. (512) 371-6470. Seminar covers NPS contamination of groundwater. Topics: delineation of wellhead protection areas, local emergency spill response, comprehensive groundwater protection strategy.

14-16 *Watershed Resources: Balancing Environmental, Social, Political, and Economic Factors in Large Basins*, Portland, OR. Contact: Conference Assistant, OSU College of Forestry, Peavy Hall 202, Corvallis, OR 97331. (503) 737-2329. Explores how environmental and human factors interact in watershed management challenges.

16-22 *Interdisciplinary Approaches in Hydrology and Hydrogeology*, Portland, OR. Contact: Helen Klose, American Institute of Hydrology, 3416 University Ave., SW, Minneapolis, MN 55414-3328. (612) 379-1030.

22 *1st Annual Fertilizer Research and Education Program Conference*, Davis, CA. Contact: Jacques Franco, or Casey Walsh-Cady, Fertilizer Res. & Educ. Prog., CA Department of Food and Agriculture, 1220 N St., Sacramento, CA 95814. (916) 322-6832. FAX: (916) 322-7855. Cosponsored by the CA Fertilizer Association and the University of CA-Davis Public Service Research and Dissemination Program. Registration $20. Make check payable to CA Dept. of Food and Agriculture Progress on research and education projects to improve fertilizer use and reduce potential groundwater contamination will be the focus of this one-day conference.

27 *New York NPS Partnership Meeting*, Newburgh, NY. Contact: Marilyn Stephenson, WQ Liaison, NYS DEC, 50 Wolf Rd., Rm 201, Albany, NY 12233-3508. (518) 457-6781. NPS Partners/ Audience Members: NYS DEC, county soil and water conservation districts, USDA SCS and ASCS, Cornell Cooperative Extension, NY Sea Grant, NYS Dept. Health, county health departments, NYS Div. Coastal Resources, county planning and environmental management councils.

27-29 *Ecosystem Restoration in the Great Lakes Basin*, Green Bay, WI. Contact: JT&A, 1000 Connecticut Ave., NW, Suite 802, Washington, DC 20036. (202) 833-3380. Register by 10/9. Call Radisson Inn Hotel, (414) 494-7300, for room. Sponsored by the EPA Region V. Topics: restoration, mitigation, preservation, and protection, of ecosystems.

29 *New York NPS Partnership Meeting*, Glens Falls, NY. See information for October 27.

30-31 *Nonpoint Source Pollution: Causes, Consequences, and Cures*, Fayetteville, AR. Contact: Martha L. Noble, National Center for Agricultural Law, University of Arkansas, Fayetteville, AR 72701. (501) 575-7646. FAX: (501) 575-5830. Registration fee: $100. Rooms at Fayetteville Hilton: (501) 442-5555. Sponsored by National Center for Agricultural Law Research and Information and Arkansas Water Resources Research Center.

November

2-7 *12th Annual North American Lake Management Society International Symposium on Lake, Reservoir, and Watershed Management*, Cincinnati, OH. Contact: Bob Mason, Hamilton County Park District, 10245 Winton Rd., Cincinnati, OH 45231. (513) 521-7275. FAX: (513) 521-2606. Topics: zebra mussels, hydropower, wetlands, urban runoff, agricultural NPS, acid lakes, phosphorus inactivation, computer modeling, citizen workshops. Sponsors: U.S. EPA Clean Lakes Program, TVA, and Ohio Sea Grant.

4 *New York NPS Partnership Meeting*, Canadaigua, NY. See information for October 27.

4-6 *Partnerships for Clean Water: Making Nonpoint Projects Work in the Year of Clean Water*, Angola, IN. Contact: Randall Seelbrede, USDA SCS, 219 Paw Paw St., Paw Paw, MI 49079. (616) 657-4220.

5 *New York NPS Partnership Meeting*, Syracuse, NY. See information for October 27.

5-6 *Oregon Water Quality Conference in Honor of James A. Vomocil*, Corvallis, OR. Contact: Ron Miner, Oregon State University Extension, 116 Gilmore Hall, Corvallis, OR 97331-3906. (503) 737-4021. Sponsored by OSU Extension Service and the Water Resources Research Institute. Topics: fish habitat, water quality, and water allocations.

1992

November

6-7 *Izaak Walton League's Conference on the Future of West Virginia's Rivers*, Oak Hill, WV. Contact: Marc Gaber or Paul Brant, Mountain RC & D, 204 1/2, W. Maple Ave., Fayetteville, WV 25840. (304) 574-3036. Cosponsored by the Mountain Resource Conservation and Development Area, Izaak Walton League, and others.

