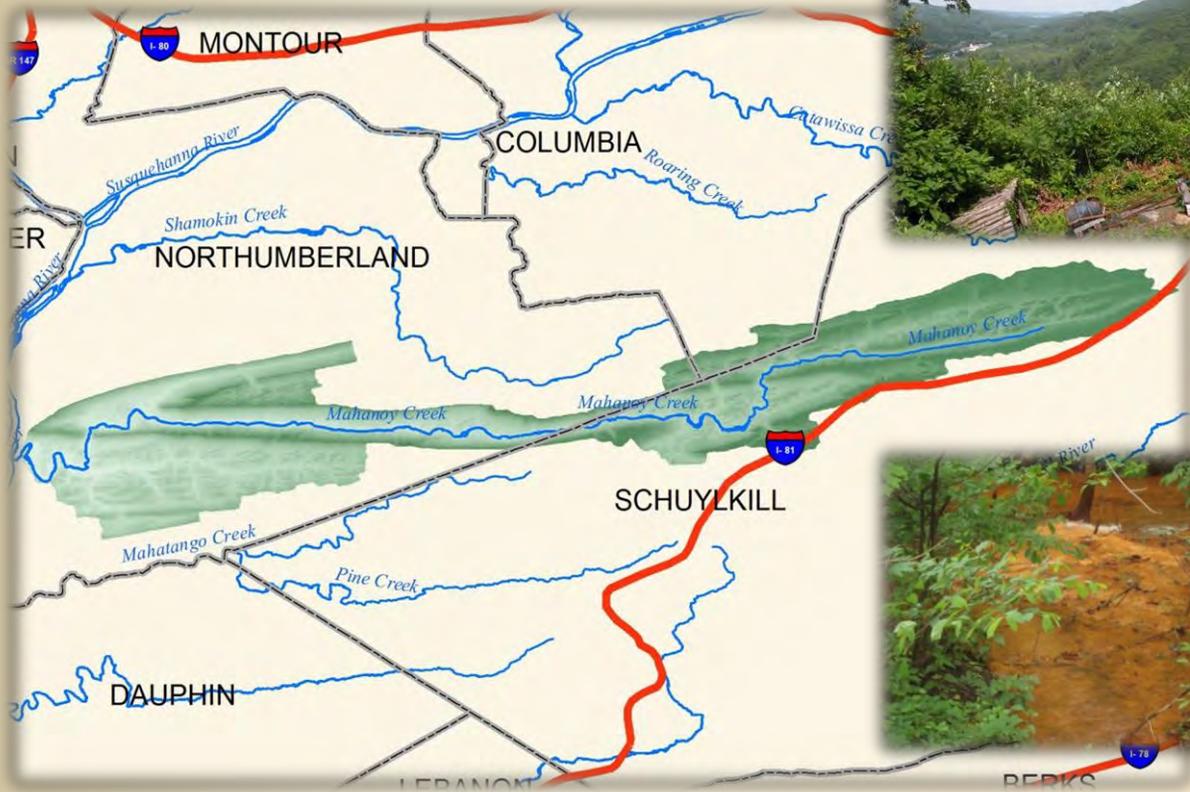


# Mahanoy Creek Watershed Conservation Plan



Schuylkill, Northumberland,  
& Columbia Counties,  
Pennsylvania

October 6, 2010



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# Mahanoy Creek Watershed Conservation Plan

**OCTOBER 6, 2010**

**Prepared For:**



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## Foreword

*The Mahanoy Creek Watershed Conservation Plan* (hereinafter known as “the Plan”) has been created as a guide for the conservation and protection of the Mahanoy Creek Watershed. This plan can be utilized by municipalities, landowners, conservation groups, and citizens interested in working towards the watershed’s long term health. The plan outlines the historical and existing information and data pertaining to the watershed creating a basic watershed “inventory”. Additionally, the Plan includes sections pertaining to future management recommendations and goals for the Mahanoy Creek Watershed Association (MCWA), municipalities, landowners and conservation groups to utilize in planning and funding watershed preservation, restoration and enhancement projects.

The Plan includes a summary of findings on physical characteristics; land, water, biological, and cultural resources, and Geographic Information Systems (GIS) data gathered in several recent assessments and reports. Additionally, several other reports/studies exist on the watershed and region. The following list includes those reports that have been reviewed including:

- 2008 Northumberland County Natural Heritage Inventory Update
- 2007 Mahanoy Creek Watershed TMDL report
- 2007 Decision Rationale, Total Maximum Daily Loads, Mahanoy Creek Watershed, For Acid Mine Drainage Affected Segments
- 2006 Schuylkill County Comprehensive Plan
- 2006 Schuylkill County Open Space and Greenway Plan
- 2005 USGS Mahanoy Creek Basin AMD report, SIR 2004-5291
- 2005 Northumberland County Comprehensive Plan
- 2004 Columbia County Natural Areas Inventory
- 2004 Watershed Restoration Action Strategy, State Water Plan Subbasin 06B (Susquehanna River), Northumberland and Schuylkill Counties
- 2003 Draft Northern Schuylkill Rail to Trail Feasibility Study
- 2003 Northumberland County Natural Areas Inventory
- 2003 Schuylkill County Natural Areas Inventory
- 2002 Schuylkill County Water Supply Study
- Northumberland County Implementation Plan for the Chesapeake Bay Tributary Strategy
- 1975 Mahanoy Creek Scarlift Report

See Appendix E for a Summary of the reports listed above.



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*The Plan* catalogues current and projected land use and land ownership patterns affecting the area and assesses how local zoning ordinances and other municipal tools can be used to optimize the balance of open space and development. The input of municipal and county officials, landowners, and private citizens solicited through public meetings and key person interviews has also been summarized. A study committee comprised of representatives from impacted municipalities, local leaders, neighborhood and community groups and adjacent property owners also played a pivotal role in the collection of information in the watershed. The Plan provides a comprehensive geographic information system (GIS) database of computer map information available to local governments and organizations for environmental planning, conservation and restoration efforts in the watershed.

Funding for *The Plan* was provided by a grant from the Pennsylvania Department of Conservation and Natural Resources (DCNR), Rivers Conservation Program. The final Plan, once approved by DCNR, will be submitted for inclusion on the "Pennsylvania Rivers Conservation Registry", providing the basis for DCNR matching grants to municipalities and environmental organizations interested in carrying out the management recommendations and goals outlined in the plan. The municipalities, or groups sponsored by them, will be eligible to apply to DCNR for grants to implement the recommendations in the Plan.



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## Acknowledgements

At a board of directors meeting on February 11, 2009, a motion was made to form an advisory board to aid Jim Chappell in the performance of his duties as Watershed Conservation Plan Project Coordinator. David Kramer and Warren (Nick) Lane were appointed to the advisory board.

The completion of the Mahanoy Creek Watershed Conservation Plan could not have been possible without the diligent efforts of the Mahanoy Creek Watershed Association (MCWA) and the contributions of its many allies. Sincerest gratitude is expressed to the following individuals and organizations for their investment and contributions to the development, and future implementation, of this Plan:

The Late Senator James Rhoades & staff  
Senator David Argall, Marybeth Dougherty & staff  
Representative Neil Goodman & staff  
Representatives Tim Seip, Merle Phillips, and Robert Belfanti  
Dr. Charles A. Cravotta III, PhD, P.G., Research Hydrologist, U.S. Geological Survey  
Schuylkill County Commissioners  
Schuylkill County Planning Department Charles Ross & staff  
Schuylkill County Conservation District  
Wayne Lehman, Watershed Specialist, Schuylkill Co Consv Dist  
Northern Schuylkill Council of Governments  
Northumberland County Commissioners  
Northumberland County Planning Department Pat Mack, Katie Jaeger & staff  
Jaci Harner, Northumberland County Conservation District  
Columbia County Commissioners  
Columbia County Planning Department Robert Aungst & staff  
Cathy Haffner, Columbia County Conservation District  
Blaschak Coal Company Tony Blaschak, Dan Blaschak & Robin Koeberle  
PA DCNR Terry Hough, Grant Manager & Wes Fahringer, and Dennis DeMara, Regional Coordinators  
Susquehanna River Basin Commission SRBC Andrew Gavin, Restoration & Protection Section & Tom Clark, AMD Coordinator  
Ed Leclare, and the PA DCED  
PA DEP  
PA DEP-BAMR Mike Korb, PE and Todd Wood  
United States Geological Survey (USGS)  
PPL  
WITF-PBS-Harrisburg Affiliate  
Eastern PA Coalition of Abandoned Mine Reclamation-EPCAMR Robert E. Hughes & Michael A. Hewitt  
Shamokin Creek Restoration Alliance  
GTS Technologies, Inc.



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A study committee was created and includes representatives from impacted municipalities, local leaders, neighborhood and community groups and adjacent property owners. Many thanks to the Mahanoy Creek Watershed Rivers Conservation Plan Study Committee for their diligent efforts:

Brian Auman - SEDA-COG, Landscape Architect  
Margaretta Bolich - Land Owner, Retired Educator  
Cathy Haffner - Watershed Specialist, Columbia County Conservation District  
Robin Keoberle - Blaschak Coal Company  
Matt Belding or Keith Sanford - PA State Game Lands Reps  
Dr. Charles A. Cravotta III, PhD, P.G. – Research Hydrologist, U.S. Geological Survey  
John Guers - Executive Director, Upper Schuylkill Association  
Champ Holman – President, Northern Schuylkill COG  
Jaci Harner - Northumberland County Conservation District  
Rev. Robert Hoenich - Pastor, Christ United Luthern Church, Ashland  
Dave Kessler - Butler Township/Sportsman Association  
Katie Jaeger - Northumberland County Planning Department  
Wayne Lehman – Natural Resources Specialist, Schuylkill County Conservation District  
Teri MacBride – Regional Community Relations Director, PPL Corporation  
Mark Major - Schuylkill County Tourism & Visitors Bureau  
Joanne Parulis - Executive Director-Schuylkill County Vision  
Adolph Slovik - Schuylkill County Planner  
Nick Troutman – Mayor, Borough of Gordon

**Your comments on this Plan are welcome. Please address them to:**

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*Emailing of comments are appreciated.*

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## Executive Summary

### Project Background

*The Mahanoy Creek Watershed Conservation Plan* has been created as a guide for the conservation and protection of the Mahanoy Creek Watershed. This plan can be utilized by municipalities, landowners, conservation groups, and citizens interested in working towards the watershed's long term health. The Plan will guide protection of the watershed, provide educational and recreational opportunities, and grant an improvement to the environment of the watershed and region and in overall quality of life for the residents of the region.

### Grant Acquisition

Funding for *The Plan* was provided by a grant from the Pennsylvania Department of Conservation and Natural Resources (DCNR), Rivers Conservation Program, a grant from the Pennsylvania Department of Economic Development (DCED), and in-kind donated services from the Mahanoy Creek Watershed Association, Schuylkill County Conservation District, and GTS Technologies. The final Plan, once approved by DCNR, will be submitted for inclusion on the "Pennsylvania Rivers Conservation Registry", providing the basis for DCNR matching grants to municipalities and environmental organizations interested in carrying out the management recommendations and goals outlined in the plan. The municipalities, or groups sponsored by them, will be eligible to apply to DCNR for grants to implement the recommendations in the Plan.

### Planning and Implementation

The MCWA and other residents within the watershed are dedicated to the restoration of Mahanoy Creek from problems associated with AMD and other environmental impacts. They have already successfully utilized grants to raise awareness of AMD problems in the communities of the watershed, to set up a monitoring program for high school teachers and students, and to construct wetlands to treat AMD. They also have sponsored stream cleanups at several sites along the Creek. Through this Watershed Conservation Plan, the Association will be continuing its dedication, through the assistance of everyone within the region, to promote awareness and protection of this precious resource now and for future generations.



*Headwaters of Little Mahanoy  
Photo courtesy of Roseann  
Weinrich*

As part of this plan, systematic and obtainable short term and long term goals have been developed to aid in the clean-up of the Mahanoy Creek Watershed, provide a better and enhanced quality of life for local and regional residents and provide a viable future for the watershed. As part of this plan and the public participation process, major goals include; the development and construction of AMD treatment facilities, establishment of a greenway/trail system, provide increased accessibility to the creek allowing for recreational uses such as canoeing and kayaking. Clean up of AMD will benefit not only the immediate project area, but will also contribute to a cleaner and greener Susquehanna River and Chesapeake Bay. A greenway and trail system is necessary to connect the Schuylkill River Heritage Area and the Susquehanna Greenway, to the Lower Anthracite Heritage Greenway, and provide interpretation of the anthracite heritage of the Western Middle Anthracite Field. The community, recreation and conservation benefits are obvious and plentiful. A year-round recreation resource could be created including the amenity of a trail system for the community. Short/long-term community, conservation and recreation goals and benefits should always be focused on improving the watershed.

The bottom-line is simple: the Mahanoy Creek Watershed Conservation Plan is a critical re-investment in all communities in the watershed. The Watershed Conservation Plan is meant to be implemented locally to benefit the watershed, the region, and the state of Pennsylvania. Overall management of the watershed will be guided by implementation of the adopted short and long-term goals of this plan.

## **Report Summary**

This plan contains a comprehensive overview and inventory of physical, biological, environmental, and hydrologic conditions within the watershed. The following is a brief description of the information within this Plan:

### **Chapter 1: Project Area Characteristics**

The Mahanoy Creek Watershed lies within northwestern Schuylkill, southern Northumberland and southern Columbia counties in eastern central Pennsylvania (See Figure 1-1). The watershed is bounded, approximately, by the Susquehanna River to the west, Little Mountain and Mahanoy Mountain to the north, the town of Delano in the east, and Fisher Ridge, Line Mountain and Interstate 81 to the south. It is accessible mainly by Interstate 81 and State Routes 147, 225, 61, and 901. The Mahanoy Creek flows west from its source near the village of Buck Mountain to the Susquehanna River.

The watershed is approximately 157 square miles, with approximately 50,000 citizens spread throughout 21 municipalities in Schuylkill, Northumberland, and Columbia counties. Land use in the watershed is dominated by forest cover at approximately 67%. Forest of deciduous (leafy) trees makes up almost all forest cover, with small amounts of mixed and coniferous (needle-bearing) tree cover. Agriculture is a major land use in a few sub-basins of the watershed. Other undeveloped areas include a parcel of Weiser State Forest, State Game Lands (SGL) No. 326, SGL No. 165, and SGL No. 84.

The Mahanoy Creek Watershed is home to approximately 51,000 people. According to US Census data from 2000, the most populated municipality is West Mahanoy Township located in the Northeast portion of the watershed. Prior to 1950, Coal Mining Production was the leader in employment throughout the region. Since then, the Goods Manufacturing sector has become the leader in employment followed by Construction, Agriculture and Mining.

## Chapter 2: Land Resources

The Mahanoy Creek Watershed is located within the Ridge and Valley physiographic province (Sevon, 2000). The Ridge and Valley province extends from New York to Alabama and is the second largest physiographic province in Pennsylvania. This province is most famous for its anthracite coal fields. The structure and composition of each particular soil determine its fertility and suitability for various types of land development. Six soil associations are present throughout the Mahanoy Creek Watershed. Many critical areas such as erosion and sedimentation along streams, floodplains, and wetlands also help determine the suitability of land development.



*Mahanoy Creek*

Within the Mahanoy Creek watershed, the majority of land is owned by private parties. Approximately 17.75 square miles of land within the 157 square mile watershed is public land consisting of state forest and state gamelands. Municipal waste facilities are also present within the Mahanoy Creek Watershed. Facilities are in the forms of landfills, waste transfer stations, and recycling facilities. Within the Mahanoy Creek Watershed, there are 8 inactive, 2 active and 1 proposed municipal waste facility.

Over 150 years of anthracite coal mining within the Mahanoy Creek Watershed has led to the impairment of Mahanoy Creek and many of its tributaries. Acid mine drainage is considered the leading cause of impairment throughout the Mahanoy Creek Watershed. The contamination result of AMD is visible by the red, orange, and sometimes blue and green, discoloration of the water. Contamination of waterways as a result of AMD is visible by the discoloration of the water. An area of 42 square miles is underlain by mining throughout the watershed. Approximately 32 acid mine discharges are present and contribute to the approximately 46 miles of polluted streams within the watershed area.

### **Chapter 3: Water Resources**

There are 54 miles of streams that make up the Mahanoy Creek Watershed. Within this area, approximately 46 tributaries drain into Mahanoy Creek. There are 11 major subwatersheds within the Mahanoy Creek watershed and 8 major tributaries that drain directly into the Mahanoy Creek. These 8 major tributaries include North Mahanoy Creek, Shenandoah Creek, Little Mahanoy Creek, Crab Run, Zerbe Run, Mouse Creek, Waste House Run and Schwaben Creek.

The Mahanoy Creek Watershed is home to a number of lakes and ponds most of which are small in size and unnamed. There are two major wetland projects within the Mahanoy Creek Watershed: the Bolich Wetland Project and the Mahanoy Creek Aerobic Wetlands. The Bolich Wetland project includes construction of a 1.5 acre passive treatment wetland along the Mahanoy Creek that will remove iron from approximately 800,000 gallons of water per day. The Mahanoy Creek Aerobic Wetlands is a four-acre Swamp that allows acid mine drainage pollutants within the creek can settle out before returning back into the creek.

While North Mahanoy Creek runs through an area severely impacted by mining, it does not suffer from water quality degradation due to acid mine drainage (AMD). No large AMD discharges are present. The creek does suffer from flow leaving the stream channel through voids created by mining operations and subsidence. A stream with voids can result in flow being present in the upper part of the creek while the mouth is dry (Cravotta, 2005). Additionally abandoned mine areas throughout the watershed can absorb and detain runoff through a variety of reasons including, but not limited to: culm and waste piles that absorb runoff; abandoned mine pits that can detain runoff; and fracture and voids within the mining areas that short circuit runoff patterns by direct infiltration into underground mine voids.

### **Chapter 4: Biological Resources**

The Mahanoy Creek Watershed provides habitat for a great diversity of wildlife including rare, threatened and endangered species. Spring Mountain, Broad Mountain, and Mahantango Mountain are all forested ridges used as migration corridors within the Mahanoy Creek Watershed. These undisturbed continuous forested ridges provide habitat to animal and plant species.

The majority of the land within the Mahanoy Creek Watershed is comprised of deciduous forest, cultivated cropland, and woody wetland area. The second and third growth forest communities within the Mahanoy Creek Watershed are described as the Appalachian Oak Forest dominated by white oak (*Quercus alba*) and northern red oak (*Quercus rubra*). A portion of Weiser State Forest covers approximately 2 square miles within the Mahanoy Creek Watershed. There are multiple conservation areas located throughout the watershed. These areas provide habitat for species of special concern while others contain landscape types which are rarely found anywhere in Pennsylvania.



*Snake in Mahanoy Creek.  
Photo courtesy of Roseann Weinrich*

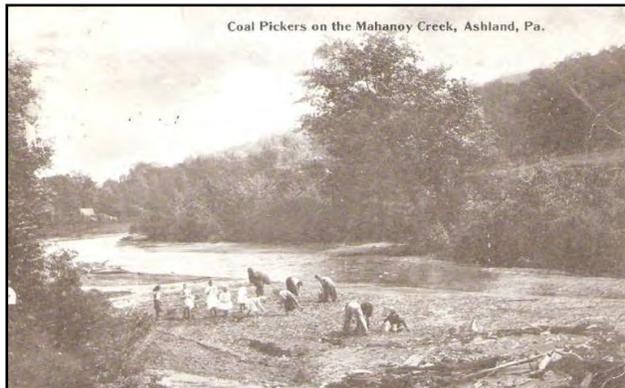
White-tailed deer, gray squirrel, cottontail rabbit, ruffed grouse, ring-necked pheasant, and doves are known to exist within the watershed along with muskrats, raccoons, and fox. There are also a wide variety of reptiles and amphibians. There are 7 bird species located in the Northern Ridge and Valley Physiographic Province that are of conservation concern according to Partners in Flight (PIF). Aquatic ecological surveys were conducted by the U.S. Geological Survey at five stream sites, including Mahanoy Creek, during low base-flow conditions.

Twenty-five species of fish were identified during the surveys, however, there may be more species present that were not present at the five survey sites. There are nine threatened and endangered species within the Mahanoy Creek Watershed. There are four plant species of special concern and two ecological communities of special concern. The threatened and endangered species, the species of special concern, and the ecological communities of special concern are located in multiple locations and add to the diversity of the watershed.

## **Chapter 5: Cultural Resources**

The Mahanoy Creek Watershed is located within the western middle anthracite coal region of Pennsylvania. The Mahanoy Creek Watershed was originally settled by European immigrants in the 1700's. Historically, development started around the areas' waterways and crossroads. The area is historically known for industries such as agriculture, milling, and coal mining. Line Mountain also served as a boundary line with the coal mining being north of the mountain and agriculture being south of the mountain. The coal industry also caused earth disturbances which impacted the water quality and the natural communities. Damaged landscape can be seen throughout the watershed as a result of coal mining production. Acid mine drainage has severely impacted the watershed.

Archaeology sites were searched by municipality names within the Mahanoy Creek Watershed. There are thirteen sites listed within Northumberland County, eight sites listed within Schuylkill County, and no known sites listed in Columbia County. The exact locations of these sites are kept confidential as preserving these artifacts are essential.



National and State listed and eligible historic properties within the Mahanoy Creek Watershed were reviewed using PHMC’s CRGIS website. There were two eligible national register sites and one listed national register site located in Northumberland County. There were eleven eligible sites listed in Schuylkill County within the Mahanoy Creek Watershed.

There is a variety of recreational opportunities available within the Mahanoy Creek Watershed including state forests and trails, boating, fishing, camping, golf courses, and local historic sites and attractions. Plans are being proposed to turn 6,000 acres of abandoned mine lands into a functional use off-highway vehicle (OHV) park for ATVs, dirt bikes, full-sized vehicles and snowmobiles in Northumberland County. The proposed park would include marked trails, restrooms, picnic facilities, and security devices. In addition to recreation for OHV users, hiking, bicycling and horseback riding trails are being proposed in the park area.

## Chapter 6: Public Participation

Public participation is an important part of DCNR’s requirements for successful completion of this Plan. Public participation input is very valuable asset in providing diverse ideas for the protection and enhancement of the watershed. A series of committee and public meetings were held to discuss the development of this Plan and issues and concerns of the public in relation to the watershed. Three committee and three separate public meetings were held throughout the watershed.

A questionnaire was distributed to the public as part of the public participation process. The questionnaire included a number of questions pertaining to the public’s interests and concerns regarding the watershed. Overall, a majority of the population was in favor of having all the municipalities within the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association in order to improve the quality of the watershed through the Watershed Conservation Plan. Some major concerns brought up by the public are litter, acid mine drainage, flooding, eroding banks, abandoned mine lands, trespassers, sinkholes, problems with sewer lines/outfalls, and wet basements.

Two press releases occurred during July 2009. On July 21, 2009 the Republican Herald ran an article in their newspaper titled *Mahanoy Creek Watershed Part of Comprehensive Plan*. This article explained how the Mahanoy Creek Watershed Association (MCWA) along with GTS Technologies, Inc. would be completing a Watershed Comprehensive Plan for Mahanoy Creek. On July 31, 2009 the Republican Herald ran an article in their newspaper titled *Public Apprised of Watershed Plans*. This article reviews the first public meeting held for the Mahanoy Creek Watershed Plan by going over how many residents were there, what was discussed, and the general reaction of the public at the meeting.

### **Chapter 7: Management Options**

The MCWA embraces the goals of DCNR's Action Plan and the Keystone Principles for Growth. Preparation and implementation of the MCWA Watershed Conservation Plan took into consideration the following management options:

1. Stewardship/Management of State Parks/Forests
2. Promote Land Conservation/Environmental Restoration
3. Build/Maintain Sustainable Communities & Re-develop First
4. Create Outdoor Connections for Citizens/Visitors

The bottom-line is simple: the Mahanoy Creek Watershed Conservation Plan is a critical re-investment in all communities in the watershed. The Watershed Conservation Plan is meant to be implemented locally to benefit the watershed, the region, and the state of Pennsylvania. Overall management of the watershed will be guided by implementation of the adopted short and long-term goals of this plan.

### **Chapter 8: Short Term Goals**

Short-term goals are goals that can be achieved in the near future (1 to 3 years). They can be considered as steps that need to be taken in order to accomplish long-term goals. In coordination and cooperation of the MCWA, study committee and public participation process, a number of short-term goals have been identified. While developing this list of short-term goals, one main theme was developed for the plan - Do What Is Attainable. In order to reach the goals set forth in this plan, it is important to adopt clear, realistic goals for the Mahanoy Creek Watershed Association (MCWA) to implement.

1. Plan for Restoration of the Watershed
2. Public Education
3. Establish Mahanoy Creek Watershed Association Website
4. Restore Floodplain
5. Remove Litter from Streambanks
6. Develop and maintain Strategic Partnerships
7. Monitor current trends within the watershed from both state and local perspectives
8. Promote River Access



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## Chapter 9: Long Term Goals

The MCWA embraces the goals of DCNR's Action Plan and the Keystone Principles for Growth. Implementation of the MCWA Watershed Conservation Plan will clearly meet those goals in a comprehensive manner by:

1. Creating a sense of community with the Mahanoy Creek Watershed
2. Acid Mine Drainage Remediation Plan
3. Maintain Ecological Integrity along the Streambanks
4. Build a Digital Watershed
5. Control Invasive Species
6. Attract people to the watershed
7. Open Space and Greenway Plan for the Watershed

## Chapter 10: Conclusion

This watershed conservation plan has identified physical features including land, water, biological, and cultural resources. An extensive GIS database has been developed for the watershed and key sensitive areas have been identified as well as existing improvements to the watershed. In addition, the plan outlines management recommendations as well as short-term and long-term goals to encourage conservation throughout the watershed and also improve the quality of the watershed. These items were compiled in part by GTS Technologies, the MCWA, the Schuylkill County Conservation District, selected key person interviews, a conservation plan study committee and public participation.

The Mahanoy Creek is severely impacted by the anthracite coal mining industry in the upper reaches of the watershed. The negative impacts of acid mine drainage have taken its toll on the health and beauty of the watershed. Management recommendations, short-term goals and long-term goals outlined in this plan will aid in the recovery and improvement of the watershed and lead to a greater appreciation and public use of the Mahanoy Creek Watershed.

## Appendix A: Public Input

As part of DCNR's requirements for the Rivers Conservation Program, GTS Technologies, in association with the MCWA, held a series of public meetings to discuss issues and concerns of the public in relation to the watershed.



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## **Appendix B: Committee Meetings**

As part of DCNR's requirements for the Rivers Conservation Program, GTS Technologies, in association with the MCWA, developed a study committee. The Study Committee is a select group of individuals with broad & relevant expertise & interest in the watershed. The committee was utilized to provide suggestions, ideas relative to the issues, concerns & future development of the watershed. A series of three study committee meetings were held at the Mahanoy Creek Watershed Association.

## **Appendix C: Key Person Interviews**

As part of DCNR's requirements for the Rivers Conservation Program, GTS Technologies, in association with the MCWA, held a series of key person interviews to discuss issues and offer unique perspectives and insights regarding the Mahanoy Creek Watershed. These interviews are documented as a part of this appendix.

## **Appendix D: GIS Data and Mapping**

The geographic information systems (GIS) information utilized in the Mahanoy Creek Watershed Conservation Plan was obtained from several public sources. This data includes shapefiles, digital elevation models, and raster data. Data obtained from these public sources was primarily used "as is" except for cropping to the watershed boundary and the addition of more descriptive attributes. In some cases, such as the steep slope and hydric soils layers, public layers were analyzed to create entirely new layers.

## **Appendix E: Summary of Published Reports**

Published reports with information regarding the Mahanoy Creek Watershed were reviewed. The majority of the published reports were received from Schuylkill, and Columbia Counties, United States Environmental Protection Agency, Pennsylvania Department of Environmental Protection, and the United States Geological Survey. Information from these reports was included within the Mahanoy Creek Watershed Plan. A summary of these reports is located in this appendix.

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## Mahanoy Creek Watershed Association

Mahanoy Creek Watershed Association (MCWA), founded in 1998, is a 501(c)(3) organization with approximately 100 unpaid volunteer members, is the primary functional organization dedicated to education, preservation, enhancement, restoration of the watershed and remediating environmental damage associated with over 100 years of anthracite coal mining and promoting the stream and watershed as a valuable recreational and educational resource. It is the philosophy of the MCWA that providing the approximately 51,000 residents in the watershed the opportunity to see its beauty will encourage greater public support for our abatement efforts that will improve the overall quality of life within the watershed.

This Plan will assist the MCWA by acting as a guide for restoration and management of the watershed. The Plan will guide protection of the watershed, provide educational and recreational opportunities, and grant an improvement to the environment of the watershed and region and in overall quality of life for the residents of the region. It is hoped that among other beneficial goals discussed in this plan, the plan will address mine drainage abatement and environmental education opportunities, plus provide for a greenway and trails linked to regional systems.

The MCWA has in the past successfully utilized grant funding to raise awareness of Abandoned Mine Land (AML) problems in the watershed's communities by setting up a monitoring program for local high school students and constructing a passive treatment wetland area in 2007 to treat abandoned mine drainage. They have also sponsored numerous stream cleanups at several sites along the creek, including the infamous Girardville Garbage Barge, which consisted of a 27.5-ton island across the creek which occurred in 2001. The Garbage Barge was of sufficient size that it created an island within the creek that impacted the flow in the creek and the surrounding environment. Ecological succession was occurring, evidenced by a tree and other vegetation growing amidst the island of plastic and household items. The herculean cleanup of the Girardville Garbage Barge could not have been completed without donations of equipment, stone (to secure the banks and construct a road to the barge), trucking services, dumpsters, garbage bags, safety equipment, gloves and food from local businesses and individuals. For their efforts, the MCWA received an award from the Pennsylvania Lens on Litter program, but the most important part of the cleanup effort (besides removal of a tremendous environmental eyesore) was the community involvement and the raising of awareness.



*Girardville Garbage Barge*



*The Bolich Wetland Project*

To date, the MCWA's efforts at remediation and raising public consciousness have not been solely due to public funding. Phenomenal support has occurred from local businesses and individuals via supplies, equipment donation and personal time. One example is the Bolich Wetland Project which is located in Barry Township, Schuylkill County, on a farm owned by Margaretta Bolich. This project was dedicated in May of 2007. The wetland project, a passive wetland treatment area, receives and treats approximately 500 gallons of AMD impacted water per minute. Water enters the wetland area with 16 mg/L of iron and leaves with 0 mg/L. It was completed with \$66,000 public funding and an excess of \$100,000 in donated goods and services

from local business and industry. The site is utilized as an educational benefit by several local high schools for water testing and environmental studies of wetlands in habitat creation and pollution abatement. With the success of this project, many local residents visit the wetland to enjoy a walk around the pond while enjoying nature. Without these donations and public support, the wetland project would never have seen completion. Through continued community support, there truly is hope for the future.

In May of 2010, a Hiking Trail dedicated in honor of the late Senator James J. Rhoades was completed and lies adjacent to the 1.5 acre Bolich Wetland. The one-mile hiking trail along the Mahanoy Creek at the Bolich property is 10 feet wide and 1 mile long, built on a 12" bed of base material and capped with 2" of limestone. This limestone capping will add an alkaline leachate to the creek, increasing the pH and contributing to abatement of the acidity problem. This trail will improve recreational enjoyment at an area already utilized for this purpose, and encourage healthy lifestyles via physical exercise and enhanced educational opportunities.



*Senator James J. Rhodes Nature Trail*



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As with other projects, this trail project included numerous volunteer and donated services. MCWA believes that this hiking trail will serve as a model for future trail construction and can be a beneficial action plan. It is hoped that this will be the first of many trails along Mahanoy Creek that will ultimately connect to other regional trail systems. Enjoyment of natural resources promotes stewardship of those same resources and will result in greater community involvement regarding additional cleanup efforts. On many different levels, from recreation to education to remediation, the proposed hiking trail system would truly be a win-win situation.

Although the Association has had past success in their goals, in relationship to the issues and concerns detailed in this plan, much more work is needed and more comprehensive and strategic actions need to be taken in order to preserve, protect and enhance the overall watershed in addition to improving the local regional quality of life.

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## Principles of the Watershed Conservation Plan

The Mahanoy Creek Watershed Conservation Plan is prepared with the guidance of the following principles: Throughout the document, more specific goals, objectives and recommendations developed from these primary principles are described:

- **General Awareness/Education.** One of the primary guiding principles of the MCWA is education. However, even with the great efforts of the Association, it has been difficult to promote awareness and education for such a large watershed that covers a variety of regions and peoples. From the public participation portion of this conservation plan, it is evident that large portions of the residents within the watershed do not understand the impacts that can occur not only from large operations but also by individual residents. Therefore there is a need to educate and make the public aware that the Mahanoy Creek Watershed is an interconnected/interrelated system of land and water on which humans, plants and animals depend. Additionally, raising awareness among the general public and municipal officials about their role as watershed stewards is critically important to the quality of life within the watershed and region. Such awareness includes the recognition that the issues affecting water quality and quantity in the Mahanoy Creek have a direct effect of the quality of life and affect the ability of the watershed to support all forms of life.
- **Coordinated Action within the Watershed.** Through their efforts, the Association has had a long history of success with projects and education within the watershed. These projects include wetland construction to abate acid mine drainage, trail development and community cleanup projects. Although their efforts in these projects have been successful, the projects are localized in nature and have had more of a local impact than regional or watershed impacts. The Association should develop strategies that produce coordinated actions of all parties/stakeholders within the watershed, municipalities, agencies, landowners, citizens, institutions, businesses and private groups, so that the ecology and scenic beauty of the Mahanoy Creek Watershed is preserved and restored.
- **Coordinated Action with other Watersheds.** Watershed associations within the region typically work "alone" and as separate entities. As a means of increasing the ability to obtain grants and funding for planned improvements, partnering with adjacent watersheds is highly beneficial. As the Plan moves forward, those involved with the implementation of the Mahanoy Creek Watershed Conservation Plan should coordinate their work with other local watershed organizations, such as those working on the Shamokin Creek and Susquehanna River, so that common issues are addressed in a coordinated fashion and could be marketed or structured to promote goals that would be successful both regionally and locally.

- **Central Role of Municipalities.** The Mahanoy Creek watershed encompasses 157 square miles, parts of three counties and more than 30 municipalities. It is imperative that the municipalities within the watershed pursue the implementation of recommendations found in *The Mahanoy Creek Watershed Conservation Plan*, using matching funding sources such as the Pennsylvania Rivers Conservation Program, Growing Greener, and funding from private foundations. A major function of MCWA should be a formalized search and marketing throughout the watershed municipalities so that a comprehensive and consistent voice can be developed. For the long-term success of this Plan, multi-municipal water based land use planning and zoning is an essential.

