

WINTER 1996 - 97

The Pennsylvania Watershed ADVISOR

DEP restructuring to emphasize watershed protection

DECEMBER 6, 1996 - Environmental Protection Secretary James M. Seif this week announced the restructuring of the department's Office of Water Management to reflect a watershed approach to managing the Commonwealth's water resources.

It is no longer enough to simply regulate point sources of pollution such as discharges from industrial and sewage treatment plants, Seif said. "We need to examine the cumulative impact of all human activity over a much larger geographical area."

A greater emphasis will also be placed on nonpoint sources of pollution, or pollution such as agricultural and stormwater runoff that does not come from a direct "end of the pipe" source. Seif said identifying and controlling nonpoint source pollution will yield the most improvement in the environmental quality of Pennsylvania's streams, lakes, rivers and coastal zones.

Under the restructuring, the number of bureaus will be reduced from five to four - Watershed Conservation, Waterways Engineering, Water Quality Protection and Water Supply Management.

The Bureau of Watershed Conservation includes watershed protection and planning, stream monitoring, nonpoint source pollution control, water rights administration, interagency water resources coordination and storage tanks.

The Bureau of Waterways Engineering plans, designs and inspects dams, flood protection and stream improvement projects, administers the wetlands protection program and coordinates emergency response to flooding situations.

The Bureau of Water Quality Protection administers sewage and industrial wastewater permitting, monitoring and compliance, oversees on-lot sewage planning (Act 537), provides direction and support to Pennsylvania's 66 conservation districts, coordinates activities under the Chesapeake Bay Program, and administers the erosion and sediment pollution control program.

The Bureau of Water Supply Management monitors and provides technical assistance to Pennsylvania's public drinking water suppliers, coordinates water supply and water resource matters during periods of drought and water shortages, collects stream gauge and climatology data to help manage the state's water resources, conducts the blackfly spray

program and reviews and makes recommendations on PENNVEST projects.

For a complete look at the Office of Water Management's programs and activities, visit DEP's web site (choose Information by Environmental Subject/Water Management).

Look up <http://www.dep.state.pa.us>



U.S. Environmental Protection Agency Administrator Carol Browner, Maryland Gov. Parris Glendening and Pennsylvania Gov. Tom Ridge discuss cooperative efforts for streamside initiatives in October - photo courtesy of Chesapeake Bay Program

Gov. Ridge Announces Commitment to Protect Chesapeake Bay with Streamside Buffers

HARRISBURG (Oct. 10) - Gov. Tom Ridge today pledged Pennsylvania's commitment to establish and protect streamside buffers to improve water quality in the Chesapeake Bay and its rivers.

Pennsylvania's commitment is part of a larger goal agreed to by the Chesapeake Bay Executive Council at its meeting in Harrisburg today.

The council - which includes Pennsylvania; Maryland, Virginia; Washington, D.C.; the U.S. Environmental Protection Agency; and the Chesapeake Bay Commission - signed an adoption statement that sets a goal of "2,010 by 2010" - 2,010 miles of new streamside

buffers for the Chesapeake Bay watershed by the year 2010.

"Just as people depend on water, rivers depend on woodlands," Ridge said during remarks at the meeting. "Our forests provide us with many benefits, and one of those is the protection of watersheds, including the mighty Susquehanna, its tributaries, and of course, the bay beyond."

The Susquehanna contributes one-half of the fresh water to the Chesapeake Bay, along with a significant amount of the nutrients (phosphorus and nitrogen) that are choking aquatic life in the estuary.

Continued on next page

Watershed management will promote natural resource sustainability in Pennsylvania

Commentary
by Mark Gutshall

The decision by the Department of Environmental Protection (DEP) to restructure the department's Office of Water Management to reflect a watershed approach is significant.

The Office of Water Management within DEP is a regulatory body and therefore administers the regulations pertaining to water conservation, quality, protection, and supply. To be effective, water resource management and protection must be addressed at the watershed level. In addition to improving the method of managing water resources, this recent decision will provide an opportunity for additional input at the local level. Watershed management provides opportunities for regulatory agencies, busi-



Mark Gutshall

nesses, nonprofits, and communities to solve problems at the local level. The stage has been set for meaningful negotiation, problem solving, and comprehensive long term natural resource management in Pennsylvania at the local level.