9-10 *The Endangered Species Act: On the Road to Recovery?*, Coeur d'Alene, ID. Contact: Peggy Hammel, Idaho Water Resources Institute. (208) 885-6429. The Endangered Species Act is up for reauthorization and is the subject of much discussion and controversy. This exploration of the ESA will examine the Act's nuts and bolts as well as economics, public involvement, tribal rights, history, reauthorization, and amendment. Case studies will discuss conflicting species management, reintroduction of predators, and much more. Registration $80. Register by 11/2. Call Coeur d'Alene resort for room reservations: (800) 688-5253.

18-20 *Integrated Watershed Management: Overcoming Obstacles*, South Lake Tahoe, CA. Contact: Ken Roby, USDA Forest Service, 410 Main St., PO Box 329, Greenville, CA 95947. (916) 284-7126. Sponsored by Watershed Management Council.

19-21 *1st New Mexico Riparian Conference: A Call to Action*, Albuquerque, NM. Contact: Russ LaFayette, New Mexico Riparian Council, PO Box 22538, Coranado Station, NM 87502. Sponsored by Soil and Water Conservation Society (New Mexico chapter) and New Mexico Riparian Council. Will clarify issues and options for riparian conservation in Southwest.

December

10-12 *The Gulf of Mexico Symposium, "America's Sea—Keep It Shining,"* Tarpon Springs, FL. Contact: Paul Fulham, Symposium Coordinator, (800) 538-GULF. Purpose of symposium is to outline the environmental and economic status of the Gulf, address resource use and management issues, improve communications among groups, and develop strategies for marine debris, toxics, habitat, nutrients, erosion, etc.

14-15 *6th National Drainage Symposium*, Nashville, TN. Contact: ASAE, 2950 Niles Rd, St Joseph, MI 49085-9659.

1993

January

7-8 *Bear River Water Quality Symposium*, Logan, UT. Contact: Craig Thomas, Bear Lake Regional Commission, PO Box 26, Fish Haven, ID 83287. (208) 945-2333. Symposium is a cooperative effort of RC&D, Bear Lake Regional Commission, and the Ecosystem Research Institute.

10-13 *The Development of Soil and Groundwater Cleanup Standards for Contaminated Sites*, Washington, DC. Contact: Dr. Eileen O'Neill, Water Environment Federation, 601 Wythe St., Alexandria, VA 22314-1992. (703) 684-2400. FAX: (703) 684-2492.

19-20 *Stormwater Management and Combined Sewer Overflow Technology Transfer Seminar*, Contact: Ms. B. Pasian, Conference Secretary, Wastewater Technology Center, PO Box 5068, Burlington, Ontario L7R 4L7. (416) 336-4588. FAX: (416) 336-4765.

February

4-6 *Managing Riparian Areas: Common Threads and Shared Benefits*, Albuquerque, NM. Contact: Water Resources Center, University of Arizona, 350 N. Campbell Ave., Tucson, AZ 85721. (602) 792-9591. Cosponsored by USDA, SCS and Forest Service; American Rivers, EPA, Council of Energy Resource Tribes, Bureau of Reclamation, Bureau of Land Management, and University of Arizona. Will offer riparian land managers, owners, and users information about integrated management of riparian areas encompassing several jurisdictions.

8-11 *Geologic Remote Sensing: Exploration, Environment, and Engineering*, Pasadena, CA. Contact: Dr. Robert Rogers, ERIM, Box 134001, Ann Arbor, MI 48113-4001. (313) 994-1200. FAX: (313) 994-5123. Topics: Oil spill detection and monitoring, environmental remote sensing, remote sensing in marine environments, engineering and hydrology.

14-19 *Expanding Parntership and Continuing Successes: 46th Annual Meeting of the Society for Range Management*, Albuquerque, NM. Contact: Jerry Schwein, SRM, 1839 York St., Denver, CO 80206. (303) 355-7070. Symposia on excellence in range management, holistic resource management, remote sensing/GIS, Conservation Reserve Program, biodiversity, and watershed/riparian issues. Several tours, including the Bar 15 Ranch, recipient of a 1989 Award for Excellence in Grazing.

23-26 *International Erosion Control Association 24th Annual Conference and Trade Exposition*, Indianapolis, IN. Contact: IECA, PO Box 4904, Steamboat Springs, CO 80477-4904. (303) 879-3010. FAX: (303) 879-8563. Topics include: erosion control research, product standards, case studies, regulatory programs, low-tech erosion control, water resource management, wetland issues, global impacts of erosion.

1993

March

14-16 *The Next Generation of U.S. Agricultural Conservation Policy*, Kansas City, MO. Contact: SWCS, 7515 Northeast Ankeny Rd., Ankeny, IA 50021-9764. (800) THE-SOIL. Supporting the conference are USDA SCS, Extension Service, and Economic Research Service; USFWS; EPA; Pioneer Hi-Bred Int'l; Deere and Company; Monsanto Co. Additional environmental and agricultural organizations will cosponsor the conference. Purpose: to assess how current agricultural conservation policies are working and to identify what additional policies might be incorporated into future legislation, including the 1995 farm bill.

