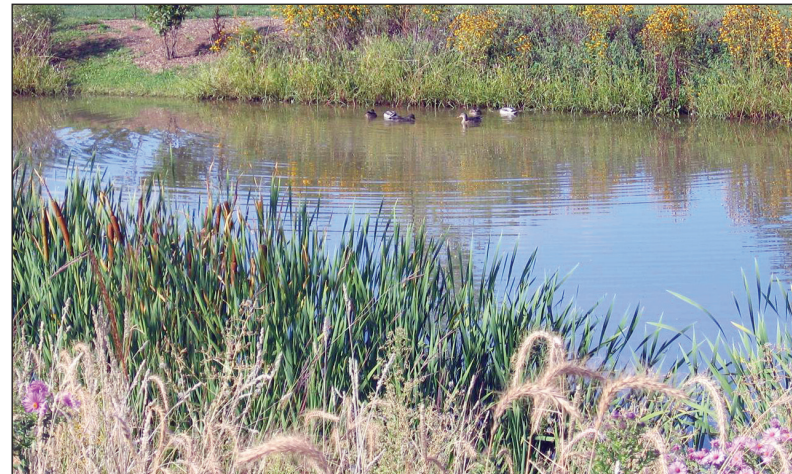




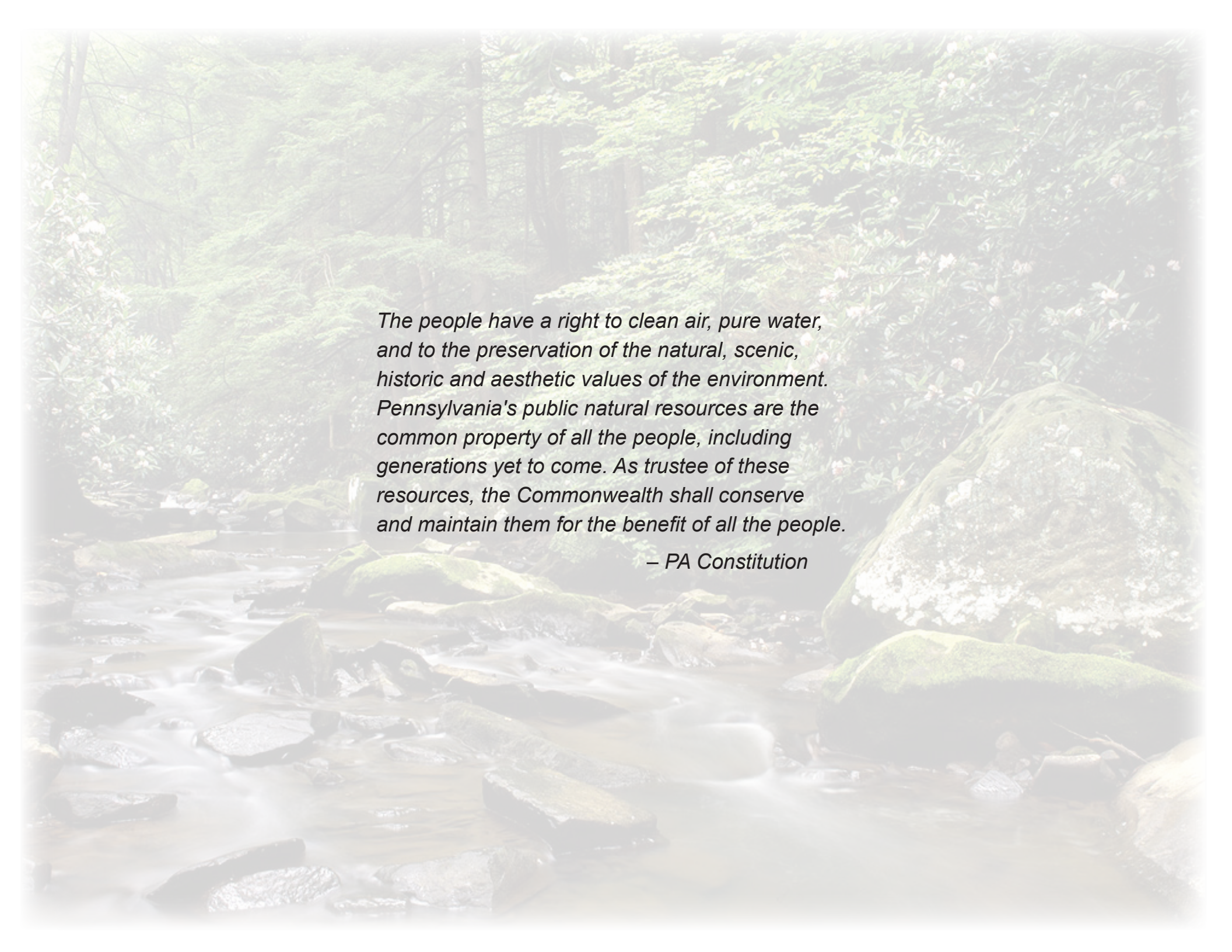
WESTMORELAND COUNTY'S Integrated Water Resources Plan



For more information contact:



218 Donohoe Road • Greensburg, PA 15601 • 724-837-5271
www.westmorelandstormwater.org email: waterplan@wcdpa.com

A scenic view of a forest stream flowing over mossy rocks. The water is clear and flows over large, dark rocks covered in vibrant green moss. The surrounding forest is lush with green foliage, including ferns and various trees. The scene is captured in a soft, slightly hazy light, emphasizing the natural beauty of the environment.