The Governor's forested riparian buffer initiative is an excellent example of a sustainable watershed management technique. This initiative will require communities to focus on their watersheds and identify existing and future opportunities.

The people in a position to encourage and influence the implementation of this initiative should begin considering how and where this can occur. There is a multitude of nonprofits and grass roots organizations that can join forces on the issue of establishing forested riparian buffers within your local watershed. Once your local group is established and your plan is together, make sure you present your ideas to the local businesses; they may be your best supporters.

Governor's Ridge's forested buffer initiative is a call-to-arms addressing our communities and watersheds in Pennsylvania. The value of our efforts will be witnessed by our children and our children's children.

\$243,000 grant to go to Lititz Run Watershed

LANCASTER, PA - Landstudies, Inc. an environmental consulting firm with offices in Oxford and Bellefonte has been selected by the Pennsylvania Department of Environmental Protection to develop and implement a comprehensive plan to make improvements to the Lititz Run Watershed in 1998 and 1999. The plan addresses stream and riparian corridor restoration, stormwater run-off management, and developing public awareness of the unique ecological, aesthetic, historical and recreational value of the Lititz Run. It will also explore areas of open space development that would improve the environmental health of the stream and the community as well as coordination of future development plans to minimize the impact on the Watershed.

Funding for the project will be spread over two years. For fiscal year 1998, \$209,500 has been appropriated. The remaining \$33,500 will be used the following fiscal period.

The Lititz Run Project is notable in that it has received strong support from Trout Unlimited, Ducks Unlimited, Pheasants Forever, Chesapeake Bay Foundation, Warwick Township, Lititz Borough, Lancaster County Planning Commission, Lancaster County Conservation District, Warwick School District, and the Millport Conservancy.

The Lititz project began in 1992 with the restoration and stabilization of a 100-foot section of the Lititz stream by the Donegal Chapter of Trout Unlimited. Greg Wilson, a local civic-minded businessman and member of Trout Unlimited helped to spearhead these early efforts. In 1995, Landstudies, Inc. became involved with the project, recommending Trout Unlimited expand their interest outside the streambanks and begin addressing the entire watershed. Watershed-based planning includes mapping, restoration assessment and evaluation of the watershed, as well as coordination with numerous individuals and agencies.

To date, wetland creation, stream improvement, riparian buffer plantings, streambank stabilization, habitat enhancement, warm season grass meadow plantings and an educational nursery have been established. Proposed alternative development techniques, as well as bioengineering and biofiltration areas, are planned.

Governor Ridge's commitment *continued from front page*

Buffer plantings next to a stream filter out the sediments and nutrients that run off the land, and help keep the water shaded and cool.

The executive council also signed an adoption statement launching the Businesses for the Bay program, a voluntary initiative that seeks to have 75 percent of businesses in the bay's watershed working on pollution prevention by the year 2000.

"In Pennsylvania, we know that pollution prevention is better than trying to clean it up after it happens," Ridge said. "The Businesses for the Bay program is an important part of our pollution prevention efforts throughout the Commonwealth."

Ridge said Pennsylvania also is making progress working in partnership with the agricultural community to encourage controls on pollution that comes from the general drainage of the land. In cooperation with the conservation districts, 100,000 acres of farmland has been brought under nutrient management plans.

"It's not a question of whether we will meet our nutrient reduction goals, but rather when we will meet the goals," Ridge said.

Joining Ridge at the Chesapeake meeting were other executive council members: Virginia Gov. George Allen; Maryland Gov. Parris Glendening; U.S. Environmental Protection Agency Administrator Carol Browner; and Pennsylvania state Sen. Noah Wenger, who is chairman of the Chesapeake Bay Commission. A representative of Washington, D.C. Mayor Marion Barry was also in attendance.

The Chesapeake Bay restoration effort is a voluntary partnership among the states of Pennsylvania, Maryland and Virginia; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; the EPA; and participating citizens' advisory groups. The effort stems from an agreement signed in 1983, and since superseded by a 1987 agreement.

For more information on nutrient management, pollution prevention and many other topics visit the DEP website at <http://www.dep.state.pa.us>.

Forested riparian buffers - Their functions and value

The term riparian refers to areas that differentiate between land and water along waterways or bodies of water; these are the transition areas between aquatic and terrestrial environments.

