



# Nonpoint Source

## News-Notes

January 2003, #70

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



### Notes on the National Scene

#### *Celebrate the 30<sup>th</sup> Anniversary of the Clean Water Act*

October 18, 2002 marked the 30<sup>th</sup> Anniversary of the Clean Water Act (CWA). The Anniversary presented an excellent opportunity to:

- Celebrate water quality improvements;
- Enhance public appreciation for the importance of our water resources and educate our nation's young people;
- Build a better understanding of remaining challenges and solutions; and
- Rekindle the public stewardship ethic and support for watershed protection programs.

In support of these goals, Congress, along with a number of the nation's Governors and national organizations, have proclaimed 2002 as the Year of Clean Water. The America's Clean Water Foundation (ACWF), a nonprofit organization formed to coordinate the 20<sup>th</sup> Anniversary Celebration in 1992, is again serving as the primary national coordinator of anniversary activities and the Year of Clean Water. ACWF coordinated a series of events throughout October 2002 to commemorate the 30<sup>th</sup> Anniversary of the CWA. These events are intended to build a base of understanding, commitment, and cooperation that will carry on and grow in subsequent years.

#### *National Events*

ACWF cooperated with several diverse organizations to host a series of watershed summits for targeted audiences. From October 6<sup>th</sup> through 10<sup>th</sup>, ACWF and the Smithsonian Environmental

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Research Center, in cooperation with Environmental Protection Agency (EPA), United States Department of Agriculture (USDA), United States Geological Survey (USGS), and National Oceanic and Atmospheric Association (NOAA), hosted the *Youth Watershed Summit*. This Summit was designed to bring together approximately 200 students and 50 teachers from across the nation to learn about watershed protection. On October 28<sup>th</sup> through 30<sup>th</sup>, ACWF and the Environmental Alliance for Senior Involvement (EASI) hosted the *Senior Watershed Summit*, a three-day watershed protection forum that convened senior citizens from across the nation. From October 30<sup>th</sup> to November 1<sup>st</sup>, ACWF cooperated with EPA, USDA, USGS, and NOAA to host the *World Watershed Summit*, an international forum designed to bring together 200 government and private sector leaders from throughout the United States and the world. This three-day summit consisted of a series of educational, work group, and plenary sessions on technical and policy issues concerning international water resource protection issues.

ACWF also collaborated on a series of conferences and events. From October 21<sup>st</sup> through 23<sup>rd</sup>, ACWF and the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) helped Delaware conduct the *Delaware Erosion, Sediment and Storm Water Management Conference 2002*. The three-day conference consisted of a series of presentations by experts who shared the latest policy, program, technology and science information in the areas of urban erosion, sediment and storm water management. On October 17<sup>th</sup> and 18<sup>th</sup>, ACWF worked with the Environmental Law Institute and the University of Virginia School of Law to host *Improving Public Participation & Governance in Water Management Symposium*, an international symposium that explored public participation and governance in watershed management across a range of scales and in a variety of cultural and political settings.

Finally, ACWF coordinated National Water Monitoring Day, officially held on October 18<sup>th</sup>. Citizen monitors, established volunteer monitoring organizations, and federal, state, tribal, and local monitoring staff from around the nation all participated by collecting water samples sometime between October 12<sup>th</sup> and 27<sup>th</sup> (to allow monitors to plan around weather conditions and other factors). The monitors then submitted their data online to ACWF, which prepared a snapshot look at water quality across the nation. The data are available for viewing on the Year of Clean Water web site ([www.yearofcleanwater.org](http://www.yearofcleanwater.org)).

### State and Local Events

Government agencies and private organizations from states around the nation also developed and registered many regional and local watershed events in support of the Year of Clean Water. These events promoted public involvement, provided education and outreach, supported technical exchange, and documented the status of water quality since the initial passage of the 1972 CWA. For example, on September 28<sup>th</sup>, the Washington State-based nonprofit group Gulf Restoration Network hosted *When the Water Runs Dry*, a public symposium designed to explore the theme of maintaining a balance between human water use and environmental needs. On October 5<sup>th</sup> and 6<sup>th</sup>, the Arkansas Watershed Advisory Group hosted the *Watersheds and the Natural State* conference, designed to educate attendees about Arkansas' natural resources and how to use the watershed approach as a method of conservation and environmental protection. Other states hosted workshops, field trips, nature walks, and other activities designed to raise water quality awareness. For a complete list of activities held by your state, or for other information about the celebration, visit the Year of Clean Water web site.

#### Water Topic of the Month

EPA also released a Year of Clean Water web site at [www.epa.gov/water/yearofcleanwater](http://www.epa.gov/water/yearofcleanwater). The site provides background on the Year of Clean Water, descriptions of national events, and a listing of water topics of the month.

January	Oceans
February	Wastewater
<b>March</b>	<b>Nonpoint Source Pollution Awareness</b>
April	Storm Water
May	Wetlands

## Nonpoint Source Outreach Toolbox Under Development

In April 2000 the states (under the Association of State and Interstate Water Pollution Control Administrators) and EPA formed the Nonpoint Source Outreach Workgroup to help address the education and outreach needs of the nonpoint source community. The Workgroup's mission is to raise public awareness and to foster behavior changes to reduce nonpoint source pollution. By conducting focus groups and consulting with behavior change experts the Workgroup researched various techniques to reach the public with a nonpoint source pollution prevention message. The Workgroup decided that the most effective way to reach the public is to provide the information and tools necessary for state and local agencies and organizations to launch their own site-specific NPS pollution outreach campaigns.

The cornerstone of the Workgroup's effort is the creation of an expandable "toolbox" of strategies and sample materials, initially geared toward changing personal behaviors in and around the home to prevent nonpoint source pollution (i.e., encouraging personal stewardship). The toolbox will contain two major parts: (1) a How-to guide for launching a local NPS pollution outreach campaign and (2) sample materials or templates (in various formats) that could easily be tailored to the community's local problems and barriers to adopting better habits.

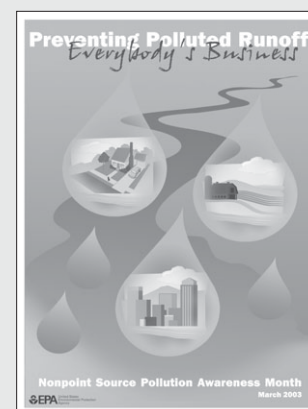
The How-to guide expands on the existing outreach guide *Getting in Step: A Guide to Effective Outreach in Your Watershed* (available at [www.epa.gov/owow/watershed/outreach/documents](http://www.epa.gov/owow/watershed/outreach/documents)), which provides guidance to states and local entities for launching NPS pollution outreach campaigns that are locally meaningful. The expanded guide will provide tips on applying community-based social marketing techniques, such as how to decide which personal behavior to focus on and which outreach tool is best suited to watershed-specific issues and target audiences. The guide also provides information on conducting outreach using mass media, printed materials, and creative, community-based events, presentations, or other outreach methods (such as watershed fairs, contests, water bill inserts, hotlines, and discount cards). A video version of the manual will accompany the guide. The 30-minute video will showcase four watershed community events around the country and the outreach techniques they used to accomplish their goals.

The updated guide and video are scheduled to be completed by early 2003, and distribution information is available at [www.epa.gov/owow/nps/outreach.html](http://www.epa.gov/owow/nps/outreach.html). The Workgroup also plans to initiate work on the second part of the toolbox (creating sample materials or templates) at the beginning of 2003.

[For more information, contact Jack Wilbur, Utah Department of Agriculture and Food. Phone: (801) 538-7098; e-mail: [jackwilbur@utah.gov](mailto:jackwilbur@utah.gov). Also contact Don Waye, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Phone: (202) 566-1170; e-mail: [waye.don@epa.gov](mailto:waye.don@epa.gov).]

### March is Nonpoint Source Awareness Month

Nonpoint source pollution impacts and prevention are being highlighted in the President's Year of Clean Water initiative. EPA has developed new brochures, fact sheets, a bookmark, and a poster to help get the word out about what citizens and government agencies can do to address nonpoint source pollution. Two of the less conventional items being used to spread the message are a crossword puzzle placemat that encourages restaurant patrons to "Take the Stormwater Runoff Challenge" and a pop-up sponge to promote low-impact development. Information on Nonpoint Source Awareness Month, including a product order form, will be available by March 1 through links at [www.epa.gov/nps](http://www.epa.gov/nps) and [www.epa.gov/water/yearofcleanwater](http://www.epa.gov/water/yearofcleanwater).



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## EPA Recruits TV Meteorologists to Raise Watershed Awareness

Millions of Americans tune into their local news each day to find out if it's going to rain on their picnic, if school will be closed because of snow, or if it will be too hot to go jogging. EPA hopes that when they do so, they can learn a little about their watershed and water quality while they are at it. On June 26, 2002, Governor Christine Todd Whitman, EPA Administrator, spoke to meteorologists from across the country about the role they can play in bringing environmental information to the public. Whitman spoke as part of the *Eyes on the Environment* workshop at the American Meteorological Society's (AMS) 31<sup>st</sup> Conference on Broadcast Meteorology in Williamsburg, Virginia.

In her remarks, Whitman noted that, "we know that Americans trust you as a source of credible information. We also know you have the experience and the tools to make science real and accessible to people in just a minute or two, day in and day out. My long range forecast for this effort is simple: together, we will help people everywhere better understand what a watershed is and how important sensible watershed management is to meeting the water challenges we face in the years ahead."

The AMS and EPA co-sponsored the workshop, which was attended by approximately 130 broadcast meteorologists. The goal of the workshop was to provide information on watersheds and demonstrate to weathercasters the process of bringing watershed information to their viewers. AMS's Executive Director, Dr. McPherson, said that he envisions the meteorologist as the "station scientist"—the person that the station turns to when science issues arise, particularly environmental ones. "I would also like to see AMS Sealholders (meteorologists meeting established criteria for scientific competence and effective communication skills in their broadcast presentations) increasingly regarded by the public as reliable sources of information on a broader range of environmental issues. *Eyes on the Environment* will help our broadcasters achieve that."

The workshop showcased an innovative Chesapeake Bay program launched by Washington D.C.'s NBC4, in partnership with the National Environmental Education and Training Foundation (NEETF), USDA Forest Service, and others, in February 2002. Bob Ryan, Chief Meteorologist for NBC4, showed a video clip from the February news launch, which included an interview with Whitman, and a 3-minute segment on the Chesapeake Bay. The feature showed a dramatic zoom-in from outer space to a close-up of the 64,000 square-mile watershed. The zoom-in, developed by StormCenter Communications, used a series of stunning NASA satellite images and provided viewers with a powerful visualization of the expansive Chesapeake Bay. Ryan also demonstrated the station's interactive web site, *Where the Atmosphere Meets the Earth* ([www.watershed.interactive-environment.com](http://www.watershed.interactive-environment.com)).