*The people have a right to clean air, pure water,
and to the preservation of the natural, scenic,
historic and aesthetic values of the environment.
Pennsylvania's public natural resources are the
common property of all the people, including
generations yet to come. As trustee of these
resources, the Commonwealth shall conserve
and maintain them for the benefit of all the people.*

– PA Constitution

Water is so everywhere present, and such a commonplace, that its gifts seem almost limitless.

– Stephanie Mills

September 2018

Water is one of our most precious natural commodities. And our relationship to it is far-reaching and complex.

We use it to fuel our industries, including Westmoreland County's number one industry, agriculture.

We use it as a place to have fun in our bathing suits and on boats.

We use it to provide food and to carry away our sewage.

And, of course, we use it as the most fundamental of all liquids for nourishing our bodies.

Our dependence on water for so many aspects of our daily lives emphatically drives home the need for its careful stewardship.

In 2015, the Westmoreland Conservation District began a community partnership effort that looked deeply into the ways we use water throughout Westmoreland County...the impacts of those uses...and some of the things that can be done to ensure that this important resource is responsibly managed.

The result is this document – Westmoreland County's first-ever Integrated Water Resources Plan, a guide for good stewardship of our water resources.

The IWRP completes the Act 167 Plan Phase 2, and coincides with Westmoreland County's 2018 comprehensive plan, "Reimagining Our Westmoreland".

Like flowing water, the IWRP is not a static document, but one that will be updated in its online presence (www.westmorelandstormwater.org) as new data becomes available.

We are grateful for the many partners that have contributed their support, expertise, and insights to this important work, including the Westmoreland County Commissioners, the Westmoreland County Department of Planning and Development, the volunteer members of the Watershed Plan Advisory Committee, Ethos Collaborative LLC, and the Richard King Mellon Foundation.



Ronald J. Rohall
Chairman



Gregory M. Phillips
District Manager/CEO

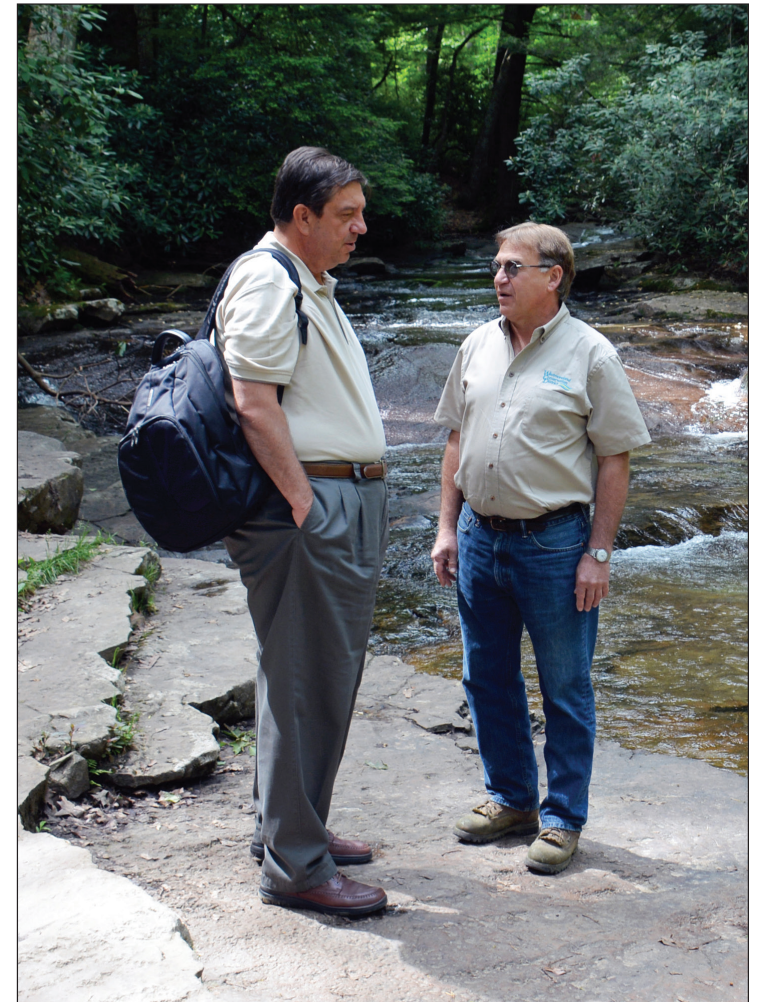


Photo by Mark Jackson

(l-r) Westmoreland Conservation District Manager/CEO Greg Phillips talks with District Board Chairman Ron Rohall on the rocky banks of Linn Run, Linn Run State Park, Rector, PA.



