

Executive Summary

This river conservation plan describes a vision of the Brodhead watershed that can be shared by all who are concerned with what a healthy river means for the residents of our watershed and for our friends and neighbors downstream.

The purpose of the Brodhead Watershed Conservation Plan is to create a plan to help guide and prioritize conservation actions on a watershed-wide basis. Rather than being a one-time, comprehensive study of the watershed, the BWCP is a long-term and continuous management commitment – a broad-brush plan that encourages municipal authorities to commit to the long-term process of implementing the goals and management objectives outlined in this plan.

The Brodhead watershed drains an area of about 285 square miles, or close to half of Monroe County, emptying into the Delaware River just north of where the Delaware River flows through the dramatic cut in Kittatinny Mountain known as the Delaware Water Gap. In addition to being an important source of recreation and habitat, the Brodhead watershed provides the drinking water supply for area residents and visitors.

Critical Decisions

The Brodhead watershed is at a critical juncture. Monroe County's population has nearly doubled in the last twenty years and is expected to increase by 60 percent over the next twenty. Growth occurs with little consideration of its impact on both the quality and quantity of surface and groundwater. As rooftops, parking lots and streets spread across the landscape, replacing forests and fields, streams suffer. Rain and snowmelt run rapidly off these man-made surfaces instead of soaking into the ground. This stormwater runoff carries pollutants into the streams, accelerates streambank erosion, and raises stream temperatures. Future development and planning should take watershed protection into consideration.

Foundation: The Public Involvement Process

Through meetings with the public and watershed partners, significant natural, recreational, economic, cultural, and scenic resources were identified. In addition, watershed-specific problems, issues, and concerns were identified.

The biggest issues and concerns within the watershed were found to be unplanned growth, dirtier stream water, polluted stormwater runoff, development on wetlands, and municipal regulations not protective enough of watershed resources. From the issues and concerns identified through the public involvement process, five broad issue categories

were developed and using these categories, five goals were established for the Brodhead Watershed Conservation Plan:

1. ***Water Quality and Quantity*** – Maintain and improve water quality throughout the watershed and insure that an adequate quantity of surface water and groundwater is maintained.
2. ***Watershed Awareness*** – Achieve greater environmental education for all age groups to address water quality, planning & regulations, and habitat.
3. ***Policy, Planning & Regulation*** – Encourage the development of local, state, and federal planning and regulations to collectively facilitate stated watershed management goals.
4. ***Fish and Wildlife Habitat*** – Manage natural habitat to promote biodiversity and to maintain, protect, and enhance natural systems.
5. ***Historic & Cultural Resources*** – Ensure that the historic resources of the Brodhead watershed are preserved and interpreted as educational examples of the area's heritage.

Vision Statement

Residents and visitors to the Brodhead watershed care about clean water. The pure streams and safe drinking water the watershed enjoys are viewed as precious assets and all are aware of how important it is to continually maintain and protect this resource. Planning at all levels of government continues to point to the importance of maintaining and enhancing this resource as a critical goal for supporting the quality of life within the watershed. Due to this acute awareness, actions are taken that assure that the streams in the watershed will remain healthy for future generations. Both individual actions and municipal policy decisions are made with the knowledge of how these actions affect the health of the watershed and with the understanding that we are all stewards of the natural and cultural resources that affect the health of the watershed. As a result of this understanding and many appropriate follow-up actions future generations are assured of a watershed that continues to sustain its human and natural residents.

Water in the watershed is not only clean and plentiful but many of the streams continue to support pristine trout fisheries. The stream corridors also provide an appropriate sense of place as greenway buffers have been maintained and enhanced in a continuous network or green infrastructure that supports other important ecological and cultural functions. In addition to trout habitat, a rich diversity of land and aquatic species are supported. Also residents and visitors alike are connected to much of this network by a series of trails that provide access to nature, interpret the rich history, and provide alternative routes of transportation.

