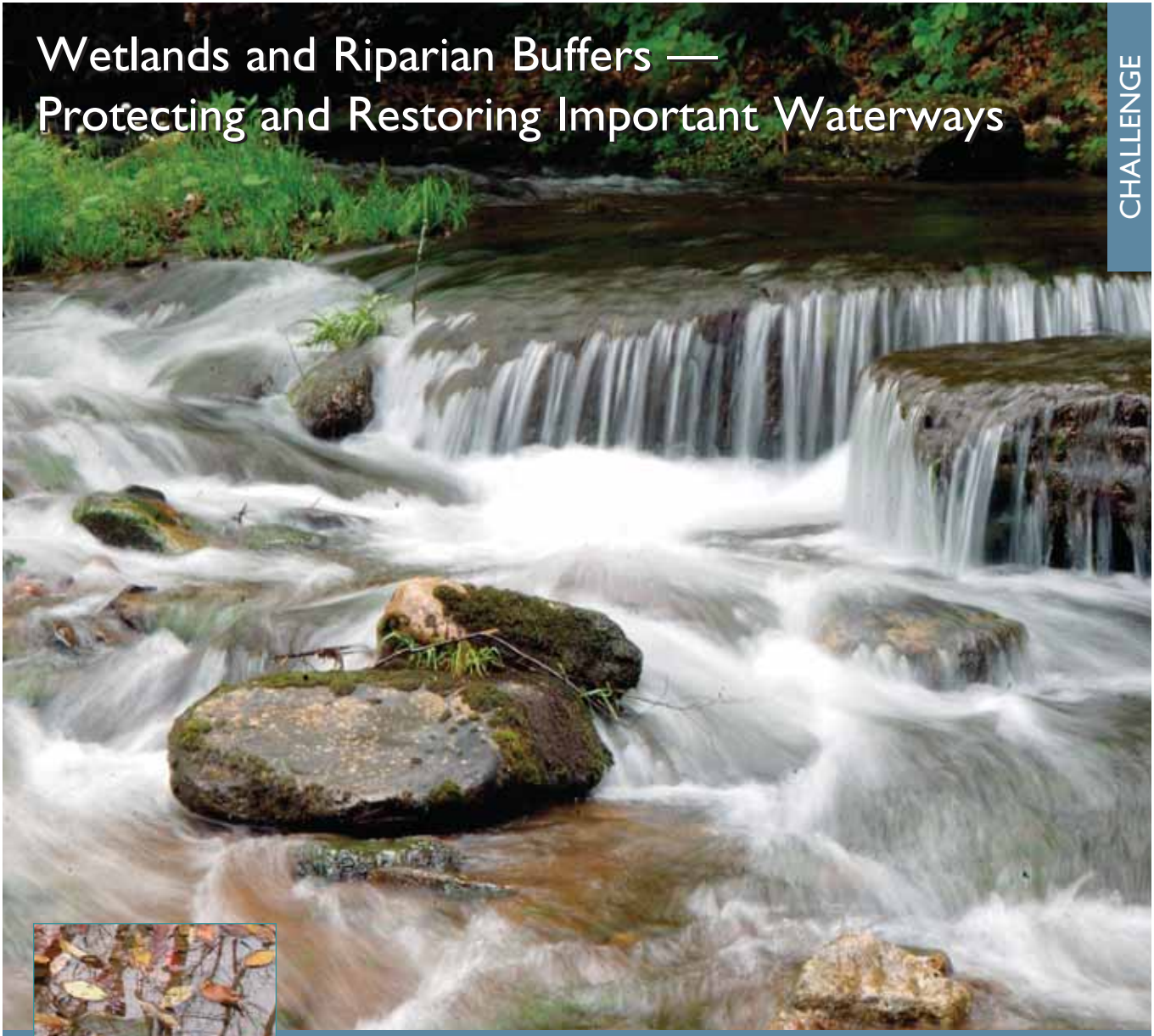
Wetlands and Riparian Buffers — Protecting and Restoring Important Waterways

CHALLENGE



J. MERLIN BENNER

PAUL GREEN

If there is magic on the planet, it is contained in the water.
LOREN EISLEY, LITERARY NATURALIST

Most of Pennsylvania's wildlife — including threatened and endangered species — use wetland habitat during all or some portion of their lives.

Wetlands and riparian buffers (streamside vegetation zones) have a crucial role in the health of the environment. They provide critical natural flood control by slowing down stormwaters and helping to recharge groundwater. Both purify runoff by trapping sediment, fertilizer, heavy metals and chemicals, and preventing concentrations of these pollutants from entering the water cycle. Without these ecological safeguards for protection, rivers, streams, and flood basins become polluted.