WESTMORELAND COUNTY'S Integrated Water Resources Plan

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– Ron Rohall, Greg Phillips

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PREFACE

In 2015, work began to create an Integrated Water Resources Plan (IWRP) for Westmoreland County to address all water resources within the county, study water issues, impacts, and solutions across the county's watersheds, and fulfill the requirements of the Pennsylvania Stormwater Management Act 167. The Westmoreland Conservation District (District), partnering with the Westmoreland County Department of Planning and Development, with the approval of the Westmoreland County Commissioners, and funding from the Richard King Mellon Foundation, undertook the process.

The Westmoreland County IWRP is easily accessible online and includes an overview of the county and our water resources, a description of land use impacts on our water resources, the issues and challenges we face, and an action plan to sustain our water resources into the future. The IWRP includes a decision making flowchart for all people making decisions about land development that impact our county's water resources, a model stormwater ordinance for adoption by all municipalities, and an explanation of the watershed modeling process and results that establishes stormwater runoff release rates for new and redevelopment.

The county commissioners signed a resolution to commence the IWRP in December 2015. The following year saw the creation of the Watershed Plan Advisory Committee (WPAC) led by the District to guide the development of the plan. An engineering consultant, Ethos Collaborative LLC, was hired to model 10 priority watershed areas of interest within the county identified in Phase 1 of the County's Act 167 Plan completed by L. Robert Kimball and Associates in 2010. As the IWRP progressed, the District, our partners, and the WPAC, completed the inventory, analysis, and creation of the plan, the watershed modeling, development of the model stormwater ordinance, and the online decision making tool for anyone seeking to develop land within the county related to our water resources. The Westmoreland County IWRP will be adopted by the County and will be updated as needed to meet future needs to sustain our water resources.



Photo by Mark Jackson

Linn Run, Linn Run State Park, Rector, PA

EXECUTIVE SUMMARY

Westmoreland County is home to more than 350,000 residents living in 65 communities, spread across 1,025 square miles. This population interacts with water in many ways: drinking water, generating waste water, using water in industries, causing stormwater runoff, enjoying water-based recreation, and protecting our natural water resources. The need for clean and sustainable water resources is pressing. Household consumption of water reaches 65 gallons per day per person. Because of this great number, 41 sewage treatment plants and 10 water providing authorities are present in Westmoreland County. Historical increases in land development and related stormwater runoff have created a variety of challenges to the sustainability of our water resources.

Westmoreland County has 2,037 miles of streams and is home to abundant water resources including wetlands, groundwater, streams, lakes, and floodplains. All these **water resources** are linked together as part of the natural water cycle. However, the water cycle is affected by land development and changes in land use. Excess stormwater runoff is one of the key natural resource issues in our county contributing to flooding, erosion, pollution, and property damage. Uncontrolled stormwater can flood homes, roads, and businesses. Flood control facilities, channels, dams, and debris basins have been built to reduce flooding, but the top three storm water issues in the county still include

flooding, inadequate infrastructure, and water pollution. From 2014 to 2017, a total of 836 complaints regarding stormwater issues were received by the Westmoreland Conservation District (District).

Stormwater runoff is only one of the **impacts** on our waterways. Fourteen percent of our 2,037 miles of waterways are affected by abandoned mine drainage (AMD). AMD contributes an influx of toxic chemicals such as iron, aluminum, and sulfur into these streams. Industry, agriculture, and resource operations such as natural gas extraction require large amounts of water. They can also create pollution that can contaminate or degrade water resources. Stormwater runoff from these activities can carry oil, metals, and sediment to our waterways. These pollutants have the potential to contaminate drinking water and harm aquatic life.

To respond to these concerns, the District and the Westmoreland County Department of Planning and Development developed the Integrated Water Resources Plan (IWRP). The IWRP studies water **issues and challenges** across the county's watersheds, while fulfilling the Pennsylvania Storm Water Management Act 167 of 1978 and meeting the requirements set by the MS4 permit program. Refer to the checklist in the Appendix. The IWRP provides a guide for future development and redevelopment to reduce future impacts to water resources and even correct past impacts from unmanaged development. **The four goals of the IWRP are to advance sustainable water resources, encourage partnerships, provide accessible information and help meet regulatory mandates for water resources.**

The IWRP takes an in-depth look at the ten priority watersheds/areas of interest (AOI), identified in the Act 167 Phase 1 report. The AOIs studied include: Turtle Creek, Sewickley Creek, Kiskiminetas River, Conemaugh River, Loyahanna Creek, Monongahela River, Allegheny River – Pucketa Creek – Plum Creek, Jacobs Creek, Youghiogheny River and Indian Creek. The watersheds in the county that were not studied in detail were still included in the data gathering and are summarized as well. Suggestions are made on projects to abate stormwater issues such as stream restoration, stormwater management retrofits, mechanical pollutant capture, land acquisition in flood hazard areas, AMD treatment, and green infrastructure. Techniques are presented to meet varying existing site conditions and to solve the wide-ranging stormwater issues.