The NBC4/Chesapeake Bay pilot project has since aired several other watershed-related stories, including an interview with USDA Forest Service Chief Dale Bosworth, who discussed the role of forests and trees in providing healthy watersheds and clean water and the threats to the nation's forests from urbanization, fire, and other factors. In March, Bob Ryan also helped promote the annual Potomac River watershed cleanup during a weather report and encouraged viewers to visit the web site for more information. Feedback on the Chesapeake Bay project has been overwhelmingly positive. Dan Parks, a resident of Rockville, Maryland, wrote, "This site is probably the smartest thing I have ever seen a television station do in a long time. Finally I can find out how to participate in cleaning up my neighborhood. Kudos to Bob Ryan and his weather team! I have always watched the weather on Channel 4 and it is good to know I have chosen a winner!" NBC4 also posts weekly news stories about watershed-related issues on its web site, including a number of updates about the drought plaguing the Mid-Atlantic.

While the Chesapeake Bay is the focus for this pilot project, the long-term goal is to encourage and train other broadcast meteorologists across the country to talk about weather, watersheds, and other timely environmental issues. Weather events, such as droughts, floods, and hurricanes

directly impact the quality of our water resources. Teaming up with local news meteorologists could be an extremely effective tool to teach people about watershed issues. Consider the following:

- More people tune in to the weather report on television than any other segment of local news reporting, including sports.
- Weather reports use visual images to communicate complex scientific terms and ideas. 'Satellite data' and 'doppler radar' are two examples that now are part of the mainstream vernacular.

Other stations across the country have been broadcasting watershed issues for several years, including:

- WWLTV, New Orleans, Louisiana, which provides bacteria counts in Lake Ponchartrain, [www.wwltv.com/weather/lakequal.html](http://www.wwltv.com/weather/lakequal.html)
- Weathercaster Loren Nancarrow, KGTV, San Diego, California, who gives "Environmental Field Notes," [www.thesandiegochannel.com/weather](http://www.thesandiegochannel.com/weather)
- WPTZ, Lake Champlain, Vermont, which broadcasts weekly news stories about Lake Champlain activities, [www.thechamplainchannel.com/champlain2000](http://www.thechamplainchannel.com/champlain2000)

- Web sites affiliated with local news broadcasts receive significant hits each month.
- Weather broadcasters and watersheds are a natural link; the very functioning of a watershed begins with the weather.

The weather reports provide a unique opportunity for public understanding of complex natural systems. A television meteorologist can incorporate into the weather report a series of do's and don'ts around the house and in the yard. In the long-term, weather forecasts offer an ideal opportunity for meteorologists to convey important environmental information that is relevant to the American public.

This growing partnership effort with broadcast meteorologists represents an important first step in meeting one of the key recommendations that emerged from last year's National Watershed Forum. The delegates to the Forum endorsed a national media campaign to educate Americans about watersheds. If the vision for this project is ever fully realized, 'watershed' may one day become a household word. Readers are encouraged to work with their local television

meteorologist to share watershed, stream, and lakes-related messages on the air.

[For more information, contact Patricia Scott, U.S. Environmental Protection Agency, Mail Code: 4501T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Phone: (202) 566-1292; e-mail: [scott.patricia@epa.gov](mailto:scott.patricia@epa.gov). For the full text of the Administrator's speech, as well as other background on this project, visit [www.epa.gov/owow/watershed/weather](http://www.epa.gov/owow/watershed/weather).]

## Up and Coming NPS Management Measures

EPA continues to finalize the National Management Measures guidance series. Each document is a technical guidance and reference document for use by local, state, and tribal managers in the implementation of nonpoint source pollution management programs. Following is a brief update on the up and coming guidances.

- The draft *National Management Measures to Control Nonpoint Source Pollution from Urban Areas* is open for public review and comment at [www.epa.gov/owow/nps/urbanmm/index.html](http://www.epa.gov/owow/nps/urbanmm/index.html). It contains information on the best available, economically achievable means of reducing pollution of surface and ground water from urban areas. Please send comments by January 15, 2003, to Rod Frederick, EPA, at [frederick.rod@epa.gov](mailto:frederick.rod@epa.gov).
- The *National Management Measures to Protect and Restore Wetlands and Riparian Areas for the Abatement of Nonpoint Source Pollution* will be finalized in December 2002. This guidance is intended to provide the best available, economically achievable means of reducing nonpoint source pollution of surface and ground water through the protection and restoration of wetlands and riparian areas, as well as the implementation of vegetated treatment systems. A copy of the draft document can be found at [www.epa.gov/owow/nps/](http://www.epa.gov/owow/nps/)

[wetlands.html](http://wetlands.html). CD-ROM copies can be requested from Chris Solloway, EPA, at [solloway.chris@epa.gov](mailto:solloway.chris@epa.gov).

- The *National Management Measures to Control Nonpoint Source Pollution from Forestry* is nearly complete. A draft was made available for public review and comment last fall. The final version, modified based upon comments received, will be available for distribution in December 2002. For more information, contact Chris Solloway.
- The *National Management Measures to Control Nonpoint Source Pollution from Agriculture* is also nearing completion. The draft guidance was announced in the *Federal Register* on October 17, 2000. A final guidance is expected this winter. For more information contact Stuart Lehman, EPA, at [lehman.stuart@epa.gov](mailto:lehman.stuart@epa.gov).

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## News from States, Tribes, and Localities

### *Comprehensive Runoff Control Rules Going into Effect into Wisconsin*

The State of Wisconsin is taking a new approach to controlling polluted runoff. A few years ago, the Wisconsin Legislature and the Governor were faced with bad news – urban and rural sources of polluted runoff were the leading cause of surface and groundwater quality problems in Wisconsin and posed a long-term risk to the state's water resources. In response, the Legislature directed the Wisconsin Department of Natural Resources (DNR) to develop performance standards to control polluted runoff from both agricultural and non-agricultural activities. On October 1, 2002, these performance standards finally went into effect after years of hard work and compromise by DNR staff and diverse stakeholders statewide.

#### *A Long Road*

To develop the standards, DNR worked with the other state agencies that have pollution control responsibilities: Wisconsin's Department of Agriculture, Trade and Consumer Protection and its Departments of Commerce and Transportation. DNR relied on a diverse advisory committee and several work groups to provide feedback and recommendations during the design process. To ensure public awareness and involvement, DNR and its partners hosted 34 public hearings in 17 locations around the state in 2000 and 2001. DNR staff made significant revisions to the draft performance standards based on more than 4,000 verbal and written comments received during the comment period. As a result, "Wisconsin now has the most comprehensive set of performance standards in the country," says DNR's Carol Holden. "We are the first state to implement comprehensive rules for agricultural, non-agricultural, and transportation-related activities."

#### *Non-Agricultural Standards*

The non-agricultural performance standards address activities in developed urban areas, fertilizer application on large turf areas, and construction and post-construction phases of commercial, residential, and transportation-related development areas. The non-agricultural standards include requirements such as controlling post-construction runoff, capturing and infiltrating runoff on site, implementing protective buffers around water bodies, and implementing storm water management plans in developed urban areas (see box).

"The non-agricultural performance standards mirror the Storm Water Phase II requirements for municipalities but go a step further and define them," explains Holden. "For instance, the construction performance standard requires the construction erosion control plan to identify BMPs that will reduce sediment loss by 80 percent. The illicit discharge and pollution prevention Phase II requirements are defined in our developed urban area performance standard. We included a requirement for municipalities that apply fertilizers to pervious areas of 5 acres or more to do so in conformance with a fertilizer application plan based on a soil test. We created an additional performance standard that requires the same thing of non-municipal turf areas, such as private golf courses."

## Agricultural Standards

Agricultural performance standards and prohibitions are intended to protect water quality by minimizing the amount of soil erosion, nutrients from manure and croplands, and other agricultural nonpoint source pollutants that enter waterways. The agricultural standards include requirements such as reducing sheet, wind, and rill erosion on cropland; minimizing risk of failure, leakage, or overflow when installing, altering, or closing manure storage facilities; diverting clean runoff away from areas with pollution potential (i.e., barnyards, feedlots); following a nutrient management plan; and properly managing manure. For a complete description of both the agricultural and non-agricultural performance standards, as well as the timeline for implementation, see [www.dnr.state.wi.us/org/water/wm/nps/admrules.html](http://www.dnr.state.wi.us/org/water/wm/nps/admrules.html).

### Implementing the Standards

Implementation and enforcement of the standards and prohibitions will occur primarily at the local government level (counties and municipalities). The rules will be phased in through 2013. Although DNR has ultimate enforcement authority, its implementation responsibilities are intended to be limited to those areas where local units of government do not implement or enforce

the rules. In these cases, the DNR will be targeting its efforts at high priority water quality areas, such as waters designated by the state as Outstanding and Exceptional Resource Waters, waters on the federal list of impaired waterbodies, and source water protection areas.

The new standards will impact a variety of stakeholders, including local governments, golf course and parkland managers, and farmers. While an urban grant program is available to fund some projects, many local governments and large acreage turf grass owners must identify their own funding mechanisms for long-term implementation and operation/maintenance of the non-agricultural performance standards. "Local governments can raise fees through the creation of storm water management utilities that can include previously tax-exempt entities," explained Holden.

To avoid placing an excessive economic burden on the farmers, the farmers are not expected to comply with the standards without financial assistance. "We can't enforce the standards unless we provide cost-share to the farmers—at least 70 percent and sometimes more in cases of economic hardship." However, cost sharing is not required for new facilities/practices or for practices required of a livestock operation with a Wisconsin Pollutant Discharge Elimination System Permit (those facilities with more than 1,000 animals).

If the rule is implemented for more than 10 years, the annual cost is estimated at \$65 million. "Statewide implementation is not going to

happen overnight," added Holden. "The recent budget shortfalls may limit how quickly the rules are applied and enforced at the local and state levels. However, once the law is on the books localities have a means for enforcement—something they did not have before," explains Holden. "We look at these standards as another mechanism to help local conservation staff members get their job done."

[For more information contact Carol Holden, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, WI 53707. Phone: (608) 266-0140; e-mail: [carol.holden@dnr.state.wi.us](mailto:carol.holden@dnr.state.wi.us); Internet: [www.dnr.state.wi.us/org/water/wm/nps/admrules.html](http://www.dnr.state.wi.us/org/water/wm/nps/admrules.html).]

### Applying the Standards at the Local Level

All local governments in Wisconsin's developed urban areas (population densities of greater than 1,000 people per square mile) must implement a storm water management plan that includes public education, leaf and grass management where appropriate, application of nutrients on municipally owned property in accordance with a nutrient application schedule, and detection and elimination of illicit discharges. Public education programs are to address proper management of leaves, grass clippings, lawn and garden fertilizers and pesticides, pet wastes, oil and other chemicals to reduce polluted runoff.

"We anticipate that the DNR and the local governments will work together to educate the public," explains DNR's Carol Holden. "The localities will use materials that are developed or identified by the DNR. To better prepare the affected municipalities, the DNR plans to offer a series of outreach activities for local government staff during the next year."

