

Executive Summary

Lower Neshaminy Creek River Conservation Plan



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Introduction

The Lower Neshaminy Creek Watershed Conservation Plan (LNWCP) is the product of many contributions from county agencies, local municipalities, concerned citizens, utilities and advocacy groups. The purpose of this plan is to preserve and enhance the many valuable environmental, recreational and cultural resources of this historically important region.

The LNWCP study area encompasses 39.5 square miles (25,284 acres) of the Lower Neshaminy Creek Watershed that lie within the boundaries of Northampton, Middletown, Upper Southampton, Lower Southampton townships and Hulmeville, Langhorne, Langhorne Manor and Pennel boroughs in Bucks County. The study area includes 18.6 linear miles of the Neshaminy Creek and 51.6 miles of major tributaries, as well as a small portion of the Queen Ann Creek watershed in Middletown Township. This area includes the last major section of the main stem Neshaminy Creek Watershed to receive an RCP.

Planning History

The Neshaminy Creek Watershed has a long history of studies and planning efforts. In 1997, the Doylestown Township Environmental Advisory Committee completed an RCP for the Neshaminy Creek in the vicinity of Doylestown Township. This plan was the fifth to be placed on the state rivers registry and the first to incorporate GIS mapping. The Delaware Riverkeeper completed an RCP for the Upper and Middle Neshaminy Creek Watershed in 2002, and the Neshaminy Creek, from the Bensalem border to its confluence with the Delaware River, was included in the Lower Delaware RCP, completed by Heritage Conservancy in 1999. The LNWCP will complete RCP coverage for the main stem Neshaminy Creek.

There are numerous flood control, stormwater and water supply plans that address many of the environmental issues facing residents of the Neshaminy Creek Watershed. While RCPs can address aspects of stormwater management, flood control and water quality, these plans are not primarily focused on those issues. At the time of the writing of this RCP, the *Act 167 Stormwater Management Plan for the Neshaminy Creek Watershed* and *Total Maximum Daily Load Plan for the Neshaminy Creek Watershed* are being revised and published, respectively. These plans, along with the *Neshaminy Watershed Work Plan #5* address the volume and quality of water in the Neshaminy Creek and focus on controlling stormwater flows and pollutants entering the creek and its tributaries.

The study area encompasses 39.5 square miles (25,284 acres) of the Lower Neshaminy Creek Watershed that lie within the boundaries of Northampton, Middletown, Upper Southampton, Lower Southampton townships and Hulmeville, Langhorne, Langhorne Manor and Pennel boroughs in Bucks County.

Water quality in the Lower Neshaminy Creek is subject to a large variety of point and non-point sources of pollution. There are 15 municipal wastewater discharge points upstream from the study area.

This RCP can bridge the goals and objectives of plans for both the upstream and downstream sections of the Neshaminy Creek watershed. This plan shares (among other goals), the goals of improving water quality, restoring riparian buffers and educating watershed residents with the Neshaminy, Upper and Middle Neshaminy and Lower Delaware RCPs. The completion of this plan and its successful listing on the state River Registry has the potential to reenergize implementation efforts for these plans and can serve as a catalyst for cooperation between communities in the upper and lower reaches of the Neshaminy Creek watershed. With the completion of the Little Neshaminy Creek RCP (the last section of the Neshaminy Creek watershed lacking an RCP), plans for the Neshaminy Creek Watershed should be reviewed to identify common themes and opportunities for implementation projects that will benefit the entire Neshaminy Creek watershed. A holistic watershed approach, that incorporates local solutions to watershed wide issues, may be the best strategy to conserve and reclaim this valuable resource.

Planning Process

A steering committee for the LNWCP was established in July 2002, and is comprised of watershed stakeholders, local, county and state governmental agencies, environmental groups and utilities. The steering committee has met regularly to identify the important river related values and issues of concern to be included in the RCP, as well as proposing management options for the watershed.

At the beginning of the planning process, the steering committee identified the RCP goals, which provided direction for the planning process. Representatives also provided critical assistance to the plan's development. The committee reviewed draft plans, assisted in hosting, organizing and advertising public participation events, mailed, and distributed plan questionnaires and participated in the volunteer stream visual assessment. The steering committee identified and prioritized the plan management options that are included with this executive summary, and coordinated local activities and efforts that are critical to the success of the RCP.