Initiatives at every governmental level work to sustain our water resources. Federal agencies including the Environmental Protection Agency (EPA) regulate water and provide grants and funds for proj-

ects. State initiatives including PA DEP's Growing Greener Program help keep our resources safe. At the local level, the District monitors new and redevelopment and educates the public and professional audiences about water resources, and engages county agencies, authorities, and municipalities in cooperative programs.

Moving towards sustainable water resources, the IWRP has developed a list of **implementation strategies** including a model stormwater management ordinance to meet the four goals set above. Act 167 requires each municipality in the County adopt a stormwater management ordinance consistent with the plan or state funding may be withheld from their community. By prioritizing the strategies and identifying a responsible party, Westmoreland County can achieve better stewardship of our water resources.

To help residents, professionals, and others understand the IWRP and implement it, the set of **appendices** included with the IWRP contain Phase 2 Act 167 Plan requirements, a model stormwater management ordinance, the decision-making flowchart and instructions, our Best Management Practice Portfolio and maintenance guidelines, the Homeowners Guide to Stormwater Management/Toolkit, Resource Library, links to current watershed plans, water and sewer information and list of local authorities serving the county, and the watershed and pollutant modeling methodology.



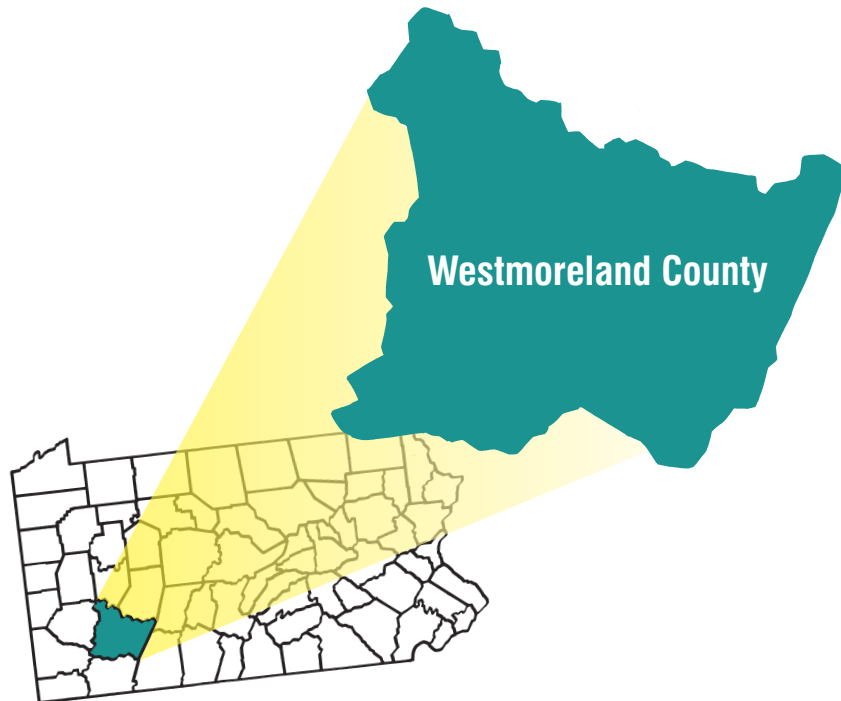
Streambank improvement project on Jacobs Creek above Bridgeport Dam

Photo by Rob Cronauer

Chapter 1. INTRODUCTION

Westmoreland County is home to more than 350,000 people in 65 communities spread across 1,025 square miles of rolling hills and wooded ridges dotted with farms, homes, businesses, and recreational opportunities. Westmoreland County is a microcosm of Pennsylvania—from its natural features to its population and its land use—the county is a collection of productive rural farms, developed urban areas, beautiful natural features, diverse forestland, steep hills, rich soils, rebuilt industrial areas, new and older residential areas, fishable water bodies, and busy waterways and highways. Like much of Pennsylvania, we are ‘water-rich’ but in need of careful management. Water resources are important in the lives and livelihoods of all residents and visitors to the county and should be protected for future generations.

This Integrated Water Resources Plan (IWRP) will help protect and sustain our water resources and meet the requirements of the PA Stormwater Management Act 167, and help designated communities meet their MS4 permit requirements.