Critical Actions

Through a review of the draft action items by steering committee members and municipal leaders, fifteen action items surfaced as “critical”. These critical issues have a “most important” priority ranking in the management options tables found in *Section 3, Recommended Actions & Management Options*. These action items should be addressed first:

- *Strengthen land use ordinances to minimize effects of impervious surfaces.*
- *Develop sewage management programs to better manage on-lot septic systems.*
- *Promote and develop greenways to link important natural, recreational and wildlife habitat areas in cooperation with willing landowners.*
- *Use incentive-based approaches to protect, restore, and conserve important fish and wildlife habitat and direct development away from important habitat areas.*
- *Encourage DEP to take prompt action on known sewage treatment plant violations.*
- *Use open space funds and other monies to protect critical riparian areas.*
- *Increase public access to fishing waters.*
- *Develop educational programs about protecting sources of drinking water in the Brodhead watershed.*
- *Organize watershed awareness raising activities, especially activities that involve children.*
- *Develop programs to protect existing and potential future sources of drinking water.*
- *Strengthen land use ordinances to better protect groundwater recharge. (Locate, delineate, and map significant recharge zones throughout the watershed.)*
- *Strengthen land use ordinances to better protect floodplains.*
- *Develop education programs to encourage landowners and citizens to plant native species, plant or maintain riparian buffers and improve stream habitat.*
- *Restore in-stream habitat in areas degraded by flooding, channelization, loss of riparian buffer, and increased runoff.*
- *Encourage riparian landowners to create and maintain forested stream buffers.*

Action Plan Summary

The following are summary recommendations for achieving the vision of the Brodhead Watershed Conservation Plan. *Section 3, Recommended Actions & Management Options* provides a detailed listing of strategies and actions required to realize the plan.

WATER QUALITY AND QUANTITY

- To achieve the goal of maintaining and improving water quality throughout the watershed and insuring that an adequate quantity of surface water and groundwater is maintained, municipalities need to strengthen land use ordinances

to better protect floodplains and groundwater recharge areas and to minimize the amount and impact of impervious surfaces. Municipalities should also adopt ordinances consistent with the updated Brodhead / McMichael stormwater management plan. Critical riparian areas should be protected by fee simple purchase or purchase of development rights.

- Municipalities and DEP will promote alternatives (such as land application) to stream discharges from sewage treatment plants where feasible, and lands for land disposal of treated wastewater should be utilized where environmentally sound and economically feasible. DEP will be encouraged to take prompt action on known sewage treatment plant violations. Steps should be taken to develop sewage management programs to better manage on-lot septic systems.
- Riparian landowners should be encouraged to create and maintain forested stream buffers. Partnerships should be organized to restore impacted and eroding streambanks using bioengineering and natural stream design approaches.
- Water quality monitoring efforts should be revamped, including hiring a professional streamwatch coordinator, reviewing current monitoring plans, and encouraging new gauging stations. Projects need to be developed to decrease non-point source pollution from existing developed areas and highways. Water suppliers and municipalities should develop programs to protect existing and potential future sources of drinking water.
- A biomonitoring protocol should be developed to assure that the DRBC standard of “no measurable change” at the Brodhead Boundary Control Point is met in the future. Headwaters areas should be protected.

WATERSHED AWARENESS

- The educational goals of the Brodhead Watershed Conservation Plan can be realized by publishing information about watershed issues on a regular basis in the local media (including newspapers, radio, and television), organizing watershed-awareness raising activities – especially those that involve children, creating a speakers bureau to inform local organizations about watershed issues, and by presenting the Watershed Conservation Plan at municipal meetings. As an awareness-raising tool, a video can be created about the Brodhead watershed.
- Educational programs must be developed to encourage landowners and citizens to plant native species, plant or maintain riparian buffers, and improve stream habitat. Programs should also be developed to educate citizens about protecting sources of drinking water in the watershed.
- Riparian landowners and watershed stakeholders can share information about watershed issues and actions through a watershed information clearinghouse or

become involved through a “community conservation corps” designed to encourage riparian neighbors to work together.