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## The Need for Protection

Located in Pennsylvania's Western Middle field of the Anthracite coal region, the Mahanoy Creek is a 54-mile long stream that is a major tributary of and part of the lower Susquehanna River Basin and Chesapeake Bay Watershed. Water quality in the Mahanoy Creek has been severely degraded by over 100 years of anthracite coal mining. At least 25% of the watershed's 157 square miles, mostly in the upper third of the watershed, has been either directly or indirectly impacted by strip mines and many of the deep mines have been flooded and are the major source of pollution in the stream. The Creek is impaired by this abandoned mine drainage that releases amounts of iron, aluminum, manganese and acidity into the stream via numerous boreholes and seeps. The metals then precipitate out, coat the stream substrate in a veritable rainbow of colors, ranging from pumpkin pie orange to antifreeze green to white, to almost clear. As a result, habitat is impacted/eliminated for macro invertebrates thus hindering other aquatic life.

Additionally, the watershed is stressed by other pollution factors such as agricultural pollution and uncontrolled runoff from barren ground and the lack of riparian buffer zones that promotes overland erosion and surcharging of the stream resulting in scour of the channel due to increased flash runoff events and sedimentation that inhibits flow. Illegal dumping throughout the watershed creates additional impacts to the watershed environment by adversely impacting water quality and creating a deterrent to stream accessibility. While providing the energy source that powered the steel mills so crucial to our country's development the watershed and region made the ultimate sacrifice resulting in environmental, economic and physical damage.

In spite of the AML and other impacts cited above, the stream is home to over 23 species of fish. Although most of the biodiversity exists in the lower reaches of the watershed as most metals have been removed at that point.

The watershed has a rich history that should be preserved. There are environs and vistas that need protection. As a result of the public participation part of this plan, protection of the watershed will result in economic stimulus to the region.



The MCWA and other residents within the watershed are dedicated to the restoration of Mahanoy Creek from problems associated with AMD and other environmental impacts. They have already successfully utilized grants to raise awareness of AMD problems in the communities of the watershed, to set up a monitoring program for high school teachers and students, and to construct wetlands to treat AMD. They also have sponsored stream cleanups at several sites along the Creek. Through this Watershed Conservation Plan, the Association will be continuing its dedication, through the assistance of everyone within the region, to promote awareness and protection of this precious resource now and for future generations.

This Plan advances local, county, and statewide planning by continuing the process started by the MCWA. Specifically, this project follows the *2006 Schuylkill County Comprehensive Plan*, *The 2006 Schuylkill County Open Space and Greenway Plan*, *the 2007 Decision Rationale Mahanoy Creek TMDL*, *the DEP's 2004 Watershed Restoration Action Strategy (WRAS) for Mahanoy Creek and Shamokin Creek Watersheds*, *the 2001 Little Nescopeck Rivers Conservation Plan*, *the 2007 Mahanoy Creek TMDL Report* and *the 2001 Effects of Abandoned Coal-Mine Drainage on Streamflow and Water Quality in the Mahanoy Creek Basin*. (See Appendix E for further discussion of these reports)

A comprehensive public involvement program was included as part of this plan. The public was involved through community planning meetings, a steering committee, public hearings, and input from county/local government, state/regional/federal agencies, and related organizations.

As part of this plan, systematic and obtainable short term and long term goals have been developed to aid in the clean-up of the Mahanoy Creek Watershed, provide a better and enhanced quality of life for local and regional residents and provide a viable future for the watershed. As part of this plan and the public participation process, major goals include; the development and construction of AMD treatment facilities, establishment of a greenway/trail system, provide increased accessibility to the creek allowing for recreational uses such as canoeing and kayaking. Clean up of AMD will benefit not only the immediate project area, but will also contribute to a cleaner and greener Susquehanna River and Chesapeake Bay. A greenway and trail system is necessary to connect the Schuylkill River Heritage Area and the Susquehanna Greenway, to the Lower Anthracite Heritage Greenway, and provide interpretation of the anthracite heritage of the Western Middle Anthracite Field. The community, recreation and conservation benefits are obvious and plentiful. A year-round recreation resource could be created including the amenity of a trail system for the community. Short/long-term community, conservation and recreation goals and benefits should always be focused on improving the watershed.

# Chapter 1

## Project Area Characteristics

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## Chapter 1 – Project Area Characteristics

### 1.1 Location

The Mahanoy Creek Watershed lies within northwestern Schuylkill, southern Northumberland and southern Columbia counties in eastern central Pennsylvania (See Figure 1-1). The watershed is bounded, approximately, by the Susquehanna River to the west, Little Mountain and Mahanoy Mountain to the north, the town of Delano in the east, and Fisher Ridge, Line Mountain and Interstate 81 to the south. It is accessible mainly by Interstate 81 and State Routes 147, 225, 61, and 901. The Mahanoy Creek flows west from its source near the village of Buck Mountain to the Susquehanna River (See Figure 1-2).

### 1.2 Size

The watershed is approximately 157 square miles, with approximately 50,000 citizens spread throughout 21 municipalities in Schuylkill, Northumberland, and Columbia counties (See Figures 1-3 through 1-5). Table 1-1 lists the municipalities within the watershed and their relative size of coverage.

**Table 1-1  
Municipalities in the Mahanoy Creek Watershed**

Municipality	County	Acres in Watershed	% of Watershed
Centralia	Columbia	80	0.1
Conyngham	Columbia	2,837	2.8
Coal	Northumberland	463	0.5
East Cameron	Northumberland	6,706	6.7
Jackson	Northumberland	5,663	5.6
Jordan	Northumberland	1,812	1.8
Little Mahanoy	Northumberland	6,698	6.7
Lower Augusta	Northumberland	22	0.0
Mt Carmel Twp	Northumberland	982	1.0



Municipality	County	Acres in Watershed	% of Watershed
Rockefeller	Northumberland	1	0.0
Shamokin Twp	Northumberland	4	0.0
Upper Mahanoy	Northumberland	5,696	5.7
Washington	Northumberland	11,551	11.5
West Cameron	Northumberland	7,382	7.3
Zerbe	Northumberland	6,089	6.1
Ashland	Schuylkill	1,052	1.0
Barry	Schuylkill	3,223	3.2
Butler	Schuylkill	16,038	15.9
Cass	Schuylkill	40	0.0
Delano	Schuylkill	919	0.9
Eldred	Schuylkill	2,289	2.3
Frackville	Schuylkill	396	0.4
Gilberton	Schuylkill	920	0.9
Girardville	Schuylkill	342	0.3
Gordon	Schuylkill	388	0.4
Mahanoy	Schuylkill	10,340	10.3
Mahanoy City	Schuylkill	346	0.3
New Castle	Schuylkill	189	0.2
Ryan	Schuylkill	35	0.0
Shenandoah	Schuylkill	1,008	1.0
Union	Schuylkill	1,513	1.5
West Mahanoy	Schuylkill	5,529	5.5
<b>Total</b>		<b>81,594</b>	<b>81.1</b>

### 1.3 Topography

The watershed is located in the Anthracite Upland and Susquehanna Lowland sections of the Ridge and Valley physiographic province of Pennsylvania. The Ridge and Valley Province is characterized by its dominant landform of parallel ridges and valleys, running from the southwest to the northeast. The Anthracite Upland Section of the province, which encompasses nearly the entire watershed, contains these characteristic landforms along with areas of hilly rather than mountainous terrain (See Figure 1-6). The Susquehanna Lowland Section comprises a small portion of the watershed near the Mahanoy Creek’s confluence with the Susquehanna River.

### 1.4 Corridor – Land Use

Land use in the watershed is dominated by forest cover at approximately 67%. Forest of deciduous (leafy) trees makes up almost all forest cover, with small amounts of mixed and coniferous (needle-bearing) tree cover. Agriculture is a major land use in a few sub-basins of the watershed. Overall, it constitutes just under 10% of land cover. Developed lands, including developed open space, also make up about 10% of land use in the watershed. See figures 1-7 through 1-9 for Watershed Land Use Maps. Table 1-2 below provides a breakdown of land uses.

**Table 1-2  
Land Cover in the Mahanoy Creek Watershed**

<b>Use</b>	<b>Area (square miles)</b>	<b>Area (Acres)</b>	<b>Percent</b>
Open Water	2.24	1,432	1.42
Developed Open Space	10.40	6,653	6.62
Developed Low Intensity	3.00	1,917	1.91
Developed Medium Intensity	1.25	802	0.80
Developed High Intensity	0.67	427	0.42
Barren Land	5.70	3,650	3.63
Deciduous Forest	99.13	63,444	63.10
Evergreen Forest	3.76	2,404	2.39
Mixed Forest	3.12	1,998	1.99
Pasture/Hay	13.10	8,384	8.34
Cultivated Crops	14.70	9,407	9.36
Woody Wetland	0.03	16	0.02
Emergent Herbaceous Wetlands	0.01	7	0.01
<b>Total</b>	<b>157</b>	<b>100,541</b>	<b>100.00</b>

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## **Mined Lands**

Land in this category is or was involved in the production of coal. A large portion of the Mahanoy Creek Watershed is or was mined for anthracite coal (See Figures 1-10 through 1-12). As of 2010, the Pennsylvania Department of Environmental Protection (PADEP) lists 111 coal mining operation sites in the watershed. There are 13 underground locations listed, of which six are active, three are inactive and unreclaimed, and four are inactive with reclamation completed. The PADEP list reports 42 surface mining sites with two abandoned, 32 active, two inactive and unreclaimed, and six are inactive with reclamation completed. Fifty-one waste coal processing operations are reported with none abandoned, 48 active, two inactive and unreclaimed, and one is inactive with reclamation completed. PADEP also lists five coal processing facility sites, all of which are reported active.

Abandoned mine lands and underground works are a major problem in the watershed. The 2007 RAMLIS (Reclaimed Acid Mine Land Inventory System) data on abandoned mine lands (AML) in Pennsylvania, indicate 614 AML sites in the watershed, totaling 8,860 acres, or 13.9 square miles. These areas include underground mine works, mine entry openings, surface strip mines, refuse piles, settling basins, spoil areas, abandoned structures and mine subsidence areas.

## **Gamelands**

Land within this category is maintained by the Pennsylvania Game Commission, primarily for outdoor recreation in the form of sport-hunting. These areas consist of State Game Lands (SGL) No. 326, Butler Township, Schuylkill County; SGL No. 165, Zerbe and Coal townships, Northumberland County; and multiple parcels of SGL No. 84, Eldred Township, Schuylkill County, East Cameron, West Cameron, Upper Mahanoy, Washington, Little Mahanoy and Jackson townships, Northumberland County (See Figure 1-13).

## **Agriculture**

Agriculture is a major land use in a few sub-basins of the watershed and is considered to be a valuable resource. Overall, agricultural land constitutes just under 10% of land cover within the Mahanoy Creek Watershed. The United States Department of Agriculture, National Resource Conservation Service (USDA, NRCS) evaluates agricultural soils into eight soil classes ranging from Class I (Prime Agricultural Soils) to Class VIII (Poor Agricultural Soils). There are 25 prime agricultural soils located within the Mahanoy Creek Watershed. Figures 1-14 through 1-16 display the prime agricultural soils, the agricultural security areas, and the preserved farms within the watershed.

## Undeveloped Land/Natural Vegetation

The Mahanoy Creek watershed includes a number of areas identified as valuable natural lands (See Figures 1-17 through 1-19). Some areas provide habitat for species of special concern while others contain landscape types which are rarely found anywhere in Pennsylvania. Starting in the headwaters of the watershed and looking west, the following areas have been identified in Schuylkill County (Nature Conservancy, 2003).

1. *Bears Head Ridgetop* – Dwarf-Tree Forest; Delano, Mahanoy and West Mahanoy townships
2. *Frackville Mine Opening* – Long-eared Bat; Gilberton Borough and Butler Township
3. *Ashland Watershed and Reservoir* – Hemlock ravines with seeps and springs; Butler Township
4. *East Girardville Mine Opening* – Long-eared Bat; Girardville Borough
5. *Mahanoy Creek at Taylorsville* – Great Blue Heron; Barry, Butler & Eldred townships

The following areas have been identified in Northumberland County (Nature Conservancy, 2002) (PNHP, 2008).

1. *Zerbe Run Site* – Four plant species of special concern; Zerbe and Coal townships
2. *Big Zerbe Strip Mine* – Bat species of special concern; Zerbe Township
3. *Mahanoy Creek Cliffs West Of Otto* – One plant species of special concern; Jackson Township
4. *Mahanoy Creek at the T-377 Iron Bridge* – One plant species of special concern, one animal species of concern and a Northern Appalachian Shale Cliff Natural Community; Jackson Township
5. *Herndon Cliffs* – One plant species of special concern; Jackson Township
6. *State Game Lands No. 84* – One animal species of special concern; Jackson, Lower Augusta and Little Mahanoy townships
7. *Bear Valley Strip Mine* – Two mammal species of special concern; East Cameron and West Cameron townships
8. *Dornsife* – One animal species of special concern; Little Mahanoy Township

Other undeveloped areas include a parcel of Weiser State Forest, Barry and Eldred townships, Schuylkill County; State Game Lands (SGL) No. 326, Butler Township, Schuylkill County; SGL No. 165, Zerbe and Coal townships, Northumberland County; and multiple parcels of SGL No. 84, Eldred Township, Schuylkill County, East Cameron, West Cameron, Upper Mahanoy, Washington, Little Mahanoy and Jackson townships, Northumberland County.

Detailed GIS land use data was provided from Schuylkill County Planning Commission and was analyzed to provide a more detailed breakdown of land uses. Tables 1-3 and 1-4 below provide an overview of this data.

**Table 1-3  
Land Use in the Mahanoy Creek Watershed in Schuylkill County**

Use	Area (Square Miles)	Area (Acres)	Percent
Agriculture	7.87	5038	11.55
Commercial	1.02	652	1.50
Industrial	0.65	417	0.96
Institutional	0.45	288	0.66
Mining	9.19	5882	13.49
Residential	6.32	4048	9.28
Utilities and Transportation	0.06	40	0.09
Woodlands	40.89	26168	59.99
Unknown Vacant	1.70	1087	2.49
Total	68.16	43620	100.00

**Table 1-4  
Land Use in the Mahanoy Creek Watershed in Northumberland County**

Use	Area (Square Miles)	Area (Acres)	Percent
Agricultural	32.21	20,613	38.93
Community Use/Utilities	0.02	9.62	0.02
Game Lands	13.95	8,925	16.85
Mine/Quarry	9.25	5,917	11.17
Mixed Use	0.05	28	0.05
Residential	0.70	446	0.84
Undeveloped Land	26.59	17,014	32.13

Note: Detailed GIS data was not available for Columbia County.



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## 1.5 Social/Economic Profile

### Population

The Mahanoy Creek Watershed is home to approximately 51,000 people. According to US Census data from 2000, the most populated municipality is West Mahanoy Township located in the Northeast portion of the watershed. Mahanoy Township, located just east of West Mahanoy, is the least populated municipality with a population less than 630 people. According to the Schuylkill County Comprehensive Plan, Schuylkill County experienced an approximately 13 percent population decline between 1960 and 2000. Neighboring Northumberland County experienced similar population loss during this timeframe proving that the watershed population has been in decline for about 50 years. See Figure 1-20 for a Watershed Population distribution map.

### Transportation

The watershed is accessible by two major highways. US Routes 11/15 run north and south and are accessed at the western end of the watershed, just west of the Susquehanna River. Interstate 81 also runs north and south and can be accessed along the southeastern portion of the watershed. Throughout the watershed, a system of state and rural routes, such as 147, 225, 61, and 901, make travel to and from the watershed easy.

Although no airports are located within the watershed, it is in close proximity to a number of cities, which are home to both regional and international airports. Both Harrisburg International and Lehigh Valley International Airports can be reached in less than two hours and Philadelphia International, JFK and Newark airports can be reached in less than three hours from the watershed making it very accessible.

A number of active rail lines exist throughout the watershed. These rail lines are used for freight services. The closest passenger rail line is located in the City of Harrisburg. Mass Transit exists in few locations. The Lower Anthracite Transportation System, located in Mount Carmel, provides fixed route bus service to the communities of Mount Carmel, Shamokin, Kulpmont and Marion Heights (NCPD, 2005). The Schuylkill Transportation System (STS), provides bus service to northern Schuylkill County which includes portions of the watershed. See Figures 1-21 through 1-23 for mapping of major roads, airports and railroads.

## **Employment**

Prior to 1950, Coal Mining Production was the leader in employment throughout the region. Since then, the Goods Manufacturing sector has become the leader in employment followed by Construction, Agriculture and Mining. Manufacturing jobs focusing in apparel and textiles have become the main source of employment in Northumberland County (NCPD, 2005) Since the 1980's, a growth in the Service Sector has become evident as the number of technology/service related jobs increases and the ability to work further from large population centers becomes more possible.

## **Economic Development Zones**

The introduction of economic development zones into the area is expanding more possibilities for employment. Keystone Opportunity Zones (KOZs) and Keystone Opportunity Enterprise Zones (KOEZs) provide opportunities to develop land at reduced state and local tax rates.

In Northumberland County a KOZ has been established in the municipalities of Coal Township and the City of Shamokin. The KOZ in the two municipalities contains 140 acres and includes the site of the former Eagle Silk Mill in the City of Shamokin, which was demolished in the mid-1990s. The remainder of the site, primarily Coal Township, is former coal lands. The strategy is to develop the City of Shamokin and Coal Township KOZ for manufacturing uses (NCPD, 2005).

In Schuylkill County, KOZs are located at the site of the High Ridge Industrial Park east of Interstate 81 and south of the road in Cass Township. Other areas in which KOZ sites have been established are in West Mahanoy Township and Mahanoy City. KOEZs are located in Butler Township, Ryan Township, Shenandoah, Mahanoy City and West Mahanoy Township. Establishment of more KOZ land for business development could bring a significant number of jobs into the region (McCormick Taylor, 2006).

# Chapter 2

## Land Resources

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## Chapter 2 – Land Resources

### 2.1 Geology

The geology of Pennsylvania is divided into six separate physiographic provinces. The United States Geologic Survey defines physiographic provinces or regions as broad-scale subdivisions based on terrain texture, rock type and geologic structure and history . The Mahanoy Creek Watershed is located within the Ridge and Valley physiographic province (Sevon,2000). The Ridge and Valley province extends from New York to Alabama and is the second largest physiographic province in Pennsylvania. This province is most famous for its anthracite coal fields.

The Ridge and Valley province in Pennsylvania is further divided into 7 sections. The Mahanoy Creek Watershed is within the Anthracite Upland and Susquehanna Lowland sections of the Ridge and Valley province.

The geology of the Mahanoy Creek Watershed can also be broken down into 13 different geologic formations. A geologic formation is a rock unit that can be distinctively mapped and identified. The formations found within the Mahanoy Creek Watershed can be found in Table 2-1 (See Figures 2-1 through 2-3). The Mauch Chunk Formation runs parallel with the Mahanoy Creek throughout a large portion of the watershed and is defined as a grayish-red shale, siltstone, sandstone and conglomerate. The Llewellyn and Pottsville Formations also make up a large part of the watershed. The Llewellyn formation is defined as grey, fine to coarse grey sandstone, siltstone, shale, conglomerate, and anthracite coal. The Pottsville formation consists of a grey conglomerate, fine to coarse grained sandstone, and is known to contain limestone siltstone and shale, as well as anthracite and bituminous coal. Both the Llewellyn and Pottsville formations overlie the Mauch Chunk formation and are the dominant formations throughout the headwaters of the Mahanoy Creek Watershed.

**Table 2-1  
Geological Formations**

Buddy’s Run Member of Catskill Formation
Duncannon Member of Catskill Formation
Hamilton Group
Irish Valley Member of Catskill Formation

## 2.2 Soil Characteristics

One of the most important land use planning tools is an accurate map of soil types. The structure and composition of each particular soil determine its fertility and suitability for various types of land development. Soil structure also affects percolation, ease of cultivation, and susceptibility to erosion (NCPD, 2005). Soil types can be generalized into soil associations by grouping two or more dominant soil series. Six soil associations are present throughout the Mahanoy Creek Watershed. See Figures 2-4 through 2-6 as well as the corresponding soil association descriptions below.

### Soil Associations

#### *Laidig-Hazelton-Dekalb-Buchanan*

Soils of the Laidig-Hazelton-Dekalb-Buchanan Series are gently sloping to very steep, deep and moderately deep, well-drained to somewhat poorly drained soils on uplands.

#### *Meckesville-Leck Kill-Calvin*

Soils of the Meckesville-Leck Kill-Calvin Series are gently sloping to moderately steep, deep and moderately deep, well-drained soils on uplands.

#### *Udorthents-Hazelton-Dekalb*

Soils of the Udorthents-Hazelton-Dekalb Series are gently sloping to very steep, deep and moderately deep, well-drained to somewhat poorly drained soils on mountainsides and ridges; formed in material weathered from sandstone and some shale.

#### *Watson-Leck Kill-Buchanan-Alvira*

Soils of the Watson-Leck Kill-Buchanan-Alvira Series are gently sloping to steep, deep, well-drained to somewhat poorly drained soils on flat to slightly concave dissected hills; formed in material weathered from sandstone, shale, siltstone and pre-Wisconsin-age glacial till.

#### *Weikert-Berks*

Soils of the Weikert-Berks Series are gently sloping to steep, shallow to deep, well-drained soils on hills and ridges formed in material weathered from shale and some sandstone.

#### *Washington-Hagerstown-Elliber-Edom*

Soils of the Washington-Hagerstown-Elliber-Edom Series are gently sloping to steep, deep, well-drained soils in valley and on ridges; formed in material weathered from limestone and calcareous shale.

A hydric soil is a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Hydric soils are present throughout the watershed as can be seen on Figures 2-7 through 2-9.

### 2.3 Land Ownership

Within the Mahanoy Creek watershed, the majority of land is owned by private parties. Approximately 17.75 square miles of land within the 157 square mile watershed is public land consisting of state forest and state gamelands. Figure 1-13 and Table 2-2 below display the area of public lands throughout the watershed.

**Table 2-2  
Public Lands**

<b>Public Land</b>	<b>Area (sq. mi.)</b>	<b>% of Public Lands</b>
<b>State Game Lands</b>	<b>15.72</b>	<b>88.5%</b>
State Game Land 326	2.03	11.4%
State Game Land 329	0.004	0.0002%
State Game Land 165	1.06	5.9%
State Game Land 84	12.63	71.2%
<b>State Forest</b>	<b>2.03</b>	<b>11.4%</b>
Weiser State Forest	2.03	11.4%
<b>Total</b>	<b>17.75</b>	<b>100%</b>

### 2.4 Critical Areas

#### Erosion and Sedimentation

Erosion and Sedimentation has the potential to become a serious threat to an area's waterbodies. Streambank erosion occurs when the banks of a stream or river erode and deposit sediment into a waterbody. Improper land use or removing vegetation along a waterway can decrease bank stability and increase incidence of streambank erosion. Vegetation along streambanks acts as a stabilizer and prevents the soil from washing away during times of increased flow in a stream or creek.

Sedimentation refers to particles of soil that enter a waterway from the eroding landscape. Watersheds experience a natural sediment load that is determined by environmental factors such as local geology, climate, and vegetation. When the environment is altered, increases in sedimentation become more likely and can be damaging to aquatic habitat and water quality. Rainfall washes soil off of plowed fields, construction sites, logging sites, developed or urban areas, and mining areas into waterbodies. Excessive sediment reduces the amount of sunlight able to reach aquatic plants. It can also clog and abrade fish gills or suffocate eggs and aquatic insect larvae within a waterway.

The state of Pennsylvania enforces an erosion, sediment, and pollution control through the use of best management practices. PA Code Title 25 Chapter 102 requires all earthmoving projects in the Commonwealth to develop an erosion and sediment pollution control plan and implement best management practices for the control of sediment pollution during construction and other earthmoving activities.

## **Floodplains**

Floodplains are the areas surrounding waterbodies that are prone to flooding. The frequency of flooding or the flooding magnitude can help to determine the area of floodplain delineation. The floodplain delineation can then be placed onto a map to provide a visual representation of the area inundated by floodwaters during a specific flooding event. Determination of flood-prone areas can be an important planning tool from both an economic and environmental standpoint.

Floodplains are critical areas since they are important for the transport of stormwater during heavy rainfall events. Development within a floodplain has direct impacts on the level of flooding. Presence of flood prone areas can have impacts on development and the potential for property damage. Refer to the Water Resources Chapter 3 of this report for further discussion of floodplains within the Mahanoy Creek Watershed.

## **Wetlands**

Wetlands are a critical component of watershed health. Wetlands provide many important benefits including pollution filtration, flood prevention, soil erosion and sediment control, habitat for fish and wildlife including habitat for threatened and endangered species and shoreline stabilization. (NCPD, 2005). The presence of Acid Mine Drainage throughout this watershed makes wetland existence a critical component to watershed health. Refer to the Water Resources chapter 3 of this report for further discussion of wetlands in the Mahanoy Creek Watershed.

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## 2.5 Waste Management

### Municipal Waste Facilities

Municipal waste facilities are present within the Mahanoy Creek Watershed. Facilities are in the forms of landfills, waste transfer stations, and recycling facilities. Within the Mahanoy Creek Watershed, there are 8 inactive, 2 active and 1 proposed municipal waste facility. Please refer to Figures 2-10 through 2-12 for Municipal Waste Facility locations within the watershed.

Recycling facilities are becoming more common across the commonwealth. The practice of recycling can help to minimize the need for future additional landfill space and has positive environmental benefits. Recycling drop off locations have become common in areas where curbside recycling is not offered. Presently, the PADEP has record of two recycling drop off locations in Northumberland County and seven in Schuylkill county within the watershed boundary.

## 2.6 Hazardous Areas

Hazardous waste is waste that is dangerous or potentially harmful to our health or the environment. Hazardous waste can be liquids, solids, gases, or sludges that are by-products of manufacturing processes, agriculture, mining and other human activities. Regulation of hazardous waste production is important to prevent contamination of the local water supply. The following is a general description of the major hazardous areas found within the watershed.

### Abandoned Mined Lands

Over 150 years of anthracite coal mining within the Mahanoy Creek Watershed has led to the impairment of Mahanoy Creek and many of its tributaries. The contamination result of AMD is visible by the red, orange, and sometimes blue and green, discoloration of the water. Contamination of waterways as a result of AMD is visible by the discoloration of the water. An area of 42 square miles is underlain by mining throughout the watershed. Approximately 32 acid mine discharges are present and contribute to the approximately 46 miles of polluted streams within the watershed area. Aside from water quality degradation, AMD damages the aesthetic and recreational values of the watershed. See the Water Resources chapter 3 for further detailed discussion of Acid Mine Drainage.



### Centralia Mine Fire

Since 1962 the abandoned coal mines beneath Centralia, located in the north-central limb of the watershed, have been continuously burning underground. No one knows exactly how the fire started but it is thought that during a routine trash fire, set by the borough, the fire made its way below the ground and into the mines. Most of the population has moved away from Centralia and the fire continues to burn.

*Centralia Mine Fire*

### Illegal Dumpsites

Any area of concentrated trash is classified as an illegal dumpsite. The presence of illegal dumpsites is an ongoing problem throughout the watershed. Illegal dumping not only creates an unattractive nuisance to the landscape, it also is harmful to the water quality and habitat in the watershed. Illegal dumpsites are found throughout most of the watershed but seem to be concentrated along the north central portion of the watershed, according to the Illegal Dump Surveys published by PA Cleanways for Schuylkill, Northumberland and Columbia Counties (PA Cleanways, 2009). Figures 2-10 through 2-12 display illegal dump sites within the watershed.



*Illegal Dumpsite*

### Industrial Waste Sites

The U.S. Environmental Protection Agency database was used to gather more information regarding illegal dumpsites, residual waste landfills, storage tank locations, land recycling cleanup locations, and captive hazardous waste operations. The items can be seen on Figures 2-10 through 2-12.

## Brownfield Sites

The redevelopment of brownfield sites can create new economic and environmental opportunities for the communities involved. Brownfield redevelopment includes the remediation, reclamation, reuse and redevelopment of contaminated commercial and industrial sites and abandoned mine lands. Currently, the two designated brownfield sites, listed below on Table 2-3, are located within the Schuylkill County portion of the watershed (See Figures 2-10 through 6-12).

**Table 2-3  
Brownfield Sites**

Site	County	Municipality	Zoning
Old Kaier's Brewery	Schuylkill	Borough Of Mahanoy City	Commercial
Beauty Fountain	Schuylkill	Borough of Mahanoy City	Light Manufacturing/Warehousing

## Land Recycling Program

According to the PADEP website, the Act 2 Land Recycling Program encourages the voluntary cleanup and reuse of contaminated commercial and industrial sites. The Land Recycling Program is built on four cornerstones that break down redevelopment obstacles. They are as follows:

1. Uniform cleanup standards,
2. Liability relief,
3. Standardized reviews and time limits, and
4. Financial assistance.

The Land Recycling Program allows an owner or purchaser of a brownfield site to choose any one or combination of cleanup standards to guide the remediation. By meeting one or a combination of the statewide health standard or the site-specific standard, the remediator will receive liability relief for the property. This program can have significant positive economic effects for the landowner and community. Approximately 53 land recycling cleanup locations are located throughout the watershed (See Figures 2-10 through 6-12).

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## **Raw Sewage**

Raw sewage continues to be a major problem within the Mahanoy Creek Watershed. Sewage contributes impairments to streams in the upper part of the watershed; however, the effects are often masked by pollution associated with Acid Mine Drainage. Leaky, on-lot septic systems are known to degrade local stream sections throughout the watershed. These problems could be addressed by a more active enforcement of the Sewage Planning Act (Act 537 Plan), including the identification of problem areas that might warrant construction of sewage treatment plants or through innovative combined AMD/ sewage treatment systems (PADEP Bureau of Watershed Management, 2004). The effects of sewage were not addressed in the 2007 TMDL report published by PADEP.

# Chapter 3

## Water Resources

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## Chapter 3 – Water Resources

### 3.1 Major Tributaries

There are 54 miles of streams that make up the Mahanoy Creek Watershed. Within this area, approximately 46 tributaries drain into Mahanoy Creek. There are 11 major subwatersheds within the Mahanoy Creek watershed and 8 major tributaries that drain directly into the Mahanoy Creek. These 8 major tributaries include North Mahanoy Creek, Shenandoah Creek, Little Mahanoy Creek, Crab Run, Zerbe Run, Mouse Creek, Waste House Run and Schwaben Creek. The Mahanoy Creek also receives flow from numerous small unnamed intermittent and perennial streams and mine discharges.

A large portion of Schwaben Creek and the Little Mahanoy Creek are designated as Trout Stocked Fisheries. Little Mahanoy and Waste House Run are designated as Wild Trout Streams. The potential for fish habitat within the watershed is jeopardized by problems including those associated with Acid Mine Drainage. Refer to the Water Quality section of this chapter for further discussion of issues pertaining to Acid Mine Drainage within the Mahanoy Creek Watershed. Figures 3-1 through 3-3 show the streams within the watershed.

### 3.2 Wetlands

The Clean Water Act defines wetlands as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.”

Wetlands provide many important benefits including pollution filtration, flood prevention, soil erosion and sediment control, habitat for fish and wildlife including habitat for threatened and endangered species and shoreline stabilization. Wetlands also offer unspoiled, open space for the aesthetic enjoyment of nature as well as recreation activities and environmental education. The alteration and destruction of wetlands by draining, filling, or other methods has an adverse effect on environmental quality and ecological systems (NCPD, 2005).

Wetlands identified within the Mahanoy Creek Watershed are those indicated by the U.S. Fish and Wildlife Service’s, National Wetlands Inventory. Wetlands maps delineate and classify wetlands based upon a hierarchical system structured around a combination of ecological, hydrological, and substrate characteristics. The classification system also contains provisions to apply modifiers to describe the amount of flooding, water chemistry, soil type, and the actions of man. Figures 2-7 through 2-9 show the wetlands identified on the National Wetlands Inventory throughout the watershed.

The following are two major wetland projects within the Mahanoy Creek Watershed:

- *Bolich Wetland Project* - Project includes the construction of a 1.5 acre passive treatment wetland along the Mahanoy Creek that will remove iron from approximately 800,000 gallons of water per day. It is estimated that the project will remove 185 pounds of iron per day. (Stream Restoration Inc., 2007). Please refer to Page xiii or Appendix F for more information on the Bolich Wetland Project.



*Bolich Wetland Project*

- *Mahanoy Creek Aerobic Wetlands* - The MCWA received a Watershed Rehabilitation and Partnership Act grant in 1999 to construct wetlands in order to treat AMD problems in Mahanoy Creek. The Swamp is a four-acre wetland located upstream of the village of Gordon. Five to ten percent of water from the stream is diverted into the swamp where the pollutants can settle out before returning back to the stream. The Swamp is the first part of the four-part passive treatment project. In 2000, the group received a Growing Greener Grant to assess the effects of AMD and for possible remedial alternatives for abandoned mine lands in the watershed. In 2001, they received a CWA Section §319 Grant to expand the Swamp project and allow 750–1,500 gallons of water per minute to be treated (PADEP Department of Watershed Management, 2004).

### 3.3 Floodplains

A floodplain is defined as the relatively flat, lowland area adjacent to a stream or river. Floodplains can be calculated and delineated for the purpose of planning for future development, land preservation and as a tool for determining areas in which flood insurance is necessary for the land owner.

The Federal Emergency Management Agency (FEMA) manages the National Flood Insurance Program (NFIP). The NFIP is a municipality-based voluntary program that is responsible for floodplain mapping, determining flood prone areas where flood insurance is required and aiding communities in implementing floodplain management practices.

The determination of a floodplain rests in the community's willingness to participate in the NFIP. Floodplains can be determined by detailed study methods using FEMA approved engineering models to determine flood depths and floodways that are displayed on a published Flood Insurance Rate Map (FIRM) and supporting data included in a Flood Insurance Study (FIS).

Flood Insurance Studies (FIS) and Flood Insurance Rate Maps (FIRMs) have been published as part of the National Flood Insurance Program under the Federal Emergency Management Agency (FEMA) for many of the municipalities located within the Mahanoy Creek Watershed. Therefore, these communities are responsible for development within the floodplain area. Out of the 31 municipalities within the watershed, only 2 do not have published FIRMs. These 2 municipalities are located in Columbia County (Township of Conyngham and the Borough of Centralia). The remaining 29 municipalities have published FIRMs that include both approximate and detailed study methods to determine floodplain delineation (see Table 3-2 for current community NFIP status). In 2008, Northumberland County underwent a countywide re-study to update their Flood Insurance Studies and FIRMs. As of the date of this publication, Schuylkill County is completing the review process of their new countywide FIS and FIRMs. The new FIS and FIRMs for Schuylkill County are expected to become effective around October 2011.