Forested riparian buffers are one of the most beneficial ecotypes in the state of Pennsylvania. Along with wetlands, forested riparian zones naturally provide the greatest functions and values within our watersheds. These attributes include filtering runoff and nutrient uptake, stream stabilization aquatic temperature moderation, proper nutrient loading, and aesthetical and recreational opportunities.

The mechanism responsible for the success of the forested riparian buffer includes the tree, as a unit of a group (forest), and its parts; leaves, twigs, branches, trunk, canopy, and roots (primary and secondary).

The following discussion will match the parts of the tree with the specific functions and values the forest provides within this watershed.

Roots: The roots of a tree within a riparian forest provide numerous benefits. The secondary and tertiary roots are fibrous and absorb excessive nitrogen and phosphorus that flow from adjacent fields. These roots are the first step of denitrification, which converts harmful nitrate loads to unhamful nitrogen gases that are released through the leaves of the tree. In addition, these roots will uptake pesticide residues and heavy metals from road runoff. All of these functions can be processed by shallow and deep roots which include both surface and groundwater processing.

The primary roots have the capability of reaching groundwater and contributing to processing pollutants. In addition, the primary roots of riparian trees are the stabilizers of the stream. These roots can withstand extreme flow velocities and have excellent soil binding properties.

Collectively, the roots of a wind-thrown tree are circular, dense, and encompass a large surface area. This is technically referred to as a rootwad. Rootwads provide natural streambank stabilization functions, habitat, and organic decomposition and collection areas necessary for the continuation of the aquatic food chain.

Bole: The main stem of the tree is technically labeled the bole. The diameter of the bole will determine its capacity to perform functions and values. For example, during storm events, as the water surges over the banks of the

watercourse, the larger trees have a great capacity to reduce the energy and velocity of the water surge. At the same time this is occurring, sediments within the surge are being deposited at the base of the trees reducing stream sedimentation; the priority pollutant within many watersheds.

The bole of the tree provides unreplacable riparian habitat. Numerous wildlife species utilize tree cavities for their homes and feeding areas. The bole of the tree (when it is in the water) becomes one of the most productive fish habitat structures in the stream. It provides shade, cover, collection area for organic debris, redirects stream flows, and armor the streambanks from erosive forces.

Canopy: The canopy of the tree is the collective term for the leaves and branches. The canopy provides shade,

riparian zone are the fuel for the ecological food chain. In most cases, the quality of life within a stream is dependent upon these fuels. The base of the food chain consists of algae, diatoms, and bacteria which are eaten by macroinvertebrates (insects that live in the soil/rock/water interface), and are eaten in turn by fish and other vertebrates, amphibians, and crustaceans. Leaf matter from the canopy provides infiltration functions. As water hits the surface of the ground, organic debris such as leaves and twigs intercept rain drops, and slow down sheet flow as it enters the riparian zone.

Riparian forests throughout a watershed provide corridors for wildlife, water quality benefits, fisheries habitat, recreational opportunities areas such as greenways for local communities, and are aesthetically pleasing.