14-18 *Symposium on Geographic Information Systems and Water Resources*, Mobile, AL. Contact: AWRA, 5410 Grosvenor Lane, Suite 220, Bethesda, MD 20814-2192. (301) 493-8600.

15-18 *Riparian Ecosystems in the Humid U.S.: Functions, Values, and Management*, Atlanta, GA. Contact: Nancy Barron, Riparian Ecosystems Conf., U.S. EPA, 345 Cortland St., NE, Atlanta, GA 30365. (404) 347-2126. FAX: (404) 347-3269. Sponsored by EPA Region 4, USDA SCS, and Forest Service, NACD, the Agricultural Research Service, and other agencies.

17-19 *Rural Nonpoint Source Pollution in the Upper Midwest: Exploring Local-Level Initiatives and Effective Partnerships*, La Crosse, WI. Contact: Linda Schroeder, Conf. Manager, Nonpoint Source Conference, 282 77th St., SE, Delano, MN 55328. (612) 972-3908. Sponsored by the Zumbro/Root Rivers Joint Powers Board, EPA Region V, SCS, MN Pollution Control, MN Dept. Agriculture, MN Extension Service, IA State University Extension, University Wisconsin Extension, WI DNR and WI Dept. Agriculture, Trade & Consumer Protection. The conference will emphasize solutions that are voluntary, creative, cooperative, demonstration-oriented, and focused on prevention and the encouragement of attitudes and practices that reduce the risk of NPS. Presenters will include farmers; local, state, and federal governments and agencies; grass-roots organizations; farm groups; and agri-businesses.

May

15-21 *2nd USA/CIS Joint Conference on Environmental Hydrology and Hydrogeology*, Arlington, VA. Contact: Helen Klose, American Inst. of Hydrology, 3416 University Ave., SE, Minneapolis, MN 55414-3328. (612) 379-1030. Three short courses are planned: Groundwater Flow Modeling, Total Quality Management, Wellhead Protection. A field trip is planned to view the hydrology, geology, and environmental problems in the Washington-Baltimore urban area. Sponsored by the American Institute of Hydrology, USGS, and the Russian Academy of Sciences. Discussion of major issues related to the industrial and agricultural impact on the hydrologic environment and global climate change from industry and forestry.

Calls For Papers — DEADLINES

1992

October

31 *Managing Riparian Areas: Common Threads and Shared Benefits*, February 4-6, 1993, Albuquerque, NM. CALL FOR POSTERS. Contact: Water Resources Center, University of Arizona, 350 N. Campbell Ave., Tucson, AZ 85721. (602) 792-9591. Submit poster abstracts by October 31, 1992.

1993

January

1 *Prairie Ecosystems: Wetland Ecology, Management and Restoration*, August 9-13, 1993, Jamestown, ND. CALL FOR PAPERS. Contact: Dr. Ned Euliss, U.S. Fish and Wildlife Service, Northern Prairie Res. Center, RR 1, Box 96C, Jamestown, ND 58401. Topics: Past, Present, and Future of Wetlands; Chemical and Physical Characteristics of Wetlands; Wetland Policies, Programs, and Politics; Biological Characteristics of Wetlands; Perspectives on Wetlands; Positive and Negative Aspects of Management. Also Created and Restored Wetlands: Functions, Values, and Technologies; Wetlands in the Landscape; and Innovative Strategies for Wetland Conservation. Paper titles due by 1/1/93; abstracts by 5/1/93.

8 *Surface Water Quality and Ecology Symposium*, October 2-7, 1993, Anaheim, CA. Abstracts are invited on urban and agricultural NPS impacts and controls, waste disposal effects on estuaries and coastal areas, nutrient problems and eutrophication, water quality impacts of air emissions, stormwater impacts, river and lake management, water quality monitoring and modeling, toxicity testing, assessment of sediments, evaluation of cumulative impacts, regional planning, criteria and standards for water quality, freshwater and marine water quality and ecosystem issues. Submit abstracts by 1/8/93 to Maureen Novotne, Water Environment Federation, 601 Wythe St., Alexandria, VA 22314-1994. (703) 684-2400 ext. 7450.

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Nonpoint Source NEWS-NOTES is an occasional bulletin dealing with the condition of the environment and the control of nonpoint sources of water pollution. 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 normally associated with agricultural, silvicultural, 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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★ 1992 ★
THE YEAR OF
CLEAN WATER
Celebration & Commitment

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