



## **1.0 INTRODUCTION**

### **1.1 Stormwater**

Stormwater is part of a naturally occurring process called a "hydrologic cycle" - the endless circulation of water from bodies of water, the atmosphere and the earth's surface. Hydrology comes from the Latin words "hydro," meaning water, and "logia," meaning science of. For this purpose, the cycle will begin when precipitation falls on the surface of the earth. As precipitation falls, some of it will enter the soil by a process known as infiltration and some of it will evaporate into the atmosphere. The portion of precipitation that does not infiltrate or evaporate "runs off" to streams and/or rivers and is categorized as stormwater.

### **1.2 Stormwater Plan**

This plan has been developed to meet the requirements of the Stormwater Management Act, P.L. 864, No. 167, October 4, 1978, herein referred to as Act 167. This is the initial plan prepared under said Act. This plan will undergo periodic review, and will be subject to revision at least every five (5) years to assess and to update the criteria and standards for the management of stormwater runoff.

It is the intent of this plan to recommend reasonable guidelines based on research and analysis for stormwater management, and to develop an ordinance based on this plan that will manage stormwater runoff as close to the source as practical; thereby lessening the impact of stormwater runoff quantity, velocity and quality. This plan will also provide guidance for the conservation of valuable natural resources, including: wildlife habitat, water quality and supply, agricultural lands, wetlands, steep slopes, open space, riparian buffers and floodplains.

This plan can only be truly effective through advocacy and citizen involvement. For that reason, municipalities, government agencies and non profit organizations were given the opportunity to identify problems in their communities. From this information, specific projects can be determined and corrective measures carried out.

As residential and commercial development increases within watersheds, the management of stormwater becomes an important

element of project planning. The lack of stormwater management results in increased runoff, creating problems such as flooding, damage to properties, damage to roads, bridges, and culverts, reduced groundwater recharge, stream bank erosion and increased sediment pollution leading to a degradation of water quality effecting the stream's biological life. Left unchecked, conventional development has the potential to continue to degrade unprotected waters and lands of the Commonwealth. In recognition of the detrimental effects that increased stormwater runoff has within a watershed, the Pennsylvania legislature recognized the need to manage stormwater effectively and more efficiently and enacted Act 167. Act 167 requires that a Stormwater Management Plan be developed for each designated watershed within the Commonwealth.

### **1.3 Pennsylvania Stormwater Management Act (Act 167)**

Under Act 167, the Pennsylvania Department of Environmental Protection (DEP) provides grant money to counties to develop Stormwater Management Plans (SWMP). During preparation of the SWMP, each municipality was given the opportunity to provide input by answering questionnaires and by participation in sixteen (16) scheduled Watershed Plan Advisory Committee (WPAC) meetings conducted to listen, educate, discuss and document stormwater related issues in the County. Based on this information, and on the research and limited analysis performed, a plan was developed, that incorporates sound engineering principles and Best Management Practices (BMP's), to protect the quality of Mercer County streams, while considering the various needs of the municipalities.

Preparation of the SWMP is facilitated by the Mercer County Regional Planning Commission (MCRPC). On August 21, 2007, the Pennsylvania DEP and Mercer County entered into an agreement for a Phase I Watershed Stormwater Management Plan Grant. Under this agreement, Mercer County was to prepare a SWMP in two phases: the first (Phase I) being the preparation and submission of a Scope of Study to the DEP for approval, and the second (Phase II) being the preparation and adoption of the plan. The Phase I agreement was terminated on June 30, 2008 and on July 23, 2008 a Phase II Scope of

Study was approved. The Phase II agreement was executed on October 2, 2008.

On July 12, 2010, the SWMP was presented to the Mercer County Commissioners for adoption. Once adopted by the Commissioners, the SWMP will be submitted to DEP for review. Under Section 9(b) of Act 167, the DEP will have 90 days to review and approve the plan. In accordance with Section 11(b) of Act 167, municipalities will have six (6) months from the DEP's approval date to adopt or amend and implement such ordinances and regulations as are necessary to regulate development within the municipality in a manner consistent with the applicable SWMP and the provisions of Act 167. These regulations include: zoning, subdivision and land development, building code and erosion and sediment control ordinances. Failure of a municipality to implement these regulations will result in written notices of violation, and continued failure to comply could result in state funds being withheld from that municipality.