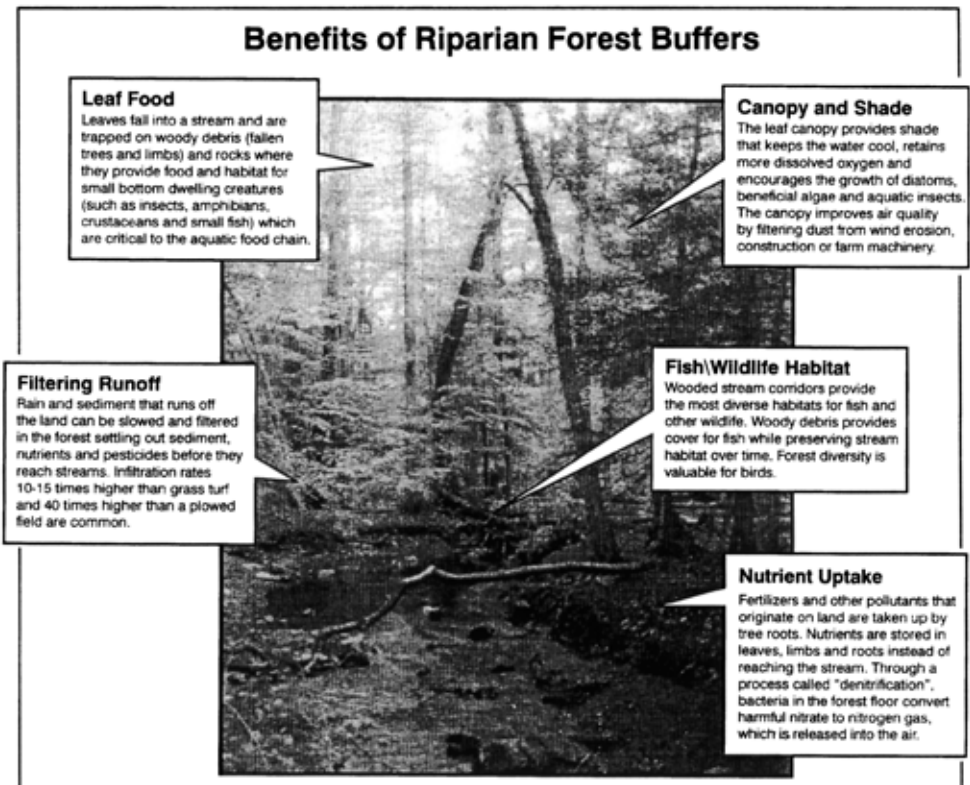


Illustration courtesy of the Alliance for the Chesapeake Bay, Whitepaper, January 1997

which moderates water and air temperature, and is the cooling mechanism of the riparian zone. Water temperature is a constraint to many aquatic organisms. Water temperature and oxygen sustainability are interrelated. As water temperature increases, dissolved oxygen decrease and algae growth increases; both are detrimental to the health of the stream.

Leaves, twigs, and branches within the stream or along the banks of the

The Pennsylvania Watershed Advisor (PWA) is produced by Landstudies, Inc. to promote watershed-based planning in Pennsylvania and to provide a forum for watershed planning ideas and projects. Article contributions are welcome. Please address comments to:
Landstudies, Inc.
 P.O.Box 97
 Oxford, PA 19363
 or fax to (610) 932-2854
 or e-mail to: landstud@epix.net

Pennsylvania Watershed Planning Conference announced

An all-day conference with the theme "Integrating Natural Resource Management with Land Planning" will be held at the Stroud Water Research Center in Avondale, PA on Friday, April 4, 1997.

The conference will consist of two half-day sessions. One will be devoted to natural resource management and the other will cover land planning and development.

The conference is being organized by Landstudies, Inc. in cooperation with the Stroud Water Research Center. The Stroud Center, a field station of the Academy of Natural Sciences in Philadelphia, is a nationally recognized fresh water laboratory. Co-sponsors of the event include the Society of American Foresters, Valley Forge Chapter; Pennsylvania Trout; the Alliance for the Chesapeake Bay; and Octoraro Wetland/Native Nurseries.

"This conference will demonstrate watershed planning techniques that focus on implementation," said Mark Gutshall, Vice President, Secretary, Valley Forge Chapter of Society of American Foresters.

Bernard W. Sweeney, Director of the Stroud Center, will deliver the keynote address on watershed planning in Pennsylvania.

Other confirmed topics and speakers are:

Natural Resource Management

- Agricultural Best Management Practices on Pequea Mill Creek - Frank Lucas, Natural Resource Conservation Service (NRCS)
- Lititz Run Watershed Restoration - Dan Zimmerman, Warwick Township Manager
- Riparian Forest Buffer Handbook for the Chesapeake Bay Watershed - Roxanne Palone, Watershed Specialist
- Forested Riparian Buffers - Bernard W. Sweeney, Director, Stroud Water Research Center

Land Planning and Development

- The Role of Coir Products in Soil Bio-Engineering - Calista Santhe, RoLanka
- The Stormwater Management Handbook - Earl Shaver, Dept. of Natural Resources and Environment Conservation
- The Pennsylvania Best Management Practices Handbook - Carl DuPoldt, NRCS
- Limited Development - Andy Johnson, Conservation Advisors

For further information, call Landstudies at (610) 932-3762

Upcoming events

April 27-29	Governor's Conference on Greenways and Trails, Radisson Penn Harris Hotel and Convention Center, Camp Hill, PA
April 27-30	Pennsylvania State Association of Township Supervisor's 75th Annual State Convention, Hershey Lodge & Convention Center, (717) 763-0930
May 7-9	Communities Working for Wetlands, Alexandria, VA, Call (800) 726-4853

Landstudies, Inc.
59 South Third St.
P.O. Box 97
Oxford, PA 19363