

Broadkill Watershed Tributary Action Team Pollution Control Strategies

Draft recommendations from 1/14/2008 meeting.
Submitted to DNREC Secretary John Hughes on 5/14/08.

Overview

The Broadkill River and its tributaries and ponds are impaired by high levels of bacteria and elevated levels of the nutrients nitrogen and phosphorus. Because of this, Delaware has committed to develop pollution control strategies for the Broadkill River Watershed. Enhancements in wastewater treatment, agricultural practices, and erosion and sediment controls have contributed to improving the Broadkill's health. However, levels of nutrients and bacteria in the waterways remain high. There has been a significant decrease in wetlands and forests over time as these natural filters have been converted for other uses. The land use continues to change from what was recently a watershed dominated by cropland to a more urban/suburban watershed. The impact of these land use changes is uncertain.

As residents and stakeholders of the Broadkill Watershed, we need to make decisions about its future. The multitude of activities that take place on land (69,000 acres in the drainage area), such as farming, lawn fertilizing, and septic use, even miles from the river, produce nutrients that enter the river through surface water runoff and groundwater recharge. Because of its diffuse nature, this nonpoint source pollution has proven difficult to tackle. Point source pollution, which is discharged from a specific site like a pipe, also occurs in the Broadkill and is regulated through permits. Since sources of pollution come from a variety of areas, any water quality goals will require everyone to do their part.

Total Maximum Daily Loads (TMDLs) were established for the Broadkill River Watershed in December 2006. The TMDL requires:

- A 40 percent reduction in non-point source nitrogen load (from the 2002-2003 baseline),

- A 40 percent reduction in non-point source phosphorus load (2002- 2003 baseline),
- A 75 percent reduction in non-point source enterococcus bacteria (2002-2003 baseline), and
- Implementation of this TMDLs Regulation shall be achieved through the development and implementation of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with the Tributary Action Teams, other stakeholders, and the public.

In terms of daily non-point nutrient loads, a 40% reduction in nitrogen (baseline 1,675 lbs/day) would require a reduction of 670 lbs/day to reach the target load. A 40% reduction in phosphorus (baseline 69.3 lbs/day) would require a 27.7 lbs/day reduction to reach the target load. Although it is difficult to quantify bacteria sources, the Team believes that measures taken to reduce nutrients will have a beneficial effect on the bacteria pollution levels.

Guiding Principles

The Team worked to improve the water quality of the Broadkill River watershed using sound science as a basis for decisions, developing solutions that are integrative, creative and innovative, with due consideration given for the private property rights of individuals in the community and for the welfare of present and future generations who live and work in the watershed.

The Team operated by consensus, and effort was made to meet the interests of all the participating stakeholder groups. We defined “consensus” to mean that there is no dissent by any member. Members were advised by facilitators not to block or withhold consensus unless they had serious reservations with the recommendation or approach. If members disagreed with the recommendation or approach selected by the rest of the group, they were asked to offer an alternative. If there was still disagreement after discussion and consideration of alternative approaches, we have noted that member(s) withheld consent. Within the PCS recommendations we note where Team members dissented with majority as a “veto”

I. Agriculture

Agriculture is by far the largest land use in the watershed representing approximately 40% of the land area. In 1999, the Delaware Nutrient Management Act was established to improve water quality while maintaining agricultural

profitability. It established a certification program that encourages the implementation of best management practices (BMPs). Currently, all agricultural operations in the Broadkill watershed have developed nutrient management plans. BMPs installed through 2006 include: Nutrient Management Plans; cover crops; Conservation Reserve Program practices; Conservation Reserve Enhancement Program (CREP) practices; manure relocation/alternative use; and the use of Phytase in poultry feed. These BMPs have produced reductions of approximately 481.96 lbs/day of Nitrogen (70% of total target reduction) and 19.58 lbs/day of Phosphorus (70% of total target reduction). Annually, these BMPs cost approximately \$282,000, making them a very cost effective means of reducing nutrients to local ground and surface waters, however these reductions are estimates based on assumptions for each BMP efficiency.