Most of Pennsylvania's wildlife — including threatened and endangered species — use wetland habitat during all or some portion of their lives. Some species are on the threatened list as a direct result of the loss of wetlands; more than half of the wetlands found in the Pennsylvania of the 1700s have vanished due to habitat degradation, agriculture, mining, and development. In fact, today wetlands cover just 2 percent of the state's total land area primarily in the glaciated northern region of the state.

STEVEN J. SAFFIER

Cattail reeds dominate this channel in Montgomery County, providing habitat for a variety of bird species.

Thousands of miles of riparian buffers along Pennsylvania's streams and rivers have been lost or degraded because of rampant development. Buffers help to shade streams and rivers, stabilize banks, and provide food for aquatic organisms. Deforestation destroys the buffer and its effectiveness in preventing flooding and erosion by removing tree canopies and plant roots that normally intercept rainfall and slow the rate at which it enters streams. In southeastern Pennsylvania, rapid development has replaced routes of natural water flow with culverts and detention basins, making buffer retention a critical local problem.

Beyond the health of our environment, these wetlands and buffers contribute to the broader quality of living in the Delaware Valley. They reduce costs associated with floods, generate income from recreational use, and add property value. The recreational value of streams, especially those with protected buffers, is indisputable, offering resources for fishing, boating, nature watching, and avenues for artistic expression. But improper management of water can lead to new, often long-term problems. For example, grassy areas created around storm basins may attract large Canada Goose populations that can become a nuisance.

STEVEN J. SAFFIER

A green frog, one of the many local amphibians that depend on wetlands for survival.

A majority of Pennsylvania's riparian lands and wetlands are privately owned and while government imposes certain restrictions on private wetlands, landowners and citizen organizations have an important role in the conservation and restoration of these resources.

Federal and state agencies, county conservation districts, and private organizations can facilitate conservation and management options for landowners. Turn the page and read about the unique partnership that was formed when a residential community took action to restore a riparian area.

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My AHA!s

AHA!
Conservation Project Planning Considerations

As the landowner or neighbor of a wetland or riparian corridor, here are some things to consider when planning a conservation or restoration project:

- Research the local, state, and federal laws pertaining to and protecting wetlands and waterways.
- Determine your needs and overall objectives: Money, management, conservation, and wildlife enhancement/deterrence.
- Evaluate the area: What are the land use trends and zoning issues?
- Evaluate the property: What type of wetlands exist, what is the condition of the stream banks, what are the characteristics of existing vegetation, soil and wildlife habitats in the riparian or wetland zone?
- Assess problems and opportunities: Are there physical or legal limitations? What kind of financial considerations are involved?
- Be a good neighbor: Share your plan with neighbors and the community; enlist the help of experts and community groups such as scouts or garden clubs.
- Record the results: If you're going to steward the land, why not keep track and measure success? Take many pictures and inventory the changes in biodiversity. Use this information to become an advocate and share what you've learned with others.

This Eagle Scout project helped restore an eroded bank on the Pidcock Creek Watershed in Solebury Township.

TED PRESENT

Sweetwater Farm — Geese on Turkey Run

CHAMPION

J. MERLIN BENNER

NANCY MINICH

SOUTHAMPTON

Because of Lower Southampton's commitment to follow the new trends in stormwater management, it serves as a model to other communities and is often toured and discussed.

It really all began with the lawn-loving geese. When residents of the Sweetwater Farm residential development in Lower Southampton approached the township to help with the geese problem along the Turkey Run Creek behind their homes, it brought to the surface bigger issues found downstream.

For several years, the outdated detention basin aided in the bank erosion of the Neshaminy Creek at nearby Playwicki Park, causing severe flooding at the township's premier open space park. Three dams, also part of the old technology to create the basin, served to trap stormwater, polluted with household runoff. While water mismanagement was taking its toll downstream, the huge numbers of geese upstream were thriving on the expanses of maintained turf grass

Basin before implementation of management plan.

ALL PHOTOS: NANCY MINICH

Clockwise: Detention basin reengineered to create a riparian buffer along the creek and restore it to its pre-development natural status — one week, two months, one year, and two years after implementation of the final management plan.

ALL PHOTOS NANCY MINICH

Top to bottom: Infiltration trench to decrease non-point source pollution and reduce downstream velocity and flooding during installation, two weeks after, and two months after.

covering the open space between property lines and the creek.