The location of Westmoreland County in Pennsylvania

WESTMORELAND CONSERVATION DISTRICT

The Westmoreland Conservation District (District) promotes clean streams, stable soils, healthy forests, productive farms, and sustainable communities throughout Westmoreland County. Established in 1949, the District has been successfully encouraging loggers, earthmovers, developers, farmers, and others whose daily work directly affects our natural resources to voluntarily incorporate conservation practices in their projects and so protect the quality of our soils, forests, and streams.

In growing communities, the need for sustainable management of our water resources is spurred by land development that exchanges open space for the hard, impervious surfaces of driveways, parking lots, and building roofs. In older, urban areas, the catalyst is the limited capacity and age of our water supply, waste water and storm sewer infrastructure. Residential development alone has been adding an additional 41 million gallons of stormwater runoff annually in Westmoreland County in recent years, increasing pressure on our infrastructure, swelling small streams, and carrying a growing load of pesticides, road salts, pet waste, and other pollutants into our waterways. The increase in land development and stormwater runoff has created a variety of serious challenges to sustaining our water resources for our communities — availability of adequate water supply and waste water management, frequent flooding, expensive repairs of aging storm sewer systems, and compromised water quality.

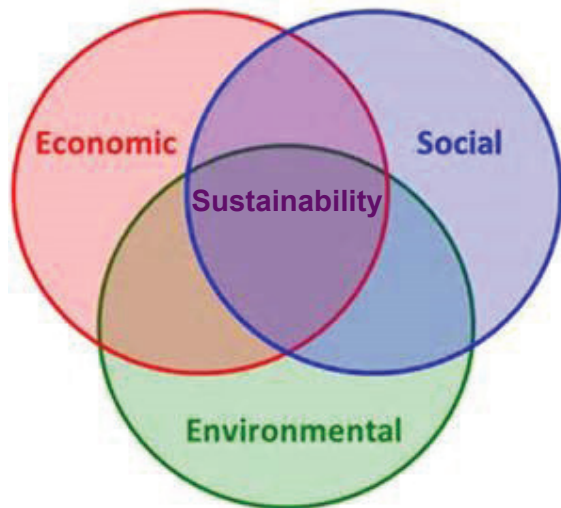


Westmoreland Conservation District office in Greensburg, PA

Photo by Kathy Hamilton

SUSTAINABILITY

The Westmoreland County Integrated Water Resources Plan (IWRP) focuses on keeping our water resources sustainable. Sustainability is the convergence of economic, social, and environmental issues. Westmoreland County's economic issues include the cost for development and maintenance of water resources and infrastructure as well as all costs related to stormwater: its control, its effects, and damages from flooding. The social issues involve all Westmoreland County residents and visitors that rely on clean water, expect quality waste water management, and are adversely affected by flooding. Environmental issues include the importance of water quality and effects of pollutants on drinking water, wildlife habitats and ecosystems, as well as erosion and stream degradation from excess stormwater that contributes to flooding and the damages that may occur. It is the goal of the IWRP to make Westmoreland County's water resources sustainable into the future.



The Integrated Water Resources Plan (IWRP) is a county-wide plan to address ALL water resources:

- Water bodies, waterways, and wetlands
- Groundwater
- Drinking water
- Waste water
- Stormwater

The IWRP meets the requirements of PA Stormwater Management Act 167, inventories and evaluates our county-wide water resources, and the impacts human activity has on them, provides guidance for our landowners and municipalities involved in development and redevelopment, and presents an action plan to address the issues and challenges that sustaining our water resources will pose into the future.

The **Pennsylvania Stormwater Management Act 167** of Oct. 4, 1978, (P.L. 864, No. 167) provides for the regulation of land and water use for flood control and stormwater management purposes, imposing duties and conferring powers on the PA Department of Environmental Protection (DEP), municipalities, and counties. The Act requires that each county prepare and adopt a watershed stormwater management plan for each watershed located in the county in consultation with the municipalities located within each watershed, and review and revise the plan(s) at least every five years. The plans must be submitted to DEP for approval and municipalities must enact ordinances or regulations consistent with the plans.

The policy and purpose of Act 167 of 1978 is to:

- Encourage planning and management of stormwater runoff in each watershed that is consistent with sound water and land use practices.
- Authorize a comprehensive program of stormwater management designated to: (1) preserve and restore the flood carrying capacity of Commonwealth streams; (2) preserve to the maximum extent practicable natural stormwater runoff regimes and natural course, current and cross section of water of the Commonwealth; and (3) protect and conserve ground waters and groundwater recharge areas.
- Encourage local administration and management of stormwater consistent with the Commonwealth's duty as trustee of natural resources and the people's constitutional right to the preservation of natural, economic, scenic, aesthetic, recreational and historic values of the environment.