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## *States Show the Money for the Environment!*

Many states are finding innovative ways to fund water quality projects these days. In the past, state and local programs depended on the Clean Water Act State Revolving Fund and EPA section 319 grant program to fund nonpoint source pollution projects in their communities. States are increasingly relying on a greater diversity of programs to boost environmental funding. Nothing is out of the question. State lottery proceeds, license plate funds, state general funds, bond referenda, and targeted taxes and credits are all being used to protect our waters from nonpoint source pollution.

### *Watersheds Win the Lotto!*

Over the years state lotteries have donated proceeds to various projects including education, gambling addiction prevention, and state general funds. Many state lotteries, including Arizona, Colorado, Nebraska, Oregon, and Minnesota, are now also dedicating a portion to environmental issues.

The Nebraska Power Ball Lottery donates 49 percent of its proceeds to the Nebraska Environmental Trust Fund ([www.environmentaltrust.org](http://www.environmentaltrust.org)), which in turn distributes the money to public and private watershed stakeholders through an environmental grant program. The Trust gives priority to projects that address one or more of four areas: habitat, surface and ground water quality, waste reduction, and carbon management. Previously funded projects have ranged from hosting household hazardous waste collection events and installing recycling trailers to improving runoff management, installing cropland buffer strips, and restoring stream corridors. Since 1994, the Trust has awarded more than 700 grants totaling \$64 million.

The Minnesota Lottery ([www.lottery.state.mn.us/moneygo.html](http://www.lottery.state.mn.us/moneygo.html)) also directs funds to benefit the environment. The lottery channels 40 percent of lottery net proceeds, or about 6 cents of every dollar spent on lottery tickets, into the Minnesota Environment and Natural Resources Trust Fund ([www.lottery.state.mn.us/etf.html](http://www.lottery.state.mn.us/etf.html)). Typically the Trust Fund receives approximately \$25 million each year to finance projects that restore, preserve, and enhance the state's natural resources. Since the lottery began in 1990, the Trust Fund has financed 217 projects totaling more than \$108 million. Since 2000, at the Minnesota Legislature's direction, the lottery has channeled an additional 40 percent of lottery net proceeds to two state funds—the Fish and Game Fund and the Natural Resources Fund. The state uses these funds to support projects ranging from development of recreation facilities to wetland restoration. The remaining 20 percent of lottery proceeds fund public education, health and human services, and public safety programs.

### *License Plate Funds Improve the Environment*

Many states have turned to specialty license plates to help earn money for the environment. Special designs dedicated to environmental protection improve citizen awareness and sell quickly once drivers know their fees go to help protect local watersheds. Typically the annual cost for a specialty license plate is between \$20 and \$40 more than a standard license plate. A portion of the extra fee is retained by the motor vehicle agency to pay administrative costs, and the remainder is directed to environmental protection.

Many states offer specialty plates that support the efforts of state agencies to implement conservation projects. For instance, Virginia recently developed a "Wildflower" plate that supports the Department of Transportation's efforts to incorporate native plants in its roadway landscaping and stabilization projects. Tennessee's "Natural Areas" license plate channels money into the State Lands Acquisition Fund, through which a number of conservation-related state organizations acquire unique natural areas for state parks, state forests, state natural areas, boundary areas along state scenic rivers, and easements.

Many states also offer specialty plates that support local, statewide, or national conservation organizations. These organizations then ensure the license plate funds are used to implement its specific conservation mission. California offers a Lake Tahoe plate that provides funding for



various environment restoration and enhancement projects undertaken by the nonprofit Tahoe Conservancy or local governments under contract with the Conservancy. Florida offers a “Conserve Wildlife” license plate that provides funds to the Wildlife Foundation of Florida, Inc., a nonprofit organization supporting habitat protection and restoration activities of the Florida Fish and Wildlife Conservation Commission. A number of states, including Texas, Tennessee, North Carolina, and Pennsylvania, offer “Ducks Unlimited” plates that support wetland restoration efforts.

Many states channel environmental license plate proceeds into environmental trust funds. Indiana offers an environmental license plate that supports the Indiana Heritage Trust Program’s statewide efforts to acquire, preserve, and enhance land for new and existing state parks and forests, nature preserves, fish and wildlife areas, wetlands, trails, and river corridors. Massachusetts offers three different specialty conservation license plates, the proceeds from which are directed to the Massachusetts Environmental Trust for providing grants to educate the public and preserve the state’s environment.

Some state programs are more localized in nature. The New Jersey Meadowlands license plate supports the efforts of the Meadowlands Conservation Trust, a public/private partnership, to acquire environmentally valuable land and to preserve and enhance the environment of the Hackensack Meadowlands District and the Hackensack River Watershed.

#### *Making General Funds Work for the Environment*

North Carolina dedicates a portion of its surplus general funds (an account created by revenues and other income sources to maintain and operate all state agencies) to support the environment. In 1996 North Carolina’s General Assembly established the Clean Water Management Trust Fund (CWMTF) to help finance projects that specifically address water pollution. At the end of any fiscal year with a surplus, 6.5 percent of the unreserved credit balance in North Carolina’s General Fund (or a minimum of \$30 million) goes into the CWMTF. Grantees may use money from the CWMTF to acquire land or easements for riparian buffers or watershed protection; to restore wetlands, buffers, and watershed lands; to repair failing wastewater treatment systems; and to improve storm water controls and management practices. Since 1997 the CMTWF ([www.cwmtf.net](http://www.cwmtf.net)) has funded 234 projects for a total of \$211 million, including a recent water-front/greenway project designed to reduce the negative effects of nonpoint source runoff by constructing a storm water treatment wetland.

#### *Letting Voters Decide*

Many states are asking their voters to direct state money spending—and those voters are choosing natural resource protection. Voters in Florida and California recently supported their state’s sale of bonds to support nonpoint source pollution prevention and other conservation projects. How do bonds work? Rather than going to a bank and asking for a loan, the state sells bonds, which is like asking investors for a loan. In return, investors receive interest on a regular basis, plus the full repayment of the loan at the end of the term.

In November 1998 Florida citizens voted on whether they wanted to support passage of the Florida Forever Program. Over 72 percent of voters said yes. This 10-year, \$300 million dollar per year program requires the state to adequately provide for conservation of natural resources and authorizes the sale of bonds to finance acquisition and improvements of land for conservation, outdoor recreation and related purposes. Florida also issues other previously approved conservation bonds that fund construction of pollution control facilities, storm water management, and cleanup of contamination from leaking petroleum storage tanks. For more information see [www.dbf.state.fl.us/cafr2001/bonded\\_debt\\_info.pdf](http://www.dbf.state.fl.us/cafr2001/bonded_debt_info.pdf).

California voters supported similar efforts. In March 2000 California voters approved Proposition 13, the Costa-Machado Water Act of 2000 (2000 Water Bond), authorizing the state to sell \$1.97 billion in general obligation bonds to support nonpoint source control, safe drinking water, flood

protection, and water reliability projects throughout the state. For more information on California's Water Bond Program, see [www.swrcb.ca.gov/prop13/index.html](http://www.swrcb.ca.gov/prop13/index.html).

#### *Targeted Taxes and Tax Credits*

Some states, such as New Jersey, rely on specific taxes to support natural resource protection. Each year the New Jersey Department of Environmental Protection receives \$5 million from state corporate business tax receipts to implement watershed management and nonpoint source pollution control efforts. For more information see [www.state.nj.us/dep/watershedmgt/financial\\_resources.htm](http://www.state.nj.us/dep/watershedmgt/financial_resources.htm).

Instead of taxing its businesses to fund nonpoint source pollution control, the state of Oregon now offers tax credits. Oregon allows entities to claim "pollution control facilities tax credit" to cover expenditures for on-the-ground management practices and improvements, including plans, projects, or strategies to reduce or control nonpoint source pollution. In essence, this program subsidizes businesses for their efforts to reduce nonpoint source pollution. More information about Oregon's pollution reduction tax credit program may be found at [www.deq.state.or.us/msd/taxcredits/factsheets/2002NPSfactsheet.pdf](http://www.deq.state.or.us/msd/taxcredits/factsheets/2002NPSfactsheet.pdf).

These diverse funding options, ranging from lottery proceeds to tax credits, are becoming more prevalent as states seek more innovative ways to fund their nonpoint source protection and other conservation projects. These efforts will be rewarded as communities around the country continue to demand better environmental quality and protection.

[For more information about nonpoint source pollution funding, visit [www.epa.gov/owow/nps/funding.html](http://www.epa.gov/owow/nps/funding.html).]

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### *An Environmental Management System—Making a Difference in Virginia*

The Virginia Department of Environmental Quality (DEQ) is leading by example. In June 2001 the DEQ completed what is thought to be the first ISO 14001-compliant state agency environmental management system (EMS) in the country. An EMS is a tool that helps an organization achieve its environmental obligations and performance goals by providing a methodology to systematically evaluate and manage environmental activities, products, and services. Implementing an EMS is still voluntary but is encouraged by the EPA and other organizations that have seen the economic and environmental benefits an EMS can provide. DEQ's EMS has led to several operational changes, including the installation of energy-saving devices, implementation of a water conservation plan, and development of a rain garden to capture and treat parking lot runoff.

#### *The EMS Process*

DEQ's EMS is based on ISO 14001, the International and American National Environmental Management System Specification developed by the International Organization for Standardization, located in Geneva, Switzerland. The ISO 14001 EMS is designed to ensure a continual cycle of planning, implementing, reviewing, and improving the actions that an organization takes to meet its environmental obligations. DEQ tailored the basic ISO 14001 EMS to suit its needs. "Although some businesses and local governments throughout the country have completed ISO-compliant environmental management systems, we believe Virginia DEQ is the first statewide agency to take the initiative to implement one," explained Harry Gregori, Jr, who heads DEQ's Division of Pollution Prevention and Compliance Assistance.

DEQ challenged all businesses and industries in Virginia to also complete a voluntary EMS. By developing one itself, DEQ has demonstrated that an EMS can be developed at a reasonable cost and yield economic and environmental benefits. And the timing couldn't have been better. "In the state's current budget crisis, the cost savings will allow us to better serve the public with our current resources," explained Robert Burnley, DEQ Director. DEQ also wanted to complete the EMS process to raise the agency's awareness about the importance of daily job-related activities and how those activities can impact the environment.

DEQ developed its EMS over a six-month period, relying on the leadership of an EMS workgroup made up of representatives from each of DEQ's regional offices as well as every major central office division. The workgroup met twice a month and focused on a different element of the EMS at each meeting. Between sessions, an EMS consultant assembled meeting materials to review, finalize, and report on at the next meeting. DEQ estimates that it spent \$60,000 (2,000 hours at approximately \$30/hour) on staff time to develop the EMS. In addition, DEQ used an EPA EMS pilot project grant to cover the EMS consultant's \$15,000 fee. The effort is anticipated to provide long-term cost savings and environmental protection through the implementation of its EMS.