The model stormwater management ordinance (Appendix E) will outline the minimum requirements for future land development within the County. The groundwork for the creation of the SWMP included: background research on existing stormwater ordinances within the County, coordination with county, state, and federal agencies, technical analysis of streams and watersheds, and most importantly, the information provided by the individual municipalities. Input from the municipalities provided important information in identifying and assessing the nature, cause, and severity of existing and potential stormwater runoff impacts within each watershed.

#### **1.4 Benefits of Act 167 in Mercer County**

According to the Executive Summary of the *Shenango River Watershed Comprehensive Plan (July, 2005)*, "Stormwater runoff is a major concern within the Shenango River Watershed." As with other counties in Pennsylvania, Mercer County has geological, economical, and political conditions that are unique. The *Shenango River Watershed Comprehensive Plan* specifically states the need for the completion and implementation of the Act 167 SWMP and recommends that individual watersheds be inventoried to determine percent of

impervious cover and stormwater impacts. The *Mercer County Comprehensive Plan (April, 2006)* mentions that the county has not prepared a SWMP for any of its seven (7) major watersheds.

This plan promotes the stormwater management goals of the *Mercer County Comprehensive Plan* by managing development to minimize site disturbance and stormwater generation, to maximize infiltration (where appropriate) and to maintain water quality by working with municipalities to update stormwater management regulations that adequately address water quality as required by government agencies, encourage best management practices and innovative stormwater management techniques to minimize runoff from new land development; thereby reducing the potential for increased flooding and flood damage and minimize erosion potential from existing development and construction sites.

Currently, the municipalities in Mercer County vary in their implementation and enforcement of stormwater management regulations. The primary objective of the technical study and planning process is to develop a stormwater management ordinance to encourage and support the consistency of regulations throughout Mercer County. Due to the abbreviated planning process imposed by DEP, there was not sufficient time to conduct watershed modeling. The modeling would have provided municipalities, as well as public works officials, with a considerable amount of useful information that could have been utilized for planning and engineering purposes.

The Phase II SWMP will provide procedures to aid in the implementation of the model ordinance by each of the forty-eight (48) municipalities within the county

### **1.5 Development of the SWMP**

The SWMP was developed in two phases. Phase I included background research, secondary source data collection and coordination with the municipalities to identify problematic areas. Phase I not only resulted in the identification of problematic areas within the County, but also a technical analysis work plan for Phase II.

During Phase I, it was necessary to conduct comprehensive surveys of stormwater issues within all watersheds in Mercer County. A Watershed Plan Advisory Committee (WPAC) was initially formed of members from municipalities within Mercer County, the Mercer County Regional Planning Commission, the Mercer County Conservation District, interested state agencies, and interested non-profit watershed groups. During Phase I, an initial round meetings with the WPAC was held to determine support for the project. The Mercer County Regional Planning Commission and Wallace & Pancher, Inc. worked collaboratively to create the "Mercer County Watersheds Act 167 Stormwater Management Plan Questionnaire" (Appendix B, Figure 1.) This questionnaire was distributed at the first WPAC meeting and was mailed to any municipality that did not attend the first meeting. All municipalities and all interested agencies were asked to complete the questionnaire. The questionnaire assisted in the collection of information from the municipalities regarding their stormwater issues, and assisted in the establishment of the WPAC.

Of the forty-eight (48) municipalities in Mercer County, thirty-six (36) completed and returned their questionnaires. Additionally, five (5) agencies/groups returned questionnaires and offered to participate in the WPAC. The WPAC members will be asked to assist their municipality in the adoption of the final plan and the ordinances required by plan.