Input from the public was also critical to developing the management options for this RCP. The following list details opportunities for public input through the planning process.

- An initial public meeting was held on November 17, 2002 to introduce the public to the RCP process and invite participation.
- Public input, regarding the needs of the study area's watersheds was solicited through public surveys that were mailed, posted on websites and distributed at municipal offices and libraries.
- Volunteers contributed to the plan by performing visual assessments on stream segments throughout the watershed to identify physical conditions of the creek and its tributaries.
- A public presentation of the Draft LNWCP was held on March 3, 2004. Copies of the plan were distributed to attendees for review. This meeting began the thirty-day comment period on the draft.
- The Final LNWCP was presented at a public meeting on November 9, 2004. Copies of the plans were distributed to attendees.

The area boasts five sites listed in the county's Natural Areas Inventory (NAI), four historic districts on the National Register of Historic Places, a nationally significant archaeological site, the most visited park in Bucks County, a potential Audubon Important Bird Area and many other resources.

Vertical line separator

Study Area Characteristics

Issues, Concerns and Constraints

The Lower Neshaminy Creek Watershed suffers from issues that are typical of post -World War II suburban development in the Delaware Valley. Flooding, streambank erosion, degraded water quality and loss of wildlife habitat are direct results of the rapid urbanization of this region.

The Lower Neshaminy Creek Watershed has experienced serious periodic flooding. Millions of dollars in property damages have been caused by the Neshaminy Creek overflowing its banks since the flood of record in 1955. In September 1999, Hurricane Floyd caused the Neshaminy Creek to reach the 100-year flood stage, resulting in damage to hundreds of homes and businesses. The following summer a localized storm brought eight inches of rain to Upper and Lower Southampton in a period of three hours, damaging more homes and businesses.

The flooding issue is strongly correlated to the way stormwater is managed in the watershed. Development has increased the quantity of stormwater runoff as well as the velocity in which that water travels into stream bodies. Detention basins, traditional stormwater controls implemented since the late 1970s, have reduced the peak discharges of stormwater into the watershed but have prolonged the discharge period. This situation has resulted in receiving streams being subject to longer periods of bank full flows. New stormwater regulations address new construction only and will have little or no impact on current conditions, which have resulted in historical flooding in the Lower Neshaminy Creek Watershed. Locally, the lower portion of the watershed, largely developed in the 1950s, has inadequate stormwater infrastructure to handle the 100-year storm. The county and federal governments have begun buy-outs of the most susceptible properties, but a watershed wide review of the way land is developed and stormwater is managed will be the most successful method of reducing further loss of property.

Water quality in the Lower Neshaminy Creek is subject to a large variety of point and non-point sources of pollution. There are 15 municipal wastewater discharge points upstream from the study area. The region's sewer infrastructure runs parallel to and crosses under the creek throughout the study area, adding the potential for inputs into the stream from leaks in the sewer infrastructure. The Pennsylvania Department of the Environment (PA DEP) identifies sediment, nutrients and water flow variability as the sources of water quality impairment in this watershed. Improving water quality in this lower portion of the watershed will require the cooperation of and coordination with upstream communities for the

management of municipal point source discharges, as well as better stormwater management to reduce nutrient and sediment inputs.

The Lower Neshaminy Creek Watershed maintains many important natural, cultural and historical resources. The area boasts six sites listed in the county's Natural Areas Inventory (NAI), four historic districts on the National Register of Historic Places, a nationally significant archaeological site, the most visited park in Bucks County, a potential Audubon Important Bird Area and many other resources.

Many of the issues, concerns and opportunities in this region are directly related to the Neshaminy Creek and the manner in which the land in the watershed has been developed. The region was not converted from pristine forest to bedroom communities overnight nor will streambank erosion and flooding cease in the near future. Improvements to this region's natural, economic and built environments can be accomplished through good planning and cooperation among the various watershed stakeholders. A holistic watershed approach, advocated by this plan, is a good step in the right direction.

Public Involvement

Public Survey

A short public survey was developed for residents of the Lower Neshaminy Creek Watershed. The purpose of the survey was to increase awareness of the RCP process and to capture the input of people who may not have the opportunity to participate in the planning process through other scheduled public participation events. The survey results are not statistically significant due to the nature of the distribution of the survey, but are a valuable tool to capture a larger pool of input from stakeholders.