The township approached Nancy Minich who had worked on several projects for Lower Southampton as a principal of NAM Planning and Design, LLC. She knew she could solve many of the problems, and dissuade the geese by reengineering the detention basin and create a riparian buffer along the creek, restoring it to its pre-development natural status while maintaining recreational space for residents.

A Pennsylvania Department of Environmental Protection Coastal Zone Management grant helped start the project and included a major public presentation to inform the community about the project. This was important in gaining the support of the homeowners who needed to be convinced that an "untidy" looking riparian buffer would not decrease the value of their property.

With the total commitment of the Township Manager, Susan McKeon, the project moved forward assisted by Nancy, project engineer Kirk Horstman, and the Bucks County Conservation District. The first substantial structural change was made when an infiltration trench was installed to decrease non-point source pollution and reduce downstream velocity and flooding. Outreach efforts encouraged awareness in the community,

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sought volunteers for hands-on help and gave the public works staff a better understanding of the native plantings of trees, shrubs, grasses, and wildflowers and the new land management practices needed to foster these plants.

The project partners also involved the local elementary school. Students showed up before major planting to perform tasks relating to their science classes. They picked up trash, monitored water quality, and counted goose droppings for future reference and measures of success. Horticultural students from the Eastern Montgomery Arts and Technical School contributed to the effort and learned how to develop ecological landscapes and maintenance programs. A volunteer planting day was scheduled and 75 people, including parents, came out to help.

Wildflowers and other native plants are thriving in the basin a year later.

No-mow area one year after (inset) and in April 2004 (above). Meandering paths of low grass encourage neighbors to explore.

ALL PHOTOS NANCY MINICH

The riparian buffer on the Turkey Run Creek is now in its second season. Meandering paths of low grass encourage neighbors to walk through and explore the site on their way to Playwicki Park. Bird activity is increasing; more sightings of Great Blue Heron, Red-winged Blackbirds, American Goldfinches and Eastern Bluebirds have been recorded. The neighbors are delighted; with the lawn reduction and other management measures taken, the visiting goose population is down and the banks have been stabilized. Wildflowers and other native plants are thriving and increasing biodiversity. Because of Lower Southampton's commitment to follow the new trends in stormwater management, this site serves as a model to other communities and is often toured and discussed.

Despite the ongoing efforts to beautify the riparian buffer and meadows, there remain a few residents of the Sweetwater Development who would prefer to see the lawn return, even if it brought back the geese. According to Nancy, "There is probably a fear that something wild will jump out of the tall grasses." But ask most of the residents, fisherman, and children that enjoy the path and waterway: they would be absolutely delighted if something did.

Here are some of Nancy's tips for establishing a healthy riparian buffer

- Strive to make the area as attractive as possible in the first year to buy acceptance. If possible, plant perennial wildflowers and grasses during the growing seasons (spring and summer) and take measures to protect new plantings.
- Include local schools in planning and implementation whenever possible. It's a win-win situation.
- Include trees, especially on the banks in your planting scheme. Tree growth will shade water and lower temperature, help to stabilize banks, and add nutrients. Plus, given the space needed for heavy geese to land and take flight, the placement of trees helps discourage fowl visitors.
- When planning to utilize grant opportunities to help fund the riparian project, be sure to build in an educational component along with the physical elements.

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The Problem With Geese

- Geese love the short grass of a manicured lawn (letting the grass grow would discourage the geese…see "Reducing the Lawn", page 21).
- Geese droppings increase nitrogen and phosphorus levels in waterways, creating imbalance.
- Droppings create a health problem by introducing bacteria into streams and creeks.
- Geese foot traffic causes bank erosion that prevents growth of plants and creates sediment that travels and accumulates downstream.
- Geese leave large quantities of messy droppings that reduce the recreational value of open space.
- In some cases, they might be aggressive, especially when nesting.

Along with reducing the goose problem, the Sweetwater project achieved its Comprehensive Goals. The project continues to:

- Increase infiltration
- Reduce runoff and erosion
- Trap sediment, nutrients, & chemicals
- Reduce bank erosion/improve stability
- Protect steep slopes
- Enhance aquatic environments
- Reduce runoff volume/flood reduction
- Improve air quality
- Increase property values
- Provide wildlife habitat/travel corridors
- Increase biodiversity
- Provide recreation opportunities
- Meet Phase II Stormwater Regulations of the Clean Water Act

Sweetwater Farm final management plan.