A second round of meetings was held to review the questionnaire results and to receive further input. Stormwater related problems, significant obstructions, watershed characteristics, and hydrological conditions were compiled from the questionnaires and meetings. It is from this data and input provided by the Mercer County Regional Planning Commission and Mercer County Conservation District that a Phase I Scope of Study was compiled and submitted to the DEP for review and comments, on July 23, 2008.

Phase II involves the creation of the model stormwater management ordinance incorporating the results of technical analysis of the larger rivers within the County and of previously identified problematic areas (e.g. street flooding, stream erosion, etc.). The technical analysis to be conducted in Phase II was also to include the hydraulic and

hydrologic modeling of the DEP designated seven (7) major watersheds within Mercer County, the development of criteria for stormwater management, and the identification of conceptual solutions to address specific stormwater problems identified during Phase I. However, due to the abbreviated planning process imposed by DEP there was not sufficient time to complete a comprehensive technical analysis.

Objectively prioritizing watersheds to determine stormwater impacts presents a number of challenges. Certain areas are ultimately given greater attention and scrutiny than others — particularly those near significant communities of people. Furthermore, annual and seasonal fluctuations in water quality and quantity complicate the process of assigning precise rankings. Nevertheless the need to rank watersheds for stormwater management is attempted based on the total length of stream impairments within a given watershed.

The following list of the seven (7) major watersheds designated by DEP within Mercer County is prioritized for future consideration:

1. Shenango River
2. Wolf Creek
3. Neshannock Creek
4. Sandy Creek
5. Little Shanango River
6. French Creek
7. Little Neshannock Creek

### **1.6 Previous Plan Efforts**

No previous Act 167 Plans have been prepared for Mercer County. The following relevant documents were utilized in the preparation of the plan:

## **1. Mercer County Comprehensive Plan, (April, 2006)**

In 1995/1996 the Mercer County Regional Planning Commission prepared the Mercer County Comprehensive Plan, Planning for Livable Communities. Its theme was: making Mercer County communities a better place to live, work and play. This 2006 Mercer County Comprehensive Plan is an update to the 1995/96 Comprehensive Plan and recognizes that much has occurred in the intervening 10 years. The 2000 Census data is now available, major changes were made to the Pennsylvania Municipalities Planning Code in 2000, and much progress has occurred in Mercer County.

This Updated Comprehensive Plan renews the vision for Mercer County, a vision that integrates the rural character with sound community development, a healthy economy, and coordinated public and private resource management to sustain and enhance our quality of life.

The Comprehensive Plan has incorporated many innovative techniques during the plan development process. Community indicators have been used to measure the community health and well being. Public involvement sessions have identified and prioritized community planning concerns and issues, as well as an updated vision for the future. The plan also incorporates a new Long Range Transportation Plan for Mercer County, as well as a Target Location Assessment for identifying potential economic development sites in Mercer County.

## **2. Shenango River Watershed Comprehensive Plan (Revised: July, 2005)**

Watershed or River Conservation Plans are comprehensive plans that study natural, recreational and historical resources of a particular watershed or stream corridor. The plans are typically funded by grants from the Pennsylvania Department of Conservation and Natural Resources' Community Conservation Partnership Program (DCNR C2P2). Watershed Conservation Plans are locally prepared and incorporate a strong community participation element. They compile broad-based data about the watershed to include a wide range of interest including socio-economics and identify future projects to

7

assess, protect and remediate its resources. Once completed, additional funding opportunities become available to implement projects identified in the plans.

The Shenango River Watershed Comprehensive Plan documents current conditions and identifies additional initiatives aimed at improving the livability and attractiveness of the Shenango River watershed region. The watershed community was involved in the development of the vision for the watershed and provided input through public meetings, interviews and surveys. Stakeholders identified resources needing restoration, protection, conservation and/or preservation and incorporated important issues into the plan. The plan presents a strategy to make the vision for the watershed a reality. Practical solutions and action steps are suggested and resources to support implementation are identified.

This plan can be used to assist groups and citizens working and/or living within the watershed with obtaining resources to fulfill the vision set forth for the area and should be used for growth planning.