Surveys were distributed through mail by Hulmeville, Langhorne, and Langhorne Manor boroughs and Middletown, Northampton, Lower Southampton and Upper Southampton townships. Copies of the surveys were also placed at the Southampton and Lower Southampton public libraries for distribution. The survey was accessible through Heritage Conservancy's website.

One thousand surveys were distributed in March 2003. Municipalities mailed between 50 and 150 surveys each depending on municipality size and percentage of area within the watershed. Of those 1,000 surveys, 125 were returned to Heritage Conservancy (HC) and eight were filled out on the HC website.

Volunteer Stream Visual Assessment

On May 17, 2003, sixteen members of the public met at Playwicki County Park to be trained in a stream visual assessment technique. The purpose of the visual assessment was to enlist residents of the watershed to visit their local stream and report on the physical condition of the stream. Armed with maps, the assessment team indicated the presence of storm or sewer infrastructure, invasive plants, severe erosion, preserved natural areas or other notable physical characteristics of the stream stretch. Assessments were geared to give a general impression of the state of the streams in the watershed, and they also served the valuable purpose of getting residents into the creeks to witness firsthand the issues facing their local streams.

The visual assessments present a picture of a watershed in need of attention. Some issues are very large and will take years to address, such as severe streambank erosion along the main stem Neshaminy Creek. Other issues, such as educating homeowners about not dumping their yard waste into the stream, can be addressed immediately. But these efforts need to be sustained for the Neshaminy Creek Watershed to reach its full potential.

Management Options

Management options for the Lower Neshaminy Creek Watershed Conservation Plan were developed based on the goals of the plan, input from public meetings and surveys, results of the stream visual assessments and resource inventory and concerns of the public and steering committee.

Management options are comprehensive in nature and most are relevant to all of the municipalities in the study area and the region as a whole. The steering committee prioritized the management options to give a sense of the projects that should be addressed first under each goal.

A matrix detailing the management options for this plan, potential project partners and the timeframe of expected project implementation are included in this section.

Prioritized Goals

Goal: *Water Quality*

Protect and improve the water quality in the Neshaminy Creek Watershed to improve recreational opportunities, wildlife habitat and sources of drinking water.

Prioritized objectives and actions

- 1) NPDES requirements
 - a) Implement remediation and conservation design education
 - b) Implement six minimum control measurements
 - i) Public education and outreach
 - ii) Public participation and involvement
 - iii) Illicit discharge detection and elimination
 - iv) Construction and site runoff control
 - v) Post construction runoff control
 - vi) Pollution prevention/good house keeping for municipal operations
- 2) Act 167 Management recommendation
 - a) Adopt water quality goals per Act 167 plan
- 3) Protect drinking water sources
 - a) Protect watershed as important source of drinking water
 - b) Institute wellhead protection programs
 - c) Reduce demand on water sources through residential water conservation programs
 - d) Support efforts of local watershed groups to improve and protect water quality in the watershed
- 4) Water quality BMPs
 - a) Implement naturalized stormwater BMPs to improve water quality

- 5) Sewer infrastructure
 - a) Conduct sanitary sewer survey to determine locations of leaks, overflows, infiltration and inflow
 - b) Repair and replace aging sewer infrastructure that adversely affects stream water quality
 - c) Convene meeting of watershed municipalities, water utilities, wastewater utilities and DEP to explore cooperation meeting federal mandates.

- 6) Target locations for these actions include:
 - a) Mill Creek between Street Road and Bustleton Pike, (L. Southampton)
 - b) Neshaminy Creek Mainstem from Newtown-Richboro Road to Playwicki Park (Langhorne, Middletown and Northampton)
 - c) Pine Run Creek from Woodenbridge Road to fork in stream (Northampton)

- 7) Churchville Reservoir and Lake Luxembourg
 - a) Reduce sediment and nutrient loading on reservoirs and flood control lakes to improve drinking water quality, fishery and recreational opportunities
 - b) Support Goose population control measures on lakes and watercourses

- 8) Water quality monitoring program
 - a) Train, recruit and educate volunteer water quality monitors

Goal: Stormwater

Improve the way stormwater is managed in the watershed to reduce flooding, protect stream baseflow, and maintain the hydrologic balance.