These reductions in N and P are impressive. These voluntary cost share programs seem to be accomplishing the intended purpose. In comparison to other pollution control strategies in urban sectors, these approaches are relatively inexpensive to implement. Even more could be done if all citizens were willing to share in the cost; the issue is one of fairness and who pays.

The team notes that some agricultural operations in the watershed are in environmentally sensitive areas and if further reductions are recommended, then the following criteria should be considered:

1. Target BMP types and target locations based on farm (*site*) specific criteria (proximity to impaired waterbodies, soil types, BMPs in place, BMPs in compliance and BMPs needed). (NOTE: Points to consider include: profit margin-don't throw another cost burden on farmer; inspections-lose cost share support if not following rules; evaluation component-how many inspectors/frequency of inspections/compliance rate).
2. Because these BMPs may be cost prohibitive for the individual farmer to bear, increase cost share program funds for best management practice strategies that produce significant results in the most sensitive areas. These BMPs may include: cover crops, conservation tillage, riparian buffers, manure storage sheds, etc. Continue to refine Nutrient Management Plans for all agricultural operations in the watershed, such as providing more assistance with implementation for Pre-Sidedress Nitrogen Tests (PSNTs), NMP soil sampling, education, outreach, and measurable outcomes. (NOTE: who will do this- U of D, Conservation District, and/or crop consultants? Will there be an evaluation system?)

3. Search for ways to improve real-time assistance to farmers. For example - email digital pictures of pests to farmer to improve efficiency/response time.

The team notes that the conversion of agricultural land for non agricultural purposes will change nutrient runoff in ways that should be closely monitored.

II. Non Agriculture Stormwater

In 2002, there were more than 8,800 acres of developed lands in the watershed. Any development that occurred prior to 1990 was not subject to the State's Sediment and Stormwater Law, which requires any land disturbing activities of a certain size to address water quantity and water quality issues specifically related to sediment. Many stormwater BMPs address both water quantity and quality, however, some BMPs are more effective at reducing nutrients than others. The Sussex Conservation District, who oversees the planning, construction, and maintenance of stormwater facilities in the county, is in the process of updating a database that will track BMPs by type and location. Until that data is available, a visual reconnaissance of subdivisions in the Broadkill Watershed in Spring 2007 revealed that approximately 190 acres are treated by dry ponds and that approximately 1,500 acres are treated by wet ponds. These BMPs produce reductions of 17.23 lbs/day of Nitrogen and 2.90 lbs/day of Phosphorus. Annually, these BMPs cost approximately \$455,000.

As noted in the Agriculture recommendations, the Team notes that conversion of Agriculture to non-agricultural land uses can impact the nutrient reductions made by the Agriculture sector. There are currently 15,000 (approx.) new residential units approved by municipal and county government in the watershed. The types of development and use of stormwater best management practices can have either positive or negative effects on nutrient reductions.

The Team recommends:

- Development activities that are subject to Delaware's Sediment and Stormwater Law shall provide stormwater management that includes nutrient reductions consistent with TMDL load reductions, or shall utilize 'best available technologies' (BATs) in the project design where TMDL load reductions are not feasible.

- Enforce sediment control measures during construction phase. We recommend enforcement provisions that are adequate and appropriate. This may include larger penalties, such as fines and stop work orders, and require remediation in addition to mitigation. We recommend the review and approval of sediment control measures during the pre-construction phase, and enforcement responsibilities.
- Encourage site specific, streamside vegetated buffers throughout the watershed through open space designations and incentives, as well as through targeted outreach/education programs. (2 vetoes)
- Provide incentives for the use of pervious materials and strategies (to take the place of traditional impervious ones) for sidewalks, parking lots, and roadways should be provided to developers by all governmental entities.
- Encourage the use of conservation design principles that reduce surface water runoff of nutrients, such as those that promote infiltration, narrower roads and sidewalks, swales and grassed waterways, water conservation and recycling, natural resource protection, open space preservation, and park creation, among other practices.
- The County, State and local governments should create codes and regulations that provide for incentives that allow and promote “conservation design” principles with a goal of reducing nutrient loads. Require stormwater maintenance plans for new development.
- Develop manuals on residential stormwater system maintenance to address new and older developments. Existing documents should be disseminated to homeowners.
- Develop a program or means to provide outreach/education to homeowners served by a stormwater management system. This program should address maintenance plans, funding obligations, legal obligations, resource agencies, etc.
- Require Realtors to provide disclosure information regarding stormwater management requirements to the buyer in writing at time of contract (1 veto).