### 3.4 Lakes, Ponds and Reservoirs

Lakes and Ponds are defined as inland bodies of standing or slowly moving water. They can be either manmade or natural and are important features in the watershed landscape. The Mahanoy Creek Watershed is home to a number of lakes and ponds most of which are small in size and unnamed. Some of the lakes are naturally occurring and there are also a number of small farm ponds throughout the watershed.

Reservoirs are artificial lakes that are used to store water. The main purpose of reservoir construction is to store drinking water for the local residents. Approximately 56% of Schuylkill County residents get their drinking water from reservoirs (McCormick Taylor Engineers & Planners, 2006). In the Mahanoy Creek Watershed, the majority of reservoirs are located in the Schuylkill County portion.

Lakes, ponds and reservoirs are also important for wildlife habitat and recreation. These waterbodies are very environmentally sensitive since they store such a valuable resource. The water quality within these waterbodies must be kept at a standard to protect both the individuals and wildlife that depend on them for drinking water and habitat. Water quality standards are managed by Chapter 93 of the Pennsylvania Code (See Section 3.5 for further discussion of Chapter 93).

**Table 3-1**  
**Waterbodies within the Mahanoy Creek Watershed**

<b>Waterbodies</b>	<b>Acres</b>
Total Area of Lake/Pond	379.75
Total Area of Reservoirs	89.81
Total Area of Stream/River	456.44
Total Area of Swamp/Marsh	40.10

**Table 3-2  
National Flood Insurance Program (NFIP) Community Status**

<b>County</b>	<b>Municipality</b>	<b>Reg Phase of NFIP?</b>	<b>Floodplain Delineation*</b>	<b>Countywide?</b>	<b>Effective Date</b>
Schuylkill	Township of Eldred	Y	A	N	9/1/1986
	Township of Barry	Y	A	N	5/1/1986
	Township of Butler	Y	D w/ FW	N	8/3/1992
	Township of Union	Y	A	N	9/1/1986
	Township of West Mahanoy	Y	A	N	4/1/1983
	Borough of Shenandoah	Y	A	N	5/1/1986
	Township of Mahanoy	Y	A	N	9/1/1986
	Township of Delano	Y	A	N	9/1/1986
	Township of New Castle	Y	A	N	8/13/1982
	Township of Cass	Y	D	N	5/17/1989
	Township of Ryan	Y	A	N	4/1/1983
	Borough of Ashland	Y	D w/ FW	N	9/17/1992
	Borough of Gordon	Y	D w/ FW	N	11/15/1978
	Borough of Girardville	Y	D w/ FW	N	4/15/1992
	Borough of Frackville	Y	A	N	5/1/1986
	Borough of Gilberton	Y	D w/ FW	N	5/2/1977
	City of Mahanoy	N	N/A		
Northumberland	Township of Jackson	Y	D w/ FW	Y	7/16/2008
	Township of Little Mahanoy	Y	D w/ FW	Y	7/16/2008
	Township of Washington	Y	D w/ FW	Y	7/16/2008
	Township of Upper Mahanoy	Y	D w/ FW	Y	7/16/2008
	Township of East Cameron	Y	D w/ FW	Y	7/16/2008
	Township of West Cameron	Y	D w/ FW	Y	7/16/2008
	Township of Zerbe	Y	D w/ FW	Y	7/16/2008
	Township of Coal	Y	D w/ FW	Y	7/16/2008
	Township of Mount Carmel	Y	D w/ FW	Y	7/16/2008
		Rebuck (not on map)	N	D w/ FW	Y
	Treverton (not on map)	N	D w/ FW	Y	7/16/2008
Columbia	Township of Conyngham	N	N/A		
	Borough of Centralia	N	N/A		
<b>* Floodplain Delineation Key</b>					
A - Approximately 100-year Flood Zone: 100-year flood boundary delineated. However, no detailed flood elevation or regulatory floodway has been established.					
D - Detailed 100-year Flood Zone: 100-year flood boundary delineated with detailed flood elevations. However, no regulatory floodway has been established.					
DW/FW - Detailed 100-year Flood Zone with Regulatory Floodway: 100-year flood boundary delineated with detailed flood elevations and regulatory floodway established.					

### 3.5 Water Quality & Quantity

#### TMDLs

Pollution from Acid Mine Drainage has resulted in high levels of metals found throughout the Mahanoy Creek and many of its tributaries. Section 303(d) of the 1962 Clean Water Act requires the establishment of water quality standards at the state level. As part of the requirements, the state is required to create a list of impaired waters for which pollution controls are not stringent enough to meet water quality standards. This is then used to determine which streams need to develop Total Maximum Daily Loads (TMDLs), which help to regulate the total amount of pollutants that can be released into a stream on a daily basis. PADEP released a TMDL report on March 13, 2007 to address the impairments noted in the 1996, 1998, and draft 2002 Pennsylvania Section 303(d) lists and the 2000 305(b) report required under the Clean Water Act (PADEP, 2007). See Figures 3-4 through 3-6 for locations of stream segments associated with 303d.

#### Chapter 93

A designated use is the assigned use according to Chapter 93 of the Pennsylvania Code whether it has been scientifically attained or not. An existing use is the assigned use according to Chapter 93 that has actually been scientifically attained after November 28, 1975. See Figures 3-7 through 3-9 for Chapter 93 designated use locations throughout the watershed.

- *Cold Water Fishes*—Maintenance or propagation, or both, of fish species including the family Salmonidae and additional flora and fauna which are indigenous to a cold water habitat.
- *WWF Warm Water Fishes*—Maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.
- *MF Migratory Fishes*—Passage, maintenance and propagation of anadromous and catadromous fishes and other fishes which ascend to flowing waters to complete their life cycle.
- *TSF Trout Stocking*—Maintenance of stocked trout from February 15 to July 31 and maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.

**Table 3-3  
Chapter 93 Designated Streams within the Mahanoy Creek Watershed**

<b>Stream</b>	<b>Chapter 93 Designation</b>
North Mahanoy Creek	CWF
Mahanoy Creek	WWF
Lost Creek	CWF
Shenandoah Creek	CWF
Rattling Run	CWF
Crab Run	CWF
Schwaben Creek	TSF
Middle Creek	TSF
Mouse Creek	TSF
Zerbe Run	CWF

**Water Pollution Control Facilities**

Water Pollution Control Facilities relating to the Pennsylvania DEP’s Water Pollution Control Program exist throughout the Mahanoy Creek Watershed. See Figures 3-10 through 3-12 for water pollution control facility locations. The following categories of facilities exist within the watershed.

Concentrated Animal Feeding Operation (CAFO) – Animal feeding operations where animals are kept and raised in confined situations. One facility is associated with a CAFO in the watershed. This facility has an internal monitoring point and not a land discharge.

Industrial Waste – Treated waste discharges from industrial processes. Eight of these facilities exist in the watershed.

Stormwater-Industrial – Stormwater generated from industrial sites. Two facilities exist in the watershed. One is a discharge location and the other is a production storage unit.

## **Water Resources Inventory**

Water Resources relating to the Pennsylvania DEP's Water Use Planning Program exist throughout the Mahanoy Creek Watershed. See Figures 3-10 through 3-12 for water resource locations. The following categories of resources exist within the watershed.

**Discharge:** The return of water used at a water resources facility. The discharge may be from a sewage treatment plant, instream discharge, spray irrigation field, groundwater recharge, on-lot septic, or an unidentified type. Thirty five discharges are located in the Mahanoy Creek Watershed.

**Ground Water Withdrawal:** The withdrawal of water used at a water resources facility. The withdrawal may be a well, spring, quarry, infiltration gallery, deep mine, surface mine, or an unidentified facility type. Twenty six groundwater withdrawals are located in the Mahanoy Creek Watershed.

**Interconnection:** The point of interconnection between water resources facilities. The interconnection may be between two public water supply agencies or between a public water supply agency and a commercial or industrial water user. Two interconnections are located in the Mahanoy Creek Watershed.

**Storage:** The storage of water used at a water resources facility. The storage may be a quarry, standpipe, open off-stream reservoir, closed off-stream reservoir, instream reservoir, hydroelectric dam, natural lake, pond, silt dam, hydroelectric pumped storage, or an unidentified facility type. Seven storage locations are located in the Mahanoy Creek Watershed.

**Surface Water Withdrawal:** The withdrawal of water used at a water resources facility. The withdrawal may be an instream diversion, intake from a dam, natural lake, pond, river well, or an unidentified facility type. Eight surface water withdrawals are located in the Mahanoy Creek Watershed.

### **3.5 Acid Mine Drainage**

Acid mine drainage is considered the leading cause of impairment throughout the Mahanoy Creek Watershed. The contamination result of AMD is visible by the red, orange, and sometimes blue and green, discoloration of the water. Contamination of waterways as a result of AMD is visible by the discoloration of the water. An area of 42 square miles is underlain by mining throughout the watershed. Approximately 32 acid mine discharges are present and contribute to the approximately 46 miles of polluted streams within the watershed area. Aside from water quality degradation, AMD damages the aesthetic and recreational values of the watershed. The following is a discussion of locations throughout the watershed that are impacted by AMD.

While North Mahanoy Creek runs through an area severely impacted by mining, it does not suffer from water quality degradation due to acid mine drainage (AMD). No large AMD discharges are present. The creek does suffer from flow leaving the stream channel through voids created by mining operations and subsidence. A stream with voids can result in flow being present in the upper part of the creek while the mouth is dry (Cravotta, 2005). Additionally abandoned mine areas throughout the watershed can absorb and detain runoff through a variety of reasons including, but not limited to: culm and waste piles that absorb runoff; abandoned mine pits that can detain runoff; and fracture and voids within the mining areas that short circuit runoff patterns by direct infiltration into underground mine voids.

Waste House Run enters the Mahanoy Creek from the north, near the village of St. Nicholas. The upper part of the sub-basin is forested, while the middle and lower reaches are located on lands severely damaged by mining. No large AMD discharges are present. Water quality problems due to AMD do not affect this tributary. The waterway is dramatically impacted by losses of flow. One mine void on the stream removes a large majority of the flow in the channel. This void is located approximately 0.5 mi. downstream of the No. 1 Reservoir on Waste House Run, which is the smallest of the three reservoirs. This condition can result in flow being present in the upper part of the stream while the mouth is dry (Cravotta, 2005). Due to the complex pattern of drainage disruptions in this sub-basin, it has been included in the Mahanoy Creek main stem drainage area for purposes of computing area and percentage breakdowns.

Shenandoah Creek confluences with Mahanoy Creek in Girardville. The Shenandoah delivers flow from Kehly Run and Lost Creek. Near its mouth, the creek flows through a large beaver constructed wetland. In 2006 the wetland was destroyed by a flood. The waterway is severely impacted by AMD from the Hammond Mine, Weston Mine and other sources. In its upper reaches, both treated and raw sewage discharges add nutrient pollution, such as nitrogen and phosphorous, to the water column. Plant growth and microbial action in the constructed wetland reduce the nutrient pollution load entering the main stem of Mahanoy Creek (Cravotta, 2005).

The Shenandoah drains an area of approximately 9.2 square miles, which is 5.8% of the Mahanoy Creek watershed. Kehly Run drains an area of approximately 1.6 square miles, which is 1% of the total Mahanoy watershed. Lost Creek drains an area of approximately 1.3 square miles, which is 0.8% of the watershed.

The Packer #5 Mine discharges are located at the confluence of Shenandoah Creek and Mahanoy Creek. The discharges are made up of the Packer #5 Breach and the Packer #5 Borehole. They are ranked second and third among the top AMD sources in the Mahanoy Creek Watershed and are the largest sources of AMD from the 11.3 sq. mi. Shenandoah complex between Mahanoy City and Girardville (Reed and Others, 1987, Cravotta, 2005). Samples taken during March and August of 2001 at the discharge locations show a low dissolved oxygen count along with high levels of acidity and dissolved metals. All are characteristics of AMD.



*Gilberton Pump Discharge  
Photo Courtesy of Roseann Weinrich*

The Gilberton Pump Discharge is another significant location of AMD discharge within the watershed. Gilberton Pump is located in the Borough of Gilberton along the Mahanoy Creek. When the Gilberton Pump is in operation, the discharge drastically affects the streamflow and water quality of Mahanoy Creek from Gilberton downstream to its confluence with Shenandoah Creek. Previously published data indicates the discharge can be large (23 ft<sup>3</sup>/s or 39,100 L/min) and acidic (net alkalinity less than -100 mg/L) because of high concentrations of iron (greater than or equal to 50 mg/L) (Sanders & Thomas, Inc., 1975; Reed and others, 1987, Cravotta, 2005).

The PADEP has developed preliminary plans to install a new borehole to the Gilberton Mine at a lower surface elevation than the pump discharge that ideally would maintain the required mine pool elevation and allow AMD to flow continuously by gravity through a constructed wetland. Downstream from the Gilberton Mine Pump, the Girard Mine seepage overflows to Mahanoy Creek from the Girard Mine pool near the eastern limits of Girardville (Cravotta, 2005).

Big Mine Run enters Mahanoy Creek approximately 0.8 mi. upstream of the Borough of Ashland. Flow in the channel consists almost completely of AMD from the Centralia Mine Tunnel. This waterway is the most severely polluted by AMD in the Mahanoy Creek watershed (Cravotta, 2005). This sub-basin has been included in the Mahanoy Creek main stem drainage area for purposes of computing area and percentage breakdowns.

Little Mahanoy Creek enters the main stem at the Borough of Gordon. The tributary receives flow from Rattling Run. The sub-basin of the Little Mahanoy has not been impacted by mining. No AMD discharges are present. Water quality problems due to AMD do not affect this tributary. The water quality of stream is affected by nutrient pollution (Cravotta, 2005). The Little Mahanoy drains an area of approximately 8.3 square miles, which is 5.3% of the Mahanoy Creek watershed. Rattling Run drains an area of approximately 2.7 square miles, which is 1.8% of the watershed.



*Pott's Discharge*

Big Run empties into Mahanoy Creek southeast of Lavelle. This waterway receives substantial AMD flow from the Potts Mine. The stream suffers from a significant pollution load of metals. The alkaline chemistry of the mine discharges and natural turbulent flow of the run result in significant reductions in dissolved metals at the mouth of the stream (Cravotta, 2005). This sub-basin has been included in the Mahanoy Creek main stem drainage area for purposes of computing area and percentage breakdowns.

Crab Run enters the main stem near Taylorville. The sub-basin of Crab Run has not been impacted by mining. No AMD discharges are present. Water quality problems due to AMD do not affect this tributary. The water quality of stream is affected by nutrient pollution and sediment loading believed to be agricultural in origin (Cravotta, 2005). Crab Run drains an area of approximately 3.5 square miles, which is 2.2% of the Mahanoy Creek watershed.

Zerbe Run confluences with Mahanoy Creek near Hunter. The upper reaches of the stream, at Trevorton and upstream, drain unmined areas and are not affected by AMD. The unnamed tributary to the run just downstream of Trevorton, receives AMD from multiple North Franklin Mine sources. The AMD degrades the overall water quality of Zerbe Run to varying degrees, depending on the extent to which it is diluted by relatively clean water from the upper reaches (Cravotta, 2005). Zerbe Run drains an area of approximately 13.1 square miles, which is 8.3% of the Mahanoy Creek watershed.

Schwaben Creek delivers flow to the main stem near Red Cross. Mouse Creek enters Schwaben Creek approximately 0.5 mi. upstream of its confluence with Mahanoy Creek. The Schwaben Creek sub-basin is an unmined area. No AMD discharges are present. Water quality problems due to AMD do not affect this tributary. The water quality of stream is affected by nutrient pollution believed to be agricultural in origin (Cravotta, 2005). Schwaben Creek drains an area of approximately 23 square miles, which is 14.6% of the Mahanoy Creek watershed. Mouse Creek drains an area of approximately 7.2 square miles, which is 4.6% of the total Mahanoy watershed.

Mahanoy Creek receives flow from numerous small, unnamed tributaries in addition to the major tributaries discussed in this section. Water quantity and quality of these minor tributaries is not definitively known. It is reasonable to assume that small tributaries which drain mined areas and/or receive AMD point discharges exhibit water quality problems such as elevated levels of dissolved and suspended metals, elevated levels of sulfates, possible low pH, and possible low or negative net alkalinity. Minor tributaries which drain unmined areas with agricultural and/or developed lands likely suffer from varying levels of nutrient pollution and possibly excess sediment load. These streams are unlikely to have elevated levels of typical AMD pollutants.

# Chapter 4

## Biological Resources

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## Chapter 4 – Biological Resources

### 4.1 Wildlife

The Mahanoy Creek Watershed provides habitat for a great diversity of wildlife, including rare, threatened and endangered species. Endangered species are those that are in imminent danger of extinction or extirpation throughout their range in Pennsylvania if the deleterious factors affecting them continue to operate. Threatened species are those that may become endangered within the foreseeable future throughout their range in Pennsylvania unless the casual factors affecting the organism are abated (PA DCNR, 2009). Spring Mountain, Broad Mountain, and Mahantango Mountain are all forested ridges used as migration corridors within the Mahanoy Creek Watershed. These undisturbed continuous forested ridges provide habitat to animal and plant species.

White-tailed deer, gray squirrel, cottontail rabbit, ruffed grouse, ring-necked pheasant, and doves are known to exist within the watershed along with muskrats, raccoons, and fox. There are also a wide variety of reptiles and amphibians. Table 4-1 below lists the common amphibians and reptiles found within the Mahanoy Watershed. A species of conservation concern is a species that is not yet threatened or endangered, but if not appropriately protected, it may become either threatened or endangered in the near future.

**Table 4-1  
List of Amphibians and Reptiles found in Mahanoy Creek Watershed**

Common Name	Latin Name	Species of Conservation Concern
Four-toed Salamander	<i>Hemidactylium scutatum</i>	X
Hellbender	<i>Cryptobranchus alleganiensis</i>	X
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	X
Marbled Salamander	<i>Ambystoma opacum</i>	X
Spotted Salamander	<i>Ambystoma maculatum</i>	
Dusky Salamander	<i>Desmognathus orestes</i>	
Long-tailed Salamander	<i>Eurycea longicauda</i>	
Northern Two-lined Salamander	<i>Eurycea bislineata</i>	
Spring Salamander	<i>Gyrinophilus porphyriticus</i>	
Eastern Newt	<i>Notophthalmus viridescens</i>	
Northern Slimy Salamander	<i>Plethodon glutinosus</i>	
Northern Red-backed Salamander	<i>Plethodon cinereus</i>	
Northern Red Salamander	<i>Pseudotriton ruber</i>	
Mountain Dusky Salamander	<i>Desmognathus ochrophaeus</i>	
Eastern Spadefoot	<i>Scaphiopus holbrookii</i>	X
Fowler’s Toad	<i>Bufo fowleri</i>	X
Northern Cricket Frog	<i>Acris crepitans</i>	X

**Table 4-1 (Continued)**

Common Name	Latin Name	Species of Conservation Concern
Northern Leopard Frog	<i>Rana pipiens</i>	X
Upland Chorus Frog	<i>Pseudacris feriarum</i>	X
American Toad	<i>Bufo americanus</i>	
Gray Treefrog	<i>Hyla versicolor</i>	
Spring Peeper	<i>Pseudacris crucifer</i>	
American Bullfrog	<i>Lithobates catesbeianus</i>	
Wood Frog	<i>Rana sylvatica</i>	
Pickerel Frog	<i>Lithobates palustris</i>	
Green Frog	<i>Rana clamitans</i>	
Common Map Turtle	<i>Graptemys geographica</i>	X
Eastern Box Turtle	<i>Terrapene carolina</i>	X
Spotted Turtle	<i>Clemmys guttata</i>	X
Wood Turtle	<i>Clemmys insculpta</i>	X
Snapping Turtle	<i>Chelydra serpentina</i>	
Common Musk Turtle	<i>Sternotherus odoratus</i>	
Eastern Painted Turtle	<i>Chrysemys picta</i>	
Eastern Fence Lizard	<i>Sceloporus undulatus</i>	X
Five-lined Skink	<i>Plestiodon fasciatus</i>	
Eastern Hognose Snake	<i>Heterodon platirhinos</i>	X
Eastern Ribbon Snake	<i>Thamnophis sauritus</i>	X
Northern Copperhead	<i>Agkistrodon contortrix</i>	X
Queen Snake	<i>Regina septemvittata</i>	X
Smooth Green Snake	<i>Opheodrys vernalis</i>	X
Timber Rattlesnake	<i>Crotalus horridus</i>	X
Northern Black Racer	<i>Coluber constrictor constrictor</i>	
Northern Ringneck Snake	<i>Diadophis punctatus</i>	
Eastern Rat Snake	<i>Scotophis alleghaniensis</i>	
Eastern Milk Snake	<i>Lampropeltis triangulum</i>	
Northern Water Snake	<i>Nerodia sipedon</i>	
Red-Bellied Snake	<i>Storeria occipitomaculata</i>	
Dekay's Brown Snake	<i>Storeria dekayi</i>	
Eastern Garter Snake	<i>Thamnophis sirtalis</i>	

Data: Pennsylvania Herpetological Atlas and Pennsylvania Herp Identification Websites



*Snake in Mahanoy Creek.  
Photo courtesy of Roseann Weinrich*

## Birds

The Mahanoy Creek Watershed is located within the Northern Ridge and Valley Physiographic Province, which extends from southeastern Pennsylvania, through northwestern New Jersey and southeastern New York.

There are 7 bird species located in the Northern Ridge and Valley Physiographic Province that are of conservation concern according to Partners in Flight (PIF). PIF is a cooperative effort involving partnerships among federal, state and local government agencies, philanthropic foundations, professional organizations, conservation groups, industry, the academic community, and private individuals.

The National Audubon Society has similar objectives, but focuses on the United States. Birds on Audubon Watchlist are considered to be seriously declining or face major threats within the United States. Three of the seven bird species that are of conservation concern within the Northern Ridge and Valley province are also on the 2007 Audubon Watchlist. The bird species of special concern are birds that are not yet threatened or endangered but if not appropriately protected, they may become so. These bird species are located in section 4.3, Table 4-2.

**Table 4-2  
Bird Species of Concern**

Species	Latin Name	Habitat
Golden-winged Warbler*	<i>Vermivora chrysoptera</i>	Persists at high elevation, naturally disturbed sites
Cerulean Warbler*	<i>Dendroica cerulea</i>	Recently expanding populations; both in mature upland (oak) and bottomland (sycamore) forests
Worm-eating Warbler	<i>Helmitheros vermivorus</i>	Favors dry, upland forests on steep slopes with dense shrubby understory; ground nester
Louisiana Waterthrush	<i>Seiurus motacilla</i>	Requires late succession (> 60 yr); rocky, flowing streams; sensitive to declining stream quality and loss of riparian forest buffers.
Henslow's Sparrow*	<i>Ammodramus henslowii</i>	Formerly more widespread until very recently; requires tall, unmowed pastures or margins of airport land.
Upland Sandpiper	<i>Bartramia longicauda</i>	Few breeding sites remain; area sensitive
Bobolink	<i>Dolichonyx oryzivora</i>	Sensitive to early mowing of pastures, conversion of dairy farms to row crops
* these species are also on the Audubon Watchlist		

## Fish

Aquatic ecological surveys were conducted by the U.S. Geological Survey at five stream sites, including Mahanoy Creek, during low base-flow conditions in October 2001. The fourteen species of fish listed below in Table 4-3 were identified at selected sites in the Mahanoy Creek watershed near its mouth at Kneass, below Schwaben Creek. The diversity and abundance of fish species in Mahanoy Creek decreased progressively upstream from 13 species at Gowen City to only 2 species each at Ashland and Girardville (Cravotta, 2005). There may be other species present, such as Eastern Brook Trout (*Salvelinus fontinalis*), at additional sites throughout the watershed. The water quality monitoring locations can be seen on Figures 4-1 through 4-3.

**Table 4-3**  
**Fish Species Identified at Selected Sites in the Mahanoy Creek Watershed**

<b>Common Name</b>	<b>Latin Name</b>
Stoneroller	<i>Campostoma anomalum</i>
Spotfin shiner	<i>Cyprinella analostana</i>
Cutlips minnow	<i>Exoglossum maxillingua</i>
Common shiner	<i>Luxilus cornutus</i>
River chub	<i>Nocomis micropogon</i>
Spottail shiner	<i>Notropis hudsonius</i>
Swallowtail shiner	<i>Notropis procne</i>
Rosyface shiner	<i>Notropis rubellus</i>
Bluntnose minnow	<i>Primephales notatus</i>
Fathead minnow	<i>Primephales promelas</i>
Blacknose dace	<i>Rhinichthys atratulus</i>
Longnose dace	<i>Rhinichthys cataractae</i>
Creek chub	<i>Semotilus atromaculatus</i>
Fallfish	<i>Semolitus corporalis</i>
White sucker	<i>Catostomus commersoni</i>
Northern hog sucker	<i>Hypentelium nigricans</i>
Margined madtom	<i>Noturus insignis</i>
Brown trout	<i>Salmo trutta</i>
Rock bass	<i>Ambloplites rupestris</i>
Green sunfish	<i>Lepomis cyanellus</i>
Smallmouth bass	<i>Micropterus dolomieu</i>
Tessellated darter	<i>Etheostoma olmstedii</i>
Greenside darter	<i>Etheostoma blennioides</i>
Banded darter	<i>Etheostoma zonale</i>
Shield darter	<i>Percina peltata</i>
<i>Data: Cravotta, 2005</i>	

### Other Wildlife

The Carnegie Museum of Natural History hosts a Mammals of Pennsylvania online resource at <http://www.carnegieinstitute.org/cmnh/mammals>, included descriptions and distribution maps of mammals in Pennsylvania. General descriptions of dragonflies and butterflies within counties of Pennsylvania can be found at the website of the USGS Northern Prairie Wildlife Research Center. Links to this information are at <http://www.npwrc.usgs.gov/resource/geograph.htm>

### 4.2 Vegetation

The majority of the land within the Mahanoy Creek Watershed is comprised of deciduous forest, cultivated cropland, and woody wetland area. The second and third growth forest communities within the Mahanoy Creek Watershed are described as the Appalachian Oak Forest dominated by white oak (*Quercus alba*) and northern red oak (*Quercus rubra*). Hemlock (*Tsuga canadensis*) is a common tree in this part of Pennsylvania, typically found on steep, north-facing slopes and cool, shaded ravines.

A portion of Weiser State Forest covers approximately 2 square miles within the Mahanoy Creek Watershed. One of the eight tracks of State Forest Land are located within the Mahanoy Creek Watershed. Table 4-4 lists known vegetation species within the watershed.



*Weiser State Forest*

**Table 4-4  
Common Trees within the Mahanoy Creek Watershed**

<b>Common Name</b>	<b>Scientific Name</b>
Ash, White	<i>Fraxinus americana</i>
Aspen, Bigtooth	<i>Populus grandidentata</i>
Aspen, Quaking	<i>Populus tremuloides</i>
Basswood	<i>Tilia americana</i>
Beech, American	<i>Fagus grandifolia</i>
Birch, Black	<i>Betula populifolia</i>
Birch, Gray	<i>Betula alleghaniensis</i>
Birch, Paper	<i>Betula papyrifera</i>
Birch, Yellow	<i>Betula alleghaniensis</i>
Cherry, Pin	<i>Prunus pennsylvanica</i>
Cucumbertree	<i>Magnolia acuminata</i>
Gum, Black	<i>Nyssa sylvatica</i>
Elm, American	<i>Ulmus americana</i>
Elm, Slippery	<i>Ulmus rubra</i>
Hemlock	<i>Tsuga canadensis</i>
Hickory, Shagbark	<i>Carya ovata</i>
Maple, Red	<i>Acer rubrum</i>
Maple, Sugar	<i>Acer saccharum</i>
Oak, Chestnut	<i>Quercus prinus</i>
Oak, Red	<i>Quercus rubra</i>
Oak, White	<i>Quercus alba</i>
Pine, Pitch	<i>Pinus rigida</i>
Pine, Virginia	<i>Pinus virginiana</i>
Pine, Eastern White	<i>Pinus strobus</i>
Poplar, Yellow	<i>Liriodendron tulipifera</i>
Sycamore, American	<i>Platanus occidentalis</i>
<i>Data: Northumberland County Soil Survey, 1985 &amp; Schuylkill Soil Survey</i>	

### **4.3 Threatened and Endangered Species**

The Pennsylvania Natural Heritage Program (PHNP) conducts inventories and collects data regarding the Commonwealth’s native biological diversity. The PHNP information system is continually refined and updated to include recently discovered locations and to describe environmental changes affecting known sites. A PNDI search request was submitted to DCNR on September 23, 2009.

Pennsylvania endangered species are in imminent danger of extinction or extirpation throughout their range in Pennsylvania if the deleterious factors affecting them continue to operate. Pennsylvania threatened species may become endangered within the foreseeable future throughout their range in Pennsylvania unless the casual factors affecting the organism are abated.

Table 4-5 below lists the threatened and endangered species located within the Mahanoy Creek Watershed including the species location and current state and federal status.

**Table 4-5  
Threatened and Endangered Species within in Mahanoy Creek Watershed**

Common Name	Scientific Name	Federal Status	Location
Indiana Bat	<i>Myotis sodalist</i>	Endangered	Multiple counties in Pennsylvania including Schuylkill, Northumberland, and Columbia
Pink mucket	<i>Lampsilis abrupta</i>	Endangered	Statewide in Pennsylvania
Rough pigtoe	<i>Pleurobema plenum</i>	Endangered and Experimental Population, Non-Essential	Statewide in Pennsylvania
Orangefoot pimpleback	<i>Plethobasus cooperianus</i>	Endangered and Experimental Population, Non-Essential	Statewide in Pennsylvania
Eastern puma	<i>Puma concolor cougar</i>	Endangered	Statewide in Pennsylvania
Ring Pink	<i>Obovaria retusa</i>	Endangered and Experimental Population, Non-Essential	Statewide in Pennsylvania
Bog Turtle	<i>Clemmys muhlenbergii</i>	Threatened and Similarity of Appearance (Threatened)	Schuylkill County
Northeastern bulrush	<i>Scirpus ancistrochaetus</i>	Endangered	Columbia County
Virginia spiraea	<i>Spiraea virginiana</i>	Threatened	Statewide in Pennsylvania

Source: U.S. Fish & Wildlife Service Website March 2010

The following species of plants were listed as species of special concern on the DCNR PNDI response.

**Table 4-6  
Pennsylvania Plant Species of Special Concern**

Common Name	Scientific Name	State Status	Location
Jeweled Shooting Star	<i>Dodecatheon radicum</i>	PA Threatened	Open wooded slopes, bluffs and on limestone. Found on shale cliffs and outcrops along Mahanoy Creek near Herndon and Otto.
Grass-leaved Rush	<i>Juncus biflorus</i>	Proposed PA Threatened	Often found in moist, open woods, boggy fields, gravel pits and ditches; fruiting in summer. Found in State Game Lands 165 near Trevorton.
Downy Lettuce	<i>Lactuca hirsute</i>	Currently unlisted	Often found in dry, open woods, thickets and rocky ledges; flowering from August to September. This species is found in State Game Lands 165 near Trevorton.
Yellow-fringed Orchid	<i>Platanthera ciliaris</i>	Proposed PA Threatened	Often found in bogs, moist meadows and woods; flowering from July to August. This species is found in State Game Lands 165 near Trevorton.

*Source:* Pennsylvania DCNR response letter – October 14, 2009.

What follows is a more detailed description of the plant species listed in Table 4-5.

**Mahanoy Creek Watershed Plant Species of Special Concern**

**Jeweled Shooting Star (*Dodecatheon radicans*) – PA Threatened**

The jeweled shooting-star has deep red-purple flowers. The petals bend backwards while the stamens form a cone in the center, giving the impression of a falling star or comet. The flowers are arranged in an attractive, nodding umbel at the top of a 1-foot stem, above a basal rosette of leaves. This species is quite rare in parts of its natural range. It grows on moist, shaded areas of east and north facing limestone outcrops and river bluffs. The plants often occur on rock ledges that receive dripping water or along wet cliffs, but are also known from dry to moist alkaline bluffs.



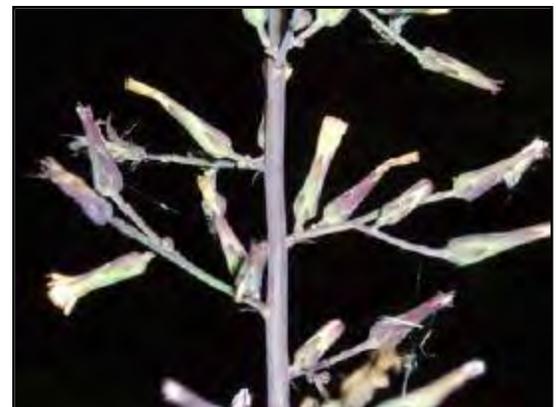
**Grass-leaved rush (*Juncus biflorus*) – Proposed PA Threatened**

The grass-leaved rush has basal and cauline leaves, blades 4-6 millimeter wide with five main veins. There are approximately 20-11 flowers per head and are chestnut brown when mature. Rare in moist, open woods, boggy fields, gravel pits, and ditches. Also found in southeast and southcentral Pennsylvania.



**Downy Lettuce (*Lactuca hirsuta*) – Currently Unlisted**

The downy lettuce is an annual or biennial herb with milky sap. The slightly to densely hairy stem can reach 8 feet (2.5 m) in height. The leaves are arranged alternatively on the stem and variable in shape and length, but tend to have toothed, pinnate lobes. The flowers are individually tiny and are grouped in yellow flower heads that are 5/9 to 7/8 inch (15 to 22 mm) long at maturity. The individual fruits have a slender “beak” at the top, somewhat similar to dandelions. The flower heads and fruits of downy lettuce are slightly larger than a very similar and much more common species of wild lettuce, *Lactuca canadensis*.



The downy lettuce has a distribution from Canada south and west into Georgia and Texas. In Pennsylvania, it has been found scattered throughout the state. The species grows in open woods, clearings, thickets, powerline and pipeline rights-of-way, and ridgetops.

Known occurrences of Downy Lettuce in Northumberland County exist along Zerbe Run in Coal and Zerbe Townships. This site includes a power line right-of-way and Zerbe Run. Downy lettuce prefers early successional conditions and was observed in a dry, rocky, open area along the powerline.



**Yellow-fringed Orchid (*Platanthera ciliaris*) – Proposed PA Threatened**

The yellow-fringed orchid is a native, perennial herb. The upright stems will grow 30 cm to 1 m tall. The roots are tuberous or fleshy and the plant has numerous lance-shaped leaves. The flowers grow in racemes, opening from bottom to top and can be bright yellow through apricot to deep orange.