Prioritized objectives and actions

- 1) Ordinances
 - a) Update ordinances to support improved stormwater BMP design, construction, operation and maintenance
 - b) Review municipal weed ordinances to eliminate conflicts with stormwater quality management goals

- 2) Stormwater management
 - a) Support efforts to research requirements of establishing stormwater utility
 - b) Coordinate stormwater management, conservation and preservation efforts between organizations and municipalities throughout the Neshaminy Creek Watershed
 - c) Revisit 1997 Lower Neshaminy Watershed Water Quality and Stormwater Study

- 3) Best Management Practices (BMPs)
 - a) Retrofit and/or naturalize BMPs where possible to promote infiltration and improvements in water quality
 - b) Utilize treatment wetlands and innovative BMPs as educational tools for the public, municipalities and agencies
 - c) Install innovative BMPs on public and school district land to be used as demonstration sites
- 4) School district property
 - a) Conduct a professional assessment of school district stormwater management facilities
 - b) Fund position at school district to address improved stormwater management, oversee implementation of assessment recommendations
 - c) Create capital improvement policies at school districts that incorporate sound environmental and stormwater management practices
- 5) Vegetation
 - a) Develop and implement residential, municipal and public education programs that address the benefits of naturalized land for water management and air quality
 - b) Utilize urban tree canopy programs to encourage urban forestry in the watershed
 - c) Increase the number of street trees in developed areas of the watershed
- 6) Stormwater flows
 - a) Reduce residential stormwater run-off through promotion of rain barrels, rain gardens and homeowner education

Goal: Flood Damage

Reduce impacts from flooding on economic, historic and natural resources.

Prioritized objectives and actions

- 1) Flood prone properties
 - a) Purchase flood prone properties for conversion to public open space.
 - b) Ensure proper management of acquired land through property management plans
 - c) Support park department staff person to address property management
- 2) Floodplains and wetlands
 - a) Reduce exemptions to existing ordinances allowing encroachment and building in these areas
 - b) Sponsor study to remap 100 year floodplain to account for upstream development as in Pennypack and Tacony creek watersheds

- c) Strengthen existing ordinances that protect property in the stream corridor
 - d) Encourage protection of existing wetlands and natural floodplain areas through conservation easements
- 3) Zoning and building exemptions
- a) Provide training to zoning hearing boards regarding the cumulative effects of exemptions and increased impervious surface on the hydrologic cycle of the watershed
 - b) Develop handbook for ZHBs educating them about cumulative impacts of impervious surfaces and offer recommendations of measures that can mitigate environmental damage
- 4) Debris and obstructions in stream
- a) Establish dialog with DEP, NRCS and ACE to create procedure for removal of obstructions

Goal: Important Resource Areas

Identify and protect the unique historical and scenic resources of the watershed.

Prioritized objectives and actions

- 1) Public open spaces
- a) Develop management plans for public open spaces and all park land
 - b) Encourage naturalization of open spaces
 - c) Create fund for purchase of trees, shrubs and meadows grasses to be used by municipalities, schools and organizations for re-vegetating open spaces
- 2) Reduce damage to natural areas
- a) Control invasive and exotic plants and animals
 - b) Develop invasive species management study for watershed
 - c) Institute measures to reduce damage from Canada Goose and White Tailed deer
 - d) Control illegal ATV use on open spaces

Target Areas for illegal ATV use are

- a) Forest adjacent to unnamed tributary to Neshaminy behind retirement community on St. Leonard's Road (Northampton)
 - b) Open space along Neshaminy Creek in Langhorne Borough
 - c) Bellwood preserve (Northampton)
- 3) Protect prioritized NAI sites
- a) Enact stricter resource protection regulations in designated NAI areas
 - b) Protect NAI areas through acquisition or conservation easements

- 4) Link important resources
 - a) Implement BCPC proposed greenway networks
 - b) Develop trails, bike paths and greenways linking important natural and historic resources
- 5) Historic sites
 - a) Maintain historic resources
 - b) Update historic preservation ordinances
 - c) Promote adaptive re-use of historic buildings
- 6) Education
 - a) Create resource materials for use by municipalities regarding the benefits of using native vegetation in landscaping and residential gardens
 - b) Encourage municipalities and school districts to adopt policy to use native vegetation in facility landscaping
 - c) Install and maintain educational and regulatory signage in public open spaces

Goal: Biological Resources, Wetlands and Recharge Areas

Promote the recharge of groundwater resources and protect floodplains, streambanks, wetlands, riparian, natural areas and areas of biological importance.