DEQ selected a 25 percent reduction in solid waste generation by June 30, 2006, as its primary environmental objective. Among 50 additional areas to be addressed through the EMS, DEQ committed to assess and identify actions to reduce energy consumption; reduce nonpoint source runoff from DEQ facilities; promote green procurement for goods and services; and communicate to both internal and external stakeholders about the status of the EMS.

### Rain Garden to the Rescue!

According to Sharon Baxter, Director of the Office of Pollution Prevention, DEQ staff members around the state are actively working to implement the EMS. "Staff sponsored activities are an excellent way of demonstrating the power of individuals in promoting organizational change to improve the environment," explained Baxter.

Ron Phillips, Planning and Permit Support Manager in DEQ's Valley Regional Office in Harrisonburg, Virginia recently led the installation of a rain garden to capture and treat runoff from the office building roof, sidewalks, and parking lot. "To determine potential impacts from storm water runoff, the EMS requires each DEQ facility to assess watershed sensitivity, measure impervious surface area, and visually inspect storm water runoff," explained Phillips.

To minimize impacts from storm water runoff, the EMS also directs the DEQ to consider the amount of impervious surface area when it considers Requests for Proposals for property leases. The Valley Office's facility has approximately 69,000 square feet of impervious surface. Phillips' team estimated that roughly one-third to one-half of the runoff from these surfaces was absorbed by grassy areas or by roadside ditches. The rest flowed through a grassy ditch into a nearby stream, which happens to be on Virginia's 303(d) list of impaired waters. Their initial visual inspection of runoff in the ditch revealed the presence of petroleum products and sediment, and they assumed that it also contained measurable quantities of metals, nutrients, and bacteria. They realized that the storm water impact of their site could easily be reduced if they installed a rain garden.

By relying on grant funds and donations of materials and services, Phillips kept the cost of the 1,000 square foot rain garden to a minimum. Except for staff time to plan and plant the rain garden, DEQ incurred no other costs. "By installing the rain garden in the days before Earth Day and showcasing it on an Earth Day bus tour, we were able to capitalize on the goodwill of local sponsors who were interested in the publicity that our project offered. We had

generous donations of soil amendments, equipment, and labor from a local excavating company and mulch and trees from two area landscape companies. Grants from the Virginia Department of Forestry and the Shenandoah Valley Pure Water Forum, a local non-profit group, covered the remaining plants and materials that we needed to complete the rain garden. In all, the donated items totaled approximately \$3,000."



**DEQ staff member spreads mulch in the rain garden.**

Phillips partnered with the local Virginia Department of Forestry office to plan and design the rain garden. To keep costs low they chose to place the rain garden along an existing drainage ditch on the property, reshaping it to be flatter and wider to slow water flow and encourage infiltration. To prepare the site, the contractor excavated 6 inches of clay soil and replaced it with a mixture of sand, topsoil, composted leaves, and mulch. The sand encouraged infiltration, the topsoil provided the plants with adequate nutrients, and the organic material helped trap pollutants. Staff members from the Valley Regional Office helped plant water-tolerant grasses, shrubs, and trees and spread mulch. "In spite of record drought in Virginia, our rain garden is holding up quite nicely. We have a few trees and perennials to replace, but aside from pulling a few weeds and adding a yearly layer of mulch, we don't anticipate spending any more time on the project— except maybe to show it off." To view pictures of the rain garden installation, see [www.deq.state.va.us/raingarden](http://www.deq.state.va.us/raingarden).

## *The EMS Makes a Difference*

Although in place for only slightly more than a year, DEQ has made progress toward its EMS goals. “We have instituted a fairly aggressive energy savings program in the offices and on the road,” explained Gregori. “We have reduced the number of department vehicles with poor gas mileage and replaced some with hybrid vehicles. We are also reducing paper use by increasing the amount of electronic format reporting, increasing our recycling efforts in the offices, and encouraging staff to double-side both printing and copying.” DEQ is also focusing on protecting water quantity and quality, said Gregori. “DEQ recently completed a model for water conservation in its facilities that several other Virginia state agencies are now using.” In addition, this past spring one of the DEQ regional offices installed a rain garden to capture and treat runoff from its facility (see box for more information).

“These and other changes have saved money and reduced our impact on natural resources,” explained Gregori. DEQ staff members are still reviewing the data from the first year for the entire agency and can’t yet quantify the full impact of the EMS. However, limited data, such as that from the Roanoke regional office, indicates that kilowatt hour usage was reduced by 7 percent for the year May 2001–2002 when compared to the previous year. Gregori added, “We expect to be able to use our data to show other organizations the many benefits of an EMS.”

*[For more information on the DEQ EMS, contact Harry E. Gregori, Jr., Virginia DEQ, P.O. Box 10009, Richmond, VA 23240. Phone: (804) 698-4374; e-mail: [hegregori@deq.state.va.us](mailto:hegregori@deq.state.va.us). For more information about the DEQ Valley Regional Office rain garden, contact Ron Phillips, DEQ Valley Regional Office, P.O. Box 3000, Harrisonburg, VA 22801. Phone: (540) 574-7800; e-mail: [rdphillips@deq.state.va.us](mailto:rdphillips@deq.state.va.us). For more information on the DEQ Environmental Policy Statement and EMS Manual, visit [www.deq.state.va.us/p2/ems.html](http://www.deq.state.va.us/p2/ems.html). For more information on the ISO program, visit [www.iso.ch](http://www.iso.ch)]*

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## Agricultural Notes

### *Local Cooperation Makes All the Difference in Minnesota*

One Minnesota county’s efforts to reduce the amount of nonpoint source pollution reaching its local lakes has met with great success, thanks in part to the support of local officials. The officials played a large role in convincing farmers to install filter strips and riparian buffers that slow runoff from nearby fields, capture suspended sediment, and absorb nutrients. More than 12,000 acres have been enrolled in various programs since Grant County started its buffer initiative in 1998. Program managers attribute much of the success to the willingness of town board members, county supervisors, and other local officials to actively participate in the initiative and promote it to others.

#### *Why Implement the Buffer Initiative?*

In the early 1990s the Grant County Soil and Water Conservation District (GSWCD) and other local agencies worked together to collect water quality monitoring data and develop trophic state indices for many of the local lakes (for more information about Trophic State Indices see [www.epa.gov/bioiweb1/aquatic/carlson.html](http://www.epa.gov/bioiweb1/aquatic/carlson.html)). These indices showed that all of the lakes in the county were either threatened or impaired. “We took this information to the local officials, many of whom are also farmers in the watershed. At that time the Conservation Reserve Program (CRP) was just starting up, and officials noted that installing buffers using CRP funding would be a good way to address the water quality problems. Since the landowners themselves initiated the idea, we decided it was worth pursuing,” explains Joe Montonye with the GSWCD.

#### *Cooperating to Develop a Successful Program*

GSWCD staff worked closely with the county’s Land Management Department to develop a proposal and plan for implementing a buffer strip initiative. Local officials—Grant County commissioners, members of the county planning commission, and the GSWCD board of supervisors—signed off on the proposal in 1998 and began work immediately. Using a grant from the Minnesota Board of Soil and Water Resources, the GSWCD funded a technician to analyze maps

## What's Next?

Although the GSWCD has met its goal of 12,000 acres of riparian buffers and filter strips, work still remains. When the GSWCD developed the initial goal, they looked at the buffer acreage that would be needed along streams, rivers, and lakes to offer the greatest water quality improvement. However, a number of landowners living along sensitive areas (e.g., intermittent streams, drainage ditches) located slightly apart from the primary waterbodies also qualified for and participated in the buffer program. The GSWCD plans to continue working with landowners to implement buffers along all primary waterways.

and identify potential buffer sites. The technician used a geographical information system (GIS) to identify where cropland areas existed within 100 feet of each bank of a lake, river, or stream. By assuming that a 100-foot buffer was needed between cropland and each waterbody, the GSWCD and the county developed a goal of installing 12,000 acres of new riparian buffers and filter strips.

To inform the landowners about the program, the GSWCD developed a letter explaining the economic and environmental benefits of riparian buffers. The GSWCD technician also prepared an aerial photo for each landowner, indicating the areas on their property best suited for buffers, to be included in each mailing. "With past program promotions, we've had many landowners calling or coming by to ask whether their property qualified. In this case it seemed most efficient to let them know in advance that their land did qualify," said Montonye. The GSWCD mailed this information to the landowners, along with a letter from the township board of supervisors endorsing the initiative. The county commissioners sent a follow-up letter to reaffirm the benefits of buffers and encourage participation.

*Local Cooperation  
Makes All the  
Difference in  
Minnesota  
(continued)*

### *Walking the Walk*

The local officials did more than pay the program lip service. "The involvement and support of the local officials was one of the keys to our success. They established buffers on their property and encouraged their neighbors to do the same," says Montonye. "Getting them on board required more work at the beginning—we had to attend numerous meetings and explain the concept—but it paid off in the long term." All five of the conservation district supervisors and four county commissioners who owned agricultural land in the watershed installed buffers. Approximately 40 of the 48 township level officials owning agricultural land followed suit. Conservation district supervisor Roger Schoephoerster established a 60-foot filter strip along a tributary of the Pomme de Terre River that runs through a corner of his property, calling the initiative "a heck of a good program and it works." The example set by the local officials showed many private landowners that the buffer program would prove beneficial.

Financial incentives for landowners also convinced many to participate, explains Montonye. "Whenever you can get a premium price for environmentally sensitive land that sometimes isn't very productive it probably makes economic sense." Federal and state cost-share programs, including the Continuous CRP, Wetland Reserve Program, Conservation Reserve Enhancement Program, and the Reinvest in Minnesota Reserve, provided varying amounts of money to landowners to take their land out of production and convert it to riparian forest or vegetated filter strips.

The cooperation of all the local agencies played another key role in the program's success, says Montonye. "All of our local agencies worked very well together to develop and implement the program." GSWCD and county staff cooperated to develop the program, educate local officials, and communicate program information to the public. Both the GSWCD and the county continue to serve as strong advocates for the program. Local Farm Service Agency and Natural Resources Conservation Service personnel work with the farmers to identify an appropriate compensation program and to install the buffers. Other than the initial challenge grant supporting the GSWCD's technician, the agencies completed the buffer initiative using their normal operating funds.

### *Is the Buffer Initiative Making a Difference?*

Program managers are relying on a network of community volunteer water quality monitors collecting Secchi disk data to assess whether the buffers make a difference. "Although it is too soon

after implementation for significant changes to appear in the data, the general feeling by the monitors is that the water quality is improving,” says Montonye.

The program continues to gain new supporters. “Just recently a local official said to me ‘I wasn’t really in favor of this program at the beginning, but I have to say that I now think it is the best thing we’ve ever done.’” notes Montonye. This change in attitude is common, he adds, and has given the program new momentum. “Peer pressure is an amazing thing. When everyone else is speaking favorably about the program it is tough to be a dissenter.” Grant County serves as a model for us all—by working hard to educate and involve local officials and other prominent local stakeholders, they achieved consensus on a frequently controversial issue.