The plants are native to sphagnum and sedge bogs, swamps, marshes, wet sandy barrens, thickets on borders of streams and ponds, moist wood, wet meadows, prairies, and in deep humus of upland forests in the Eastern United States and Canada. The yellow-fringed orchid can also be found in acid seeps, moist, acidic soils, margins of sinkhole ponds, wet pine upland forests. The range of this plant is Texas to Florida and as far north as New Hampshire.

**Table 4-7  
Pennsylvania Ecological Communities of Special Concern**

Name	State Status	Location
Northern Appalachian shale cliff community	PA Imperiled Habitat	Shale bedrock outcrop with dwarfed tree and shrubs with some grass, sedge and dry mosses growing in very dry conditions in open light on vertical shale slopes, located near Herndon along Mahanoy Creek.
Ridgetop dwarf tree forest	PA Vulnerable Habitat	Ridgetop acidic barrens complex – Bears Head Barrens

*Source:* Pennsylvania DCNR response letter – October 14, 2009.

Note: PA Imperiled Habitat: imperiled because of rarity or because of some factor(s) making it very vulnerable to extinction.

PA Vulnerable Habitat: vulnerable either because very rare and local throughout its range, found only in a restricted range (even if abundant at some locations), or because of other factors making it vulnerable to extinction.

### **North Appalachian Shale Cliff Community**

The North Appalachian Shale Cliff Community is a Pennsylvania Imperiled Habitat. Shale cliffs are found along several streams in Northumberland County including the Mahanoy (below). These cliffs provide habitat for an interesting assemblage of plant species.



*Appalachian Shale Cliff Community*

### **Ridgetop Dwarf Tree Forest**

The Ridgetop Dwarf Tree Forest is a Pennsylvania Vulnerable Habitat community. This Natural Community occupies the higher elevations of Locust Mountain north of Shenandoah and Delano, and is bounded on the east by Interstate I-81. This community complex is typically found between elevations of 1200 to 2100 feet where thin, dry soils, high winds, repeated cutting and frequent fires limit the growth of trees. The species found on these sites are specially adapted to the conditions of these acidic, droughty, fire-prone, nutrient poor soils, where other species cannot survive. The Bears Head Ridgetop Dwarf-Tree Forest extends through Delano, East Union, Mahanoy & West Mahanoy Townships.

The ridgetops are identified by pronounced dwarf-stature trees of pitch pine, scrub oak, chestnut oak, scarlet oak, white oak, black gum, gray birch, and sassafras. The dwarfed trees are usually accompanied by thick undergrowth of blueberries, huckleberries, mountain laurel and sheep laurel and black chokeberry. There is usually a sparse herbaceous cover of bracken fern, teaberry, fly poison, wild sarsaparilla, poverty grass, and common hairgrass.

## Known Occurrences of Plant Species and Communities of Special Concern

Zerbe Run in Coal and Zerbe Townships, Northumberland County, there is a known occurrence of Grass-leaved rush (*Juncus biflorus*), and Downy lettuce (*Lactuca hirsute*). This area is within a portion of the State Game Lands Number 165.

The T-377 Iron Bridge located in Jackson Township, Northumberland County, is a known occurrence of Northern Appalachian Shale Cliffs and Jeweled Shooting Star (*Dodecatheon radicum*)

### 4.4 Important Habitats

Local Audubon societies can provide helpful information about birds within a watershed or Important Bird Areas (IBA). An Important Bird Area is a site that has exceptional concentration or diversity of birdlife, has significant population of one or more species on Pennsylvania's "special concern" list, contains representative, rare, threatened or unique habitats, sites containing birds characteristic of those habitats, or sites that contain long-term avian research or monitoring. There are currently no IBA's located within the Mahanoy Creek Watershed.

### Conservation Areas

The Mahanoy Creek watershed includes a number of areas identified as valuable natural lands. Some areas provide habitat for species of special concern while others contain landscape types which are rarely found anywhere in Pennsylvania.

Starting in the headwaters of the watershed and traveling downstream, to the west, the following areas have been identified within the Mahanoy Creek Watershed (Nature Conservancy, 2003) (PNHP, 2008). Figures 1-17 through 1-19 show these areas throughout the watershed.

#### *Schuylkill County*

- Bears Head Ridgetop – Dwarf-Tree Forest; Delano, Mahanoy and West Mahanoy townships
- Frackville Mine Opening – Long-eared Bat; Gilberton Borough and Butler Township
- Ashland Watershed and Reservoir – Hemlock ravines with seeps and springs; Butler Township
- East Girardville Mine Opening – Long-eared Bat; Girardville Borough
- Mahanoy Creek at Taylorsville – Great Blue Heron; Barry, Butler & Eldred townships

### *Northumberland County*

- Zerbe Run Site – Four plant species of special concern; Zerbe and Coal townships
- Big Zerbe Strip Mine – Bat species of special concern; Zerbe Township
- Mahanoy Creek Cliffs West Of Otto – One plant species of special concern; Jackson Township
- Mahanoy Creek at the T-377 Iron Bridge – One plant species of special concern, one animal species of concern and a Northern Appalachian Shale Cliff Natural Community; Jackson Township
- Herndon Cliffs – One plant species of special concern; Jackson Township
- State Game Lands No. 84 – One animal species of special concern; Jackson, Lower Augusta and Little Mahanoy townships
- Bear Valley Strip Mine – Two mammal species of special concern; East Cameron and West Cameron townships
- Dornsife – One animal species of special concern; Little Mahanoy Township

### *Columbia County*

- Shenandoah Municipal Authority Watershed – This locally significant site contains the forested seeps, streams, and creeks leading into Shenandoah Reservoir #6.

### **Invasive Species**

Invasive species have caused natural disturbance within the watershed. The following species have been known to negatively affect the forests within the northeast region of Pennsylvania: chestnut blight fungus, the hemlock woolly adelgid, the grass carp, and a long list of plants that out-compete native species. Other non-native plant species that have disturbed woodlands include Japanese honeysuckle, tree-of-heaven, Oriental bittersweet, Japanese stiltgrass, and garlic mustard. Purple loosestrife, Japanese knotweed, mile-a-minute weed are weedy, aggressive species known to disturb wetland areas along streams. Curly pondweed has become a dominant plant species in some of the region's waterways.

The Asiatic clam (*Corbicula fluminea*) has become the most common mussel in some of the streams in this region. This is known to be an invasive species.

Recognition of the problem of invasive species is growing, at the same time as damage to native ecosystems is mounting. Identifying invasive plants and understanding the potential damage they can cause is essential to stopping their spread and protecting native vegetation.

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# Chapter 5

## Cultural Resources

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## Chapter 5 – Cultural Resources

The Mahanoy Creek Watershed is located within the western middle anthracite coal region of Pennsylvania. The Mahanoy Creek is locally known as “Coal Creek” or “Black Creek”. The word Mahanoy is likely derived from the Native American word “Maghonioy” meaning “salt lick” and is also referred to as “Mohony Creek” in early Moravian diaries (Snyder, 1998).

Coal was first discovered in Pennsylvania in 1761; the coal industry expanded greatly following the Civil War. The coal industry within the watershed provided jobs and opportunity to new European immigrants. The railroads throughout the watershed were originally constructed to transport coal. Coal production was at its peak leading up to World War I and then again during World War II. Post wars it then steadily declined until it was out competed by oil and natural gas (Edmunds, 2002).

The coal industry also caused earth disturbances which impacted the water quality and the natural communities. Damaged landscape can be seen throughout the watershed as a result of coal mining production. Acid mine drainage has severely impacted the watershed.

### 5.1 Recreation

There is a variety of recreational opportunities available within the Mahanoy Creek Watershed including state forests and trails, boating, fishing, camping, golf courses, and local historic sites and attractions.

#### State Forests

Weiser State Forest covers approximately 2 square miles within the watershed. There are two marked trails, the Heron Trail and the Sincavage Trail, located within this portion of the state forest. Weiser State Forest is named for Conrad Weiser, an early German interpreter with the Native Americans.

#### State Game Lands

There are four state game lands located within the Mahanoy Creek Watershed. There are also two state game lands, Land 132 and Land 308, which are located within 5 miles of the watershed. Hiking, biking, hunting, camping, and other various recreational activities are available within the State Game Lands. These game lands are displayed on Figure 1-13, Conservation Lands and described below.

- **State Game Land 326** – This game land consists of three parts, the western most being within the watershed. This game land is located between Frackville Borough and Gordon Borough, Schuylkill County.

- **State Game Lands 329** – This game land is located within Columbia and Schuylkill Counties, adjacent to the Weiser State Forest just north and adjacent to the watershed. This game land is located just northeast of Centralia, Pennsylvania.
- **State Game Lands 165** – This game land is located within Northumberland County just north of Trevorton, Pennsylvania.
- **State Game Lands 84** – This game land extends almost the complete length of the watershed within Northumberland County.

### Trails

*Susquehanna Greenway* – This greenway is a corridor of open space and trails that run through urban, suburban, and rural areas and follows along the Susquehanna River. The greenway serves multiple purposes in its community and is used by a wide array of people for many different activities such as bicycling, walking, hiking, jogging, skating, horseback riding, and parts are also accessible by wheelchairs.

*Bartram Trail* – This trail is part of several existing and proposed trails along the Schuylkill River that make up The Greenway Trail. This trail is named after John Bartram, a botanist of Philadelphia that lived in the early 18<sup>th</sup> century (Snyder, 1998).

The Rails-to-Trails Conservancy database was searched and there are currently no rails-to-trails located within the watershed. Information for this database was collected between November 2007 and August 2008.

### State/County Parks

There are no State or County parks within the Mahanoy Creek Watershed.

### Boating

Mahanoy Creek is locally used for recreational boating including rafting and canoeing. The lower portion of the creek is known for rafting along the Mahanoy Creek between Girardville and Ashland. This portion of the creek is recommended for calmer waters and a more scenic landscape. The upper portion of the creek is recommended as being canoeable late winter and spring during fast snowmelt or within two days of hard rain. This portion of the stream is recommended as being canoeable in late winter and spring during snowmelt and within three days of hard rain, above S.R. 0125, and within a week below (Gertler, 1993). Downstream of State Route 901 the creek is navigable for non-power boats (rafting) most of the year.



*Mahanoy Creek*

### Fishing

Schwaben Creek is a tributary to Mahanoy Creek in the southwest portion of the watershed. The name “Schwaben” translates to “Swabia” which is a region of Germany consisting of the present day state of Baden-Württemberg and was likely named by early German immigrants. Schwaben Creek is a trout stocked fishery and an excellent creek for recreational fishing and brings in fishermen from outside the region. Local sportsmen’s clubs raise trout for the stream. See Figures 5-1 through 5-3 for fishing locations and stocked streams and lakes throughout the watershed.

### Camping

Weiser State Forest is publicly owned and offers primitive camping within and adjacent to the Mahanoy Creek Watershed. Locust Lake State Park which is located a short distance from Mahanoy Creek Watershed offers camping opportunities. Several privately owned campgrounds are located within short driving distance of the Mahanoy Creek Watershed.

**Table 5-1  
Camping Areas in the vicinity of the Mahanoy Creek Watershed**

Name	Public or Private	Address
Weiser State Forest	Public	Contact: Bureau of Forest – Forest District #18, Box 99 Cressona, PA 17929
Locust Lake State Park	Public	Barnesville, PA 18214
Wilderness Moose Lodge	Private	135 Mountain Rd, Dalmatia, PA 17017
Farnsworth Camping Center	Private	279 N. Market St., Elysburg, PA 17824
Knoebels Grove Campground	Private	Pennsylvania 487, Elysburg, PA 17824
J & D Campgrounds	Private	973 Southern Dr., Catawissa, PA 17820
Lake Glory Campground	Private	96 Eisenhower Rd, Catawissa, PA 17820
Mount Zion Family Campground	Private	675 Numidia Dr., Catawissa, PA 17820
Red Ridge Lake Campgrounds	Private	61 Millers Rd, Zion Grove, PA 17985
Camp-A-While	Private	1921 East Main St., Hegins, PA 17938
Rosemount Camping Resort	Private	Tamaqua, PA

**Table 5-2  
Golf Courses within the Mahanoy Creek Watershed**

<b>Name</b>	<b>Public or Private</b>	<b>Address</b>
Rolling Meadows Golf Course	Public	23 Rolling Meadows Road Ashland, PA 17921
Mountain Valley Golf Club	Public	Burma Road, Mahanoy City, PA 17948

**Future Recreational Developments**

Plans are being proposed to turn 6,000 acres of abandoned mine lands into a functional use off-highway vehicle (OHV) park for ATVs, dirt bikes, full-sized vehicles and snowmobiles in Northumberland County. The proposed park would include marked trails, restrooms, picnic facilities, and security devices. In addition to recreation for OHV users, hiking, bicycling and horseback riding trails are being proposed in the park area.

The park is being proposed on county owned land within Zerbe, Coal and Mt. Carmel Townships. For years, these lands have been abused by a number of impairing activities including: unregulated mining, illegal dumping, trash burning, underage drinking, poaching and unregulated off road vehicle use in wetlands, creeks and steep erodible hillsides. Construction of a regulated park would promote recreation, tourism and sustainability to the region.

Concerns have been raised regarding the planning of the OHV park that supporters of non-motorized activities including hunting, hiking and biking are considered in the development of this project. The idea of adding additional members to the park steering committee has been proposed to see that these interests are well represented. Another concern is that of the environmental damage that could occur as a result of the proposed park. Wildlife habitat and buffers between populated areas and the noise and dust of off road vehicles have been proposed as a means to protect the local population from this development. A number of valid issues have been raised to maximize the recreational, environmental and economical potential of the proposed park. For more information on these plans, please refer to information located in Appendix F – Current Trends Within the Watershed.

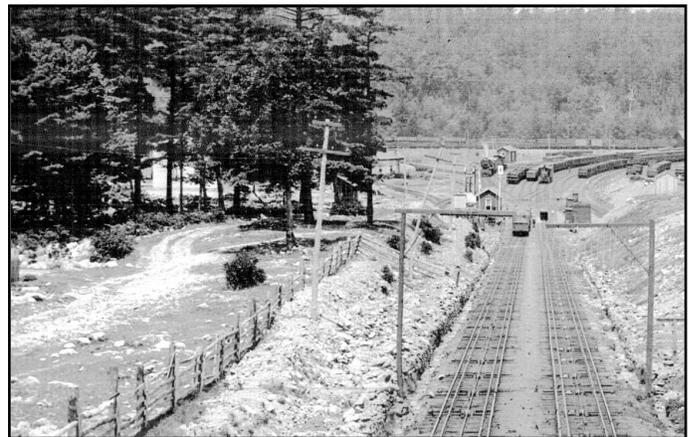
## Landmarks and Monuments

- Ashland Mothers' Memorial:** The statue, located in the community of Ashland, was unveiled on September 4, 1938 as a tribute to all of Ashland's mothers. A plaque on the front of the statue reads "honors all mothers, past and present, and is the only one of its kind in the country". A Pennsylvania state historical marker is proposed to be in place by Labor Day weekend 2011.



*Ashland Mothers' Memorial*

- Pennsylvania Anthracite Miners Memorial** is located in the town of Shenandoah. It is located at the entrance to Girard Park at the intersection of Main and Washington Streets. The memorial is a park and sculpted monument to the thousands of men who mined Anthracite coal in Northeastern Pennsylvania. The "panels" of the monument are inscribed with miners' names.
- Gordon Plane** is a railroad inclined plane that hauled coal over Broad Mountain. It was built and controlled by The Mine Hill and Schuylkill Haven Railroad and the first car handled over the Gordon Plane was in 1854. The Gordon Plane was used for approximately 42 years before it was dismantled by Reading Railroad in 1899. The Gordon Planes transported 2,000 cars up and over the mountain in a 24-hour period, twice of what the Mahanoy Plane was capable of.



*Gordon Plane*

- **Mahanoy Plane** is a railroad inclined plane that hauled coal from Gilberton to Frackville. The plane runs from the top of Broad Mountain and connects the Mill Creek Railway with the Mahanoy and Shamokin branch of the Philadelphia and Reading Railroad. It is 28 degrees at its steepest point. The plane was used from 1861 to 1932.



- **Fountain Springs Christ Church Cemetery**, located in the town of Fountain Springs is a site of local importance. There are many revolutionary war and civil war veterans buried in this cemetery. The *Brock Cemetery*, located on Brock Street in Ashland, is also a cemetery of local importance.

### Local Attractions

- **Pioneer Tunnel Coal Mine** offers guests a tour of underground anthracite coal mine, Steam Lokie rides, gift shop, and snack bar. The Steam Lokie rides take visitors along some of the same paths the miners traveled. There is also a museum and playground nearby. The Pioneer Tunnel Coal Mine is located at 19<sup>th</sup> and Oak Streets, Ashland.



- **Gordon Music Festival** is a daylong family oriented Music and Arts festival held at Gordon Town Park in Gordon.
- **Goody's Fun Center** is a local attraction which offers miniature golf, ice cream, arcades, and batting cages. It is located on 498 Morea Road, Mahanoy City.

- **Anthracite Museum** is located in the town of Ashland. The Anthracite Museum is a unique museum and offers a regional and historical perspective into the Anthracite Coal Mining Industry.



- **Kaier Mansion** is a bed and breakfast located at 729 East Centre Street in Mahanoy City, Pennsylvania. The home once belonged to Margaret and Charles D. Kaier, founder of the Kaier Brewery and on May 11, 1891 it became known as the Kaier Mansion. The home was then sold to Joan and James Goodman who opened the Kaier Mansion as a Bed & Breakfast in 1991 (Kaier, 2010).

## 5.2 Archaeological/Historical

### Historic Settlement

The following information was obtained from a variety of information. Both the Northumberland and Schuylkill County Historical Societies were visited and people at each respective Society were interviewed regarding the Mahanoy Creek Watershed. Multiple books and maps were reviewed at the Societies and are referenced both below and in the References section of this report.

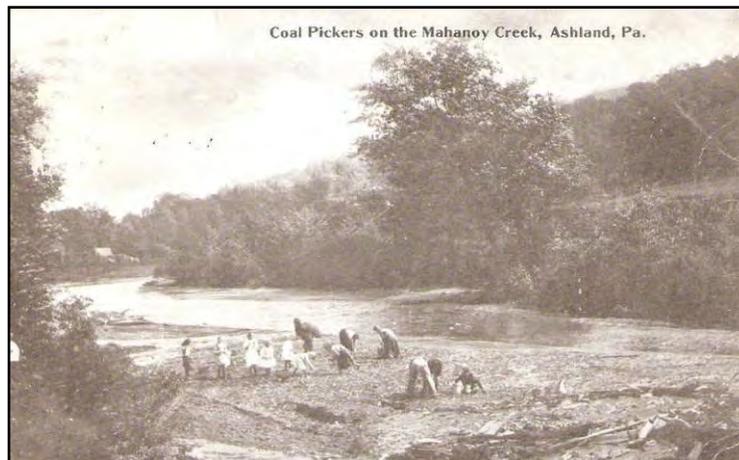
The Mahanoy Creek Watershed was originally settled by European immigrants in the 1700's. There is no known inhabitation of Native Americans prior to European immigration. The Native Americans were known to travel through the watershed to hunt, but the area was too rocky and barren to permanently inhabit. Streams were rough and carried a heavy undergrowth of laurel which prevented fishing.

Early Moravians would travel through the area in order to meet and teach the Native Americans. Conrad Weiser was predominantly responsible for negotiating every major treaty between the colonial settlers in Pennsylvania and the Iroquois Nations from 1731 until 1758. Weiser made several journeys to Central Pennsylvania to attend to matters of Iroquois diplomacy (PHMC, 2010).

From 1749 to 1768, Line Mountain served as the northernmost point of Pennsylvania. Historically, development started around the areas' waterways and crossroads. Areas south of Line Mountain and south of Mahanoy Creek such as Rebeck, Gordon, and Frackville developed before those above Line Mountain such as Trevorton and Girardville. German immigrants began to move into the area between Red Cross and Rebeck, south of Mahanoy Creek.

There were two major groups of people who settled within the Mahanoy Creek Watershed, those who emigrated from New York, and those who emigrated from southeastern Pennsylvania (south of Blue Mountain). Line Mountain served as a separation line between early German immigrants, to the south, and early Eastern European immigrants, to the north. The southwestern portion of the watershed was predominantly Lutheran while the northeastern portion of the watershed was predominantly Catholic.

Many of the early structures were built around existing springs and were built using wood rather than stone. This was likely due to the need to settle quickly. In 1810 the City of Shenandoah had the highest population in Schuylkill County. This is likely due to the close proximity of city housing and the demand for coal workers.



### Industry

The production of coal was the most important industry in the area from 1900 to 1930. After World War II the use of coal for fuel began to decrease and the use of oil and natural gas began to increase. In the 1960's the majority of coal operations were strip mining (NRCS, 1982).

The area is historically known for industries such as agriculture, milling, and coal mining. Geology played a large role in the types of industry that developed throughout the watershed. Line Mountain also served as a boundary line with the coal mining being north of the mountain and agriculture being south of the mountain.

The northern portions of the Mahanoy Creek Watershed are part of the Middle Anthracite region within the state. European immigrants from England, Wales, Germany, and Ireland came to America to work in the mines during in the late 19<sup>th</sup> Century. The Welsh were familiar with the mining industry as it was a popular industry in Wales. The second wave of immigrants came from Eastern European countries such as Poland, Slovenia, Hungary, Ireland, and Lithuania (Derrick & Foulds, 1990).

Many patch towns are located within the Mahanoy Creek watershed. Patch towns were built by the coal mining industry as housing for their workers. Examples of patch towns can be seen between Shenandoah, Mahanoy City, and Gilberton. The area has experienced change through development and evolution of existing industries.

### **Transportation**

A common path used for travel was the Tulpehocken Path. The Tulpehocken Path started at Sunbury (which was known as Shamokin at the time) and ran south toward the Tulpehocken Creek east of Lebanon.

The development of the railroad was very important to the transportation of coal throughout the watershed (Derrick, 1990). Before the railroad was in place coal was transported using wagons. In order to transport the coal outside the region, the Reading Anthracite Mining Company built a railroad between Trevorton and the Susquehanna River. A railroad was also built between Zerbe Valley and Mahanoy Valley Railroad. In most areas, the railroad was built adjacent to the existing Schuylkill canal. Eventually the smaller railroads were absorbed by the Philadelphia and Reading Railroad in 1871.



The Schuylkill Canal is located between Pottsville and Philadelphia. It is 108-miles long and was completed in 1824. The Susquehanna Division of the Pennsylvania Canal is located within the Mahanoy Creek Watershed (NRCS, 1982). The canal helped to expand commerce between the anthracite coal region and Philadelphia and was the cheapest and most efficient means of transportation for the coal industry. The development of the Schuylkill Canal and regional transportation improvements helped with the growth of the coal mining industry between the region and the surrounding major markets including Philadelphia, New York and Baltimore.

Due to the local geography of the area, to this day there are no four-lane highways within the watershed. Centre Turnpike was completed in 1812 and was one of the first major roads in the United States. It ran from Sunbury to Pottsville and Reading. The Catawissa Pike was another early road located within the Mahanoy Creek watershed. It was the only road passing through what is now Frackville and ran from Shenandoah to Maizeville meeting at Sunbury Pike. Mahanoy Plane Road ran between Frackville and Mahanoy Plane in 1865. The Trevorton Bridge was built in 1885 for use as a railroad bridge and later for highway and pedestrian use as well.

Many mine workers lived in Frackville, and as a result, a local railroad was built between Frackville and Cressona to transport workers from Cressona to coalfields and to transport goods and resources. Cressona is at the confluence of the West Branch and the main stem of Schuylkill River, which is a water route to Philadelphia. Another railroad extension was built by the Philadelphia and Reading Railroad in 1862 in order to transport coal between Frackville and Philadelphia.

In the early 19<sup>th</sup> century there was a stage line that ran from Pottstown to Danville through what is currently Ashland. In 1915 there was an electric trolley located in Frackville. The path of the trolley closely followed the railroad tracks. The trolley only ran until 1925 when it was discontinued due to strikes and higher wages.

Girardville was named for Stephen Girard, a ship owner and merchant who settled in Philadelphia in 1776 (Columbia University Press, 2008). Many acres of land within and outside Girardville are still connected to the Girard Estate.

### **Archaeological Resources**

The Pennsylvania Historical and Museum Commission (PHMC) maintains a statewide registration program for archaeological discoveries known as the Cultural Resources Geographic Information System (CRGIS). CRGIS is a map-based inventory of historic and archaeological sites and surveys stored in the files of the Bureau for Historic Preservation. This web-based system is continuously being updated. Archaeology sites were searched by municipality names within the Mahanoy Creek Watershed. There are thirteen sites listed within Northumberland County, eight sites listed within Schuylkill County, and no known sites listed in Columbia County. The exact locations of these sites are kept confidential as preserving these artifacts are essential.

### **Historic Sites**

National and State listed and eligible historic properties within the Mahanoy Creek Watershed were reviewed using PHMC's CRGIS website. There were two eligible national register sites and one listed national register site located in Northumberland County. There were eleven eligible sites listed in Schuylkill County within the Mahanoy Creek Watershed. This information is listed in Table 5-3 Historic Properties Table. Further information on two of those sites, Himmel's Church and the St. Nicholas Breaker, are below.

**Himmel's Church**, located in Rebuck, dates back to 1772 and is of significant importance in the area. The German translation of Himmel is heaven. There is also an adjacent cemetery along with the church. This church served as the core of the community for many generations and was the first church and school north of Blue Mountain. The church was used as a school until 1870.

**St. Nicholas Breaker:** There are remnants of an old coal breaker in the small town of St. Nicholas, between Mahanoy City and Gilberton. The breaker, built in 1930, was the largest coal breaker in the world. There was talk about the breaker being restored but it turned out to be too much of an investment for such a dangerous property.



*St. Nicholas Breaker, between Mahanoy City and Gilberton*

**Table 5-3  
Listed Historic Properties within the vicinity of the Mahanoy Creek Watershed**

Historic Name	Address	Municipality	County	National Register Status	Resource Category	Material	Date Built	Additional Information
Locust Gap Colliery*; Reading Antracite	-	Mount Carmel Township	Northumberland	Eligible	Structure	-	-	-
Meadowbrook Farm; Eisenbrogn, Penrose Farm	-	Washington Township	Northumberland	Eligible	Building	Wood	1871	Style: Late Gothic Revival
Himmel's Church Covered Bridge	T-442, Northeast of Rebuck	Washington Township	Northumberland	Listed	Structure (Bridge)	Wood	1874	-
Ashland Historic District	-	Ashland Borough	Schuylkill	Eligible	District	-	-	-
Lavelle School**	-	Butler Township	Schuylkill	Eligible	Building	Brick	-	-
Gaverick Memorial Hall/Hose Company	-	Frackville Borough	Schuylkill	Eligible	Building	Brick	1911, alterations 1947	-
Sanners Store	2-4 N Lehigh Ave.	Frackville Borough	Schuylkill	Eligible	Building	Wood	1891	-
Girardville School	-	Girardville Borough	Schuylkill	Eligible	Building	Brick	-	Style: Queen Anne
Kilker Property^	20 W Main St.	Girardville Borough	Schuylkill	Eligible	Building	Shingle	-	-
Merchants Bank	20 E Center St.	Mahanoy City Borough	Schuylkill	Eligible	Building	Stone	1903, 1923	-
J.W. Cooper High School	1 N White St., Shenandoah, PA 17976	Shenandoah Borough	Schuylkill	Eligible	Building	Stone	1917, 1918 alterations: 1927, 1940	Style: Beaux Arts Classic Revival
Union Township School**	-	Union Township	Schuylkill	Eligible	Building	-	-	-
Saint Nicholas Breaker	Suffolk Rd.	West Mahanoy Township	Schuylkill	Eligible	Building	-	-	-

\* Currently permitted mine site. Located in Shamokin Creek Watershed.

\*\*No address listed, therefore could not be mapped and may not be located within the Mahanoy Creek Watershed

^ This is a local name and had no name listed within the CRGIS system.

REFERENCE: Pennsylvania Historical and Museum Comissions' (PHMCs) Cultural Resources Geographic Information System (CRGIS) 2010.

# Chapter 6

## Public Participation

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## Chapter 6 – Public Participation

Public participation is an important part of DCNR’s requirements for successful completion of this Plan. Public participation input is very valuable asset in providing diverse ideas for the protection and enhancement of the watershed. A series of committee and public meetings were held to discuss the development of this Plan and issues and concerns of the public in relation to the watershed. Three committee and three separate public meetings were held throughout the watershed. Please refer to Appendices A and B for more detailed information and for complete meeting minutes.

### 6.1 Committee Meetings

One of the first tasks completed in the preparation of this Plan was to establish a Study Committee. The study committee was compiled of a cross section of the MCWA, experienced technical people with knowledge of the watershed, concerned citizens from the general public, private industry and public sector. A series of three committee meetings were held throughout the study process. Generally, the meetings were held at the beginning of the Plan process, after initial compilation of the GIS data and after the public participation process. These meetings were held in order to update the study committee on progress and results of the public participation process. For more information on the Study Committee Meetings, please refer to Appendix B of this report.

The first committee meeting held in association with the Mahanoy Creek Watershed Conservation Plan was held on June 17, 2009. During the meeting, the committee provided input on general issues, concerns, and needs of the study related to the watershed. Strategy of the public involvement process, publicity, and media relations were also discussed.

The second committee meeting was held on July 23, 2009. This meeting was held to review information from the first committee meeting, discuss and review action items, and to present preliminary GIS data compilation.

The third committee meeting was held on March 4, 2010. The purpose of this meeting was to update the MCWA on the project status. GTS gave a lengthy powerpoint presentation on the collective results of the public participation, a summary of input received, examples of extensive GIS data layers compiled for the watershed, listing of additional data obtained, listing of data still needed, and listing of key person interviews to be held. In general, AMD Cleanup appeared to be the number one priority for the Watershed Conservation Plan, with litter removal/cleanup being a close second.

## 6.2 Public Meetings

Public meetings were held to enable the general public to provide valued input into the Plan and the future of the watershed. Due to the size of the watershed and the need to provide consistent information out to the public, it was decided to present similar presentations at each meeting. Providing similar presentations throughout the watershed allowed for consistent data output to the public while permitting the possibility of varied public input depending on the location within the watershed. The three public meeting held include:

- July 29, 2009 at the Girardville Borough Hall.
- November 12, 2009 at Trevorton Elementary School.
- January 27, 2010 at Line Mountain High School.



### *Public Meeting Number 1*

It was discovered that the primary concern voiced by the public was dependent on where the individual resided. In the upper reaches of the watershed, where impacts from mining is very prevalent, abandoned mined land active mining and acid mine runoff appeared to be the major issue. In the middle of the watershed, the protection of open space and the influx of tourists to uncontrolled ATV usage was the most important. In the lower portion of the watershed, erosion and sedimentation control, accessibility, and property rights, and small business development appeared to be of the greatest issues.

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## Questionnaires & Answers

A questionnaire was distributed to the public as part of the public participation process. The questionnaire included a number of questions pertaining to the public's interests and concerns regarding the watershed. The results were tabulated and are summarized below. Refer to Appendix A for completed questionnaires.

Residents within the watershed and surrounding areas listed wildlife as the top benefit of living adjacent to the water, followed by scenery and fishing along with walking, increased property value, and play areas for children. Some popular recreational areas within the watershed are Gamelands 84, Rattlesnake Road in West Cameron, hiking around Taylorsville Mountain, Connorton Wetland, Locust Lake, and many more. Some issues that the residents living adjacent to the Mahanoy Creek have experienced are litter, acid mine drainage, flooding, eroding banks, abandoned mine lands, trespassers, sinkholes, problems with sewer lines/outfalls, and wet basements.

Overall, a majority of the population was in favor of having all the municipalities within the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association in order to improve the quality of the watershed through the Watershed Conservation Plan. 78% of the population was in favor of having local ordinances written to include the protection of their creeks and other water resources. The most important recommendations to include within the Mahanoy Creek Watershed Conservation Plan is acid mine drainage/illegal dumping cleanup, trails/greenways, fishing/recreation, public environmental education, stormwater erosion control, preserve historic features, job creation, promote tourism, and protect open space.

### 6.3 Press Releases

On July 21, 2009 the Republican Herald ran an article in their newspaper titled *Mahanoy Creek Watershed Part of Comprehensive Plan*. This article explained how the Mahanoy Creek Watershed Association (MCWA) along with GTS Technologies, Inc. would be completing a Watershed Comprehensive Plan for Mahanoy Creek in order to best preserve, restore, and enhance the watershed for almost 51,000 residents in Schuylkill, Columbia, and Northumberland Counties. The article also mentions the three public meetings that will be (were) held. A hard copy of this article can be found in Appendix F.

On July 31, 2009 the Republican Herald ran an article in their newspaper titled *Public Apprised of Watershed Plans*. This article reviews the first public meeting held for the Mahanoy Creek Watershed Plan by going over how many residents were there, what was discussed, and the general reaction of the public at the meeting. The public had some suggestions for the Comprehensive Plan such as the abatement and neutralization of acid mine drainage, monitoring water safety, and seeking the cooperation of businesses and landowners for the plan. The article also mentions the next two scheduled public meetings.

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# Chapter 7

## Management Options

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## Chapter 7 – Management Options

The MCWA embraces the goals of DCNR’s Action Plan and the Keystone Principles for Growth. Preparation and implementation of the MCWA Watershed Conservation Plan took into consideration the following management options:

- **Stewardship/Management of State Parks/Forests** - The MCWA stakeholders are dedicated stewards of the Mahanoy Creek Watershed. This project will enhance DCNR’s mission to provide natural recreational opportunities throughout the watershed and region including the state forests within the watershed. The plan will provide a sound planning base to chart the protection, access to, and management of the watershed’s forest and recreation assets for all citizens.
- **Promote Land Conservation/Environmental Restoration** - Statewide land conservation begins at the local level. MCWA promotes conservation within their watershed and maintains an educational program within the watershed. The plan will provide for comprehensive environmental restoration and conservation of watershed streams thus protecting the Susquehanna River and the watershed’s public water supplies.
- **Build/Maintain Sustainable Communities & Re-develop First** - This project invests in established communities, greatly stimulates economic development, will clearly increase job opportunities, builds green infrastructure and greenway connections, and encourages new outdoor recreation. We are restoring the watershed to re-vitalize the towns and infrastructure within thus drastically improving the quality of life in the watershed.
- **Create Outdoor Connections for Citizens/Visitors** - This plan will focus on restoring the watershed and providing a year-round recreation resource for the people of the region and Pennsylvania. We will greatly involve the public in incorporating components to enhance use and foster appreciation of the watershed thru trail/greenway links, providing access to the regions natural resources, and public education. MCWA includes an education component in order to help students and citizens connect with the outdoors, learn to protect our resources, and encourage lifestyle decisions that involve natural conservation.