Learn more at www.dep.pa.gov/business/water/cleanwater/stormatermgmt/pages/act-167.aspx

In June 2010, L. R. Kimball completed **Phase 1 of the Act 167 Plan**, as mandated by the State. Their work is summarized in the final report titled 'Act 167 Scope of Study for Westmoreland County Stormwater Management Plan'. The report included a summary of county watershed characteristics, identified relevant stormwater related issues, prioritized county watershed areas of interest for modeling, and proposed a Phase 2 Scope of Work, schedule, and budget.

The report concluded that “the county-wide watershed planning process for Westmoreland County must be designed with the individual watershed characteristics in mind, as well as the resources (technical, political, and economic) of the County.” The plan also stated “The goal of Westmoreland County’s Act 167 planning process is to provide a county-wide comprehensive program for the planning and management of stormwater,” and that a stormwater management ordinance is required to “address stormwater related problems in critical areas throughout the County.” Each of the county’s municipalities “must adopt the resulting stormwater management ordinance, or amend and implement ordinances as necessary to regulate development in a manner consistent with the plan and the provisions of Act 167... [to] have a beneficial impact on the waters of Westmoreland County.”

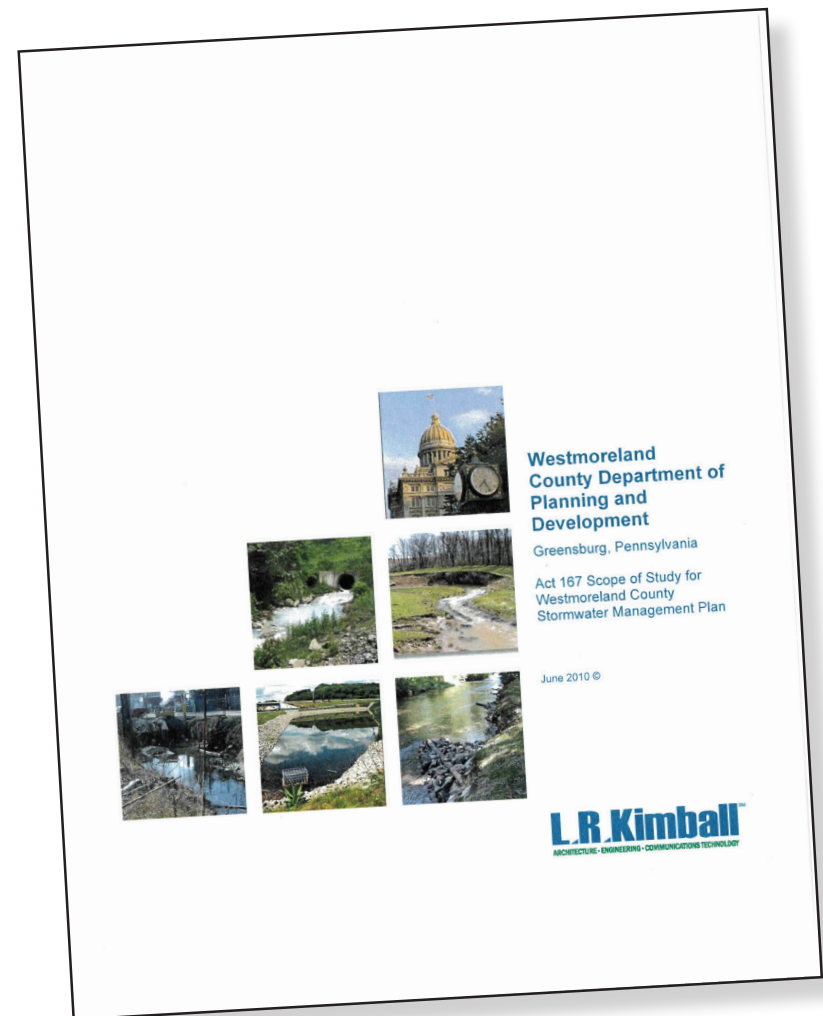
Phase 1 recommended that the following county watershed areas of interest in current and future growth areas that have recurring flooding issues be included in more detailed hydrologic modeling, especially to determine recommended release rates for development and redevelopment:

1. Turtle Creek
2. Sewickley Creek
3. Kiskiminetas River – partial area of interest
4. Conemaugh River – partial area of interest
5. Loyalhanna Creek – partial area of interest
6. Monongahela River – partial area of interest
7. Allegheny River/Pucketa Creek/Plum Creek – partial area of interest
8. Jacobs Creek
9. Youghiogheny River - partial area of interest
10. Indian Creek

Additional high priority goals set forth by Phase 1 included updating the

only current Act 167 plan in the county for the Turtle Creek watershed, assessing and verifying obstructions and other stormwater issues in the county identified in Phase 1, and assessing stormwater impacts in the growth areas of the county identified by the report.

Refer to the final report 'Act 167 Scope of Study for Westmoreland County Stormwater Management Plan' June 2010, by L. R. Kimball.