### **3. Eight Headwaters Watershed Assessment & Protection Plan in Hermitage (August, 2004)**

Concerns about the state of surface water quality within the City of Hermitage led the City to seek funding for a study to assess the status of eight (8) headwater streams that flow within the City, and develop plans for restoring and maintaining these streams. Major funding for this project was provided through a Growing Greener grant provided by the Pennsylvania Department of Environmental Protection. The Steering Committee for this plan included City staff, staff from local and state agencies, local professionals and concerned individuals who came together to begin examining water quality and land use.

This plan provides the City of Hermitage with a comprehensive watershed assessment and protection plan, intended to form the basis for developing tools that will allow the City to properly manage, improve and protect its streams and water quality. The eight (8) headwater streams have all been affected by various land use

practices. The assessment and protection plan is intended to help manage current and future land use in order to protect water quality.

#### **4. Natural Heritage Inventory (June, 2003)**

The Pennsylvania Natural Heritage Program (PNHP) is a partnership between The Department of Conservation and Natural Resources, the Western Pennsylvania Conservancy, the Pennsylvania Game Commission and the Pennsylvania Fish and Boat Commission. County Natural Heritage Inventories showcase Western Pennsylvania Conservancy's conservation science efforts by combining and presenting information on unique plants, animals, natural ecological communities, and other important natural resources in Pennsylvania. These projects identify, map and discuss important places within a county, prioritize them based upon their attributes, and provide recommendations regarding their management and protection.

County inventories are designed to inform the residents of a county about their living heritage and give them a tool to use in planning the future of their communities. County and municipal planners; federal, state and local agencies; businesses; environmental consultants; developers; local conservation organizations; and many other people and groups use these studies to help make land-use decisions within their counties. With increasing emphasis on planning within the state, these studies will become more and more important for considering the resources of the commonwealth wisely and comprehensively.

The Mercer County Natural Heritage Inventory identifies and maps Mercer County's most significant natural places by investigating plant and animal species and natural communities that are unique or uncommon in the county. Areas important for wildlife habitat and scientific study were also included.

The inventory, while not bestowing protection to any of the areas listed, is a tool for informed and responsible decision-making. Public and private organizations can use the inventory to guide land acquisition and conservation decisions. Local municipalities and Mercer County governmental agencies use it for comprehensive

planning projects, zoning issues and during the review of development proposals. Developers, utility companies and government agencies all benefit from access to this environmental information prior to the creation of detailed development plans.

### **5. Greener Visions, Making Smart Growth Options Work in Mercer County (June, 2006)**

The project provides education and sample conservation ordinances that can be used by municipalities and developers to provide alternatives to traditional residential developments. The project found that Mercer County will be facing a demographic crisis, having a smaller population than it did in 1960. The median age of a County resident is over four (4) years older than the median age for an American. The project results suggested that for the County to grow and thrive it will need to attract new residents by marketing its many attributes and by providing housing choices that appeal to today's homebuyers such as proximity to highway access, walking/bike trails, sidewalks on both sides of the street and parks/playgrounds.

Mercer County can recognize the need to attract new development by promoting the expansion of choices for housing and residential land development within the County through the Greener Visions initiative. Greener Visions promotes the use of new planning tools enabled by the PA Municipalities Planning Code and the creation of new design standards. These new tools and concepts include: 1) Planned Residential Developments; 2) Rural Conservation Subdivisions; and 3) Traditional Neighborhood Developments. These tools could be a development option in a Mercer County community if the community adopts one of the new model development ordinances that have been prepared as part of the Greener Visions Initiative.

MCRPC can work with local planning commissions and elected officials to examine how these new tools could work in their municipality. By adopting one or more of these tools, you will be providing your community with choices to meet the needs of future homebuyers. If you do not make use of these tools, developers who wish to build in your community may be forced to build conventional subdivisions that

are land consumptive, automobile dependent and at odds with community character.

## **6. Current Municipal Ordinances**

Current municipal ordinances provide for the harmonious, orderly, efficient and integrated development of the municipality and to promote the sound layout and design for subdivisions and land developments. A summary of the current municipal ordinances is further defined in 2.1 Political Jurisdictions.