The bottom-line is simple: the Mahanoy Creek Watershed Conservation Plan is a critical re-investment in all communities in the watershed. The Watershed Conservation Plan is meant to be implemented locally to benefit the watershed, the region, and the state of Pennsylvania. Overall management of the watershed will be guided by implementation of the adopted short and long-term goals of this plan.

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# Chapter 8

## Short-Term Goals

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## Chapter 8 – Short Term Goals

In order to bring people of the Mahanoy Creek Watershed together and promote a healthy watershed with a sustainable future, a plan must be put in place. The PA Rivers Conservation Program has been developed to conserve and enhance river resources through preparation and accomplishment of locally initiated plans. Development of this watershed conservation plan is the first step in conservation efforts of the people of the Mahanoy Creek Watershed acting as a community.

Short-term goals are goals that can be achieved in the near future (1 to 3 years). They can be considered as steps that need to be taken in order to accomplish long-term goals. In coordination and cooperation of the MCWA, study committee and public participation process, a number of short-term goals have been identified. While developing this list of short-term goals, one main theme was developed for the plan - Do What Is Attainable. In order to reach the goals set forth in this plan, it is important to adopt clear, realistic goals for the Mahanoy Creek Watershed Association (MCWA) to implement.

The following are short-term goals for implementation under this plan:

### 1. Plan for Restoration of the Watershed

- ❖ One of the first steps towards a healthier watershed is cleaning it up. Cleanup and restoration of the watershed is a daunting task when there are so many issues in such a large watershed. The following are a list of attainable steps that can be taken to aid in the cleanup of the watershed.
  - Prepare and submit a DCNR grant application for preparation of a Restoration Implementation Plan and pursue other state, federal, and private funds.
  - Initiate AMD/AML cleanup via watershed QHUP “Anchor Segment”
  - Run AMD treatment software for all AMD discharges
  - Prepare watershed implementation/restoration plan for Office of Surface Mining (OSM) funding
  - Implement a litter control program
  - Expand Bolich wetland AMD treatment facility

- Identify solutions to the Packer 5 and Gilberton Pump Discharges
- Reestablish stream channels and prepare a stormwater management plan
- Evaluate combined sewage/AMD treatment facility options
- Identify and market mine pool development segments with SRBC

## **2. Public Education**

- ❖ In order to accomplish any of the goals set forth in this plan, it is important that the public values the watershed as an important existing and future resource. Public education is key to understanding how a watershed works and how one individual can impact the watershed. MCWA in conjunction with local municipalities, private industries, and institutions, should initiate a comprehensive public education program. Educating both residents and visitors can have a great effect on the way individuals treat the watershed.

## **3. Establish Mahanoy Creek Watershed Association Website**

- ❖ MCWA should establish a website with multiple links. Continual maintenance of this website will be conducted as part of Long Term goals.

## **4. Restore Floodplain**

- ❖ In places along Mahanoy Creek, the floodplain is known to be dead, blackened, and gouged. These areas could be detailed and riparian restoration could take place in these areas to increase their natural value.

## **5. Remove Litter from Streambanks**

- ❖ Some portions of the streambank within the Mahanoy Creek watershed have been littered with debris. This litter should be cleaned up in order to better preserve the watershed.

## **6. Develop and maintain strategic partnerships**

❖ The MCWA should develop strong relationships with a number of individuals and organizations for the benefit of exposure and gaining assistance. The following are a list of partnership and relationship suggestions that could prove beneficial for the watershed:

- Foster strong political relationships
- Develop a relationship with the Susquehanna River Basin Commission and optimize assistance from SRBC
- Partner with the Chesapeake Bay Commission and optimize benefit

## **7. Monitor current trends within the watershed from both state and local perspectives**

❖ By staying abreast of the current trends within the watershed and surrounding area, it is possible to address problems before they occur. Evaluation of proposed changes in the watershed can aid the local community in addressing impacts and benefits of those changes.

- Implement a watershed-wide monitoring/testing program
- Evaluate the proposed Northumberland County ATV park impacts on the Mahanoy Creek Watershed
- Partner with the Shamokin Creek Alliance for Joint Benefit and funding optimization
- Form and optimize a watershed-wide COG
- Develop a relationship with Girard Estates and optimize benefit
- Partner with Trout Unlimited & the PA Fish and Boat Commission to develop fish stocking segments and recreation enhancement
- Partner with and maximize data from Eastern Pennsylvania Coalition for Abandoned Mine Reclamation (EPCAMR).
- Pursue maximum PA DEP support and participation and work with PA DEP to identify solutions to stream impairments and pollution including the Gilberton Pump Discharge

## **8. Promote River Access**

- ❖ Establish a plan to locate and establish formal public boat access along the Mahanoy Creek. This plan should focus on bringing people into the mid to lower portions of the watershed for recreational purposes. Once recreation is established at the mid to lower portions of the watershed, the plan will then continue to develop and include the upper portions of the watershed.

# Chapter 9

## Long-Term Goals

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## Chapter 9 – Long Term Goals

The MCWA embraces the goals of DCNR’s Action Plan and the Keystone Principles for Growth. Implementation of the MCWA Watershed Conservation Plan will clearly meet those goals in a comprehensive manner by:

### 1. Creating a sense of community within the Mahanoy Creek Watershed

- ❖ The Mahanoy Creek watershed covers a large area of approximately 157 square miles. It can be easy for the people who live at one end of the watershed to feel a disconnect with those living at the other end. Residents who value the watershed as their home would benefit from a greater sense of community. Suggestions to get the Mahanoy Creek Watershed community working together include:
  - Implement a volunteer based wildlife habitat enhancement program
  - Implement a property-owner/public access plan
  - Develop an economic development/jobs strategy
  - Maintain funding sources to implement MCWA goals and manage the watershed in a comprehensive manner
  - Continue and expand public education efforts
  - Maintain and effectively utilize strategic partnerships

### 2. Acid Mine Drainage Remediation Plan

- ❖ Implementation of the remediation of Acid Mine Drainage within the watershed is a top priority. This is a key objective for the watershed. The streams within the watershed serve as a resource providing a wide array of active and passive public use options.

### 3. Maintain Ecological Integrity along the Streambanks

- ❖ Lands along the streambanks of Mahanoy Creek should be preserved in order to maintain the best ecological integrity.

#### **4. Build a Digital Watershed**

❖ The digital world is commonplace in today’s society. By building a “digital watershed”, it can be possible to access watershed related data and create solutions to the issues affecting the watershed quicker in addition to greatly enhancing funding potential. The creation of this plan and all of the GIS data obtained and created to support the plan is the first step in fulfilling this goal. A few other suggestions toward building a digital watershed are as follows:

- Maintain a MCWA website with multiple links
- Expand and optimize a watershed GIS database
- Utilize software and modeling programs to benefit the watershed

#### **5. Control Invasive Species**

❖ This is necessary for the long-term maintenance of the Mahanoy Creek Watershed. It is recommended that native plants to Pennsylvania be utilized in plantings within the watershed.

#### **6. Attract people to the watershed**

❖ Attracting people to the watershed can result in the resident’s and public’s greater appreciation of the area. Bringing more people into the watershed to either live or visit can also benefit the watershed economically. Suggestions to attract people to the watershed are as follows:

- Get people into the watershed for active and passive usage
- Implement a recreation/open space/trail component
- Implement a public relations/exposure/events plan

#### **7. Open Space and Greenway Plan for the Watershed**

❖ Establish a county-wide network of open space and greenways within the watershed. Agricultural open space should be preserved in the southwestern portion of the watershed within Northumberland County. Maintain forest areas within the watershed, especially in areas such as the State Game Lands. Reclamation of abandoned mine lands should be addressed.

# Chapter 10

## Conclusion

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## Chapter 10 - Conclusion

The Mahanoy Creek watershed is located in Northumberland, Schuylkill and Columbia Counties, Pennsylvania. The drainage basin of the Mahanoy Creek covers approximately 154 square miles and includes 33 municipalities. The stream flows from its headwaters in Delano Township to its confluence with the Susquehanna River in Jackson Township.

The Mahanoy Creek Watershed Association received a Pennsylvania Rivers Conservation Program Planning Grant from PADCNR, with support from Pennsylvania Department of Community and Economic Development (PADCED), for the Mahanoy Creek watershed. A study of the Mahanoy Creek and the preparation and publication of a comprehensive Mahanoy Creek Watershed Conservation Plan were the intended outcomes of the grant. The Pennsylvania Rivers Conservation Program was created by the Pennsylvania Department of Conservation and Natural Resources (DCNR). The program was developed to conserve and enhance river resources through preparation and accomplishment of locally initiated plans.

This watershed conservation plan has identified physical features including land, water, biological, and cultural resources. An extensive GIS database has been developed for the watershed and key sensitive areas have been identified as well as existing improvements to the watershed. In addition, the plan outlines management recommendations as well as short-term and long-term goals to encourage conservation throughout the watershed and also improve the quality of the watershed. These items were compiled in part by GTS Technologies, the MCWA, the Schuylkill County Conservation District, selected key person interviews, a conservation plan study committee and public participation.

The Mahanoy Creek is severely impacted by the anthracite coal mining industry in the upper reaches of the watershed. The negative impacts of acid mine drainage have taken its toll on the health and beauty of the watershed. Management recommendations, short-term goals and long-term goals outlined in this plan will aid in the recovery and improvement of the watershed and lead to a greater appreciation and public use of the Mahanoy Creek Watershed.

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## References

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## References

Columbia University Press, 2008. Girardville. Columbia Encyclopedia, The Sixth Edition.

Cravotta III, Charles A., 2005. Effects of Abandoned Coal-Mine Drainage on Streamflow and Water Quality in the Mahanoy Creek Basin, Schuylkill, Columbia, and Northumberland Counties, Pennsylvania. SIR 2004-5291. U.S. Department of the Interior & U.S. Geological Survey.

Department of Conservation and Natural Resources, 2010. Invasive Plants in Pennsylvania. <http://www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx>>

Department of Environmental Resources, 1975. Mahanoy Creek Mine Drainage Pollution Abatement Project Operation Scarlift. Sanders & Thomas, Inc. Consulting Engineers.

Derrick, William E. Jr. & Foulds, Gisela, 1990. Trevorton Sesquicentennial. Trevorton Sesquicentennial Committee.

Edmunds, William E., 2002. Coal in Pennsylvania. Pennsylvania Geological Survey, Fourth Series. Harrisburg. Educational Series 7.

Gertler, Edward, 1993. Keystone Canoeing: A Guide to Canoeable Waters of Eastern Pennsylvania: Third Edition. Seneca Press.

Habitat for Wildlife Inc., 2010. Habitat for Wildlife Homepage. <http://www.habitat4wildlife.org>

Kaier Mansion Bed & Breakfast, 2010. History of Kaier Mansion, <http://www.kaiermansion.com/index-1.php>

Klinosky, Michael P., 1997. Monuments of Schuylkill County, <http://www.enter.net/~mpk2/monuments.html>

McCormick Taylor Engineers & Planners, 2006. Schuylkill County Comprehensive Plan. Schuylkill County Planning & Zoning Commission.

McCormick Taylor Engineers & Planners, 2006. Schuylkill County Open Space & Greenway Plan, Schuylkill County Planning & Zoning Commission.

National Audubon Society, Inc., 2010. Audubon Pennsylvania. Important Bird Area Maps, <http://pa.audubon.org/iba/maps.html>

Natural Resources Conservation Service (NRCS), July 1982. Soil Survey of Schuylkill County, Pennsylvania. United States Department of Agriculture.



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## References (Continued)

Nature Conservancy, 2002. Northumberland County Natural Areas Inventory. Pennsylvania Science Office of the Nature Conservancy, Middletown, Pennsylvania.

Nature Conservancy, 2003. A Natural Areas Inventory of Schuylkill County, Pennsylvania. Pennsylvania Science Office of the Nature Conservancy, Middletown, Pennsylvania.

Northumberland County Conservation District, No Publication Date. Northumberland County Implementation Plan for the Chesapeake Bay Tributary Strategy. <http://pacd.org/education/chesapeake-bay-education-office/pas-chesapeake-bay-tributary-strategy-county-implementation-plans/>

Northumberland County Planning Department (NCPD), 2005. Northumberland County Comprehensive Plan.

Pennsylvania Cleanways, 2009. PA Cleanways Illegal Dump Surveys – points (GIS Data).

Pennsylvania Department of Conservation and Natural Resources (PA DCNR), 2009. Commonwealth of Pennsylvania. <http://www.dcnr.state.pa.us>

Pennsylvania Department of Environmental Protection, PADEP Bureau of Watershed Management, February 2004. Watershed Restoration Action Strategy - State Water Plan Subbasin O6B (Susquehanna River), Northumberland and Schuylkill Counties.

Pennsylvania Department of Environmental Protection, April 4, 2007. Decision Rationale, Total Maximum Daily Loads, Mahanoy Creek Watershed, For Acid Mine Drainage Affected Segments Columbia, Northumberland and Schuylkill Counties.

Pennsylvania Department of Environmental Protection (PADEP), March 13, 2007. Mahanoy Creek Watershed TMDL Columbia, Northumberland and Schuylkill Counties.

Pennsylvania Department of Environmental Protection, February 25, 2002. Schuylkill County Water Supply Study. Vitillo Corporation.

Pennsylvania Herpetological Atlas, 2008-2009. Pennsylvania Herpetological Atlas. <http://www.paherpatlas.org/>

Pennsylvania Herp Identification, 2008. Online Guide to Reptiles and Amphibians of PA. <http://www.paherps.com/>

Pennsylvania Historic Museum Commission (PHMC), 2010. History of Conrad Weiser Homestead. Conrad Weiser Homestead Homepage. <http://www.conradweiserhomestead.org/>



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## References (Continued)

Pennsylvania Natural Heritage Program, 2010. Fact Sheets - Plants.  
<http://www.gis.dcnr.state.pa.us/hgis//Factsheets.aspx#plants>

Pennsylvania Natural Heritage Program (PNHP), 2008. A Natural Areas Inventory of Northumberland County, Pennsylvania (Update 2008). Middletown, Pennsylvania.

Pennsylvania Science Office of the Natural Conservancy. Columbia County Natural Areas Inventory. Middletown, Pennsylvania. 2004.

Pennsylvania Science Office of the Nature Conservancy. A Natural Areas Inventory of Schuylkill County, Pennsylvania. 2003. Pennsylvania Natural Heritage Program, Western Pennsylvania Conservancy, Middletown, Pennsylvania.

Rhoads, Ann Fowler and Timothy A. Block, 2007. The Plants of Pennsylvania – An Illustrated Manual – Second Edition. University of Philadelphia Press, Philadelphia, PA.

Sevon, W. D., 2000. Physiographic Provinces of Pennsylvania. Map 13, Forth Edition, Department of Conservation and Natural Resources.

Simone Jaffe Collins Landscape Architecture, June 2003. Draft Northern Schuylkill Rail to Trail Feasibility Study.

Snyder, Charles Fisher, 1998. Conrad Weiser in the Susquehanna Valley. The Northumberland County Historical Society.

Stream Restoration Inc., 2007. Datashed Homepage. <http://www.datashed.org>

U.S. Fish & Wildlife Service, 2010. Species Reports - Environmental Conservation Online System.  
[http://ecos.fws.gov/tess\\_public/pub/stateListingIndividual.jsp?state=PA&status=listed](http://ecos.fws.gov/tess_public/pub/stateListingIndividual.jsp?state=PA&status=listed)

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# Appendix A

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## **Appendix A – Public Input**

As part of DCNR’s requirements for the Rivers Conservation Program, GTS Technologies, in association with the MCWA, held a series of public meetings to discuss issues and concerns of the public in relation to the watershed. This Appendix includes information related to public input.

- ❖ Public Meeting No. 1 – July 29, 2009 – Girardville Borough Hall
  - Notice of Public Meeting #1
  - Meeting notes and sign-in sheet
- ❖ Public Meeting No. 2 – November 12, 2009 – Line Mountain Elementary School
  - Meeting notes and sign-in sheet.
- ❖ Public Meeting No. 3 – January 27, 2010 – Line Mountain High School
  - Meeting announcement
  - Meeting notes and sign-in sheet.
  - Completed Questionnaires along with a brief summary of results.
- ❖ Public Meeting Powerpoint Presentation

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**NOTICE OF  
PUBLIC MEETING**

**MAHANAY CREEK WATERSHED  
RIVERS CONSERVATION PLAN PROJECT**

The Mahanoy Creek Watershed Association invites your participation in a Public Meeting for the Mahanoy Creek Watershed Rivers Conservation Plan Project. The Mahanoy Creek Watershed covers 28 municipalities in Schuylkill, Northumberland and Columbia Counties including the Boroughs of Ashland, Centralia, Frackville, Gilberton, Girardville, Gordon, Mahanoy City, Rebuck, Shenendoah, Treverton and surrounding areas. The project consists of preparing a comprehensive inventory and assessment of the resources within the 157 square mile watershed. The Public Meeting will present information on the watershed and outline the components of the Rivers Conservation Plan. Representatives from the consulting team and the watershed association will highlight the proposed plan and provide a discussion of the planning process and schedule. The purpose of the meeting is to receive vital public input on the plan, its content and future use.

Meeting Location:

Girardville Borough Hall  
North 4<sup>th</sup> Street and B Street  
Girardville, PA 17935

Date: Wednesday July 29, 2009

Time: 7:00 p.m.

In compliance with the American's With Disabilities Act of 1990 (ADA) the meeting has been scheduled in a facility that is accessible to individuals who have disabilities. If you are unable to attend the meeting or if you have a special concern that needs individual attention, please contact:

James Chappell, Association Coordinator-570-644-1602, or  
Joseph Nardella, GTS Technologies, Project Manager-717-920-7018  
441 Friendship Road, Harrisburg, PA 17111

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**08/14/09****Mahanoy Creek Rivers Conservation Plan**Mahanoy Creek Watershed Association (MCWA)  
GTS Job #07072**Public Meeting #1-Notes**Date & Time: 07/29/09; 7:00 PMLocation: Girardville Borough HallIn Attendance: Members of the Mahanoy Creek Watershed Association Board of Directors  
Members of the Mahanoy Creek Watershed Association  
Joseph Nardella – GTS Technologies, Inc. (GTS)  
Kerry Leberknight – GTS  
(See attached attendance sheet for complete list)

- Kerry Leberknight of GTS opened the meeting by thanking all of the attendees to the public meeting for coming and willing to be part of this important project. He went on to introduce Joe Nardella, Water Resources and Project Manager of GTS and GTS's role in the Rivers Conservation Plan (RCP). He explained that this is the first of 3 public meetings that will be held throughout the Watershed. One each will be held in the middle and lower reaches of the watershed.
- Mr. Leberknight then introduced members of the MCWA in attendance, explained the purpose of the meeting, a summary of what a RCP is and the major components of what goes into the RCP. He stated that the purpose of the meeting is to provide input into the RCP by providing comments on the benefits and problems within the watershed and to allow the public to state their concerns and hope for the future of the watershed and the quality of life within the watershed.
- He also explained the breakdown of the funding sources and the in-kind (donated) services that both the MCWA and GTS are providing to the project.
- Mr. Leberknight then summarized what components/data have been collected to this point and discussed the handouts and questionnaire that has been developed.
- Mr. Leberknight summarized that in general, an RCP is a document that inventories elements, within the watershed, that the residents and the MCWA want to protect, restore and enhance. He then introduced Joe Nardella, Project Manager from GTS
- Mr. Nardella then proceeded to describe the technical aspects of the RCP. He began by explaining what a watershed is, the groundwater and surface water components of a watershed and how activities can affect the watershed. He also explained that there was a handout available that explains what a watershed is. He also showed the delineation of the Mahanoy Creek Watershed (MCW) using the available maps brought as exhibits. He explained the MCW is not your typical watershed due to the impacts of surface and deep mining and that due to the connected paths produced by deep mining groundwater and surface waters are more directly impacted.
- Mr. Nardella then described some specific information, benefits and detractions of the watershed that have been discovered during discussions with the MCWA, the Study Committee and data/information that has been collected from secondary source information such as stated and federal agencies. Photographs showed some of these areas.

- The floor was then opened to the public to provide comments on the watershed and issues that they believed need to be addressed with respect to issues and concerns and what are the needs to protect, restore and enhance, the Watershed. Those items have been condensed and listed below:
  - The disconnect between the residents that live in the upper and lower reaches of the watershed. The watershed is large and the needs are varied.
  - Mining versus farming-Within the watershed there needs to strike a balance
  - Because the watershed is varied between the upper and lower reaches, maybe the watershed may benefit for having 2 watershed associations because the areas are different.
  - Promote different workgroups or promote action networks for Acid Mine Drainage (AMD), Agriculture, trails, and commerce.
  - Need to educate mining companies. Resident believes the mining companies are promoting problems in the watershed. Residents have observed uncontrolled discharges of coal silt and pond discharges into the Creek. Black water has been seen.
  - Need a more responsive method from DEP –They need to address problems faster that are reported within watershed. Residents stated that from the time a problem is reported such as black water discharges, several days could go by and then it's too late.
  - Need a more proactive residency-one person calling in won't effect change. Many people calling in could institute change.
  - Residents believe the coal companies are not being held to standards to protect the watershed. Residents believe that DEPs inactivity is allowing pollution to enter the stream. DEP not doing their job.
  - Include in RCP recommendations to have state agencies be more actively involve in protecting the watershed by more actively monitoring what goes on (mining). Develop line of communication/process to have quicker response to problems that are reported.
  - Some residents believe that Co-generation plants are believed to be adding to the pollution loading to the stream. Mercury etc.
  - A resident stated that the No 1 priority in the watershed is to clean up the water. If you don't have a clean place, people won't want to go to it.
  - Another resident stated that AMD and trash is a major problem in the watershed. Others agreed.
  - Promote trails to give more people access and educate what is in the watershed. Once they see it they will be more proactive to clean and protect it.
  - Need to look into the future—You need long range planning to make sure everything that is implemented to improve the watershed is integrated. Don't build a trail and then later on build a shopping center next to it.
  - A member of the MCWA stated that primary goal of the Association is clean water and education.

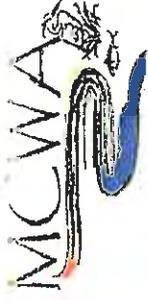
- A Recommendation was made to develop trail organization to actively go after developing trails and get ROW.
- There needs to be education to public/residents. They need to take ownership of the stream. If they see a problem...like trash, they should clean it up.
- A resident recommended that the Association could get labor help thru Americorps.
- A resident cited the need for stream channel protection- There is a erosion and sedimentation problem, channel instability, scour, erosion occurring in stream.
- A resident recommended the need for Stormwater/floodplain management through ordinances.
- Towns and communities along the stream should take ownership of their part of the creek to clean up and protect it.
- A resident stated that along with mining, fly ash is also a problem. Others agreed
- A more long-range idea is to promote riverfront establishment/riverfront development as a seed to promote community development.
- A resident recommended promoting the rich history in the watershed, including Indian history
- A Resident recommended trying to tap into Abandoned Mined Land reclamation money from the Feds. Need to get landowner commitment.
- Need relationships with political representatives and press to assist in education and communication.
- Need to control dumping within the watershed. Need to stop uncontrolled dumping.
- Need check and balances in the mining industry.

Mr. Leberknight thanked the residents for attending the meeting and reminded them that at this point we are not debating these issues but wanted to provide an open forum to bring to light issues of benefit and concern through the knowledge of people who live in the watershed. This is a long process and the RCP is the first step in a continuing process in improving the quality of life within the watershed and providing a structure to obtain additional grants to implement priority issues presented in the RCP. There will be a public notice for the next meeting to be held sometime in the fall.

Respectfully Submitted,  
GTS TECHNOLOGIES, INC

A handwritten signature in black ink that reads 'Joseph N. Nardella'.

Joseph N. Nardella  
Water Resources Manager/Project Manager



**MAHANAY CREEK RIVER CONSERVATION PLAN**  
**PUBLIC MEETING NO. 1**  
**GIRARDVILLE BOROUGH HALL**  
**JULY 29, 2009**

Name	Address	Phone Number	Email Address	Request Copy of Presentation
Wendy Farnsworth	7 W. Center St. Ashland	875-1685	wendoo@verizon.net	yes
Wayne Lehman	1204 AG Center Dr. 17901	622-3742x120	wlehman@co.schuylkill.pa.us	yes
BILL COBURN'S	230 W. CHESTNUT ST.	874-7144		yes
LOUIS SAKAKI	137 FOURA Rd Shamokin	570-648-7449		YES
Chuck Cravotta	MSGS 216 Convent Rd. Shamokin		cravotta@grgs.gov	
DAVID F KALGIA	146 E SUNBURY ST SHAMOKIN	850-3824	PIENUSK@ATT.NET	YES
Leslie Maynor	PO Box 572 E. town PA	717 723 3063	lesliemaynor@gmail.com	yes
DAVID E. STRAUB	504 BEAL VALLEY AVE SHAM.	570-648-3825	STRAB.DAVID9@GMAIL.COM	YES
Pat Medlin	1712 Spruce St. Ash	570 825 3092		"
See Medlin	" "	" "		
Willie Bell	400 Nighthawk Garden Ash	570-875-4553		yes
Diana M. Bell	" "	" "		"
Dolores Kramer	11 Barry Road			
Roseanne Kyma	100 N. 2nd St. Shamokin	570-276-6586		
Karen Onoroff	204 W. MAIN ST. SHAMOKIN	570-205-5708	kevin77@verizon.net	Yes
ED PAUTIENIS	1311 MAIN ST. GILBERTON PA	570-874-1285-	N.A.	YES
Bill Keppeler	405 S. First Ash	570-875-0638	MCWA	
PAVID L. KRANSER	11 BARRY ROAD SHAMOKIN	570-875-9713		YES
JOHN GUERS	111 W. MAIN ST. GIRARDVILLE	276-6375	JGUERS@LPPER.SCHULUIS-CA	NO
Brian Pankonis	123 E. Main Girardville	621.3474	bpankonis@state.pa.us	NO
John Stotterback	516 N. 4th St. Cataraugus	356-3931	jkeoni2@synoo.com	yes

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**11/12/09**

**Mahanoy Creek Rivers Conservation Plan**

Mahanoy Creek Watershed Association (MCWA)  
GTS Job #07072

**Public Meeting #2-Notes**

Date & Time: 11/12/09; 7:00 PM

Location: Line Mountain School

In Attendance: Members of the Mahanoy Creek Watershed Association Board of Directors  
Members of the Mahanoy Creek Watershed Association  
Joseph Nardella – GTS Technologies, Inc. (GTS)  
Kerry Leberknight – GTS  
(See attached attendance sheet for complete list)

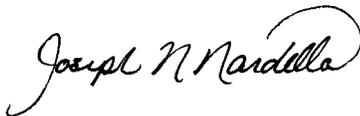
- Kerry Leberknight of GTS opened the meeting by thanking all of the attendees to the public meeting for coming and willing to be part of this important project. He went on to introduce Joe Nardella, Water Resources and Project Manager of GTS and GTS's role in the Rivers Conservation Plan (RCP). He explained that this is the second of 3 public meetings that will be held throughout the Watershed.
- Mr. Leberknight then introduced members of the MCWA in attendance, explained the purpose of the meeting, a summary of what a RCP is and the major components of what goes into the RCP. He stated that the purpose of the meeting is to provide input into the RCP by providing comments on the benefits and problems within the watershed and to allow the public to state their concerns and hope for the future of the watershed and the quality of life within the watershed.
- He also explained the breakdown of the funding sources and the in-kind (donated) services that both the MCWA and GTS are providing to the project.
- Mr. Leberknight then summarized what components/data have been collected to this point and discussed the handouts and questionnaire that has been developed.
- Mr. Leberknight summarized that in general, an RCP is a document that inventories elements within the watershed that the residence and the MCWA want to protect, restore and enhance. He then introduced Joe Nardella, Project Manager from GTS
- Mr. Nardella then proceeded to describe the technical aspects of the RCP. He began by explaining what a watershed is, the groundwater and surface water components of a watershed and how activities can affect the watershed. He also explained that there was a handout available that explains what a watershed is. He also showed the delineation of the Mahanoy Creek Watershed (MCW) using the available maps brought as exhibits. He explained the MCW is not your typical watershed due to the impacts of surface and deep mining and that due to the connected paths produced by deep mining groundwater and surface waters are more directly impacted.
- Mr. Nardella then described some specific information, benefits and detractions of the watershed that have been discovered during discussions with the MCWA, the Study Committee and data/information that has been collected from secondary source information such as stated and federal agencies. Photographs showed some of these areas.

- The floor was then opened to the public to provide comments on the watershed and issues that they believed need to be addressed with respect to issues and concerns and what are the needs to protect, restore and enhance, the Watershed. Those items have been condensed and listed below:
- With the limited number of public participants at this meeting the public comments were structured as a casual conversation. The general consensus and majority agreed that it is important to protect the creek, watershed and promote the quality of life both locally and for the region. There were comments on promoting economic development however there needs to be a balance with the protection of quality of life.

One issue that basically took up the remainder of the evening was the concern for safety. During the summer months, there are many people who travel from out of the area to utilize abandoned and some active mine site for All Terrain Vehicle (ATV) use. It was estimated that upwards of 10,000 people per weekend descend upon the area in Northumberland County, including Coal Township, Zerbe Township, Mount Carmel Township, East Cameron Township and West Cameron Township. There are all types of ATVs, from full size 4x4 and all-terrain vehicle (ATV) use. The group believes that it well known and because of its unique and diverse terrain, it will only become more known. The area covers approximately 5,000 acres. There is a great amount of traffic in the area and there is a concern that there is not enough safety/protection for both the residents and the "ATVers". It seems that just about every weekend, someone is seriously injured and there have been deaths. There are bonfires at night that can be seen from afar and the ATVers come into town on their ATVs. The attendees are not necessarily against the people using their ATVs, they just think that it is a little overwhelming to the region, and stress the regional infrastructure and safety personnel.

Mr. Leberknight thanked the residents for attending the meeting and reminded them that at this point we are not debating these issues but wanted to provide an open forum to bring to light issues of benefit and concern through the knowledge of people who live in the watershed. This is a long process and the RCP is the first step in a continuing process in improving the quality of life within the watershed and providing a structure to obtain additional grants to implement priority issues presented in the RCP. There will be a public notice for the next meeting to be held sometime after the new year.

Respectfully Submitted,  
GTS TECHNOLOGIES, INC



Joseph N. Nardella  
Water Resources Manager/Project Manager

HAVE A VOICE IN THE FUTURE  
OF YOUR WATERSHED!

Mahanoy Creek Watershed  
RIVERS CONSERVATION PLAN  
Public Meeting #2

*When: November 12, 7:00 pm*

*Where: Line Mountain*

*Elementary School*

*(Former Treverton H.S),*

*542 West Shamokin St.,*

*Treverton, PA 17881*









JANUARY 27, 2010  
MCWA  
MAHANoy CREEK RIVERS CONSERVATION PLAN  
PUBLIC MEETING #3  
LINE MOUNTAIN SCHOOL

PUBLIC INPUT

- RCP may impact economics of existing mining and supporting industries.
- Concern is that allowing trails, creek access may impact use of existing homeowners along the creek.
- Boating is important however, you need to respect landowner rights for accessibility.
- Agricultural runoff is a problem. Schwaben Creek is a good example. Better agricultural/farming practices have improved it.
- Continue to educate better practices that can continue to protect the creek.
- Some erosion in tributaries.
- Tree buffers would be a benefit to cool the waters.
- Individual landowners should be educated on the benefits of riparian/vegetated buffer zones.
- Conservation Districts could hold open house type of education to property owners to educate them on the need/benefit of riparian/vegetated buffer zones.
- Request that trails include horse trails..multi-use.
- Some state game lands that used to allow horses now restrict them from using the land.
- Consider multi-use trails.
- People/associations that promote public use of their land should be protect (good Samaritan Act)
- Mining industry should be helped to promote best management practices like is done with the agriculture industry.
- Clean up the creek and you will draw more people that will promote/stimulate economic development.

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**01/27/10**

**Mahanoy Creek Rivers Conservation Plan**

Mahanoy Creek Watershed Association (MCWA)  
GTS Job #07072

**Public Meeting #3-Notes**

Date & Time: 01/27/10; 7:00 PM

Location: Line Mountain School

In Attendance: Members of the Mahanoy Creek Watershed Association Board of Directors  
Members of the Mahanoy Creek Watershed Association  
Joseph Nardella – GTS Technologies, Inc. (GTS)  
Kerry Leberknight – GTS  
(See attached attendance sheet for complete list)

- Kerry Leberknight of GTS opened the meeting by thanking all of the attendees to the public meeting for coming and willing to be part of this important project. He went on to introduce Joe Nardella, Water Resources and Project Manager of GTS and GTS's role in the Rivers Conservation Plan (RCP). He explained that this is the third of 3 public meetings that will be held throughout the Watershed.
- Mr. Leberknight then introduced members of the MCWA in attendance, explained the purpose of the meeting, a summary of what a RCP is and the major components of what goes into the RCP. He stated that the purpose of the meeting is to provide input into the RCP by providing comments on the benefits and problems within the watershed and to allow the public to state their concerns and hope for the future of the watershed and the quality of life within the watershed.
- He also explained the breakdown of the funding sources and the in-kind (donated) services that both the MCWA and GTS are providing to the project.
- Mr. Leberknight then summarized what components/data have been collected to this point and discussed the handouts and questionnaire that has been developed.
- Mr. Leberknight summarized that in general, an RCP is a document that inventories elements within the watershed that the residence and the MCWA want to protect, restore and enhance. He then introduced Joe Nardella, Project Manager from GTS
- Mr. Nardella then proceeded to describe the technical aspects of the RCP. He began by explaining what a watershed is, the groundwater and surface water components of a watershed and how activities can affect the watershed. He also explained that there was a handout available that explains what a watershed is. He also showed the delineation of the Mahanoy Creek Watershed (MCW) using the available maps brought as exhibits. He explained the MCW is not your typical watershed due to the impacts of surface and deep mining and that due to the connected paths produced by deep mining groundwater and surface waters are more directly impacted.
- Mr. Nardella then described some specific information, benefits and detractions of the watershed that have been discovered during discussions with the MCWA, the Study Committee and data/information that has been collected from secondary source information such as stated and federal agencies. Photographs showed some of these areas.