Cover of the Westmoreland County Act 167 Plan Phase 1 report, 2010

Westmoreland County

Act 167 SWM Plan Phase 1 Scope of Study

**Figure 3
Phase 2 Watersheds
to be Modeled**

SWM Problem Types

-  Accelerated Erosion
-  Flooding
-  Habitat Loss or Damage
-  Inadequate Infrastructure
-  Other
-  Sedimentation
-  Water Pollution
-  Act 167 Watersheds
-  Streams
-  Detailed Model Areas

Legend

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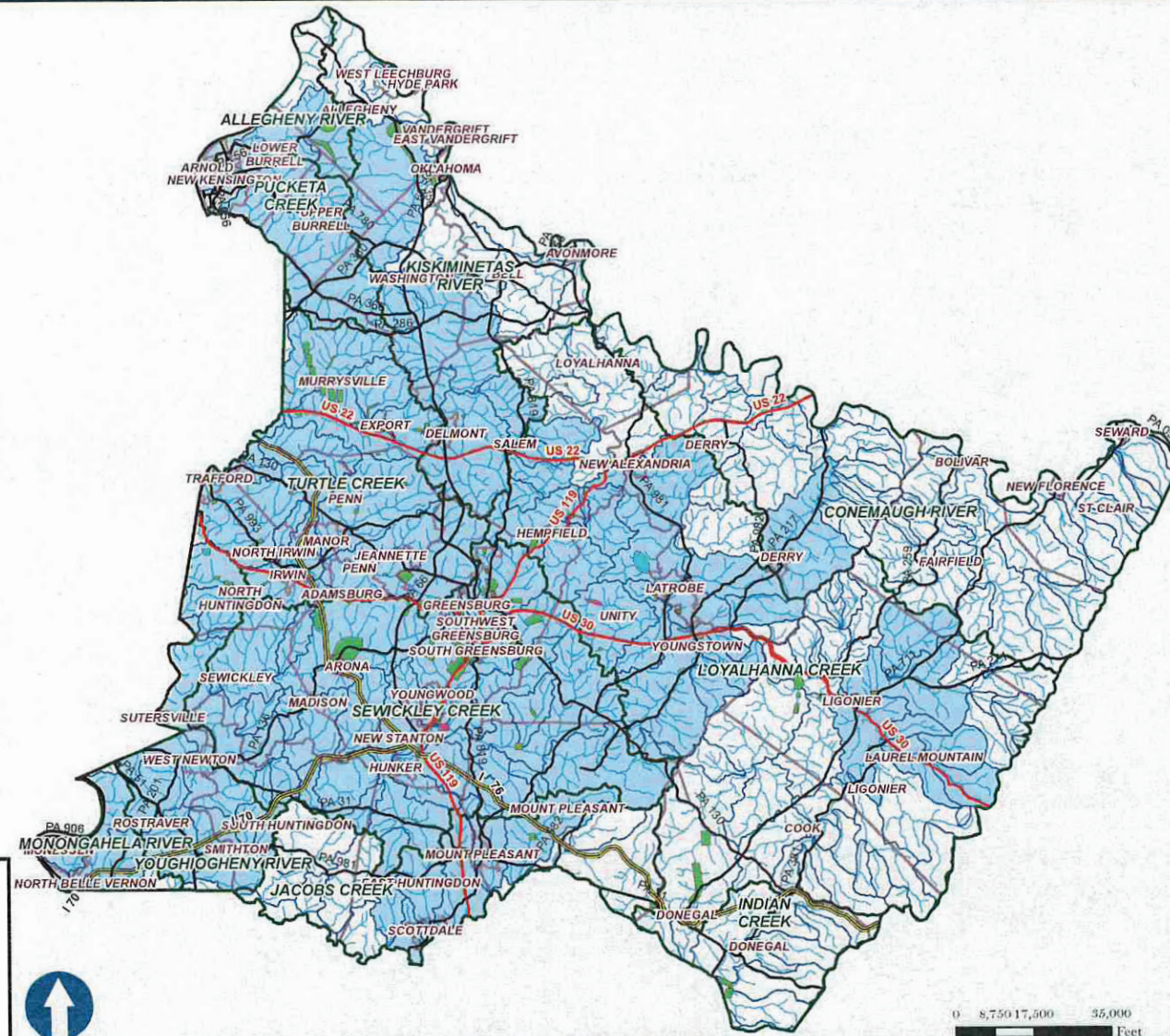
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415 Moon Clinton Road, Coraopolis, PA 15108

Prepared By: TCD
Project No. 08-1300-0544

Date: 03-16-10



Location of Westmoreland County within Pennsylvania.



0 8,750 17,500 35,000
Feet

Watershed areas of interest to be modeled from the Phase 1 Act 167 Plan report, 2010

For a complete copy of the Phase 1 report go to www.spcwater.org/pol-167.shtml

GOALS

From a broad perspective, the Integrated Water Resources Plan (IWRP) has one focus: our county's water resources. Centered around this most valuable of all resources, the IWRP sets **four key goals** like four compass points giving direction and guidance to sustaining our water resources.