*[For more information on the Grant County Buffer Initiative, contact Joe Montonye, Grant County Soil and Water Conservation District, 17 Central Ave N, Elbow Lake, MN 56531. Phone: (218) 685-5396; e-mail: [joe.montonye@mn.usda.gov](mailto:joe.montonye@mn.usda.gov).]*

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## *Louisiana Master Farmer Program Fights Agricultural NPS Pollution*

With 340 Louisiana stream segments listed on the 303(d) impaired waters list and public concern for agricultural runoff gaining momentum, the Louisiana Farm Bureau and the Louisiana State University Ag Center decided to find a solution for agricultural nonpoint source pollution. The Louisiana Master Farmer program pulls resources from various organizations and provides farmers and the public with tools to better their environment. The statewide program offers farmers solutions based on environmental stewardship education. Carrie Borel, Ag Center, describes the program as a “voluntary approach to address agricultural nonpoint source or other water quality challenges by educating, adopting, and implementing proven agricultural BMPs in each watershed throughout the state. The strength in the program comes from the multi-agency participation as well as from commodity organizations and the Farm Bureau.”

Combined efforts from the Ag Center, Louisiana Farm Bureau, Louisiana Department of Agriculture and Forestry, Louisiana Department of Environmental Quality, Louisiana Department of Natural Resources, and USDA Natural Resource Conservation Service (NRCS) made the idea a reality. Each of the state agencies contributes through funding or technical assistance, and the Ag Center acts as program coordinator. Federal funds are also used to support the implementation, and in FY 2003, EPA section 319 funds will assist in BMP implementation on the model farms. The program also plans to use the USDA’s Environmental Quality Incentives Program (EQIP) and Conservation Reserve Program (CRP) for implementation funding.

Farmers apply for the Master Farmer Program by submitting an application to the Ag Center. Once enrolled, farmers take courses on farm production, management, and marketing components. Each component consists of twelve course hours in addition to actual implementation on their farm. Classes are offered in each of the 12 major Louisiana watersheds at community centers. Farmers can expect the program to last for approximately 3 years when upon successful completion, they are certified as Master Farmers.

Participating farmers must complete three components to become certified Master Farmers. The first phase consists of environmental and BMP education through classroom lectures and discussion. The NRCS provides course materials on conservation plans, and local soil and water conservation districts offer information on area BMP activities. The second phase consists of model farm (farms of previously certified Master Farmers) visits, where enrolled farmers visit sites in their watershed where BMPs have already been implemented. The third phase is the development and implementation of site-specific comprehensive conservation plans including the implementation of cost-effective BMPs on the participant’s farms.

The Master Farmer program is a unique, statewide, and successful comprehensive watershed based approach to controlling agricultural nonpoint source pollution. Currently, the program lists more than 250 enrollees including cotton, sugar, and rice growers, and cattle ranchers. The farmers in Louisiana are excited about the program and the opportunities it creates, and enrollment continues

to grow. Other states, such as Mississippi, have shown interest in starting similar programs due to the success of the initial push in Louisiana.

[For more information, contact Carrie Borel, Louisiana State University Ag Center, P.O. Box 25100, Baton Rouge, LA 70894-5100. Phone: (225) 578-2906; e-mail: [cborel@agctr.lsu.edu](mailto:cborel@agctr.lsu.edu). For more information about the Louisiana Master Farmer Program, see [www.lsuagcenter.com/Subjects/masterfarmer](http://www.lsuagcenter.com/Subjects/masterfarmer).]

## Technical Notes

### High Tech Plants Become Gold Mine for Site Cleanups

Call it a miracle of modern science. Call it alchemy. But more and more researchers are singing the praises of a relatively new technique called phytomining. The research, at the crossroads of geology, biology, and chemistry, uses plants to soak up, or hyperaccumulate, metals like zinc, cadmium, nickel, and even gold from soils into the stems. Interest in the field has increased as test plots and demonstration projects have shown that these plants not only help clean up soils, but can also be harvested and burned to generate metal ore from the plant ash. This double benefit is capturing the attention of many in science and business, bringing the technology to the cusp of broad commercial application worldwide.

While phytoremediation is the general process of using plants to help clean up contaminated sites, phytomining is the use of plants to extract economically viable products from a growth medium such as soil, mine spoils, or even water. Applications of phytoremediation have been on the upswing since the early 1980s, and recent breakthroughs and new creativity have led to new, commercially profitable, ways of cleaning up sites, dubbed phytomining by the late pioneer researcher Dr. Robert Brooks of New Zealand's Massey University. This article explores how both phytoremediation and phytomining are being used to clean up contaminated sites and control nonpoint source pollution.

In reality, there is a continuum between phytomining and phytoremediation. While both are intended to help clean up the environment, the former is designed to be commercially profitable. While phytoremediation is not meant to yield a financial profit, it is often the least expensive choice for restoring a site. A 1995 study found that phytoremediation would save at least 75 percent of the cost of site cleanup over traditional excavation and storage techniques for certain applications on metal-contaminated sites. In 1999,

phytoremediation was used to clean up lead from a contaminated site owned by Daimler-Chrysler that resulted in a projected savings of \$1.1 million. It is typically integrated with other strategies, often providing the finishing step in site cleanups. These plant technologies have many potential applications, including brownfields remediations, Superfund restorations, cleanups of acid mine damage, and environmental justice projects.

In the U.S., the USDA's Agricultural Research Service has led this green revolution, matching plants and soil conditions that can be applied to a long list of toxic metals and radioactive compounds (see sidebar). According to an EPA hazardous waste database, phytoremediation has the potential to at least partially clean up thousands of hazardous waste sites in the U.S. alone. Sites that are candidates for phytoremediation often remain barren and erode toxins to waterways because their soils are inhospitable to most plants. Hyperaccumulator plants, however, thrive in such conditions. They keep erosion in check and readily absorb metals or other contaminants into their shoots, both of which prevent the toxins from entering waterways. While hundreds of hyperaccumulator plant species have been catalogued in recent years, the trick is to match up

All these contaminants can be phytoremediated. Those with asterisks are also current candidates for phytomining:

- Metals, including cadmium, cobalt, copper, gold\*, mercury, lead\*, nickel\*, palladium, platinum, thallium, and zinc\*
- Toxic elements, including arsenic and selenium
- Cyanide
- Atrazine and other pesticides
- Munitions wastes
- Petroleum products, including trichloroethylene (TCE) and related compounds
- Uranium and other radioactive compounds

the right plant with the identified contaminant and climate zone, while steering clear of invasive and non-native species.

An analysis by the USDA's Agricultural Research Service shows that harvests of crops or wood from pastures or forests grown on land with nickel-rich soils would fetch about \$50 to \$100 per hectare per year. A phytomining crop growing on the same land would produce an annual yield of 400 kilograms of nickel per hectare, worth more than \$2,000 even at today's depressed market price for nickel. This yield could be increased to over \$3,000 per hectare per year by selling the by-product energy from burning the plants to create nickel ore ash.

Phytoremediation is being studied closely for its potential to remove cadmium from rice paddy regions across Asia where test plot results indicate benefits to food safety and the environment. Cadmium from many mine sites is contaminating rice paddies that are being farmed intensely by some of Asia's poorest farmers. In these applications, phytoremediation may significantly further the cause of environmental justice. Similarly, gold mine spoils in South Africa and Brazil, which can contain dangerous amounts of cyanide and mercury used in extracting the gold, are prime candidates for phytoremediation, and possibly even profitable phytomining.

In the fight to restore our environment, it is often the earth which offers up the best tools. In the case of phytoremediation and phytomining, we are wisely beginning to follow its lead.

## Soy Growers Leaving More Residue

An American Soybean Association (ASA) study, released in November 2001, shows that more than half of the farmers surveyed credited the introduction of Roundup Ready Soybeans as the factor having the greatest influence on their willingness to implement conservation tillage practices. Chief among those conservation tillage practices is the practice of no-till farming.

Using conventional farming methods, farmland is plowed in the fall, disked before planting, and then cultivated once or twice

during the growing season to control weeds. While this method helps control weeds, it also disrupts the soil and leaves the ground exposed to wind and rain erosion, which carries soil and agricultural chemicals into the air and into nearby streams and rivers.

Under a no-till farming system, where farmers eliminate all tillage, soybean seeds for the next crop are planted through the organic material left over from the previous crop (e.g., corn, cotton, wheat). Roundup Ready Soybeans are genetically resistant to the application of Roundup, an herbicide that inhibits weed growth. The combination of Roundup Ready Soybeans and Roundup allows farmers to avoid mechanical weed removal.

The ASA released the findings of the first conservation tillage study in November 2001. "ASA estimates that no-till and reduced-till farming are now the preferred planting methods on more than 80 percent of all soybean acres," said ASA Chairman Bart Ruth and Rising City, Nebraska, farmer. Almost half (49 percent) of study participants increased no-till soybean acres during the last six growing seasons



Photo courtesy of Bob Callaman, American Soybean Association

**Soy Growers Leaving More Residue.** The seeds for these soybeans were drilled through a layer of vegetation and the stalks of the previous year's corn crop.

### Study Details

For the study, ASA hired Doane Marketing Research, Inc. to study farming practices of 452 farmers in 19 Midwestern and Southern states with quotas established based on each state's proportion of soybean acres.

Participants with 200 or more soybean acres were randomly selected from lists maintained by Doane, and 201 additional participants were selected at random from an ASA members list.

While the study showed that ASA members were earlier adopters of conservation tillage practices, the tillage practices in 2001 of non-members were similar to that of ASA members prior to 2001. ASA represents more than 26,000 soybean producers with affiliate offices in 26 states and 13 international marketing offices around the globe.



(1996-2001). During this period, no-till soybean acres increased to more than 49 percent of total soybean acres, and reduced-till acres have increased to 33 percent of soybean acres.

In the ASA study, 53 percent of growers made fewer tillage passes in soybeans. Reduced tillage practices in soybeans saved 247 million tons of irreplaceable topsoil and 234 million gallons of equipment fuel across the country. "This technology reduces my production costs because I don't have to drive my equipment over each field as many times," said Ruth. "That decreases my labor costs and the wear-and-tear on my equipment. It also lowers my fuel cost and improves air quality. And for the first time in modern history, we have the technology to implement sustainable agricultural practices that are saving the soil for future generations."

*Mention of commercial products or publications does not constitute endorsement, or recommendation for use, by EPA.*

*[For more information, contact Bart Ruth, Chairman, American Soybean Association, 12125 Woodcrest Executive Drive, Suite 100, Saint Louis, MO 63141. Phone: (402) 542-2181; e-mail: [bd Ruth@alltel.net](mailto:bd Ruth@alltel.net). Also contact Bob Callanan, ASA Communication Director. Phone: (314) 576-1770; e-mail: [bcallanan@soy.org](mailto:bcallanan@soy.org).]*

### New Book Traces Development of Tillage Systems

Increasing numbers of farmers are turning to no-till and other methods of conservation tillage. In doing so, they are adopting soil-saving techniques collectively called crop residue management (CRM). Using CRM means that farmers do not have to go repeatedly into fields to plow, saving them time, fuel costs, machinery maintenance, and labor. Most experts agree that improved water quality, better water conservation, improved soil tilth (state of aggregation of the soil), reduced soil erosion, and lower input costs, are added benefits of CRM.