- Establish stormwater retrofit requirements for direct discharge to the Broadkill River, ponds, and tributaries.
- Require DNREC to develop a stormwater retrofit strategy for communities built before 1991 so they can reduce the quantity of nutrients, bacteria, and sediment that they deliver to ponds and streams (e.g. rain gardens, vegetative buffers).
- As part of DelDOT highway maintenance program, plant trees (*vegetated buffers*) along all roads and highways to absorb water and reduce run-off, consistent with highway safety standards (2 vetoes).
- Encourage county and municipal authorities to reduce the number of required parking spaces at shopping malls, break up the parking areas with planted islands, and use of porous surface.
- Encourage municipal and county authorities to mail stormwater pollution prevention information.
- Encourage municipal and state authorities to prevent or remediate the silting in of public pond systems to assure their ongoing existence.
- Investigate the possibility of converting ditches to shallow ponds that could remove nutrients from the runoff stream by holding up low flow rates to permit time for nutrient reduction (1 veto).
- Investigate and propose modalities for financing future stormwater needs.
- Use cost-benefit analysis to help set priorities for stormwater management projects.
- Require stormwater maintenance plans for new commercial properties. (1 veto)
- Develop manuals on stormwater system maintenance to address commercial properties. Existing documents should be disseminated to commercial property owners.

- Develop a program or means to provide outreach/education to commercial property owners served by a stormwater management system. This program should address maintenance plans, funding obligations, legal obligations, resource agencies, etc.

III. Wastewater

Within the Broadkill Watershed, several initiatives have led to nutrient reductions to date. A state-wide Holding Tank Compliance Program assists the 21 holding tanks in the watershed with monthly pump-outs, which reduces the nutrients entering groundwaters. In addition, approximately 350 individual onsite wastewater treatment and disposal systems (OWTDS) in the Red Mill Pond area were eliminated when they were connected to a central sewer district. These actions have resulted in estimated reductions of 18.54 lbs/day of Nitrogen and 1.89 lbs/day of Phosphorus and annually, had a cost of approximately \$333,000. (Note that this cost is annualized over the life of the loan and/or BMP).

- Require new and replacement onsite wastewater treatment and disposal systems (OWTDS) larger than 2,500 gpd to use technologies that achieve specific performance standards for TN and TP. Typically, phosphorus reducing technologies are only recommended where site specific conditions warrant.
- Investigate and report state-of-the-art best available technologies for the non-water management of waste, including pilot demonstration projects.
- Require enforcement of existing individual OWTDS regulations. (1 veto)
- Provide incentives and financial assistance when needed for repair and upgrade of individual OWTDS, (particularly for low income households).
- Develop a program or means to provide outreach/education to homeowners served by an OWTDS. This will require a dissemination strategy.

Broadkill Steering Committee

Member affiliation/interest

Gary Stabley - President, City of Lewes Board of Public Works

Rich Collins - Positive Growth Alliance

Annabella Larsen - Prime Hook National Wildlife Refuge

George O'Shea – Prime Hook National Wildlife Refuge

Marilyn O'Neal – Perdue, Georgetown

Judy Denver – U S Geological Survey and watershed resident

Joan Martin Brown – Milton resident and Milton Town Council

Bob Stenger – Watershed resident and golf course owner/operator in upper watershed

Nick DiPasquale – Duffield Associates, Inc. and Audubon Society

Charles Jones – Milton resident with boat livery on Broadkill River

Ernie Sheppe – Morris & Ritchie Associates and professional engineer

Bob Howard – watershed resident

Bev and Ron Stoner – watershed residents and Broadkill River Monitoring Program

Sandra Dee Henning – watershed resident and Broadkill River Monitoring Program

Kip Foskey – Sussex Conservation District

Facilitators

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