Goal 1: Advance Sustainable Water Resources. The Plan will identify specific steps to take towards sustainability of our county's water resources. Wise stewardship of water today means we will have water tomorrow—water for our industry, agriculture, domestic use, and recreation. In addition, sustainable water resources are those which are clean, not polluted; managed, not flooding; beneficial, not harmful; and abundant, not lacking. This Plan will both promote sustainable management of water resources and provide sustainable opportunities for addressing water issues.

Goal 2: Encourage Partnerships to Support Water Resource Initiatives. The Plan focuses on people and what they can accomplish as they work to protect, enhance, and conserve our streams, lakes, ponds, rivers, wetlands, and groundwater. From land developers to municipal officials, from farmers to urbanites, each county resident has a responsibility for water stewardship. This Plan will empower people to work together on various water-related projects.

Goal 3: Provide Accessible Information on Water Resources. To equip citizens, officials, decision-makers, and design professionals with the latest tools and information on water resources, the Plan calls for establishment of on-line resources including the decision-making Flowchart, an up-to-date Library, and a real-time Dashboard of stream and water data. The Plan gives access to data and mapping of water resources, watersheds, and impacts, and provides recommendations for action.

Goal 4: Meeting Regulatory Mandates for Water Resources. Various laws and regulations govern stormwater issues in Pennsylvania. The 'regulated community' interacts regularly with the Clean Streams Law, Act 167 of 1978, and the more recent MS4 regulations—each with unique and different standards. The IWRP establishes a firm yet flexible Model Stormwater Ordinance to set a standard for each County municipality to follow. It promotes the use of Best Management Practices for good stormwater management, and encourages municipalities to follow

the MS4 regulations. The Plan meets the requirements of Act 167, and creates a 'level playing field' for each of our county's 65 different municipalities with regard to stormwater.

SCOPE OF WORK

The scope of work for the IWRP was initially developed from the Act 167 Plan Phase 2 scope of work proposed during Phase 1. Initially addressing only stormwater management, it was amended and broadened to include a more comprehensive approach to all of our county water resources. The IWRP Scope of Work included:

- Creating a watershed plan advisory committee (WPAC) to guide Phase 2 of the County's Act 167 Plan and IWRP in data collection, review, analysis and, decision making
- Collecting data, reviewing, and analyzing the county and all its water resources with regard to past impacts and future land development
- Modeling priority watershed areas of interest identified in the Act 167 Plan Phase 1, and creating decision-making guidelines for new development and redevelopment of our land related to water resources
- Determining the impacts land use has on our water resources and evaluating the issues and challenges we face in the future to sustain our water resources
- Developing an IWRP action plan to address sustainable water resources by:
 - Meeting the goals of the IWRP
 - Creating a decision making flowchart tool for all county residents and visitors involved in land development related to our water resources
 - Developing a model stormwater ordinance for adoption by all the county's municipalities to sustain our water resources into the future
 - Proposing solutions and potential projects to guide our county into a future with sustainable water resources
 - Assisting Municipal Separate Storm Sewer (MS4) municipalities and others to address sustainability and meet MS4 and other regulatory requirements.

WATERSHED PLAN ADVISORY COMMITTEE (WPAC)

The Westmoreland County IWRP was developed by the District and the Westmoreland County Department of Planning and Development with the assistance of the WPAC. The WPAC is a team of local regulators, water resource managers, conservation organizations, and interested citizens who provided comprehensive information from across the county and each watershed and provided feedback and input throughout the plan development process.

The WPAC was drawn from individuals and representatives invited from across the region, reaching up to 300 members including:

- Westmoreland County Commissioners
- Westmoreland County Department of Planning and Development
- Westmoreland Conservation District
- 65 Municipalities
- Watershed Organizations
- Southwestern Pennsylvania Commission
- Conservation Organizations including but not limited to
 - US Army Corps of Engineers, PennDOT, PA Fish and Boat Commission, Pennsylvania Environmental Council
- Water & sewer agencies
- Citizens and property owners
- Concerned and interested regional neighbors

Input from WPAC members was key to the completion of the IWRP and included:

- Information exchange from the project team to communities in the county
- Identification of local strengths, problems and experiences
- Noted concerns and expectations of an IWRP to address stormwater and other issues with our water resources
- Comment and feedback on IWRP recommendations
- Encouragement of local input and adoption of IWRP and the Model stormwater ordinance

FUNDING

The Westmoreland County IWRP was completed in-house by the District staff in partnership with the Westmoreland County Department of Planning and Development, the volunteer members of the WPAC, and with the assistance of Ethos Collaborative LLC, who completed the watershed modeling through a generous grant from the Richard King Mellon Foundation.



County Commissioner Chuck Anderson addresses members of the WPAC.

Photo by Kathy Hamilton