- Landowners should be encouraged to conserve privately owned woodlots, or to use sustainable forestry practices, where applicable. Interested landowners should also be encouraged to place conservation easements on open land through donation or purchase.
- The Brodhead Watershed Association should acquire a full-time staff person to oversee and/or implement the recommendations of this plan.

POLICY, PLANNING AND REGULATION

- Municipalities need to promote conservation of important habitat areas through conservation-based ordinances and codes (e.g. Conservation Subdivision Design / *Growing Greener*), promote and develop greenways to link important natural, recreational, and wildlife habitat areas in cooperation with willing landowners, and review proposed land development plans for their impact on outstanding and unique features. Municipalities should also develop ordinances to maintain a minimum percentage of forest cover and establish Environmental Advisory Councils.
- Funding must be pursued to prepare subwatershed assessments (similar to the Pocono Creek Pilot Study) for each of the remaining subwatersheds within the Brodhead watershed. A water budget should be developed for each subwatershed to assure that surface and groundwater withdrawals do not exceed levels necessary to maintain adequate stream base flow. An analysis of impervious coverage and a build-out analysis should be conducted for the entire watershed.
- The Pennsylvania Department of Environmental Protection should require sewage treatment plant permittees and/or operators to maintain in-stream habitat below sewage treatment plants through bio-monitoring.

FISH AND WILDLIFE HABITAT

- To achieve the goal of managing natural habitat to promote biodiversity and to maintain and protect natural systems, municipalities should use incentive-based approaches to protect, restore, and conserve important fish and wildlife habitat and direct development away from these areas. Inventory studies may be needed to identify Important Bird Areas and other critical habitat areas.
- Open space and other funds should be used to purchase lands from willing sellers to provide public access to fishing waters. Fisheries inventories should be conducted in high priority stream areas, and current fish stocking

programs should be reviewed. New approaches for more effective management of deer, geese, and other nuisance wildlife, and of exotic and invasive species should be developed.

- Restoration of in-stream habitat in areas degraded by flooding, channelization, loss of riparian buffer, increased runoff, or any other cause of stream degradation is also called for. Restoration of previously relocated or channelized stream segments should also be explored.

HISTORIC & CULTURAL RESOURCES

- To achieve the goal of ensuring that the historic resources of the Brodhead watershed are preserved as educational examples of the area's heritage, municipal ordinances need to be amended to encourage creative reuse of historic structures consistent with maintaining the historic character of the building; likewise, permits should be required for demolition. Clear and reasonable design review standards for renovations to historic structures should also be incorporated into municipal codes.
- A plan must be developed for identifying, protecting, and interpreting important historic structures and areas in the watershed. All eligible historic structures should be added to the National Register of Historic Places to ensure their protection.
- Specific projects include: Determine the feasibility of restoration of the historic Henryville House and/or acquiring the site to develop a facility for interpretive use, consider acquiring the 24-acre property containing Marshalls Falls and nearby Titania House as a local park/open space, maintain the historic Double Arch Stone Bridge as necessary to preserve original features, and restore the Creekside Park at the Delaware Water Gap Train Station for historical interpretation and tourism.

Implementation

An important outcome of this plan is the petition for inclusion of the Brodhead watershed on the Pennsylvania Rivers Conservation Registry. The plan has been developed with assistance from the Pennsylvania Rivers Conservation Program, administered by the Pennsylvania Department of Conservation and Natural Resources (DCNR), and has incorporated a significant public involvement effort. With the endorsement of agencies and municipalities, the registry of the Brodhead watershed entitles projects and programs of the types recommended in this plan to eligibility for implementation funds from the Commonwealth through the River Conservation Program. This will allow a number of organizations, municipalities, conservation districts, county planning organizations, and

community organizations to leverage up to \$50,000 per year to implement the recommendations in this report.