In the history of U.S. agriculture, CRM is a relatively new concept that had its beginnings in the early 1930s. A recently published book by Harold Owens, a retired USDA agronomist and soil conservationist (and former agricultural writer for *NPS News-Notes*) provides a historical context that helps the reader understand how CRM works and what it means today.

Owens' book, *Tillage: From Plow to Chisel and No-tillage, 1930-1999*, begins with a detailed look at the pioneers of CRM, the innovative farmers and researchers who began and developed these techniques. Beyond the human interest story, Owens discusses how improved machinery

contributed to the methods underlying CRM. Owens says, "The ingenuity of manufacturers and innovative farmers in developing equipment to leave more residue on the surface, and then to plant through it, has facilitated the availability and use of CRM."

CRM gave crop residue, once an undesirable by-product, a make-over. Owens points out that the development of herbicides, which provided an alternative to tillage for controlling weeds, greatly enhanced farmers' willingness to leave residue on the soil surface. A change in attitude accelerated the acceptance and adoption of crop residue management as a way for farmers to optimize their net returns and improve the environment and natural resources.

Owens' book is available through the Midwest Plan Service (MWPS) for \$12 per copy. A CDROM version, for \$25, is also available with the full text of the *Conservation Tillage Systems and Management* handbook and other conservation tillage education materials. To place an order, contact the MWPS, 122 Davidson Hall, Iowa State University, Ames, IA 50011. Phone: (800) 562-3618; e-mail: [mwps@iastate.edu](mailto:mwps@iastate.edu).

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### Best Management Practices Manual for Urban Sites

The Metropolitan Council of the St. Paul/Minneapolis area, in cooperation with several local cities and watershed districts, has developed the *Urban Small Sites Best Management Practices (BMP) Manual* to assist Twin Cities municipalities and wastewater management organizations in guiding site development and redevelopment. The Council, the regional planning agency for the Twin Cities' seven-county area, operates the regional transit system, collects and treats wastewater, and assists in environmental, transportation, housing, and infrastructure planning.

The manual provides assistance to communities and water management organizations during preparation of required surface water management plans. It also serves as a design reference for developers, contractors, and others for use during project design and implementation. Karen Jensen, Water Resource Planner for the Council, says, "The Council hopes that the manual will foster environmental protection during dense infill and other efficient land development." The Council developed the manual with a budget of \$150,000. Preparation of the manual was con-

tracted to Barr Engineering Company of Minneapolis at a cost of \$139,600, and the remainder of the funds was used to produce and send CD-ROM and hard copies of the manual to all cities, counties, and water management organizations within the seven-county area.

The manual is designed for sites of less than 5 acres in cold climate environments and provides factors in selecting BMPs, guidelines for pollution prevention and storm water runoff BMP design, and 40 sample BMPs. Cold climate settings often create issues such as frozen pipes, reduced growing seasons, reduced infiltration rate, and high volumes and pollutant loads of snowmelt. Most of the 40 BMPs presented in the manual may be characterized as low-impact development, promoting the protection or restoration of the natural hydrology of the site. The manual also includes a storm water treatment BMP selection matrix to aid identification of site-appropriate BMPs, an annotated bibliography, and a list of local examples of successful BMP implementation.

The Urban Small Sites Manual will assist small-site cold climate urban development and redevelopment projects by identifying practices to reduce storm water runoff quantity and improve runoff quality. The manual provides information for small sites, taking into consideration hydrology, pollutants, and the cold climate. In addition to an outline for BMP selection and information on 40 BMPs, the manual includes a regulatory analysis for watershed programs, local BMP installation examples and contacts, sources for model stormwater ordinances, and a source list of BMP manuals and other references.

The Council distributes the CD-ROM and hard copies of the manual for sale through their data center. The manual is a not-for-profit venture, and the price of the copies covers reproduction costs only. The CD-ROM version of the manual may be purchased for \$7.50, and the hard copy format is available for \$30.00. The manual is also available online at [www.metrocouncil.org/environment/Watershed/bmp/manual.htm](http://www.metrocouncil.org/environment/Watershed/bmp/manual.htm).

[For more information, contact Karen Jensen, Metropolitan Council, 230 East 5<sup>th</sup> Street, St. Paul, MN 55101. Phone: (651) 602-1401; e-mail: [karen.jensen@metc.state.mn.us](mailto:karen.jensen@metc.state.mn.us); Internet: [www.metrocouncil.org](http://www.metrocouncil.org).]

## Notes on Education

### Storm Drain, Watershed Signage Choices Abound

“Don’t dump” messages stenciled at storm drain inlets have helped the public make the connection between what happens on the land and in our water since the 1980s. This watershed outreach effort now has company. Today there are many public signage options available to watershed managers, public works and transportation officials, and volunteer coordinators. From billboards at watershed divides to customized manhole covers, the word about watershed awareness and stream protection is getting out in new ways. The following is a roundup of some of the creative methods used to raise awareness of nonpoint source pollution and watershed protection.

#### Storm Drain Markers

Since the mid-1990s colorful vinyl markers with “don’t dump” messages have been affixed to storm drain inlets in various watersheds across the country. Although the markers are typically no larger than four to eight inches long, they are highly customizable and durable. Their cost-effectiveness helped make them an attractive option for local governments, watershed organizations, and volunteer groups. As an alternative to vinyl markers, some groups have used ceramic or metal medallions to promote public awareness of the connection between storm drains and water pollution. In Phoenix, Arizona, and Fort Worth, Texas, raised metal castings have been set into walkways next to many storm drain inlets.



Photo courtesy of City of Phoenix, Arizona

At less than \$2 per aluminum marker, these five-inch disks are an attractive and affordable choice for Phoenix, Arizona.

#### Manhole Covers and Inlet Grates

A few communities are capitalizing on an often overlooked piece of urban infrastructure, the lowly manhole cover, to help raise awareness that urban runoff often ends up in local waters. A number of different foundries have created customized castings with messages similar to those used on

storm drain stencils. Fish logos and city seals are often featured in these designs. Curb inlets have also provided sufficient facing to incorporate “don’t dump” messages with logos.

### Billboards

Roadside billboards telling motorists they are entering a particular watershed are beginning to dot the country’s landscape. While budgets for billboard messages are beyond the reach of many grassroots organizations, billboards are becoming more popular with larger local governments, regional organizations, and states. Water supply utilities also employ billboards to reach the public for their source water protection strategies. Along with the higher price tag, billboard messages have a higher visibility. While the messages develop watershed awareness, or what marketers refer to as branding, they are unlikely to lead to actions to reduce pollution unless they are used in concert with a variety of complementary outreach tools.

### Roadside Signs

Roadside signs denoting stream crossings have been standard for most state transportation authorities for decades. Recently, local governments have joined to raise awareness of streams intersecting local roads with larger and more colorful signs. In addition to bridge crossing signs, some local governments and water utilities are placing watershed divide signs along many local roads to raise watershed awareness. The idea of highlighting stream names is that it is easier for the public to care for something if they know its name.

### Bus and Subway Posters

To overcome “awareness gaps” among urban dwellers of their connections to the natural world, posters with eye-catching graphics and hard-hitting messages on commuter buses and in subway stations have been used. One such series of posters was developed by a water quality consortium in the Puget Sound region and is being directly adopted in a growing number of metropolitan regions. The posters, distributed by Washington State Department of Ecology, can be viewed and ordered online at [www.ecy.wa.gov/programs/wq/posters](http://www.ecy.wa.gov/programs/wq/posters). While the cost of ready-made posters is negligible, renting ad space on buses and subway stations may require a significant expenditure with campaigns typically lasting one month at a time.

This increased arsenal of public signage options for raising watershed awareness is arriving just in time for communities subject to new Storm Water Phase II requirements. The permits, mandated for thousands of small and medium sized localities across the country by March 2003, will require well-developed public education and outreach programs as one of six compulsory program elements (See News-Notes Issue 69 at [www.epa.gov/owow/info/NewsNotes](http://www.epa.gov/owow/info/NewsNotes).) “Don’t dump” signage at storm drain inlets may provide additional credit as a pollution prevention measure, another element required under the Phase II permits.

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## Managing Car Washing

If the dog is man’s best friend, the car must be a close second. In fact, with more than 750 motor vehicles for every 1,000 Americans, they outnumber dogs by a factor of about three to one. In the United States, the car has become a ubiquitous symbol for independence and freedom, and we have given over much of our national landscape to accommodate it. Among the many impacts of motor vehicles on our environment, car washing has been noted by many water quality experts as a serious contributor of nonpoint source pollution. This activity can send high loads of nutrients, heavy metals and toxic hydrocarbons to receiving waters during dry weather conditions, when receiving waters are least able to handle the impacts (see box). What doesn’t make it to the water dries onto surfaces and washes into the water when the wet weather returns.



Car Wash Education Campaigns

Graphic courtesy of the Northern Virginia Regional Commission

Car washing by Americans on private property has traditionally been viewed as unregulated and unregulatable. Individual residential car washing is exempted from existing Phase I Municipal Separate Storm Sewer Systems (MS4) general permits and soon-to-be adopted Phase II MS4 general permits, provided they are not “significant contributors of pollutants” to the MS4 system. Whether or not car washing is a significant contributor of pollutants in particular circumstances, most MS4 communities do not relish the prospect of banning an activity so ingrained in American culture. Instead, the focus of environmentally progressive communities seems to be on pollution prevention and good housekeeping practices. Specifically, “Do It Yourself” (DIY) car washers are being encouraged to:

- switch to using commercial car washes, which use less water and are required by law to not send their discharges to surface waters or any conveyance systems leading to such waters;
- wash their cars where suds and rinse water cannot drain into streams or storm drains, such as over pervious surfaces like lawns and gravel;
- where washing over impervious surfaces cannot be reasonably avoided (for instance, in many townhouse and apartment communities), block off storm drains with a device to divert flow to the sanitary sewer, a safe recharge area, or an infiltration BMP;
- reduce the frequency of car washing and the amount of cleaning products used per wash;
- use biodegradable low- and no-phosphate detergents and the least toxic auxiliary cleaning products (many tire care products come with “harmful or fatal if swallowed” warning labels); and
- use water hoses with automatic shut-off nozzles.