- The floor was then opened to the public to provide comments on the watershed and issues that they believed need to be addressed with respect to issues and concerns and what are the needs to protect, restore and enhance, the Watershed. Those items have been condensed and listed below:
  - RCP may impact economics of existing mining and supporting industries.
  - Concern is that allowing trails, creek access may impact use of existing homeowners along the creek.
  - Boating is important however, you need to respect landowner rights for accessibility.
  - Agricultural runoff is a problem. Schwaben Creek is a good example. Better agricultural/farming practices have improved it.
  - Continue to educate better practices that can continue to protect the creek.
  - Some erosion in tributaries.
  - Tree buffers would be a benefit to cool the waters.
  - Individual landowners should be educated on the benefits of riparian/vegetated buffer zones.
  - Conservation Districts could hold open house type of education to property owners to educate them on the need/benefit of riparian/vegetated buffer zones.
  - Request that trails include horse trails..multi-use.
  - Some state game lands that used to allow horses now restrict them from using the land.
  - Consider multi-use trails.
  - People/associations that promote public use of their land should be protect (good Samaritan Act)
  - Mining industry should be helped to promote best management practices like is done with the agriculture industry.
  - Clean up the creek and you will draw more people that will promote/stimulate economic development.

Mr. Leberknight thanked the residents for attending the meeting and reminded them that at this point we are not debating these issues but wanted to provide an open forum to bring to light issues of benefit and concern through the knowledge of people who live in the watershed. This is a long process and the RCP is the first step in a continuing process in improving the quality of life within the watershed and providing a structure to obtain additional grants to implement priority issues presented in the RCP. This was the final of the 3 public meetings.

Respectfully Submitted,  
GTS TECHNOLOGIES, INC



Joseph N. Nardella  
Water Resources Manager/Project Manager



**MAHANAY CREEK RIVER CONSERVATION PLAN  
PUBLIC MEETING #3  
JANUARY 27, 2010**

Name	Representing	Phone Number	Email Address
Nelson E. Dunkelberger		570-648-5657	
Josh Phillips	Representative Mark Phillips		
Ted Carodiskey		570-286-2291	Theo2@ptd.net
Kurt Masser	Northumberland County	570-988-4564	kmasser@norrycopa.net
Patrick Mack	Planning Director, Northumberland County	570-274-3062	Pmack@hotmail.com
Clayton J. Chappell		570-644-1602	Chappell43@wmconnect.com
Dave Kramer			
Craig A. Taxis		570-758-2673	ctaxis@tds.net
Jaci Harner	Northumberland County Conservation District	570-286-7114 x4	
Carol Bickel		570-594-3206	
Ken Dagen		570-495-3311	
Dave Miller		570-648-0023	Hawkeye002@gmail.com
David L. Keim		570-425-3292	
Brian Lenker		570-259-3793	
Robert Long		570-797-2106	

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# Mahanoy Creek Watershed Rivers Conservation Plan

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1. Do you live in the Mahanoy Creek Watershed?  Yes  No
  2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
  3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
  4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
  5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
  6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
  7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
  8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
  9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
  10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
  11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
  12. Where do you live?  
Municipality \_\_\_\_\_ County \_\_\_\_\_
  13. Do you have internet access?  Yes  No
-

---

**OPTIONAL**

If you are interested in receiving more information about the Rivers Conservation Plan as the project progresses, please complete the following:

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Email: \_\_\_\_\_

For more information, please contact:

Joe Nardella  
Water Resources/Project Manager  
GTS Technologies, Inc.  
441 Friendship Road  
Harrisburg, PA 17111  
Phone: (717) 920-7018  
Fax: (717) 233-0994  
Email: [jnardell@gtstech.com](mailto:jnardell@gtstech.com)

Jim Chappell  
Project Coordinator  
Mahanoy Creek Watershed Association  
15 Barry Road  
Ashland, PA 17921  
Phone: (570) 644-1602 (Dave Kramer)  
Email: [CHAPPELL43@wmconnect.com](mailto:CHAPPELL43@wmconnect.com)

## Mahanoy Creek Watershed Rivers Conservation Plan Questionnaire Review

Total Number of Completed Questionnaires Received 40

	<u>YES</u>	<u>NO</u>
Do you live in the Mahanoy Creek Watershed?	30	10

Do you own or operate a business in the MC Watershed?	7	33
---	---	----

Number of Residents with a stream on their property	11	STREAM
Number of Residents with a pond on their property	2	POND
Number of Residents with a spring on their property	5	SPRING
Number of Residents with a wetland on their property	4	WETLAND

Specific names of water bodies	Mahanoy Creek
	Gobbler Run
	Shenandoah Creek
	Little Mahanoy Creek
	Unnamed Tributaries

### **Benefits**

(how many questionnaire recipients found the following aspects of living beside water to be beneficial)

Scenery	31
Wildlife	36
Play area for children	20
Fishing	28
Increased Property Value	22
Walking	27
Other**	8

\*\*Other listed as canoeing, boating, paleontology sites, horseback riding (2), and no benefits

### **Where do you/your family go for recreation within the watershed**

Gamelands 84  
 Rattlesnake Road in West Cameron  
 Hiking around Taylorsville Mountain  
 Gowen City  
 Personal Property (Hunt/Fish the Line Mtn./ Cherrytown Rd. area)  
 Schuylkill/Northumberland Border Area  
 home  
 Connerton Wetland  
 West Cameron Township  
 Local Parks  
 Gordon Park (Bolich Project)  
 Locust Lake/ Mahanoy Creek Gordon  
 Fishing in a hole (abandoned strip mine)  
 hiking throughout the north slope of Ashland Mtn.  
 State Game Lands through Gowen City  
 Mahantango Creek

**Issues/problems associated with living beside the Mahanoy Creek or its tributaries**

Acid Mine Drainage	24
Flooding	18
Eroding Banks	18
Wet Basement	4
Abandoned Mine Lands	11
Trespassers	10
Litter	28
Sewer Lines/Outfalls	5
Sinkholes	6
Other**	1

\*\*Other listed as Stealing

	<u>YES</u>	<u>NO</u>	<u>No Opinion</u>
Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, business, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?	36	2	2

Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?	31	5	4
---	----	---	---

What is the most important recommendations to include in a plan for conserving the Mahanoy Creek Watershed?	
Acid Mine Drainage Cleanup	32
Stormwater/Erosion Control	18
Protect open space	13
Public environmental education	20
Preserve Historic Features	17
Promote Tourism	14
Recreation	22
Fishing	22
Trails/Greenways	23
Job Creation	16
Other **	4

\*\*Other listed as Riparian Buffers, wildlife habitat, protect floodplain from development, avoid promotion of tourism

**Residential Locations of Questionnaire recipients**

<b><u>Municipality</u></b>	<b><u>County</u></b>
Herndon	Northumberland
Dornsife/Leck Kill	Northumberland
Butler	Schuykill
Upper Manahoy Twp.	Northumberland
Dornsife	Northumberland
West Cameron	Northumberland
Lower Mahanoy Twp.	Northumberland
Ashland	Schuykill
Girardville	Schuykill
Gordon	Schuykill
East Cameron	Northumberland
Mahanoy	Schuykill
Shenandoah	Schuykill
Jackson Twp.	Northumberland
Ashland/Gonan City	Schuykill
Shamokin	Northumberland
Upper Tulpehocken Twp.	Berks
Catawissa	Columbia
Elysburg	Northumberland
Augustaville	Northumberland
Mount Carmel	Northumberland

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# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) N/A
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Mount Carmel County Northumberland
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input checked="" type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Augusta County Northern
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality AUGUSTAVILLE County NORTH'S
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
 

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) Great City
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
 

<input checked="" type="checkbox"/> Acid Mine Drainage	<input checked="" type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input checked="" type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
 

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> No opinion
---	-----------------------------	-------------------------------------
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)
 

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input checked="" type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or all the contacts listed below. Yes
12. Where do you live?
 

Municipality <u>Elysburg</u>	County <u>Northumberland County</u>
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13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) Nick
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
 

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
 

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input checked="" type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
   
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)
 

<input type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?
   
Municipality Shenokin County Northumberland
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No *but I gra up here  
it my parents still live here*
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply). *NO*
4. Does this water body have a specific name (ex. Mahanoy Creek) NO
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Scenery                | <input checked="" type="checkbox"/> Fishing                  |
| <input checked="" type="checkbox"/> Wildlife               | <input checked="" type="checkbox"/> Increased property value |
| <input checked="" type="checkbox"/> Play area for children | <input checked="" type="checkbox"/> Walking                  |
| <input type="checkbox"/> Other _____                       |  |
6. Where do you/your family go for recreation within the watershed? (Specify location) hiking around Taylorsville mtn
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Acid Mine Drainage | <input type="checkbox"/> Trespassers          |
| <input checked="" type="checkbox"/> Flooding           | <input checked="" type="checkbox"/> Litter    |
| <input type="checkbox"/> Eroding Banks                 | <input type="checkbox"/> Sewer lines/outfalls |
| <input type="checkbox"/> Wet Basement                  | <input type="checkbox"/> Sinkholes            |
| <input type="checkbox"/> Abandoned Mine Lands          | <input type="checkbox"/> Other _____          |
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Acid Mine Drainage clean up    | <input checked="" type="checkbox"/> Promote tourism  |
| <input type="checkbox"/> Stormwater/Erosion control                | <input checked="" type="checkbox"/> Recreation       |
| <input checked="" type="checkbox"/> Protect open space             | <input checked="" type="checkbox"/> Fishing          |
| <input checked="" type="checkbox"/> Public environmental education | <input checked="" type="checkbox"/> Trails/Greenways |
| <input checked="" type="checkbox"/> Preserve historic features     | <input type="checkbox"/> Job Creation                |
| <input type="checkbox"/> Other _____                               |  |
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live? *→ grew up in Lavelle*  
Municipality Catawissa, PA County Columbia
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) SOLEY EAST OF RT 125 AL'S RAFFLES LAKE RD IN W. CARBON
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems? OBSERVED WHILE SWIMMING

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. YES
12. Where do you live?  
Municipality SHAMOKIN County NORTHUMBRIA
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Scenery                | <input checked="" type="checkbox"/> Fishing                  |
| <input checked="" type="checkbox"/> Wildlife               | <input checked="" type="checkbox"/> Increased property value |
| <input checked="" type="checkbox"/> Play area for children | <input checked="" type="checkbox"/> Walking                  |
| <input type="checkbox"/> Other _____                       |  |
6. Where do you/your family go for recreation within the watershed? (Specify location) N/A
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Acid Mine Drainage   | <input type="checkbox"/> Trespassers          |
| <input type="checkbox"/> Flooding                        | <input type="checkbox"/> Litter               |
| <input checked="" type="checkbox"/> Eroding Banks        | <input type="checkbox"/> Sewer lines/outfalls |
| <input type="checkbox"/> Wet Basement                    | <input type="checkbox"/> Sinkholes            |
| <input checked="" type="checkbox"/> Abandoned Mine Lands | <input type="checkbox"/> Other _____          |
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
- Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)
- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> Acid Mine Drainage clean up  | <input checked="" type="checkbox"/> Promote tourism  | ① <i>Protect existing high-value areas</i>                              |
| <input checked="" type="checkbox"/> Stormwater/Erosion control   | <input checked="" type="checkbox"/> Recreation       | ② <i>Restore impaired environments</i>                                  |
| <input checked="" type="checkbox"/> Protect open space   | <input checked="" type="checkbox"/> Fishing          | ③ <i>Enhance opportunities for recreation &amp; economic activities</i> |
| <input checked="" type="checkbox"/> Public environmental education   | <input checked="" type="checkbox"/> Trails/Greenways |   |
| <input checked="" type="checkbox"/> Preserve historic features   | <input checked="" type="checkbox"/> Job Creation     |   |
| <input checked="" type="checkbox"/> Other <u>Wildlife Habitat, protect flood plain from development (flooding)</u> |  |   |
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Upper Tulpehocken Twp. County Berks
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) GAMELANDS 84
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input checked="" type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live? Municipality SHAMOKIN County NORTH D
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	

*all are pretty good important*
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.  
*currently moving*
12. Where do you live?  
Municipality \_\_\_\_\_ County \_\_\_\_\_
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) MAHANOX CREEK
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Scenery                | <input type="checkbox"/> Fishing                             |
| <input checked="" type="checkbox"/> Wildlife               | <input checked="" type="checkbox"/> Increased property value |
| <input checked="" type="checkbox"/> Play area for children | <input checked="" type="checkbox"/> Walking                  |
| <input checked="" type="checkbox"/> Other <u>BOATING</u>   |  |
6. Where do you/your family go for recreation within the watershed? (Specify location) SCHUYLKILL / NORTH WASHINGTON BOROUGH AREA
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Acid Mine Drainage | <input type="checkbox"/> Trespassers          |
| <input type="checkbox"/> Flooding                      | <input checked="" type="checkbox"/> Litter    |
| <input type="checkbox"/> Eroding Banks                 | <input type="checkbox"/> Sewer lines/outfalls |
| <input type="checkbox"/> Wet Basement                  | <input type="checkbox"/> Sinkholes            |
| <input type="checkbox"/> Abandoned Mine Lands          | <input type="checkbox"/> Other                |
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
- Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Acid Mine Drainage clean up    | <input checked="" type="checkbox"/> Promote tourism  |
| <input type="checkbox"/> Stormwater/Erosion control                | <input checked="" type="checkbox"/> Recreation       |
| <input type="checkbox"/> Protect open space                        | <input checked="" type="checkbox"/> Fishing          |
| <input checked="" type="checkbox"/> Public environmental education | <input checked="" type="checkbox"/> Trails/Greenways |
| <input checked="" type="checkbox"/> Preserve historic features     | <input checked="" type="checkbox"/> Job Creation     |
| <input type="checkbox"/> Other                                     |  |
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality ASHLANA / GORDON CITY County SCHUYLKILL PA.
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) NO
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Scenery     | <input type="checkbox"/> Fishing                             |
| <input checked="" type="checkbox"/> Wildlife    | <input checked="" type="checkbox"/> Increased property value |
| <input type="checkbox"/> Play area for children | <input checked="" type="checkbox"/> Walking                  |
| <input type="checkbox"/> Other _____            |  |
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Acid Mine Drainage | <input type="checkbox"/> Trespassers          |
| <input checked="" type="checkbox"/> Flooding           | <input type="checkbox"/> Litter               |
| <input checked="" type="checkbox"/> Eroding Banks      | <input type="checkbox"/> Sewer lines/outfalls |
| <input checked="" type="checkbox"/> Wet Basement       | <input type="checkbox"/> Sinkholes            |
| <input type="checkbox"/> Abandoned Mine Lands          | <input type="checkbox"/> Other _____          |
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
- Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Acid Mine Drainage clean up    | <input checked="" type="checkbox"/> Promote tourism |
| <input checked="" type="checkbox"/> Stormwater/Erosion control     | <input checked="" type="checkbox"/> Recreation      |
| <input type="checkbox"/> Protect open space                        | <input checked="" type="checkbox"/> Fishing         |
| <input checked="" type="checkbox"/> Public environmental education | <input type="checkbox"/> Trails/Greenways           |
| <input type="checkbox"/> Preserve historic features                | <input type="checkbox"/> Job Creation               |
| <input type="checkbox"/> Other _____                               |   |
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Butler Twp. County Schuylkill
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) SHENANDOAH CREEK
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) CONBERT WETLAND
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input checked="" type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input checked="" type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input checked="" type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality GIRARDVILLE County SCHUYLER
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) No
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
 

<input type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other <u>Canoes the Mahanoy</u>	
6. Where do you/your family go for recreation within the watershed? (Specify location) Personal Property - Hunt the Line Mt. / Cherry Town Road Area
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
 

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
 

Yes       No       No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)
 

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. Yes
12. Where do you live?  
Municipality Jackson Township County Northumberland
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) RIVER - LAKE \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input checked="" type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality ASHLAND County SCHUPPKILL
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) Mahanoy Creek
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) West Cameron Twp.
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input checked="" type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input checked="" type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input checked="" type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. yes
12. Where do you live?  
Municipality Ashland County Lehigh Schuylkill
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) Mahanoy Creek - Stream has no name
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other	
6. Where do you/your family go for recreation within the watershed? (Specify location)
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input checked="" type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live? West Cameron  
Municipality 2576 Lower Road County Northumberland
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) Shenandoah Creek
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input checked="" type="checkbox"/> Sinkholes
<input checked="" type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input checked="" type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. yes
12. Where do you live?  
Municipality Shenandoah County Schuylkill
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply). No
4. Does this water body have a specific name (ex. Mahanoy Creek) N/A
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) No where at the moment
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input checked="" type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input checked="" type="checkbox"/> Sewer lines/outfalls
<input checked="" type="checkbox"/> Wet Basement	<input checked="" type="checkbox"/> Sinkholes
<input checked="" type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Circleville County Schuyler
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply). **no**
4. Does this water body have a specific name (ex. Mahanoy Creek) n/a
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) LOCAL PARKS
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality SIRARDVILLE BOROUGH County Schuylkill
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Scenery     | <input checked="" type="checkbox"/> Fishing                  |
| <input checked="" type="checkbox"/> Wildlife    | <input checked="" type="checkbox"/> Increased property value |
| <input type="checkbox"/> Play area for children | <input checked="" type="checkbox"/> Walking                  |
| <input type="checkbox"/> Other _____            |  |
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Acid Mine Drainage | <input type="checkbox"/> Trespassers                     |
| <input checked="" type="checkbox"/> Flooding           | <input type="checkbox"/> Litter                          |
| <input type="checkbox"/> Eroding Banks                 | <input checked="" type="checkbox"/> Sewer lines/outfalls |
| <input checked="" type="checkbox"/> Wet Basement       | <input type="checkbox"/> Sinkholes                       |
| <input type="checkbox"/> Abandoned Mine Lands          | <input type="checkbox"/> Other _____                     |
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
- Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)
- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Acid Mine Drainage clean up | <input checked="" type="checkbox"/> Promote tourism |
| <input checked="" type="checkbox"/> Stormwater/Erosion control  | <input type="checkbox"/> Recreation                 |
| <input type="checkbox"/> Protect open space                     | <input checked="" type="checkbox"/> Fishing         |
| <input type="checkbox"/> Public environmental education         | <input type="checkbox"/> Trails/Greenways           |
| <input checked="" type="checkbox"/> Preserve historic features  | <input type="checkbox"/> Job Creation               |
| <input type="checkbox"/> Other _____                            |   |
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Mahanoy PLANE County SEH.
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input checked="" type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input checked="" type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. **NO - DUE TO PHYSICAL DISABILITIES ATTENDED MEETING FOR INFORMATION, ONLY.**
12. Where do you live?  
Municipality \_\_\_\_\_ County \_\_\_\_\_
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) STATE GAME lands 84 off Route 125
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input checked="" type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. YES
12. Where do you live?  
Municipality EAST CAMERON TWP. County NORTHUMBRELAND
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter <del>XXX</del>
<input type="checkbox"/> Eroding Banks	<input checked="" type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input checked="" type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input checked="" type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. ALREADY DO.
12. Where do you live?  
Municipality BUTLER TOWNSHIP County SCHUYLKILL
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Scenery                | <input checked="" type="checkbox"/> Fishing                  |
| <input checked="" type="checkbox"/> Wildlife               | <input checked="" type="checkbox"/> Increased property value |
| <input checked="" type="checkbox"/> Play area for children | <input checked="" type="checkbox"/> Walking                  |
| <input type="checkbox"/> Other _____                       |  |
6. Where do you/your family go for recreation within the watershed? (Specify location) GORDON PARK BOLECH PROJECT
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Acid Mine Drainage | <input type="checkbox"/> Trespassers          |
| <input checked="" type="checkbox"/> Flooding           | <input checked="" type="checkbox"/> Litter    |
| <input checked="" type="checkbox"/> Eroding Banks      | <input type="checkbox"/> Sewer lines/outfalls |
| <input checked="" type="checkbox"/> Wet Basement       | <input checked="" type="checkbox"/> Sinkholes |
| <input type="checkbox"/> Abandoned Mine Lands          | <input type="checkbox"/> Other _____          |
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
- Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Acid Mine Drainage clean up    | <input type="checkbox"/> Promote tourism             |
| <input checked="" type="checkbox"/> Stormwater/Erosion control     | <input checked="" type="checkbox"/> Recreation       |
| <input checked="" type="checkbox"/> Protect open space             | <input checked="" type="checkbox"/> Fishing          |
| <input checked="" type="checkbox"/> Public environmental education | <input checked="" type="checkbox"/> Trails/Greenways |
| <input checked="" type="checkbox"/> Preserve historic features     | <input checked="" type="checkbox"/> Job Creation     |
| <input type="checkbox"/> Other _____                               |  |
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. Yes
12. Where do you live?  
Municipality GORDON BOROUGH County SCHUYLKILL
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) Locust Lake Mahanoy Creek Garden
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input checked="" type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input checked="" type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality GORDON County Schuylkill
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Scenery              | <input type="checkbox"/> Fishing                  |
| <input type="checkbox"/> Wildlife                        | <input type="checkbox"/> Increased property value |
| <input type="checkbox"/> Play area for children          | <input type="checkbox"/> Walking                  |
| <input type="checkbox"/> Other <u>PALEONTOLOGY SITES</u> |   |
6. Where do you/your family go for recreation within the watershed? (Specify location) FISHING IN "A" HOLE ABOVE SPRING RUNS, HIKING THROUGHOUT THE NORTH SLOPE OF ASHLAND MOUNTAIN
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Acid Mine Drainage   | <input checked="" type="checkbox"/> Trespassers |
| <input type="checkbox"/> Flooding                        | <input type="checkbox"/> Litter                 |
| <input type="checkbox"/> Eroding Banks                   | <input type="checkbox"/> Sewer lines/outfalls   |
| <input type="checkbox"/> Wet Basement                    | <input checked="" type="checkbox"/> Sinkholes   |
| <input checked="" type="checkbox"/> Abandoned Mine Lands | <input type="checkbox"/> Other _____            |
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
- Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Acid Mine Drainage clean up    | <input checked="" type="checkbox"/> Promote tourism  |
| <input checked="" type="checkbox"/> Stormwater/Erosion control     | <input checked="" type="checkbox"/> Recreation       |
| <input checked="" type="checkbox"/> Protect open space             | <input type="checkbox"/> Fishing                     |
| <input checked="" type="checkbox"/> Public environmental education | <input checked="" type="checkbox"/> Trails/Greenways |
| <input checked="" type="checkbox"/> Preserve historic features     | <input checked="" type="checkbox"/> Job Creation     |
| <input type="checkbox"/> Other _____                               |  |
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. YES
12. Where do you live?  
Municipality GIRAROVILLE County PA
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) State Game Lands by Gowen City.
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input checked="" type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input checked="" type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Ashland County Schuylkill
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) Mahanoy Creek
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Acadon County Northumberland
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply). *N/A*
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Scenery                | <input checked="" type="checkbox"/> Fishing                  |
| <input checked="" type="checkbox"/> Wildlife               | <input checked="" type="checkbox"/> Increased property value |
| <input checked="" type="checkbox"/> Play area for children | <input checked="" type="checkbox"/> Walking                  |
| <input type="checkbox"/> Other _____                       |  |
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
- |   |   |
|---|---|
| <input type="checkbox"/> Acid Mine Drainage   | <input type="checkbox"/> Trespassers          |
| <input type="checkbox"/> Flooding             | <input type="checkbox"/> Litter               |
| <input type="checkbox"/> Eroding Banks        | <input type="checkbox"/> Sewer lines/outfalls |
| <input type="checkbox"/> Wet Basement         | <input type="checkbox"/> Sinkholes            |
| <input type="checkbox"/> Abandoned Mine Lands | <input type="checkbox"/> Other _____          |
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
- Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)
- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Acid Mine Drainage clean up   | <input type="checkbox"/> Promote tourism             |
| <input checked="" type="checkbox"/> Stormwater/Erosion control    | <input checked="" type="checkbox"/> Recreation       |
| <input type="checkbox"/> Protect open space                       | <input checked="" type="checkbox"/> Fishing          |
| <input type="checkbox"/> Public environmental education           | <input checked="" type="checkbox"/> Trails/Greenways |
| <input checked="" type="checkbox"/> Preserve historic features    | <input type="checkbox"/> Job Creation                |
| <input checked="" type="checkbox"/> Other <i>Riparian buffers</i> |  |
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below. *Yes. Jaci Harner, Watershed Specialist, North'd Co. Conservation District 570-286-7114 x4*
12. Where do you live?  
Municipality *Lower Mahanoy* County *Northumberland*
13. Do you have Internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Butler Twp. County Schuylkill
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) LITTLE MAHANAY
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
 

<input type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input checked="" type="checkbox"/> Other <u>NONE OF THE ABOVE</u>	
6. Where do you/your family go for recreation within the watershed? (Specify location) WE DON'T. WE VACATION IN FLORIDA.
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
 

<input type="checkbox"/> Acid Mine Drainage	<input checked="" type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input checked="" type="checkbox"/> Other <u>STEALING</u>
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
 

<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> No opinion
------------------------------	--	-------------------------------------
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)
 

<input type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input checked="" type="checkbox"/> Other <u>I do not want to promote tourism &amp; trails because it infringes on my right to privacy as a property owner along Little Mahoney Creek</u>	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or all the contacts listed below.
12. Where do you live?  
Municipality WEST CAMERON County NORTHUMBERLAND
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input checked="" type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)

<input type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other <u>NONE</u>	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality WEST CAMERON TWP County NORTHUMBERLAND
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input checked="" type="checkbox"/> Other <u>Horse Back Riding</u>	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)

<input type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input checked="" type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Douglas County Northumberland
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (ex. Mahanoy Creek) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input checked="" type="checkbox"/> Other <u>Horse Back Riding</u>	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (Check all those you think are most important)

<input type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input checked="" type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input checked="" type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Danville County Northumberland
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

- 
1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) Gobbler Run
- 
5. Living beside water can have benefits. Which of the following do you feel are beneficial?
- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Scenery                | <input type="checkbox"/> Fishing                  |
| <input checked="" type="checkbox"/> Wildlife               | <input type="checkbox"/> Increased property value |
| <input checked="" type="checkbox"/> Play area for children | <input type="checkbox"/> Walking                  |
| <input type="checkbox"/> Other _____                       |   |
- 
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
- 
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?
- |   |   |
|---|---|
| <input type="checkbox"/> Acid Mine Drainage       | <input type="checkbox"/> Trespassers          |
| <input checked="" type="checkbox"/> Flooding      | <input type="checkbox"/> Litter               |
| <input checked="" type="checkbox"/> Eroding Banks | <input type="checkbox"/> Sewer lines/outfalls |
| <input type="checkbox"/> Wet Basement             | <input type="checkbox"/> Sinkholes            |
| <input type="checkbox"/> Abandoned Mine Lands     | <input type="checkbox"/> Other _____          |
- 
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?
- Yes  No  No opinion
- 
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)
- |  |  |
|--|--|
| <input type="checkbox"/> Acid Mine Drainage clean up               | <input type="checkbox"/> Promote tourism         |
| <input type="checkbox"/> Stormwater/Erosion control                | <input checked="" type="checkbox"/> Recreation   |
| <input type="checkbox"/> Protect open space                        | <input checked="" type="checkbox"/> Fishing      |
| <input checked="" type="checkbox"/> Public environmental education | <input type="checkbox"/> Trails/Greenways        |
| <input checked="" type="checkbox"/> Preserve historic features     | <input checked="" type="checkbox"/> Job Creation |
| <input type="checkbox"/> Other _____                               |  |
- 
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Upper Mahanoy Twp County North'd
- 
13. Do you have internet access?  Yes  No
-

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input checked="" type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live? Municipality Butler County Sch.
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input type="checkbox"/> Wildlife	<input type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) Hunt & Peak Line Mt Area
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input checked="" type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input checked="" type="checkbox"/> Eroding Banks	<input checked="" type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Darnsife / Leek Kill County North'd
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input checked="" type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input type="checkbox"/> Play area for children	<input checked="" type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) \_\_\_\_\_
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input checked="" type="checkbox"/> Acid Mine Drainage	<input type="checkbox"/> Trespassers
<input type="checkbox"/> Flooding	<input checked="" type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input checked="" type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input checked="" type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Public environmental education	<input checked="" type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input checked="" type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality Herrndon County North
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed Rivers Conservation Plan

1. Do you live in the Mahanoy Creek Watershed?  Yes  No
2. Do you own or operate a business in the Mahanoy Creek Watershed?  Yes  No
3. Do you have a stream, pond, spring, or wetland on your property? (Please circle all which apply).
4. Does this water body have a specific name (*ex. Mahanoy Creek*) \_\_\_\_\_
5. Living beside water can have benefits. Which of the following do you feel are beneficial?

<input type="checkbox"/> Scenery	<input checked="" type="checkbox"/> Fishing
<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Increased property value
<input checked="" type="checkbox"/> Play area for children	<input type="checkbox"/> Walking
<input type="checkbox"/> Other _____	
6. Where do you/your family go for recreation within the watershed? (Specify location) Hopins
7. Living beside the Mahanoy Creek or its tributaries can create issues. Have you experienced any of these problems?

<input type="checkbox"/> Acid Mine Drainage	<input checked="" type="checkbox"/> Trespassers
<input checked="" type="checkbox"/> Flooding	<input type="checkbox"/> Litter
<input type="checkbox"/> Eroding Banks	<input type="checkbox"/> Sewer lines/outfalls
<input type="checkbox"/> Wet Basement	<input type="checkbox"/> Sinkholes
<input type="checkbox"/> Abandoned Mine Lands	<input type="checkbox"/> Other _____
8. Would you favor having all the municipalities in the Mahanoy Creek Watershed work together with county officials, landowners, businesses, industry, and the Mahanoy Creek Watershed Association to improve the quality of the watershed through the Rivers Conservation Plan?  Yes  No
9. Local municipalities are responsible for most of the regulations that can help protect their creeks and water bodies. Would you want your local ordinances to be written to include protection of their creeks and other water resources?  
 Yes  No  No opinion
10. What is the most important recommendation(s) to include in a plan for conserving the Mahanoy Creek Watershed? (*Check all those you think are most important*)

<input checked="" type="checkbox"/> Acid Mine Drainage clean up	<input type="checkbox"/> Promote tourism
<input type="checkbox"/> Stormwater/Erosion control	<input type="checkbox"/> Recreation
<input type="checkbox"/> Protect open space	<input checked="" type="checkbox"/> Fishing
<input type="checkbox"/> Public environmental education	<input type="checkbox"/> Trails/Greenways
<input type="checkbox"/> Preserve historic features	<input type="checkbox"/> Job Creation
<input type="checkbox"/> Other _____	
11. Are you willing to help clean up or monitor the watershed? If so, please list your contact information or call the contacts listed below.
12. Where do you live?  
Municipality \_\_\_\_\_ County \_\_\_\_\_
13. Do you have internet access?  Yes  No

# Mahanoy Creek Watershed

Rivers Conservation Plan



## Watershed 101

- **wa·ter·shed** – noun 1. the ridge or crest line dividing two drainage areas; water parting; divide. 2. the region or area drained by a river, stream, etc.; drainage area
- An area of land that drains downslope
- Water travels aboveground and underground
- Actions upslope affect those downslope

## The Mahanoy Creek Watershed



- 157 Sq. mile area-28 municipalities in 3 counties
- 54 miles of streams in the Susquehanna & Chesapeake Bay Basins
- Impaired by Acid Mine Drainage (AMD) from 150 years of mining
- Contaminated groundwater/Illegal dumping/Centralia
- Concerns – stream access/water quality-quantity/alkalinity-PH
- Rich History – mining/people/railroad/ethnicity
- State forest-game lands/natural beauty/proud heritage
- Interesting Flora/Fauna

## The Mahanoy Creek Watershed

- 42 sq miles underlain by mining - 32 discharges
- 46 miles polluted streams
- Contamination-metals, groundwater, sewage
- Abandoned deep/surface mines, buildings/rail
- Mine pools/flooding

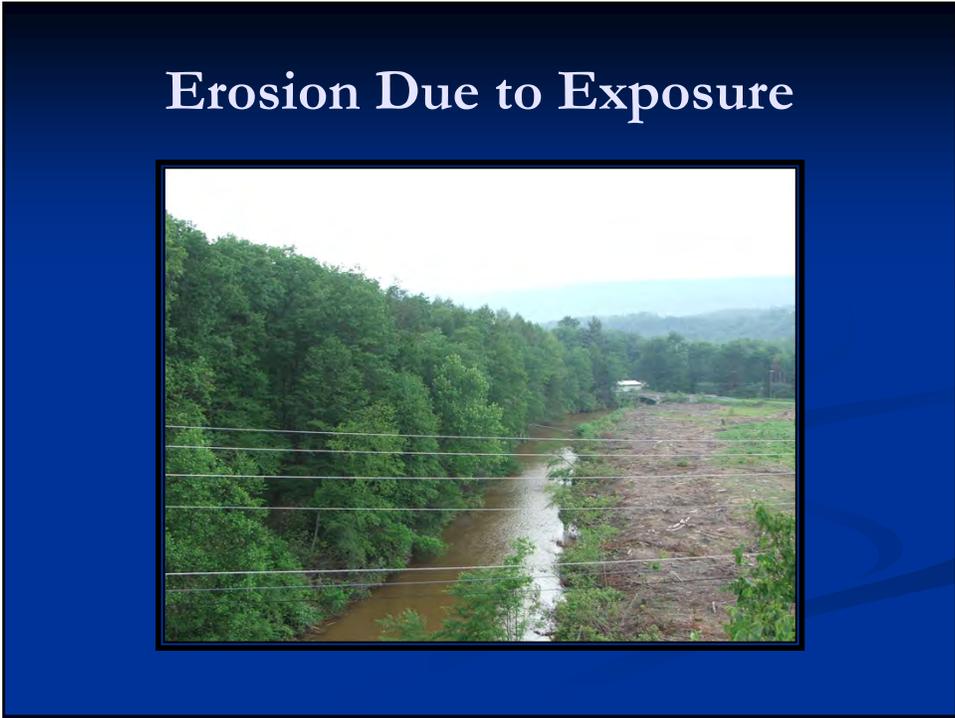


## Mahanoy Creek Watershed Impairments



## Gilberton Pump Discharge





## Mahanoy Creek Watershed Assets

- Scenic areas abound
- Historic/cultural assets
  - Mahanoy Plane
  - Pioneer Tunnel
  - Mother's Memorial
  - Anthracite Museum
- 23 species fish and birdlife
- State forest and gamelands
- Trail sections/linkable greenways
- Established communities



## Mahanoy Creek Watershed Assets



## The Mahanoy Creek Watershed Association



- Founded in 1998 - 501(c)(3) Organization
- 50 unpaid volunteers - 1,000's of hours
- 11 yrs of cleanup, restoration, education
- Family oriented – focus on next generation
- Local volunteers and donated services
- Grant applications/studies completed
- GTS Technologies, Consultants

# Projects to Date



- Girardville Garbage Barge cleanup
- Bolich Wetland Project
- Trail section - current expansion
- On-going education program local schools

# American Hiking Society / Nature Valley Trail Grant

- Obtained through public support via vote on website
- Grant from American Hiking Society/Nature Valley
- 10 feet wide and a mile long, built on a 12-inch bed of donated base material and capped with 2 inches of limestone
- Limestone will create alkaline leachate and reduce acidity.