Prioritized objectives and actions

- 1) Groundwater resources and stream baseflow
 - a) Identify important groundwater recharge areas and protect as open space.
- 2) Riparian buffers
 - a) Restore streambanks and riparian buffers along streams in the watershed.

The following areas should be targeted for riparian restorations

- a) Tributary to Lake Luxembourg, Franklin to Tollgate Roads (Middletown)
 - b) Hulmeville Creek between Wilson Avenue and Mainstream (Hulmeville)
 - c) Mill Creek behind B&R Health Club to Bustleton Pike (L Southampton)
 - d) Mill Creek, Street Road to Bustleton Pike (L Southampton)
 - e) Mill Creek, Bridgetown Pike to Playwicki Park (Northampton)
 - f) Neshaminy Creek (Langhorne)
 - g) Neshaminy Creek at Adventure Land Day Camp (Bensalem)
 - h) Pine Run, Buck to Woodenbridge Road (Northampton)
- 3) Support goals of the Churchville Greenway Watershed master plan

- a) Initiate cooperative projects to fulfill master plan goals and objectives
- 4) Promote good management practices on community open spaces
 - a) Promote invasive plant and animal control, reduced mowing schedules, and other environmentally sound management practices for community held open spaces and common areas.
 - b) Address illegal ATV in community open spaces
 - c) Promote use of vegetated buffers around BMPs and ponds to discourage use by Canada Goose
- 5) Fisheries
 - a) Improve fisheries in Churchville Reservoir and Lake Luxembourg

Goal: Parks and Recreation

Increase recreational opportunities, link greenways throughout the watershed and promote open space acquisition.

Prioritized objectives and actions

- 1) Municipal recreation facilities
 - a) Maintain and improve playground and recreational facilities
 - b) Increase passive recreation opportunities for residents through acquisition and management of natural open spaces
 - c) Improve bike path and bike trail network through-out the watershed and park system
- 2) Environmental education
 - a) Support CNC efforts to educate public and school children regarding environmental issues
- 3) Increase access to the creek for recreation
 - a) ID potential public access points
 - b) Acquire property / easements to increase public access
- 4) Canoe and kayak access points
 - a) Identify and install canoe and kayak access points to the Neshaminy Creek
 - b) Develop access points utilizing sound environmental design practices to serve as educational sites
- 5) Playwicki Farm Park
 - a) Develop educational signage or programming informing public about important archaeological site
- 6) Promote connection of this park through Mill and Neshaminy Creek greenways
 - a) Perform a gap analysis, acquire land, develop a trail network, restore wildlife habitats, develop environmental education programs and

encourage public participation in planning, acquisition, operations and maintenance

Goal: Education and Coordination

Educate the public, including builders, municipalities and residents, about reducing negative impacts from their activities, on floodplains and riparian areas.

Prioritized objectives and actions

- 1) Regulatory mandates
 - a) Coordinate efforts between municipalities, water and wastewater utilities to cooperatively address SDWA, Act 167, NPDES Phase II and TMDL for Neshaminy Creek Watershed to capitalize on efforts
- 2) Promote integration of RCP with municipal comprehensive plans and ordinances watershed-wide
- 3) Review implementation of plan recommendations within five years
 - a) Organize working group to encourage plan project implementation
- 4) Residents and homeowners
 - a) Develop programs and materials educating homeowners about environmentally sensitive land use practices
- 5) Signage
 - a) Post educational signage at stream crossings, naturalized areas, public open spaces and historical sites
 - b) Pursue program to designate official names for unnamed tributaries to the Neshaminy Creek. Ensure that perennial streams are mapped
- 6) Sponsor regular trash and debris removal efforts

The following areas should be targeted for this action

- a) Ironworks Creek Almshouse Road to Second Street Pike (Northampton)
- b) Mill Creek behind B&R Health Club to Bustleton Pike (L Southampton)
- c) Mill Creek Cherry Blossom to Bristol Road (Northampton)
- d) Neshaminy Creek Newtown–Richboro Road to Playwicki Park (Langhorne, Middletown and Northampton)
- e) Pine Run Brookside Drive to fork in stream
- f) Unnamed tributary to Neshaminy Joanne to Bridge Road (Northampton)



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