### The Question of Community Car Washes

The practice of car wash fundraisers by scouts, churches, schools and other organizations is a time-honored tradition, but one with an uncertain future in the wake of the upcoming Phase II MS4 requirements. While this activity is not explicitly exempted by general permits which must be adopted by thousands of localities by next March, many communities will take a “wait and see” attitude toward enforcement. Some local governments are encouraging, or requiring, charitable groups to register their fundraisers, block off storm drains, and divert runoff to sanitary sewers, designated pervious areas or infiltration-type BMPs. Kitsap County, Washington, has a particularly proactive outreach campaign for educating charitable car wash groups and a system for diverting car wash runoff that it calls the Bubble Buster. Used with a temporary storm drain plug, the bubble buster is a patented device for collecting the wash water and diverting it from a storm drainage system (see [www.kitsapgov.com/sswm/carwash.htm](http://www.kitsapgov.com/sswm/carwash.htm)). In some communities, regulated commercial car washes team up with nonprofit groups and offer discount tickets for fundraising events.

### Potential Pollution Sources from Car Washing:

- thermal impacts from dry weather surface flows over blacktop pavements
- heavy metals from rust, brake linings, etc.
- oil and grease
- detergents and surfactants (substances that break down the surface tension property of water)
- nutrients from ammonia or phosphorus-based detergents
- petroleum hydrocarbons from tire cleaners, etc.

Changing the behaviors of chronic car washers (people who wash their cars at least once a month) may not be easy, as many in this category are blind to the connection between their actions and water quality or are otherwise resistant to changing their routines. In this regard, government leadership, neighborhood peer pressure, and outreach efforts like storm drain marking campaigns can help (see News-Notes #69).

In Prince Georges County, Maryland, 12 percent of DIY car washers switched to using commercial car washes in the immediate wake of a one-year pollution awareness campaign (from 29 percent to 41 percent) in a county-led effort in 1993. In Los Angeles, about 6 percent of chronic car washers washed their vehicles less frequently as a result of a public outreach campaign by the city in 1997. And a 1997 survey in King County, Washington revealed that only half of DIY car washers would switch to using a commercial car wash, even if they were given discounts or free washes. Perhaps ironically, while DIY car washers do not readily associate their actions as having an impact on water quality, they are sensitive to water supply consider-

ations, as evidenced by their overwhelming compliance with water conservation restrictions during times of drought.

In possibly the most ambitious effort of its kind to date, a Canadian water quality advocacy group called RiverSides Stewardship Alliance has begun to apply social marketing strategies to encourage DIY car washers to switch to using commercial car washes. The initiative seeks public-private partners to heavily promote the benefits of patronizing professional car washes via a high profile "Take Me Out to the Car Wash" campaign, as well as to spread the word about the negative consequences of DIY car washing. As the five-year campaign has recently started, its effectiveness will not be known for a few more years. (See [www.riversides.org/review/riversides/carwash.htm](http://www.riversides.org/review/riversides/carwash.htm) for more information.)

Because of its symbolic association in American culture with pride and independence, car washing poses a special challenge to those who care about its connection with degraded water quality. Through sensitive and sensible approaches, and a strong dose of old-fashioned ingenuity, solutions are beginning to emerge.

*[For more information, contact Don Waye, U.S. Environmental Protection Agency, Mail Code: 4503T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Phone: (202) 566-1170; e-mail: [waye.don@epa.gov](mailto:waye.don@epa.gov).]*

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## *New Mexico State University Hosts Environmental Design Contest*

In their quest to prevent catastrophic wildfires, the United States Forest Service (USFS) submitted a challenge to the 2002 New Mexico State University (NMSU) Environmental Design Contest to find commercially viable uses for small diameter trees (3" - 8"). Wildfires fueled by excess small trees and brush destroy homes and habitat; threaten residents, firefighters, and wildlife; and leave the land barren and subject to massive erosion for years to come. Erosion of the burned areas contributes to overload of sediment to local waterways, clogging streambeds and degrading aquatic habitat.

USFS policy encourages mechanical thinning of small tree and brush forests that supply ladder fuel, the fodder that allows small fires near the ground to spread up and out. But mechanical thinning is expensive, time-consuming, and wasteful. If commercial uses for thinning could be developed, private companies might be interested in doing the thinning to manufacture their product, thereby providing jobs for local residents and relieving the USFS of some of the burden.

During the contest, teams from five universities tackled the problem of finding structural uses for small diameter logs. Three teams designed roof trusses, structures on which a building's roof is laid, and two teams designed footbridges. Montana State University won first place and a \$2500 prize for designing a footbridge strong enough to support an automobile.

Each year, private industry and government agencies sponsor the contest, submit tasks, and supply judges. The tasks are all real world problems faced by sponsors. The sponsors gain fresh and creative ideas from the students, and the students get real world experience in problem solving. The design contest is not directly involved in marketing the ideas developed by the students though some of the designs include a marketing plan. The school also sponsors a job fair on the last day of the contest where many of the sponsors and attending companies can look for new employees.

*[For more information, contact Dr. Abbas Ghassemi, New Mexico State University, P.O. Box 30001, MSC WERC, Las Cruces, NM 88003-8001. E-mail: [aghassem@werc.net](mailto:aghassem@werc.net).]*

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## *Alabama Builders Self-inspect Storm Water Controls*

Builders in Alabama are now able to self-inspect storm water controls thanks to a public/private partnership. In 1997, Alabama Department of Environmental Management (DEM) entered into a Memorandum of Agreement (MOA) with the Homebuilders Association of Alabama (HBAA) to

enhance compliance rates with the Alabama Construction Storm Water General Permit and increase efforts to implement pollution prevention measures through awareness training of builders and developers who are on-site on a daily basis. Initially, permits required builders to hire a Qualified Credentialed Professional (QCP) to conduct site inspections monthly or within 24 hours of a 3/4-inch rain. QCPs, usually professional engineers recognized by DEM as having expertise in storm water management, were high in demand and short in supply. If a QCP was not available or didn't do his job correctly, builders were forced to self-inspect without expert knowledge, often leaving them open to the threat of non-compliance fines and lawsuits. Even though ADEM also conducted inspections periodically, builders were often left with the responsibility of fixing problems without any expert knowledge or assistance. ADEM and the Homebuilders Association decided to take action.

The organizations developed an 8-hour training course, the Qualified Credentialed Inspection Professional (QCIP) program, that teaches developers and builders their responsibilities as well as the practical aspects of installing BMPs for erosion and sediment control, and most importantly, provided them with a state QCIP accreditation. After completing the course, attendees take a written exam with follow-up annual 4-hour refreshers. Initial development costs for the course were approximately \$50,000 which was paid for by the HBAA. Annual costs for the course are recovered by student tuition (\$395 for initial course, \$100 for refresher).

More than 500 builders have been certified since 1999. QCIP graduates are then authorized to conduct both monthly and post-precipitation inspections of their own sites. The program has built community awareness of permit requirements and significantly increased compliance rates.

Don Spurlin, builder and owner of Spurlin and Company, vouches for the QCIP program's success and benefits. Since his certification, he has been able to save money and protect water quality in the subdivisions he builds. With self-inspection, he doesn't have to pay an engineer to inspect BMPs monthly or after rain events. NPDES Phase II requirements won't be a challenge for QCIP certified builders. Spurlin, for example, is already implementing BMPs that will be a part of the requirements. Spurlin notes that the most important benefit of the QCIP program is the knowledge builders gain that leads them to be proactive when protecting water quality.

By implementing BMPs at the beginning of construction, he prevents silt and sediment from entering the streets and waterways. Spurlin notes, "Ten years ago, I had to continually spend money and time on cleaning silt out of the streets. Now, I put BMPs in place on day one and am absolutely able to protect water quality." Spurlin's preferred methods include silt fencing, hay bales, and natural vegetation use.

This program prevents nonpoint source pollution by targeting educational resources to those that can have the greatest impact—the regulated community. By developing a thorough understanding of permit requirements and the fundamentals of BMP implementation and maintenance, the regulated community's ability to reduce pollutant loading, while saving money, is significantly enhanced. This program is truly a win-win situation.

[For more information, contact Steven O. Jenkins, Chief, Field Operations Division, ADEM, P.O. Box 301463, Montgomery, Alabama 36130. Phone: (334) 394-4382; e-mail: [SOJ@adem.state.al.us](mailto:SOJ@adem.state.al.us).]

### States' Erosion Control Methods Examined

*Cost-Effective Erosion Control with Blankets and Mats*, an article published recently in *Erosion Control* magazine, examines the variety of erosion control methods used by the departments of transportation in three states with varying terrains and climates—Pennsylvania, Colorado, and Texas. As noted in the article, today's stricter erosion control regulations (National Pollutant Discharge Elimination System Phase II permits, etc.) have forced developers to become far more diligent in preventing

erosion on the construction site—not just after construction is completed, but also during the construction phase itself. The article focuses on the growing popularity of applying erosion control blankets and turf reinforcement mats for temporary slope protection or long-term channel reinforcement at road and other construction sites. The article, published in the May/June 2002 issue, is available online at [www.forester.net/ecm\\_0205\\_cost.html](http://www.forester.net/ecm_0205_cost.html).

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## Reviews and Announcements

### *Sea Grant Book Promotes Healthy Watersheds*

Healthy functional watersheds are essential to our lives. We all live in watersheds, and whether we're washing our cars in driveways, grazing our cows along stream banks, or just enjoying a day boating, we all risk adding to the stress placed on aquatic ecosystems. *The National Coastal Ecosystem Restoration Manual*, written by experts and practitioners across the country, helps readers understand and become better stewards of their watersheds. Its intended audience is broad: farmers, members of watershed councils, landowners, homeowners, forestry managers, state and federal agencies and organizations, nongovernmental natural resource organizations – everyone who lives and works in a watershed.

Available for \$30, the 464-page manual guides readers through the watershed restoration process. In the first section, readers learn to hold effective meetings and hone their decisionmaking and communication skills. The goal is to create well-functioning local groups that can undertake the difficult task of collaborating long enough to restore damaged habitat. The second section focuses on watershed ecosystems (uplands, wetlands, riparian areas, and estuaries), explaining how each functions and recommending methods of assessment, enhancement, and evaluation. The final section of the manual applies BMPs in many different settings, including agriculture, forestry, cities, and marinas.

For more information on the manual, visit [www.nmfs.noaa.gov/habitat/restoration/tempfiles/NOladprint.pdf](http://www.nmfs.noaa.gov/habitat/restoration/tempfiles/NOladprint.pdf). To request copies, call (541) 737- 2716, or send an e-mail to [sea.grant.communications@orst.edu](mailto:sea.grant.communications@orst.edu) and reference publication ORESU-H-02-002.

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### *Out of the Gutter in Washington, D.C.*

The NRDC recently released *Out of the Gutter; Reducing Polluted Runoff in the District of Columbia*, which recommends the use of Low Impact Development (LID). Every time it rains, Washington, D.C., like all major cities, is plagued by excessive storm water runoff, which has gravely contaminated the city's three major waterways (the Potomac River, the Anacostia River, and Rock Creek). To clean up the pollution, the city's Water and Sewer Authority (WASA) currently relies on conventional storm water management practices, many of which are costly and outdated. In this July 2002 report, NRDC recommended instead that WASA adopt the LID approach and use green roofs, strategically placed beds of native plants, rain barrels, and other measures to soak up rain and prevent it from washing directly into waterways. NRDC also encouraged the local government and WASA to restructure the city's flat storm water fee, protect environmentally sensitive lands, restore the urban forest, and encourage water conservation and water reuse techniques.