## A Rivers Conservation Plan Is...

- DCNR/DCED funded
- Created to conserve, restore, and enhance watershed
- Developed locally
- Required for restoration funding
- Highly dependent on public involvement and education
- Enacted locally



## A Rivers Conservation Plan Should...

- Assess land, water, and resources
- Inventory AMD/AML
- Assess streams, wetlands, and stormwater
- Assess land use/transportation
- Assess recreation/trails and opportunities
- Assess towns/economics



## Mahanoy Creek Rivers Conservation Plan

### The DCNR Requires:

- Substantial public involvement
- An inventory of resources and concerns
- A series of proposed management options

### The Scope of Work:

- Public Participation
- Data Collection & Analysis
- GIS Mapping
- Draft Plan & Executive Summary
- Final Plan
- Prioritize future implementation

## Mahanoy Creek Rivers Conservation Plan

### Current and On-going Efforts:

- Data Collection
- Public Involvement
- Inventory database
- GIS database/mapping
- Identify options
- Analyze/prioritize
- Determine Issues, Concerns, Constraints
- Management priorities
- Use Public/Study Committee
- Recommended Plan



## Plan Schedule

- 2009 – Rivers Conservation Plan begun
- November 2009 - Second Public Meeting
- January 2010 – Third Public Meeting
- March 2010 Est. – Rivers Conservation Plan completed
- Future – Implement Plan Components/Grants



## Contact Information

- |   |  |
|---|--|
| ■ Joe Nardella<br>GTS Technologies, Inc.<br>(717) 920-7018<br><a href="mailto:jnardell@gtstech.com">jnardell@gtstech.com</a>      | ■ Jim Chappell<br>Mahanoy Creek<br>Watershed Association<br>15 Barry Road<br>Ashland, PA 17921<br>(570) 644-1602<br><a href="mailto:CHAPPELL43@wmconnect.com">CHAPPELL43@wmconnect.com</a> |
| ■ Kerry Leberknight<br>GTS Technologies, Inc.<br>(717) 920-7019<br><a href="mailto:Kleberkn@gtstech.com">Kleberkn@gtstech.com</a> |  |



## Public Participation

Comments/Concerns/Questions



## Appendix B

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## **Appendix B – Study Committee**

As part of DCNR’s requirements for the Rivers Conservation Program, GTS Technologies, in association with the MCWA, developed a study committee. The Study Committee is a select group of individuals with broad & relevant expertise & interest in the watershed. The committee was utilized to provide suggestions, ideas relative to the issues, concerns & future development of the watershed. A series of three study committee meetings were held at the Mahanoy Creek Watershed Association.

- ❖ Committee meeting No. 1 held June 17, 2009
- ❖ Committee meeting No. 2 held July 23, 2009
- ❖ Committee meeting No. 3 held March 4, 2010

A list of the study committee and project team participants, meeting notes and sign in sheets are included as part of this appendix.

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*Mahanoy Creek Watershed Association  
15 Barry Road  
Ashland, PA 17921  
Tel: 570.644.1602*

## **Mahanoy Creek Watershed Rivers Conservation Plan**

### **STUDY COMMITTEE & PROJECT TEAM**

#### **Study Committee**

Brian Auman - SEDA-COG, Landscape Architect  
Margaretta Bolich - Land Owner, Retired Educator  
Cathy Haffner - Watershed Specialist, Columbia County Conservation District  
Robin Keoberle - Blaschak Coal Company  
Matt Belding or Keith Sanford - PA State Game Lands Reps  
Dr. Charles A. Cravotta III, PhD, P.G. – Research Hydrologist, U.S. Geological Survey  
John Guers - Executive Director, Upper Schuylkill Association  
Champ Holman – President, Northern Schuylkill COG  
Jaci Harner - Northumberland County Conservation District  
Rev. Robert Hoenich - Pastor, Christ United Luthern Church, Ashland  
Dave Kessler - Butler Township/Sportsman Association  
Katie Jaeger - Northumberland County Planning Department  
Wayne Lehman – Natural Resources Specialist, Schuylkill County Conservation District  
Teri MacBride – Regional Community Relations Director, PPL Corporation  
Mark Major - Schuylkill County Tourism & Visitors Bureau  
Joanne Parulis - Executive Director-Schuylkill County Vision  
Adolph Slovik - Schuylkill County Planner  
Nick Troutman – Mayor, Borough of Gordon

#### **DCNR Representatives**

Terry Hough-DCNR Project Manager/Wes Fahringer & Dennis DeMara-Regional Coordinators

#### **Mahanoy Creek Watershed Association-570-875-4713**

Roseann Weinrich - President	Nick Lane - Treas.	Rob Krick
Dave Kramer - Vice President	Tom Flannery	Dave Miller
Jim Chappell - Secretary	Bill Kripplebauer	Joe Medlinsky
	Norm Runkle	Judy Mehlbaum

#### **Consulting Engineer-GTS Technologies-717-920-7018 or 7019**

Joe Nardella - Project Manager, Water Resources Manager  
Kerry Leberknight - Study Committee Coordinator, Vice President



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Engineers • Geologists • Environmental Consultants

**07/17/09**

**Mahanoy Creek Rivers Conservation Plan**

Mahanoy Creek Watershed Association (MCWA)  
GTS Job #07072

**Committee Meeting #1-Notes**

Date & Time: 06/17/09; 6:30 PM

Location: Mahanoy Creek Watershed Association

In Attendance: Members of the Mahanoy Creek Watershed Association Board of Directors  
Members of the Mahanoy Creek Watershed Association  
Joseph Nardella – GTS Technologies, Inc. (GTS)  
Kerry Leberknight – GTS  
(See attached attendance sheet for complete list)

- Dave Kramer, VP of MCWA started the meeting by introducing himself and the rest of the Board members and provided a brief review of how the Association got to this point of preparing the Rivers Conservation Plan (RCP)
- Kerry Leberknight of GTS opened the meeting by thanking all of the attendees for being part of this important project and being part of the Study Committee meeting. He then went on to discuss his role in the project of coordinating the study committee and public involvement process. He then introduced Joe Nardella of GTS who will be the Project Manager of the RCP and will explain the RCP in more detail later. He then asked for everyone on the study Committee to introduce themselves (See attached attendees list). He continued by reviewing the meeting agenda, schedule and handouts and watershed fact sheet. And a general overview of the watershed. He then reviewed the general purpose of the plan and what the plan can be used for and reviewed that the overall goal-purpose of the RCP: To conserve and enhance water resources thru the development of plans developed locally. He continued by quickly reviewing basic components of the RCP and that the process will take approximately 10 months-including data collection, public and study committee meetings, key person interviews, development and approval of the plan.
- The role of the Study Committee and public participation was then discussed:
  1. The need study committee and public participation input is of primary importance to the success of the RCP.
  2. Role of Study Committee: provides opportunity for concerned citizens residents, stakeholders to have an input and allow people with special expertise/technical background to provide technical input and provide input. Allows diverse input and opinions.
  3. The Study Committee and Public participation process helps to establish consensus for the goals/priorities of watershed, what should be in plan and how we move forward.
- Kerry Leberknight then introduced Joe Nardella who went into more detail of what the RCP is and the components of the plan. Joe Nardella also reviewed the maps and data compiled to date. 3 maps have been developed to date: General topographic map, Benefits map (Public lands, wetlands, environmental) and Impacts (AMD)

The floor was then opened for input from the committee:

1. Mr. Kripplebauer (MCWA)—suggested that water quality improvement/AMD cleanup are most important—The only way to get people involved is to clean the water first. Once that is done, other components will follow easily. People will get involved. Get fish back in the water
2. Dave Kramer (MCWA)—Stated that Goal of MCWA/the reason that the association was started was to clean the water, clean up AMD and provide an educational component to all MCWA projects to get young people to have an interest in the watershed and get involve. Changing attitudes about the watershed is important and a major concern. Having cleanups/organized events. Get young people involved. The people need to “take ownership” of the stream “Adopt the stream as their own and not think of it as a disposal system the way it is now”
3. Joe Nardella summarized that from the 2 comments it appears that the MCWA feels that an important concept is to change attitudes in the watershed from the existing passive role to a more active role in promote and protect the watershed.
4. Dave Kramer- Years ago, trout fishing contests used to be held in the stream near Mahanoy City.
5. Joe Nardella- suggested “Adopt a stream” program like they do for adopt a highway section to have groups have a more permanent/active role in cleaning and protecting the stream. Dave Kramer said they do have cleanup programs through the MCWA were the association goes out and try to spur interest but it’s periodic. A formal adopt-a-stream program has not been tried.
6. Brian Auman- Cleanup and the economic cleanup. How can you have an incentive....Promote a win/win/win situation. For example, Cogeneration plants-Develop plants that remain in some of these areas. You clean up the area, develop an industry, produce energy and employ people. That type of incentive can help spur on cleaning up the stream. It’s a long-term prospect but that type of situation can be self-supporting. Also, how can you make the cleanup “fun”. How can you attract more people and continue it to the next generation. Possible highlighting existing benefits of the watershed, like the middle “canyon” section of the watershed. If you can get kids out on the stream to “experience” the stream and watershed, it can spur interest now and for the next generation. That could be a great canoeing/kayaking location. Members of the MCWA agreed.
7. A landowner on the lower portion of the watershed, bordering the State game lands, suggested getting the landowners along the stream to band together to help cleanup and keep the stream clean could be a win/win situation because it would increase the value of their property. However in her discussions with the landowners, they think that if the stream is cleaned up, it will invite fishermen and tourist and crowds will “invade” the area. She seems to think it is an excuse to allow the homeowners to continue using the stream as their private dumping ground. We need to get the landowner to understand the idea of caring and sharing the stream.
8. Joe Nardella recommended that one way to deal with protection of the creek and water quantity and quality is through comprehensive floodplain and stormwater management ordinances. These ordinances can help protect the watershed by controlling point and non-point pollution sources. Stormwater ordinances can help protect against uncontrolled runoff that can impact water quality and quantity that can produce stresses to the watershed and riverine systems. Floodplain ordinances help control encroachment within the floodplain.
9. Representatives from both Schuylkill and Northumberland Counties stated that their Counties have initiated comprehensive countywide Stormwater and Floodplain Management Ordinances through the Act 167 process. Both Counties have just started the process.

10. Zoning re-writes in the counties should be written to pay particular attention to protecting the stream. Such as Buffer zones.
11. Public Interest/Tourism – Very little info about the watershed is on the Internet. Might be worth getting partners/stakeholders and other providers have links or information on their WEB sites. Therefore better/broader way to get info out.
12. Might want to discuss AMD-Title IV work with Mike Korb of BAMR.
13. AMD Treatment facilities-Biggest bang for the buck. Is there an area that could be started to look at? MCWA-Dave Kramer: Biggest frustration is that they try and promote water quality protection and enhancement and then you have the Gilberton Pump (maintained and operated by DEP), which the Association believes is a major source (30-40%) of the loading problems in the Watershed. The pump helps to keep the mine pool down to keep flooding from occurring in basements. The Assoc. wishes that DEP would treat the discharges
14. A committee member stated that they have talked to individuals living in Sunbury that fish in the lower reaches of the watershed and rave about how good the area is. So already there is outside interest in the potential that the watershed has to offer.
15. A committee member suggested that if there was promotion of success stories that have already happened that it may spur interest in the watershed. (Success breeds success). Such as Swatara Creek would be a possible good example.
16. You correct the water quality and it will spur on other benefits
17. Gorge is beautiful
18. Existing Flooding problems-Jim Chappel of MCWA stated yes, there is a flooding problem especially in the upper basin. Gilberton area due to sedimentation in the stream that restricts flow. Also in the Mahanoy Plane area. Basically siltation due to AML. Re-mining of these areas seems to promote positive drainage. Zoning/floodplain management changes could include buffer zones to trap sediment before it enters stream or collection basins.
19. If canoeing is to be promoted, canoeing access could be a problem
20. Dr. Cravatta-There are fish in the Basin. The problem is not necessarily the pH but the metals in the creek. Also as far as kayaking, people will come and kayak in “red” water because it is a good kayaking stream. The Red Moshanon Creek is a good example. Even though there is red water it is great white water conditions. Also in the upper reaches of the Mahanoy Creek Watershed, near the wild trout areas, during normal flows the stream loses its flow completely into the subsurface mines. So it is not really a water quality issue but a water quantity issue. There are only a few discharges that are net acid. Most discharges are net alkaline. Trout are a temperature sensitive species. They can tolerate iron, but not acid. The downstream portion of the watershed is actually buffered. The best way to approach treatment is one source at a time.
21. Schuylkill County Sportsman Advisory Board--Over the last couple years they have been successful in getting information out to landowners to establish access areas and to patrol and help clean up areas. Once the access was granted, the sportsmen have taken a more active role in maintaining the access, which the landowners have appreciated. Some have been going on for quite a while so the Advisory Board believes it is successful.
22. Joe Nardella stated the more commitment you get up front from landowners allowing access, the better it will lend to a successful RCP and implementation plans. Because typically, landowner acceptance to allow access can be a large hurdle in developing implementation plans.

23. Dr. Cravatta-While traveling down the stream I notice (heard) much bird life that you wouldn't normally hear driving down roads. He noticed a Veery, which is not necessarily common in this area.
24. Others stated that Scarlet Tanager, Fence Post lizard-There is quite a diverse animal species within the watershed due to the combination of water and forested areas.
25. Nick Troutman- Gordon is one of the smallest communities in Schuylkill County. With the state of the financial status of the State today, what private funds has the Association been trying to get, since more than likely, future state funding for these types of projects will be cut? Kerry Leberknight responded -We understand that money will be tight in the future, but we have the money now to do the RCP. What is your perception of the public's position of what may be important in the watershed? Nick Troutman-Acid Mine Drainage, Water quality improvement, Active participation, Education (Vision Program).
26. Watershed Information/Education-Possibly could be added to local school curriculum.
27. Clean-up Sojourns (Swatara Creek does it)
28. Talk about success stories from other watershed. Bring in others from Successful watersheds to talk at the public meetings.
29. Is there a trash problem in the watershed? What is the source? --Source of Trash-both from active dumping and from debris wash down. People need to be educated that what they throw away in one area of the watershed impacts all parts of the watershed.
30. May be able to capitalize on the mining history in the area-Having maps to educate people as they travel through the watershed and region. Including Centralia.
31. Economic Development--Spur on industries that can use mine pool water.
32. Kerry Leberknight-As you can see there is almost unlimited opportunity to help the watershed. How do we get the information out to the general community....WEB site? The committee members will check into who can develop a local WEB site.
33. Kerry Leberknight-What about a survey? The Committee recommended a survey of landowners along the Creek and a general public survey. Joe Nardella-An online survey may not be the best because it may be weighted to people that are positively interested. Other in the committee stated it also gives you an age-weighted survey, younger people will tend to fill out an online survey.
34. Local newspaper-Press release, newspaper survey. The committee agreed that the newspaper might be the better way to go. Use the fact sheet (condensed) to include in the newspaper. The association needs to include some facts in the press release of what they have done this point to spur on interest and action from the public.
35. You may need to step it back a little to explain to the public what a watershed really is and what impacts they have as a landowner that occurs in the watershed, that can impact water quality. How their actions impact the watershed.
36. The Committee can write letters under the Association name interesting points that -Doyle Dietz.
37. Greenside darter in lower reaches of the Creek-Dr. Cravatta beautiful colorful fish

38. Some potential action items were then developed

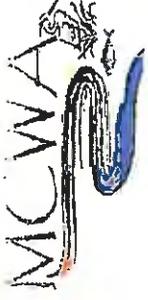
- Collect technical information or source of where pertinent to the Watershed and the RCP plan.
- Tap into long standing residents for key person interview.
- Local/County historical societies. Newspaper archives
- Railroad is an attraction-both historical and cultural need to gather information.
- Ethnic history/diversity collect information
- Kerry Leberknight handed out list of potential key person interview.
- County Planning Depts. helping with GIS (Northumberland, Schuylkill) Will look into it.

**Next Meeting: Committee Meeting #2 will be held Thursday July 23, 2009 at 6:30 PM at the MCWA office**

Respectfully Submitted,  
GTS TECHNOLOGIES, INC

A handwritten signature in black ink that reads 'Joseph N. Nardella'.

Joseph N. Nardella  
Water Resources Manager/Project Manager



MAHANAY CREEK RIVER CONSERVATION PLAN  
 1ST STUDY COMMITTEE MEETING  
 JUNE 17, 2009

Name	Representing	Phone Number	Email Address
DAVID KESSELER	BUTLER TOWNSHIP	570-875-0257 # 570-6487	DKESSE1@VEERZON.NET
JOHN GUERS	UPPER SCHUYLKILL, INC.	570-276-6375	JGUERS@UPPERSCHUYLKILL-CHA
JOANNE PARULLIS	SCHUYLKILL VISION	570-622-6097	j.parullis@schuyllknj.com
Jaci Harner	Northumberland Co. Planning	570-286-7114 x4	jharner@ncdpcpa.org
Kate Keesler	North Co. Planning	570-644-2276 (home)	
Marge Roelch	Landscape	570-875-1765	mroelch@landmat.com
Cherie Crumby	USGS	717-730-6963	cravofra@asgs.gov
Joe Medlinsky	MCWA	570-875-3092	
REBEKAH WEINSTEIN	MCWA	570-875-4642	rebweinstein@yahoo.com
Robert Keick	MCWA	570-276-1686	RobKeick@earthlink.net
Wayne Lehman	SCD	(570) 622-3742 x120	wlehman@schuyllhill.pa.us
NORMAN RUMKLE	MCWA	(570) 974-1045	
Bill Krippelbauer	MCWA	570-875-0633	
J Frawney	" "	570-462-2935	JFrawney@state.pa.us
J Guaffel	" "		
David J. Kramer	" "	570-875-4713	
TERI MACBRIDE	PPL Corporation	570-416-5135	TERI.MACBRIDE@PPLWEB.COM
BRIAN ALMAN	SEDA-COG	570-524-4491	balman@sesta-cog.org
Nick Troutman	Gordon Borough	570-397-9045	GordonMayer@hottmail.com
ROBIN B. KESSELER	BLASCHAK COAL COOP	570-733-7113	RKESSELER@BLASCHAKCOAL.COM

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Engineers • Geologists • Environmental Consultants

09/15/09

**Mahanoy Creek Rivers Conservation Plan**

Mahanoy Creek Watershed Association (MCWA)  
GTS Job #07072

**Committee Meeting #2-Notes**

Date & Time: 07/23/09; 6:30 PM

Location: Mahanoy Creek Watershed Association

In Attendance: Members of the Mahanoy Creek Watershed Association Board of Directors  
Members of the Mahanoy Creek Watershed Association  
Joseph Nardella – GTS Technologies, Inc. (GTS)  
Kerry Leberknight – GTS  
(See attached attendance sheet for complete list)

- 
- Kerry Leberknight of GTS opened the meeting by thanking all of the attendees for being part of this important project and being part of the Study Committee meeting.
  - Dave Kramer commented that the members of this Watershed are “insane.”
  - Someone commented that the first step is admitting you have a problem. Group responded “Hi, Dave” in unison.
  - The floor was then opened for input from the committee:
  - 1. **REVIEW OF MINUTES** - Kerry Leberknight passed out minutes from the Committee Meeting #1 and requested comments and corrections. Joe Nardella clarified that these are “meeting notes,” not official minutes, but rather audio transcriptions along the lines of stream of consciousness. Responses are requested by email.
  - 2. **REVIEW OF PUBLIC MEETING** - Attendees for press conference – Senator was absent due to a vote and apologized for his absence and Kerry Leberknight reports that he strongly supports the watershed. Ditto with Commissioners and Representative Goodman, but due to budget impasse were not able to attend. Will keep them appraised.
    - Article in the *Republican Herald*. Summary of program by Chuck Cravotta. Kerry Leberknight interviewed by Tim Lambert of WITF about the article. The interview is archived at [www.witf.org](http://www.witf.org).
    - Kerry Leberknight passed out handout from press conference.
  - 3. **DISCUSSION OF NEXT PUBLIC MEETING** - Kerry Leberknight discusses posting public notices for the meeting and publicizing the event so as many people as possible can attend. He covers the agenda of the meeting (what is a watershed, what is the Mahanoy Creek Watershed, RCP) emphasizing that the purpose is to gather public input and inventory ideas, not to lead them to any particular conclusion. Discussion of format of meeting.
  - 4. **REVIEW OF PHOTOS** – Kerry Leberknight noted many negative photos. What are assets of the watershed? Board members commented on available photos and photos will be collected shortly.
  - 5. **PUBLIC MEETING PUBLICITY** – Discussion of presentation and how to outreach to boost attendance. Letters to the editor are encouraged, as well as inviting elected officials and local municipalities. Brainstorming session about how to generate buzz. Kerry will email meeting announcement to media outlets.
    - Discussion of marketing watershed by taking out a box ad
    - Public Service bulletin board
    - Community calendar in the paper
    - Radio stations – WTPA, T102, Magic, WITF, WBIA
    - Channel 16 Community Bulletin Board

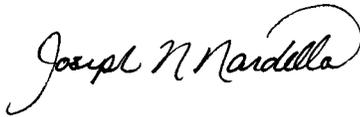
6. **WEBSITE DEVELOPMENT** – Web development person unavailable until September.
  - Add to County's website
  - Cost of building a webpage
  - Would like to have something by September
7. **SENIOR CITIZENS GROUP SPEAKERS** – Publicity through speaking at group meetings.
8. **ITEMS FROM LAST MEETING** – Joe Nardella will review highlights with the Committee. Kerry keeps talking, suggesting the following as a way to prioritize watershed projects:
  - **Protect**
  - **Restore**
  - **Enhance**
9. **IMPORTANCE OF PUBLIC INPUT** – key to gathering information, upcoming public meeting. Consultants taking a trip through the watershed to gather personal comprehension in coordination with interviews. The public input and study committee fill the gaps in data so nothing is missed. Points of consideration thus far:
  - Water Quality Improvements
  - Promote Education
  - Passive to Active
  - Adopt-a-Stream
  - Promote Win-Win strategy
  - Stop Dumping
  - Monitor Act 167, esp. zoning
  - Discussion AMD Title IV
  - AMD Treatment Sites – Gilberton Pump
  - Highlight Benefits of Watershed
  - Promote Success Stories (i.e. 23 species of fish)
  - Address existing flooding
  - Access for canoeing
  - Schuylkill Sportsman Advisory Board
  - Water quantity (lost to mines, re-enters as AMD)
  - Landowner commitment upfront (key to getting and keeping grants). Have to protect them from “bloodsucking attorneys.”
  - Property owners - a few major landowners
  - Success stories from other watersheds
  - Capitalize on existing history – collecting information
  - Developing a survey
  - Committee to write letters
10. **SUMMARY TO DATE** – AMD, Landowners, education, trash, and flooding
11. **POTENTIAL ACTION ITEMS:**
  - Collect technical information
  - Key person interviews – long-term residents
  - Contact Counties, local historical societies
  - Railroad as attraction – more information needed
  - Ethnic history and diversity
  - Action on key person interviews – Shamokin Creek Restoration person? Kerry talked with Carl Kirby, needs to speak with the president. Interconnection with tunnel, etc. = door opener, pursuing work together may lead to greater funding. Kerry will continue to talk with them.
  - Kerry suggests assigning the above topics to members to keep the project moving.
  - Joe reiterates GTS is receptive to any and all communication regarding the watershed.

12. **KEY PERSON INTERVIEWS** – Still refining, prioritizing.
  - Is there a list of questions for interviews?
  - Kerry will outline interviews depending on the interviewee.
  - Joe summarizes general questions, but emphasizes that these key people will have unique perspectives and insights.
13. **HISTORY OF THE ASSOCIATION** – Someone is writing a brief summary of the Association
14. **TITLE IV** - Kerry Leberknight will take care of this with Mike Korb
15. **AMD TREATMENT** – Kerry will sit down with Chuck Cravotta to verify AMD discharges
16. **GEOTHERMAL/TREATMENT FROM MINE POOLS** – Gilberton Pump. Maybe prevent outflow from mines, treatment plant for AMD treatment at source. Keep in mind for future stages of the project. Possible grant application down the road. Gilberton Pump is already being looked at for Coal Gasification Project, B&D mining, etc., there is a demand for water. Where are we talking about and *who owns the land?* Kerry emphasizes the need to work with landowners before running into dead ends.
17. **GILBERTON PUMP MYSTERY PROJECT** – Kerry mentions moving forward on a confidential project
18. **RE-ESTABLISH STREAM FLOW** – Keeping water out of deep mines.
19. **WHO CAN WORK ON WHAT?**
  - **Streams** – Prioritizing, Ranking streams. Joe explains ranking system
  - **Flooding** – County Hazardous Mitigation Plan, Digital Floodplain information (western)
  - **Access** – Not a bad situation for putting in boats. Not legal to block access by traverse in the water. Access at bridges to put kayaks in. New PENNDOT bridge access potential. Access for trails. Connection of trails for more regional trail system. Trail connection in Ashland. Compilation of access points for watershed. Contact DCNR, State Gamelands.
  - **Identify Property Owners Along the Stream** – GTS will identify a breakdown of public/private lands. Listing of coal companies. Available from Schuylkill County parcel lookup. GTS will collect this data. GIS layers available. *WHO IS THIS GIS CONTACT SPEAKING?*
  - **History** – County, Historical Societies, Evelyn Marquadt, Robbie XX?, Someone offers a general history, Lithuanian festival at the Schuylkill Mall, Jackie O's Bar, Molly McGuire's, *Downsiddy?*
  - **Geocaching** – Possibility of putting geocache in the watershed. Discussion of what is geocaching?
  - **Someone Cleaned their office**
  - **Irish Festival** – Opportunity to reach individuals in the watershed
20. **WORK DONE TO DATE** – What is the next step? Primary data collection
21. **ACTION ITEMS**
  - **GIS Info** – Committee member volunteered
  - **Floodplain Info** – Committee member volunteered
  - **General History** – Committee member volunteered
  - **Listing of Watershed Activities** – Tom's list, someone has it. Newspaper articles and pictures. Need 1 page list of Association Activities. Can show active participation to the state in order to get grants.
  - **Abandoned Rail Lines** – County has list? County Engineer? Joe will look into this when he meets with the Counties. ROW through Ashland was bought for trail purposes by Lower Anthracite Trail Association. Committee member also volunteered to look into list of rail lines.
  - **Plan Watershed Tour** – Kerry will contact Mike Korb and extend invitation to Association Members
  - **Next Meeting** – Trying to schedule next meeting. Discussion of interim action items (contact key people for interviews).
  - **Grant** – Any money from DCNR? New GG Grant has been turned in for money to expand the wetland project by an acre for approx. \$53k.
  - **AMD Discharges** – Examine discharges and discussion about re-establishing streams.
  - **Pictures** – Committee member will send "good" pictures

- **Nature Trail** – Committee member is working on trail with backhoe, trees, stones hauled into soft spots, top material on-site.
- **Call for Information** – Please send any and all information to Joe & Kerry regarding discussion items throughout the watershed. Committee suggested talking with Frank Zukas.
- **Monarch Butterfly Migration** – Butterflies migrate through the Watershed. Committee member will look into this.

**Next Meeting: Committee Meeting #3 will be held Thursday March 04, 2010 at 6:30 PM at the MCWA office**

Respectfully Submitted,  
GTS TECHNOLOGIES, INC

A handwritten signature in black ink that reads 'Joseph N. Nardella'.

Joseph N. Nardella  
Water Resources Manager/Project Manager



**MAHANAY CREEK RIVER CONSERVATION PLAN  
STUDY COMMITTEE MEETING  
JULY 23, 2009**

Name	Representing	Phone Number	Email Address
Marge Beck		570-875-1765	
JOHN GUERS	UPPER SCHMIDT, INC.	276-6375	JGUERS@UPPERSCHMIDT.COM
Joe "Bud" Meallinsk	MCWA	875-3092	
ROSEAN N. WENIGER	MCWA	875-4642	Hwibione rd@yahoo.com
Katie Jaeger	North'd Co. Planning	908-4320	
DAVID BOHAPPELL	M.C.W.A.	644-1602	
DAVID L. KRAMEA	M.C.W.A.	570-875-4713	
Bill Kripplbauer	M.C. WA	875-0633	
Kenny Leberlaugh	GTS		
THOMAS N. F. ANDERSON	MCWA	462-2933	TAnderson@StateParks Parks.org@statepark.com

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3/25/2010

**Mahanoy Creek Rivers Conservation Plan**

Mahanoy Creek Watershed Association (MCWA)

GTS Job # 07072

**Committee Meeting #3 Notes**

Date & Time: 03/04/2010-6:30 to 9:00 PM

Location: Mahanoy Creek Watershed Association

In Attendance: MCWA Board of Directors  
MCWA Members  
Joseph Nardella-GTS Technologies (GTS)  
Kerry Leberknight-GTS  
Wayne Lehman, Schuylkill Co Conservation District  
Dr. Charles Cravotta, USGS

Dave Kramer, MCWA VP started the meeting and indicated the purpose of the meeting was for GTS Technologies to update the group on project status, and then for the group to discuss the progress to date as well as suggestions, comments on next steps and priorities.

Joseph Nardella of GTS gave a lengthy powerpoint presentation on the collective results of the public participation program including results of the questionnaire utilized, a summary of input received, examples of extensive GIS data layers compiled for the watershed, listing of additional data obtained, listing of data still needed for the inventory, and listing of key person interviews to be held over the next three weeks. A proposed schedule for plan preparation is to have a draft plan for consideration before the association within 30 days.

Kerry Leberknight had all members present rank plan priorities from an unranked listing of those topics recommended from the public meeting process.

The floor was then opened for input from the committee and association:

In general, AMD cleanup appeared to be the number one priority for the RCP

Litter was also a major priority. Members felt that aspect may be more solvable relative to money. The feasibility of overall and effective cleanup was discussed as well as watershed-wide ordinance enactment—a Mahanoy Creek Watershed COG was discussed

Correct spelling of Gowan City

Check into property panels (tax maps) along stream

Check into new QHUP requirements from DEP BAMR as per OSM for plan inclusion

Mention consumptive use issues in plan—7 MGD (3.3 lost as steam) coal to diesel plant proposed—may explore mine water use

Evaluate cold water fishery use in stream

Recommended use Paula Boulerain of SRBC to interview instead of Tom Clark

Boat access points to the stream were discussed—Jim Chappell of MCWA has land that can be used—get his input for the plan



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Robert Mulaui (sp?) is a strong source of information on bird species within the watershed

The proposed Northumberland Co ATV Park was discussed

Related to the ATV park, it was pointed out that there is a need to manage use of coal lands

When is ATV use a problem with the association?

The association will send information on the history of the association and the watershed to Joe Nardella at GTS

It was reported that Rausch Creek ATV Park is currently closed

The association requested further distribution of the public meeting questionnaire for schools (younger input) via the local IU and a large local student environmental group—MCWA President Roseann Weinrich knows both and will handle—Kerry Leberknight to send her the questionnaire and listing of public meeting priority topics

Respectfully Submitted,  
GTS TECHNOLOGIES, INC.

A handwritten signature in black ink that reads 'Joseph N. Nardella'. The signature is written in a cursive style with a large, looping 'J' and 'N'.

Joseph N. Nardella  
Water Resources Manager/Project Manager

**MAHANAY CREEK RIVERS CONSERVATION PLAN PRIORITY RANKINGS**

- AMD/Stream Cleanup** \_\_\_\_\_
- Stormwater/Erosion Control** \_\_\_\_\_
- Flooding/Flood Protection** \_\_\_\_\_
- Protect Open Space** \_\_\_\_\_
- AML Reclamation** \_\_\_\_\_
- Environmental Education** \_\_\_\_\_
- Trails/Greenways** \_\_\_\_\_
- Recreation** \_\_\_\_\_
- Historic Preservation** \_\_\_\_\_
- Promote Tourism** \_\_\_\_\_
- Fishing** \_\_\_\_\_
- Job Creation** \_\_\_\_\_
- Avoid Tourism** \_\_\_\_\_
- Wildlife Habitat Protection** \_\_\_\_\_
- Litter Control** \_\_\_\_\_
- Protective Ordinances** \_\_\_\_\_
- Public Access** \_\_\_\_\_
- Prevent Tourism** \_\_\_\_\_
- Other** \_\_\_\_\_
- Other** \_\_\_\_\_
- Other** \_\_\_\_\_
- Other** \_\_\_\_\_



# Appendix C

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## Appendix C – Key Person Interviews

As part of DCNR’s requirements for the Rivers Conservation Program, GTS Technologies, in association with the MCWA, held a series of key person interviews to discuss issues and offer unique perspectives and insights regarding the Mahanoy Creek Watershed. The following is a list of key person interviews conducted by GTS. Notes from each interview are included as part of this appendix.

- Wayne Lehman, County Natural Resources Specialist, Schuylkill County Conservation District
- Schuylkill County Commissioners
  - Mantura Gallagher, Chm.
  - Frank McAndrew
  - Frank Staudenmeier
- Charles M. Ross, Director, Schuylkill County Planning Department
- Robert Hughes, Executive Director, EPCAMR
- Michael Hewitt, Program Manager, EPCAMR
- Senator David Argall, R-29<sup>th</sup> District
- Nick Troutman, Mayor of Gordon Borough
- Dr. Charles A. Cravotta III, PhD, P.G., Research Hydrologist, U.S. Geological Survey
- Tony Blaschak, Owner Blaschak Coal Company
- Robin Koeberle, Engineering Manager, Blaschak Coal Company
- Teri MacBride, Regional Community Relations Director, PPL Corporation
- Andrew Gavin, Chief-Restoration & Projection Section, SRBC
- Thomas Clark, AMD Coordinator, SRBC
- Mike Korb, P.E., Environmental Manager, PADEP
- Todd Wood, P.E., AMD Engineer, PADEP

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Mahanoy Creek Watershed Conservation Plan

KEY PERSON INTERVIEW

Schuylkill County Conservation District  
Wayne Lehman, County Natural Resources Specialist  
Pottsville, PA

March 30, 2010

Mr. Lehman comments:

Clean up the AMD and the public will use the watershed.

People need to take pride in the watershed which will ultimately result in improved quality of life in the watershed.

We must reverse the mentality of watershed adults concerning the ability to change and restore the watershed from one of pessimism to optimism.

Stepwise process could be:

- AMD cleanup
- Education
- Events like sojourns
- Publicize watershed (PR/Web)-push nice areas
- Fishing (to maybe jump-start restoration process)
- Free trash pickup
- Keep floodways open
- Explore Chesapeake Bay opportunities

AMD abatement is a key. Target is to get AMD set-aside money.

Use updated USGS watershed report prioritized list of AMD discharges as starting point for systematic abatement targets. Techniques include dry up discharges; reconnecting streams; keeping water in stream channels; investigating, understanding and modeling groundwater and subsurface flows and stream losses, reducing initial stormwater flow into mine pool.