Although the report was written for Washington D.C. specifically, it has applicability for many municipalities and communities. The report is available online at [www.nrdc.org/water/pollution/gutter/gutterinx.asp](http://www.nrdc.org/water/pollution/gutter/gutterinx.asp). To order a hard copy, contact NRDC Publications Department, 40 West 20th Street, New York, NY 10011. Phone: (212) 727-4486.

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### *EPA Publishes Guidance for Beach Grants*

EPA recently released the *National Beach Guidance and Required Performance Criteria for Grants*. The document contains the nine performance criteria that an eligible coastal or Great Lakes state, tribal, or local government must meet to receive a Beaches Environmental Assessment and Coastal Health Act (BEACH Act) Implementation Grant. BEACH Act grants help these agencies operate beach water quality monitoring programs, including notifying the public where there are health hazards. Though the guidance is intended primarily for state and tribal programs, the document also provides useful guidance to help local agencies improve their beach programs. The grants provided \$2 million in 2001 and grew to \$10 million in 2002.

To view the guidance, visit: [www.epa.gov/waterscience/beaches/grants](http://www.epa.gov/waterscience/beaches/grants), or request document number EPA-823-B-02-004 from the Office of Water Resources Center at (202) 566-1729. Multiple copies can also be ordered from EPA's National Service Center for Environmental Publications by calling (800) 490-9198 or via fax at (513) 489-8695.

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## *EPA Releases Needs Report for TMDLs*

In July 2002, EPA published *The Twenty Needs Report: How Research Can Improve the Total Maximum Daily Load (TMDL) Program*, a technical study intended to help focus research efforts in the TMDL program. It summarizes TMDL-related science needs identified by state, tribal, and federal programs, the National Research Council, the private sector, and others.

The report guides EPA researchers to further improve the scientific basis of processes and techniques used to restore and protect impaired waters. Each of the needs outlined in the report include problem descriptions and suggestions for research. The three main focus areas include research involving EPA Headquarters and regions, TMDL development and implementation, and the broader Clean Water Act impaired waters program, in which TMDLs play a central role. The report cites the need for better access to expertise within the EPA regions and Headquarters, better quality and increased number of completed TMDLs, and improved watershed and water quality modeling.

This publication is available online at [www.epa.gov/owow/tmdl/techsupp.html](http://www.epa.gov/owow/tmdl/techsupp.html). To order a hard copy, contact the EPA National Service Center for Environmental Publications (reference EPA 841-B-02-002), P.O. Box 42419, Cincinnati, OH 45242. Phone: (800) 490-9198; e-mail: [ncepimal@one.net](mailto:ncepimal@one.net).

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## *Pennsylvania Nutrient Management Policy Report Released*

The Pennsylvania State Cooperative Extension Service recently published the report "Nutrient Management Policy: Pennsylvania Stakeholders' Views About Progress, Challenges, and Future Directions." Written by Charles Abdalla, associate professor of agricultural economics, and Alyssa Dodd, extension associate in agricultural environmental policy, the report describes the Pennsylvania Nutrient Management Act's (NMA) legislative history and progress in implementation, provides insight into nutrient management policy challenges, identifies key indicators or program performance and success, offers broad conclusions about nutrient management policymaking in Pennsylvania, and identifies future policy directions.

The report is based on analysis of information collected from 28 interviews with wide variety of Pennsylvania stakeholder agencies and organizations. Abdalla said, "Our goal was to identify perspectives about critical nutrient management issues and provide a report that would contribute to more informed discussions and policy decisions." While not every possible stakeholder group was included, the report's findings are believed to be comprehensive and balanced from a state-wide perspective.

The report listed water quality protection as the ultimate goal but not the only goal of Pennsylvania's NMA. Other goals included providing assurance that agricultural nutrients were properly managed, creating practical and understandable regulations, protecting the environment without putting farmers out of business, balancing nutrients with crop needs, and creating uniform statewide nutrient management standards. Many interviewees believed that Pennsylvania's water quality was better protected with the NMA, but that there was more to be done. Interviewees also stressed the need for phosphorus control on farms in addition to nitrogen standards. Most interviewees agreed that the NMA was successful with inclusiveness, leadership, education, and funding serving as key factors. Most interviewees envisioned an ideal nutrient management program to be comprehensive, accountable, and science-based. An ideal program would address all farms causing water pollution and non-agricultural nutrients ensure implementation and compli-



ance, and use scientific tools such as a watershed approach to address cumulative impacts and water pollution risks.

The report will help citizens and public decision-makers debate issues, options, and future policy directions for nutrient management in the Commonwealth. "Audiences finding the report useful include people involved in animal agriculture, such as farmers, agribusiness, and related businesses, rural residents, public decision-makers and elected officials, and anyone interested in water quality and the environment," noted Abdalla.

For more information, contact Dr. Charles Abdalla, Penn State University, Department of Agricultural Economics and Rural Sociology, University Park, PA. Phone: (814) 865-2562; e-mail: [CAbdalla@psu.edu](mailto:CAbdalla@psu.edu). To view the document online, visit [agenvpolicy.aers.psu.edu](http://agenvpolicy.aers.psu.edu).

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### *Farm & Home Environmental Newsletter Published*

The fall issue of the Farm & Home Environmental Management Programs Newsletter has been posted on our website. Produced by the staff of the National Farm\*Home\*Syst office, the newsletter aims to inform interested readers about voluntary pollution prevention programs around the nation and about new research and policy impacting the management of environmental risk on farms and in homes. Access the full newsletter by visiting: [www.uwex.edu/farmasyst](http://www.uwex.edu/farmasyst).

**Editor's Note:** An announcement for the Summer 2002 issue of the Volunteer Monitor incorrectly listed shipping costs for individual issues in Nonpoint Source News-Notes #69 (September 2002). In fact, subscriptions are free, but there is a small charge for back issues. Additionally, larger quantities are available for handing out at workshops and conferences. To subscribe, order back issues, or for any questions, send an e-mail to [skvigil@yahoo.com](mailto:skvigil@yahoo.com) or visit [www.epa.gov/owow/volunteer/vm\\_index.html](http://www.epa.gov/owow/volunteer/vm_index.html).

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### *Web Sites Worth a Bookmark*

*Southern California Wetlands Recovery Project:* [www.coastalconservancy.ca.gov/scwrp](http://www.coastalconservancy.ca.gov/scwrp)

Southern California Wetlands Recovery Project (WRP) is a partnership of public agencies working cooperatively to acquire, restore, and enhance coastal wetlands and watersheds between California's Point Conception and the international border with Mexico. The site features maps and photos depicting 29 different wetlands and offers information about the partnership's ongoing projects, wetland resources, and wetland-related documents. The site includes a link to the WRP Information Station, a watershed-based interactive data and mapping system.

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*American Rivers:* [www.amrivers.org](http://www.amrivers.org)

American Rivers is a national nonprofit river conservation organization dedicated to protecting and restoring healthy natural rivers. Their site offers updated watershed-related news, publications and other resource tools for watershed groups, and an index of river-related conservation groups across the country.

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*Texas Institute for Applied Environmental Research:* [tiaer.tarleton.edu](http://tiaer.tarleton.edu)

The Texas Institute for Applied Environmental Research (TIAER), housed at Tarleton State University, recently announced the launch of their new web site. The Institute addresses emerging environmental issues, particularly those related to land management. The TIAER site offers information about the organization, a news page, and a searchable research library of TIAER's agricultural production and nonpoint source pollution reports and articles published since 1992.

The North Dakota Department of Health recently unveiled its nonpoint source pollution web site. The program focuses on the restoration and maintenance of the beneficial uses of the State's water resources (i.e., streams, rivers, lakes, reservoirs, wetlands, aquifers) impaired by NPS pollution. The site provides grant guidance, project information, TMDL links, educator links, and more.

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## Datebook

DATEBOOK is prepared with the cooperation of our readers. If you would like a meeting or event placed in the DATEBOOK, contact the NPS News-Notes editors. Notices should be in our hands at least two months in advance to ensure timely publication.

## Meetings and Events

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### January 2003

- 19–22 *American Water Works Association Source Water Protection Symposium*, Albuquerque, NM. For more information, contact Linda Moody at (303) 347-6201 or [lmoody@awwa.org](mailto:lmoody@awwa.org).
- 27–30 *National GRTS User Group Meeting*, Denver, CO. Contact Don Kunkoski at (301) 694-7329 for more information.
- 28–31 *Emerging Technologies, Tools, and Techniques to Manage Our Coasts in the 21st Century*, Cocoa Beach, FL. For more information, contact Noemi Mercado at (202) 566-1251; e-mail: [mercado.noemi@epa.gov](mailto:mercado.noemi@epa.gov).
- 30–31 *3<sup>rd</sup> National Conference on Science, Policy and the Environment, Education for a Sustainable and Secure Future*, Washington DC. For additional information and to register online, visit [www.NCSEonline.org](http://www.NCSEonline.org). Phone: (202) 207-0007; e-mail: [conference@NCSEonline.org](mailto:conference@NCSEonline.org).

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### February 2003

- 17–20 *Urban Storm Water: Enhancing Programs at the Local Level*, Chicago, IL. For more information, contact Bob Kirschner, Conference Coordinator, Chicago Botanic Garden, 1000 Lake Cook Road, Glencoe, IL 60022; email: [bkirschn@chicagobotanic.org](mailto:bkirschn@chicagobotanic.org).
- 20–21 *International Conference on Stormwater and Urban Water Systems Modeling*, Toronto, Canada. For more information, contact Lyn James, Computational Hydraulics International. Phone: (519) 767-0197; e-mail: [info@chi.on.ca](mailto:info@chi.on.ca).
- 24–28 *International Erosion Control Association: 34<sup>th</sup> Annual Conference & Expo: A Gathering of Global Solutions*, Las Vegas, NV. Contact IECA, P.O. Box 774904, Steamboat Springs, CO 80477. Phone: (970) 879-3010; Internet: [www.ieca.org](http://www.ieca.org).

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### March 2003

- 10–14 *Applied Fluvial Geomorphology Course*, Charlottesville, VA. For more information, contact Canaan Valley Institute at (800) 922-3601.
- 17–20 *National Estuary Program Meeting*, Washington, DC. Contact Marilyn Katz, EPA, at (202) 566-1246 for more information.
- 28 Abstract Submittal Deadline, *TMDL 2003*, Chicago, IL. For more information, visit [www.wef.org/pdf/files/TMDL2003Call.pdf](http://www.wef.org/pdf/files/TMDL2003Call.pdf) or send an e-mail to [tmdl03@wef.org](mailto:tmdl03@wef.org).
- 31–April 4 *National Biological Assessment and Criteria Workshop*, Coeur d'Alene, ID. Contact Laura Gabanski, EPA, at (202) 566-1179 for more information.

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