Property access and control is also a key.

Available space to abate discharges is sometimes a problem since most discharges are right at the stream.

The Packer 5 Discharge Study that was recently completed explored 5 alternative passive treatment concepts which ultimately resulted in the project concluding that the treatment option was not feasible due to space and cost constraints for the quantity of flow treated for the project cost. This is one of top AMD discharge problems. Sale of FeO<sub>2</sub> was explored via Girardville Borough. May be OK for active treatment, but cost (benefit-cost ratio) is still problem. Must compare quantity of flow treated and water quality benefit vs cost of treatment.

Might look at two sections of association due to different conditions in upper vs lower segments of watershed—upper is AMD and lower is more Ag based, but need to weigh having less individuals to be involved if split into two different associations.



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Pay attention to media coverage. Also maximize use of signs publicizing Mahanoy Creek Watershed Association Project.

Explore joint opportunity to work with Shamokin Creek Alliance—may relate to Northumberland ATV Park Project.

Obtained CD of Packer 5 Final Report.

Mahanoy Creek Watershed Rivers Conservation Plan

KEY PERSON INTERVIEW

Schuylkill County Commissioners  
Pottsville, PA

Mantura Gallagher, Chm.  
Frank McAndrew  
Frank Staudenmeier

Schuylkill County Planning Department

Charles M. Ross, Director

March 30, 2010

Comments from Commissioners and Director Ross:

Priorities—

- 1) Jobs
- 2) AMD cleanup / AML reclamation (backfill land)
- 3) Recreation and fishing
- 4) Stormwater and erosion control
- 5) Zoning (county-wide zoning plan in process-done in June)
- 6) Siting of alternative energy facilities
- 7) Support / coordinate with proposed industrial/commercial development projects adjacent to watershed

County is currently completing an Act 167 Stormwater Management Plan—Phase I to be completed in June—No Phase II funds, thus may stop there for while—not getting too much participation/cooperation from municipalities so far.

Should try to get passive treatment on all AMD discharges.

Should try to get Gilberton Pump Discharge resolved.

Current high interest in locating large energy plants on AML lands due to ideal locations away from public, no current beneficial use, etc—Director Ross briefed us on proposed \$1 billion coal gasification (IGCC) plant that county recently issued zoning permit for adjacent to watershed. Also widespread interest and use in wind farms—already have approximately 50 along tops of AML ridges.

Schuylkill County Economic Development Company (SEDCO) has plans to expand High Ridge Industrial Park (fully developed) and are looking for additional acreage on edge of watershed to expand.

The county gave us county-wide GIS data on CD and other info to be uploaded to GTS FTP site for use in RCP.

## Mahanoy Creek Watershed Rivers Conservation Plan

### KEY PERSON INTERVIEW

EPCAMR-Eastern PA Coalition for Abandoned Mine Reclamation  
Robert Hughes, Executive Director  
Michael Hewitt, Program Manager  
Ashley, PA

April 5, 2010

Robert & Mike provided a briefing on their past & current work (2 year effort so far) related to in-depth hydrogeologic analysis of underground mine pool complexes for most of the Mahanoy watershed in terms of mine pool locations & inter-connections. They use ARCVIEW, R2V & earthvision GIS applications (includes 3D graphics from OSM) to geo-reference mine pools & identify current conditions related to water surface elevations, barrier pillars, colliery boundaries, etc. The extensive data is based upon multi-colliery hydrologic units. Their work will be completed within 6 to 9 months at which time the data would be available to the association & public. A detailed synopsis of their study is attached.

Comments from Mr. Hughes and Mr. Hewitt:

Mr. Hughes prepared detailed recommendations and comments for the Mahanoy Creek Watershed RCP which are attached.

They use groundwater modeling data developed by USGS.

They map depth of mine seams based on 100' contours.

They identify current bore-hole elevations.

Over time, barrier pillars have eroded, been altered which, along with fluctuating pool elevations, have caused many mine pools to be inter-connected resulting in larger, more complex mine pools.

EPCAMR has a full range of education materials and workshops to assist the association.

Work with PADEP-BAMR on P1, P2, and P3 sites to get any and all funding available—work to get P3 sites converted to P1 or P2.

Need to address property ownership and access to open up stream segments. Identify and obtain parcel databases (Schuylkill Co. has on-line, Northumberland Co uses Union Co., but may be available, contact Tim Murphy at Columbia Co.

In the anthracite field, EPCAMR believes best approach is to divide discharges up, not make into bigger complexes—divide and conquer.

Association needs to set up and maintain comprehensive volunteer monitoring program and provide data to EPCAMR/others.

EPCAMR is willing and interested in allowing Mahanoy Creek Watershed Association to link onto their web site—they will attend association meeting to discuss.

Process to address watershed restoration includes:

Have DEP-BAMR handle/fund any P1, P2, P3 problems  
Identify and market economic development potential mine pools  
Identify and use other mine pools areas for parks/recreation  
Treat what's left

The western section of the watershed is OK for stormwater BMP applications—IE—work to prevent water from getting into mine pool in first place via sound stormwater BMP techniques—there are not as many discharges in this area.

Mine pools are an extensive water source.

Identify mine pool zones, where are large sections, & focus on matching water users (industry) with these-IE—Mine Pool Development Projects!!

Initiate effort to resolve Gilberton Pump problem.

Look at watershed using mosaic or GIS overlay format—where are point sources?, rest of land, keep water on surface—also map water sources for industry related to above comment on potential Prime Mine Pool Development Areas.

Mahanoy Creek Watershed Rivers Conservation Plan

KEY PERSON INTERVIEW

Senator Dave Argall (R-29<sup>th</sup> District-covers most of mid & upper watershed)  
Nick Troutman, Mayor Gordon Borough, N Schuylkill COG, Senator Argall's Staff

April 13, 2010

Senator Argall & Mr. Troutman's comments:

Senator strongly recommends we do what's attainable—short range goals & implementation plans should focus on what can be done with resources & funds that are realistically available. Short range-3-5 yrs—mid range-5-10 yrs—long 10 -20 yrs

Try to focus also on identifying some type industry that would use mine pool water & at same time provide jobs in area.

Education (Awareness) is important! A large need exists for people to even be aware that the watershed exists as well as what the conditions, issues, needs are in the watershed. May consider web site.

Access to the creek for increased use is an issue.

Consideration of an "anchor stream segment" or "anchor block" is a good idea. Multiple components that could be developed in one section that is the easiest to start with that results in an area for public/family use to get people using the watershed as soon as possible is a short range goal.

Consideration of a Watershed-wide COG is a good idea—N Schuylkill COG would support this & assist in trying to implement. Larger COG would get more clout for winning grants as well as afford more consistent regulatory applications & communications. Champ Holman is President of N S COG (on our Study Comm)

May also develop strategic relationship with Shamokin Creek Alliance since 2 watersheds are connected.

Initiate efforts to get DEP to work more actively with watershed association.

Involve Senator John Gordner, R-27<sup>th</sup> District—he has lower part of watershed.

DEP growing Greener funding looks bleak for next few years.

Look at some type regional treatment facility (passive?).

## Mahanoy Creek Watershed Rivers Conservation Plan

### KEY PERSON INTERVIEW

Dr. Charles A. Cravotta III, PhD, P.G.  
Research Hydrologist, U.S. Geological Survey  
(NOTE-Dr. Cravotta has conducted extensive field research on the Mahanoy watershed)

Dr. Cravotta's comments:

Must deal with all scenarios, not just clean up discharges (use a mixture of approaches).

Try to use mine pool water.

Try to develop opportunities to have public canoe the creek—hold float trips—you can still canoe creek even though it's polluted--the Red Moshannon Creek does this now.

Need to get community support as soon as possible for restoring watershed. He likes the idea of an "anchor segment" "anchor block" involving as much improvement in a segment as can do thus opening up to public as soon as possible.

Need to have an access plan-need to improve on access—association can be DCNR-related group to develop public access.

In as many segments of creek as possible, avoid changes to the wild nature of the creek in those segments of the creek.

Identify clear, realistic roles for the watershed association.

Association plays a key role on AMD cleanup. To a lesser extent, mine pool development/use.

Association can play a leading role in education

Association can play a leading role in enhancing utilization of the resource.

The association can get better at working with & partnering with PA DEP.

The association can get better at working with all involved coal companies & Girard Estates.

The association can get better at political involvement/influence.

Next step is to pursue other phases of DCNR C2P2 grants for Implementation/Restoration Plan development. Claim credit for success of RCP! Do plan for next steps! IE-Work On Access!

Overall, the watershed faces complex multi-faceted problems. Stream restoration is one problem to address, but it won't affect mine pool to any extent.

A 1953 study identified water problems, etc. with issues & problems still pretty much same today. It discussed “keeping water in the stream”. To do so, need to identify key loss areas. Goal is to keep clean water in stream segments & extend clean water habitat down further in valley. Target easiest stream segment to start with & extend from there thus creating “anchor segment” for public use/fish stocking.

Look at DEP/OSM QHUP (QHP) requirements, identify what’s needed, stream restoration can work as AMD abatement. Need money to do this. This is one approach to get some of money needed. Watershed has TMDL plans/info, but all TMDL Plans lack detail & cost-benefit analysis required by QHUP.

We have sufficient data to complete cost benefit analysis. Needs appended with cost-benefit analysis! This data can then be utilized to formulate a watershed Implementation or Restoration Plan (do the plan & get money). “Fish is the Key-if can be established for fishing—benefit is much greater.

Dr. Cravotta did a sample cost-benefit analysis for the Centralia Tunnel when he did the Mahanoy Creek Watershed TMDL study. With a resultant Implementation Plan, this can then be ready for actual project funding/design. NOTE: Dr. Cravotta provided GTS with a cost-benefit table related to fish benefit costs in various categories for PA streams as well the DEP AMD Set-Aside Guidelines document.

Look at lower end of watershed (gorge on down) as first “anchor segment” target-best potential for fishing & to get local support.

When doing the cost-benefit reviews, do 2 reviews:

- 1) individual site reviews
- 2) entire watershed review (scoring) IE-what watershed worth?

Relate above to AMD Set-Aside Guidelines for maximizing funding.

Get higher values if trout stocked.

Select “stream zones” to line (do stream loss restoration work). IE: North Mahanoy Creek small section is OK. Start with that & extend 2 miles. This will result in obtaining high value RE: cost-benefit value, thus funding.

AMD abatement-is a stream restoration issue—do that first (can use geophysics to identify loss segments)

Specific example of cost-benefit related discharge include:

Packer 5—where cost-benefit was not feasible related to quantity of AMD abatement for the cost—

Locust Gap Mine/Helfenstein Tunnel (M29) discharge is a top impact discharge for high impact on the creek. Abating this would potentially get good CB benefit.

Centralia Mine Tunnel (M19) is another high impact discharge that causes a high level of pollution to the creek.

North Franklin Mine Drift & Borehole (M32) near Treverton is also one of top polluting discharges. Check—these are P3 priorities from DEP? Can we have changed?

Should focus on specific sub-watershed sections—focus on a few discharges--maybe Zerbe Run—clean up Zerbe Run, do a QHUP for it. It is a Cold Water stream (CWS). The rest of it is good, thus it could be a trout stocked fishery.

Check on access—who are property owners for Zerbe Run—include in Recommendations of plan.

EPCAMR report/data will be available soon—they can work with association later to assist with recommendations/education/etc. Association needs to provide input to EPCAMR also.

They are working on a regional groundwater model, association needs to do localized ones.

We need to identify potential high value targets RE: C/B benefits! Then identify what needs to be fixed. Then check against DEP AMD Set-Aside Guidelines to maximize funding potential. Check tables related to monitoring & cleanup.

Consider how to gain exposure/usage of watershed—the Centralia Mine Fire & Centralia are accessible, set up Treasure Map hunts, education tours—Mine History tours, sojourns, The AMD Trail, do what can to get people to watershed!

On May 20<sup>th</sup>, USGS, DEP hosting Chinese scientists to tour AMD areas.

Develop strategy for providing fishing sections & increase downstream use of same where can.

Explore trail links, recreation use.

Promote catch & release wild brown trout sectors—use CB analysis to assist with this. Spring Creek in State College has this.

Keep clean water clean! Seal streams & keep water from going into mine pools. Re-establish hydrology in stream channels.

Explore mine pool use for industry.

Not aware of DEP P1 or P2 sites in watershed.

Mary D pilot project is good example of cooperative effort with coal companies (Blaschak) & others.

Association needs to do an Implementation Plan to get funding to gradually implement watershed restoration. Identify data gaps we need to fill & do them.

Explore EPA 319 funds.

Coordinate RCP with major proposed Northumberland County ATV Park for relationship/impact on the RCP & watershed. Talk with Pashek Assoc the consultant.

Mahanoy Creek Watershed Rivers Conservation Plan

### KEY PERSON INTERVIEW

Blaschak Coal Company  
Tony Blaschak, Owner  
Robin Koeberle, Engineering Manager (on study committee)  
Mahanoy City, PA

April 12, 2010

Mr. Blaschak & Mr. Koeberle's comments:

Education is one key to protecting & restoring the watershed.

Blaschak does not have any locations where they could provide access to the stream for canoeing—stream is way too shallow along their land in the upper reaches.

Water is a resource! Make it valuable! There exists a tremendous amount of water in the underground mine pools & in the water table in the valley around their operations. There are vast underground caverns (legacy caverns) that make up the complex hydrology of the valley. This causes pollution & flooding problems.

May consider approaching funding from a flood control perspective to help solve AMD problems.

May look at regional treatment approach—passive treatment facility?

Look at major groundwater study to understand the hydrology involved—EPCAMR, USGS, Schuylkill County Conservation District are potential partners in this effort. They also have valuable data on subject.

They do not favor trails/recreation on their land due to liability. They do look for ways to cooperate with community to resolve problems-IE:-exchanged land on Mary D project so abatement could be implemented.

Suggestion related to Gilberton Pump discharge—remove existing barrier pillar & take discharge down to next barrier near Treverton-Zerbe Township—this is property owned by Girard Estates—a former Engineer Brill had proposed this solution. There is 1,200 feet of water in the mine pool—consider lowering 20 or 30 feet. Approach Girard to get their cooperation & access. Talk to Keystone Anthracite. Check further into this proposed solution alternate.

In Shamokin area, mining/mine pool goes from 700 ft. above sea level to 800 ft. below sea level, or 1,500 ft. of water. For every cu. Ft. of coal = 7.5 gal of water.



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Regulations over years caused major drop in mining operations—later some AML's have now become responsibility of state. COE & EPA as well as DEP involved. May consider filling pits, but this also has hydrology & water quality implications.

Need for culm banks to be cleaned up—this overall process will take at least 20 years & then need to treat at that point—with hope that new technology will emerge to assist this process.

Litter control is also problem—Blaschak has recently spent \$154,000 to clean up litter on their property.

Reclamation has been done every year in the mining industry except during the war years.

Sewage—from septic systems, still is pollution problem in the watershed.

Blaschak feels everything they do is probably reclamation in some form or another.

Only jobs in area these days are generally warehouse related. We need non-service jobs. We need to develop initiative to give business/industry incentive to locate here.

Mahanoy Creek Watershed Rivers Conservation Plan

KEY PERSON INTERVIEW

PPL

Teri MacBride, Community Relations Specialist (member study committee)  
Sunbury & Berwick

April 9, 2010

Ms. McBride comments:

Place priority on relating plan to communities/people in watershed, & the businesses in the communities.

Need to solve disconnect between people & watershed.

Focus on jobs/economic development benefits.

Identify the needs to support the people in watershed communities. Drinking water is one big need.

Endorses "anchor segment" (anchor block) concept to get people to watershed & help solve the disconnect.

Focus also on access points for recreation & enjoyment of viewsheds since lot of area is privately owned.

The Susquehanna River watershed is leading the way related to watershed issues, but the Mahanoy Creek watershed is connected to it & also to the Chesapeake Bay, thus the Mahanoy watershed is integrated to a bigger picture.

The culture of the watershed is limiting—there is not a sense of cohesion, there lacks collaboration. This will take time. Mt. Carmel, Kulpmont, Shamokin all think different, but they're the same also. The watershed is fractionalized.

Also, where does the Mahanoy Creek Watershed fit in the region? What is its role in the region?

AMD is not a health issue (it's a fish problem), but—make the best use of it!

Develop a community development initiative, don't be ashamed of it—tell the story—capitalize on it—the history of coal—the legacy. (consider PCN series or the history channel). Set up an ipod trail or trip, consider geocache event or trail.

Experience what's there! The Mahanoy Experience! They're part of a bigger picture—feeder to Chesapeake Bay & Susquehanna River.

The association (or the plan) needs to voice what they want—then present—"here's how to get there".

Education is critical! Also research related to better technology or approaches to improving the watershed.

The association needs a Business Plan—Marketing Campaign. There is a lot of distribution industry in the area. The I-81 Corridor has impact & presents an opportunity. How do you take advantage of it? Jobs are an important focus.

An example is PPL's Burnside facility selling as product hydrated lime coal ash. This helps reduce AMD by improving the Ph. Another is piping water 12 miles for their Susquehanna Plant—Washingtonville to Watsonstown.

The plan needs to have something the communities & youth can get excited about.

Water withdrawal is an issue to explore possibilities.

The demand is not there now for co-gen facilities—government subsidy is needed to make work.

PPL does sometimes sponsor and/or contribute funds to projects from watershed associations including recreation areas/trails/etc.

Recommend develop partnership with Shamokin Creek Alliance.

Martha Hern is the PPL rep for Schuylkill County.

Mahanoy Creek Watershed Rivers Conservation Plan

KEY PERSON INTERVIEW

Susquehanna River Basin Commission  
Andy Gavin, Chief-Restoration & Protection Section  
Tom Clark, AMD Coordinator  
Harrisburg, PA.

April 19, 2010

Mr. Gavin & Mr. Clark's comments:

Drinking water protection is one of Mr. Gavin's programs.

Mr. Clark indicated the watershed is very tore up on AML sections.

Need to reverse the skepticism about the area—turn it around.

Look at the resources that may be available—hydroelectric, geothermal, coal production & flip the switch to turn into assets & positive things.

Look for opportunities to create success stories.

Operation & maintenance costs are always a concern/factor when looking at solutions.

Only way the association will succeed is by getting the base that's already there motivated.

Need to identify a realistic focus of the association.

SRBC has extensive data on the watershed—they are working with EPCAMR on large Anthracite Remediation Strategy Report done in next 4 to 5 months. At that point lot more data will be made public.

They will be identifying a project in the watershed to focus on & develop. SRBC and/or association or both can then apply for funds to clean up.

Check out Downstream Strategies firm of W VA (Morgantown) related to improving quality of life initiatives & approaches.

SRBC is also doing consumptive use make up study. This may be opportunity to be explored in watershed.

Mine pool reuse is very high on priority list of SRBC. They are listing mine pools & working on combining their above ground data with EPCAMR's below ground data for a comprehensive data-base related to mine pools.

Look at developing joint Shamokin/Mahanoy QHUP for more clout.

SRBC is receptive to developing relationship with MCWA to support/assist is variety of ways. MCWA needs to make request for specific things to SRBC. Education support is one example well as linking to their web site. SRBC can help the association build capacity.

Identify what is the best return on their investment related to resources, time & money.

What external agencies can help them?

They like the idea of a watershed-wide COG.

Strongly recommend pursuing DEP set-aside money (30% set aside) via prep of QHUP for a segment of watershed to get things started. Have most of data—resolve cost-benefit ratio & convince DEP to accept your QHUP. Identify what's missing for an acceptable QHUP & fill in the data gap. Watershed COG may supply clout to convince DEP as well as gain funding.

Determine what are vital components needed for QHUP. P1 &/or P2 sites are required. These are present in watershed.

Key aspect is "sealing stream segments". Identify a seal a stream segment as anchor segment & convince BAMR to do it. Get political help to sell it.

May consider Zerbe Run segment with N. Franklin discharge as QHUP & implement.

Look at treating sewage & AMD in one treatment plant (currently being done in Loyalhanna Creek)—consider large discharges—connect some together?

Mahanoy Creek Watershed Rivers Conservation Plan

KEY PERSON INTERVIEW

Mike Korb, P.E., Environmental Manager  
Todd Wood, P.E., AMD Engineer  
PA Department of Environmental Protection  
Bureau of Abandoned Mine Reclamation  
Wilkes-Barre, PA.

April 5, 2010

Mr. Korb & Mr. Wood's comments:

Need to pursue QHUP plan & completion of Watershed Implementation or Restoration Plan relative to AMD abatement for chance at funding projects within watershed. This is next step after approved RCP.

May do sub-watershed QHUP instead of full watershed plan.

Need to comply with DEP AMD Abatement Set-aside Guidelines to qualify for OSM funds.

Need to look at stream bed improvements vs down stream flooding-what are cause & effect relationships?

Also look at proper ordinances for watershed management & protection. They are lacking at present.

A key problem in watershed is septic system discharges that contribute to stream/watershed impairment.

Litter is also a problem.

A vital constraint to implementing projects is property owner access. DEP constantly confronts this issue.

DEP is currently exploring solution alternatives to the Gilberton Pump & Discharge. DEP operates & maintains this facility on Rich Company property at around \$125,000 operating cost per year. Looking at maybe relief borehole & treat (passive). Flow has been intermittent, but is getting constant. Also looking at lowering mine pool as well as electric power applications. There is an existing SRBC permit for water withdrawal.

# Appendix D

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## Appendix D – GIS Data and Mapping

As part of DCNR’s requirements for the Rivers Conservation Program, GTS Technologies, in association with the MCWA, compiled and created various Geographic Information Systems (GIS) layers for the Mahanoy Creek Watershed. These layers were used to map and compile data features of the watershed.

The geographic information systems (GIS) information utilized in the Mahanoy Creek Watershed Conservation Plan was obtained from several public sources. This data includes shapefiles, digital elevation models, and raster data. Data obtained from these public sources was primarily used “as is” except for cropping to the watershed boundary and the addition of more descriptive attributes. In some cases, such as the steep slope and hydric soils layers, public layers were analyzed to create entirely new layers.

The primary source for GIS information was the Pennsylvania Spatial Data Access (PASDA) website, which is a state-wide clearinghouse for public GIS data. Examples of layers obtained from this source include Pennsylvania State Game Lands, Pennsylvania State Forests, the National Elevation Dataset for Pennsylvania, and Chapter 93 Stream Classifications.

Floodplain data was obtained from the Federal Emergency Management Agency (FEMA). This data included the National Flood Hazard Layer (NFHL) and Q3 Flood Data.

Schuylkill County provided the GIS layers from their 2006 Comprehensive Plan. Examples of layers obtained from this source include Schuylkill County agricultural security parcels and Schuylkill County parks.

A portion of the mine land and water quality information was obtained from Pennsylvania Reclaimed Abandoned Mine Land Inventory System (PA RAMLIS). Layers from this source include coal mining operations, abandoned mine drainage discharge locations, and abandoned mine land areas. Additional mine land and water quality monitoring layers were obtained from a United States Geological Survey (USGS) report titled *Effects of Abandoned Coal-Mine Drainage on Streamflow and Water Quality in the Mahanoy Creek Basin, Schuylkill, Columbia, and Northumberland Counties, Pennsylvania, 2001*. Examples of data obtained from this source include macroinvertebrate monitoring locations and water quality monitoring locations.

The following table lists layer description, file name, and source for all layers. A compact disk containing all of the GIS data layers is including with this report.

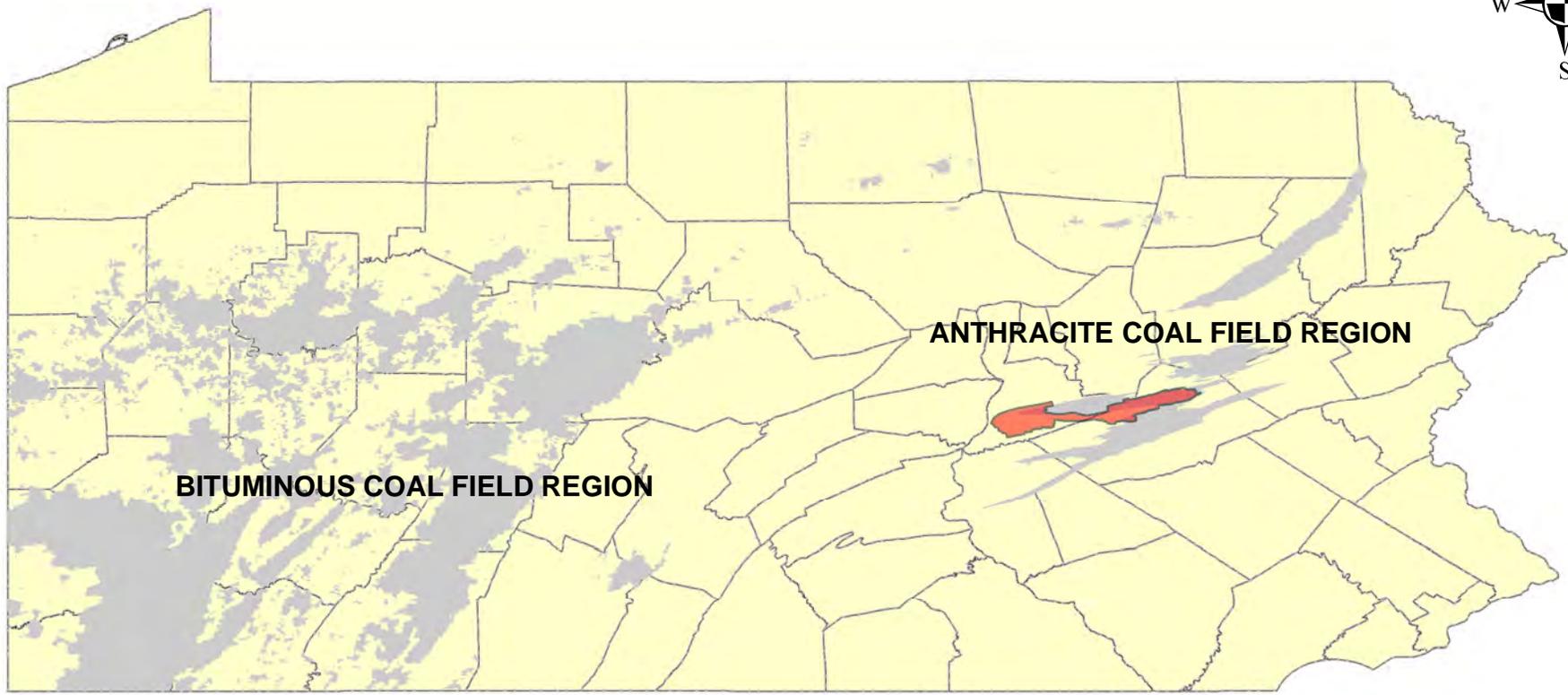
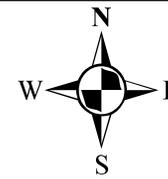
**TABLE 1  
MAHANAY CREEK GIS DATA**

<b>Description</b>	<b>File Name</b>	<b>Source</b>
303d Non-Attaining Stream Segments	IntegratedListNonAttaining201	PA DEP
2003 Schuylkill County Preserved Farms	2003PreservedFarms Region Pr1	Schuylkill County
Abandoned Mine Discharge Locations	Anthracite Discharges	PA RAMLIS
Abandoned Mine Land Areas	AML Areas	PA RAMLIS
Active Railroads	activerr	Penn State University
Airports	padot pub airport 2002	PennDOT
AMD Impacted Streams	AMD Impacted Streams	PA RAMLIS
Captive Hazardous Waste Operations	CaptiveHazardousWasteOperati	PA DEP
Census Blocks (no metadata)	Mahanoy Group Blocks	US Census
Coal Mining Operations	Coal Mining Operations	PA RAMLIS
Columbia County Natural Areas Inventory	columbia nai-polygons_may200	Columbia Couty
Geology	Mah-geol	SRBC
Hydric Soils	Mahanoy Hydric	Developed from NRCS Soils
Illegal Dump Sites	PACleanwaysIllegalDumpSurvey	PA Cleanways
Inactive Railroads	Inactrr	Penn State University
Interstates of the US (no metadata)	in101503	NWS
Land Recycling Cleanup Locations	LandRecyclingCleanupLocation	PA DEP
Landuse	nlcd landuse	USGS
Mahanoy Creek Subwatersheds	mah-shds	SRBC
Mahanoy Creek Watershed	mal wshd	SRBC
Municipal Waste Operations	MunicipalWasteOperations2009	PA DEP
Municipalities	mah muni	SRBC
Nation Elevation Dataset (no metadata)	ned 32674376-Clip	USGS
Northumberland County 100 YR Floodplains	NFHL Floodplains Dissolve	FEMA
Northumberland County NHI Core Habitat Areas	Core habitat Northumberland	Northumberland County
NWI Wetlands	mah nwipoly	SRBC
PA Counties	PA COUNTY	PennDOT
PA Major Rivers	majrivrs	PennDOT
Population Centers	mah pop	SRBC
Prime Farmland Soils	Prime Farmland Soils	Developed from NRCS Soils

**TABLE 1  
MAHANoy CREEK GIS DATA**

<b>Description</b>	<b>File Name</b>	<b>Source</b>
Residual Waste Operations	ResidualWasteOperations2010	PA DEP
Schuylkill County 100 YR Floodplain	schuylkill floodplain 100yr 1	FEMA
Schuylkill County Agricultural Security Parcels	agriculturalsecurityparcels 2	Schuylkill County
Schuylkill County Natural Areas Inventory	schuylkill nai polygons Clip1	Schuylkill County
Soil Associations	mah soil	SRBC
State Forest	dcnr stateforestlands 2006	PA DCNR
State Game Lands	PGC StateGamelands2007	PA Game Commission
State Parks	DCNR StateParks200904	PA DCNR
State Roads	PaStateRoads2010 10	PennDOT
Steep Slopes	Areas 25 Slopes	Developed from NED (USGS)
Stocked Trout Lakes	Lakes PFBCDatabase200901 Cli	PFBC
Stocked Trout Streams	TroutStocked Streams 200901	PFBC
Storage Tank Locations	StorageTankLocations2009 07	PA DEP
Streams – Chapter 93 Designated Use	StreamsChapter93DesignatedUse200812	PA DEP
USGS Report AMD Priority Locations	amdpriorities	USGS
USGS Report Macroinvertebrate Monitoring Locations	bugs	USGS
USGS Report Water Quality Monitoring	qwsites	USGS
Water Pollution Control Facilities	WaterPollutionControlFacilit	PA DEP
Water Resources	WaterResources2009 07 Clip	PA DEP
Waterbodies	mah wb	SRBC
Wild Trout Streams	Trout NaturalReproduction200	PFBC

Regional Map  
Mahanoy Creek Watershed



**Legend**

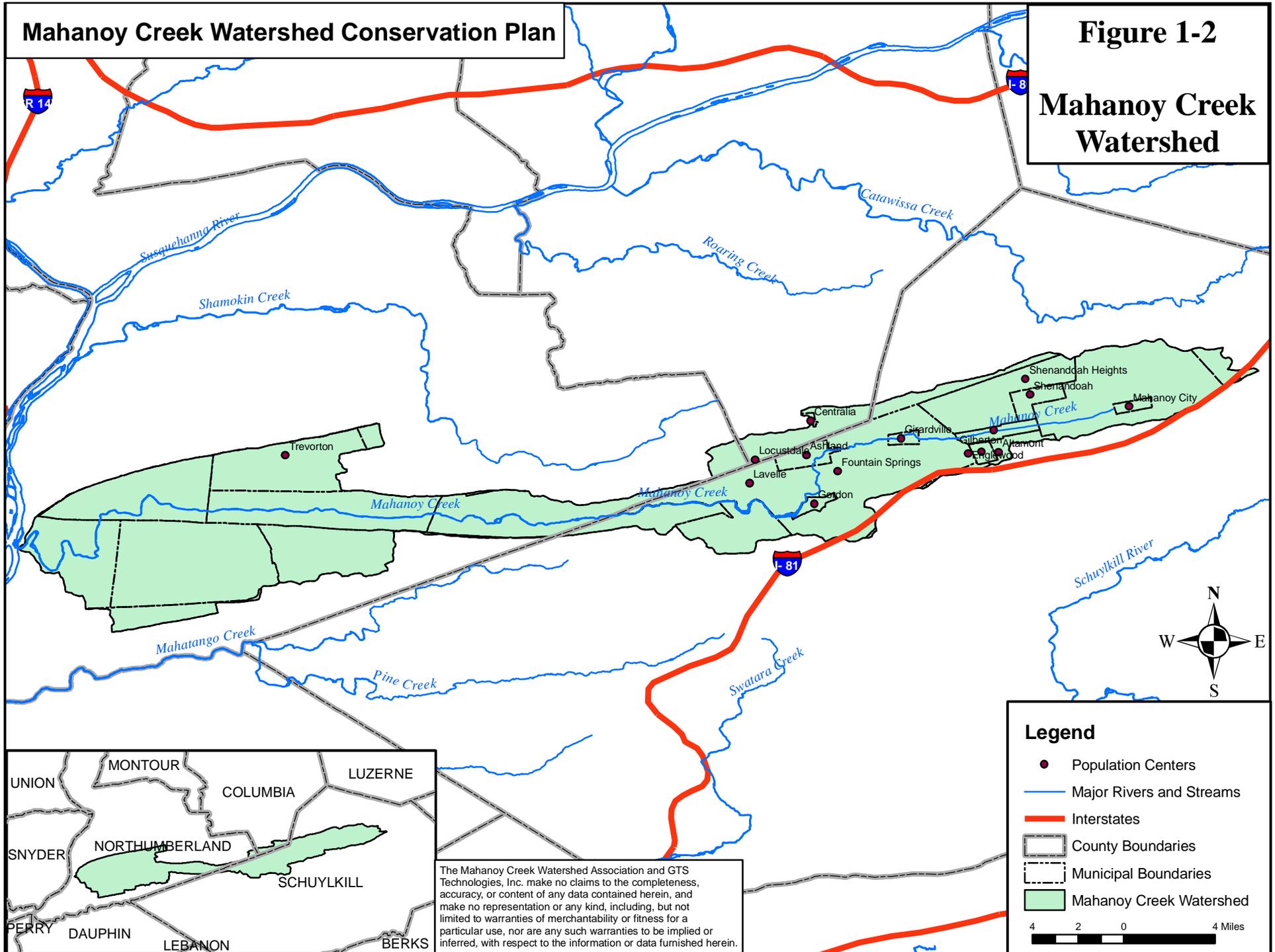
-  Mahanoy Creek Watershed
-  Limits of PA Coal
-  County Boundaries

30 15 0 30 Miles

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# Mahanoy Creek Watershed Conservation Plan

**Figure 1-2**  
**Mahanoy Creek Watershed**



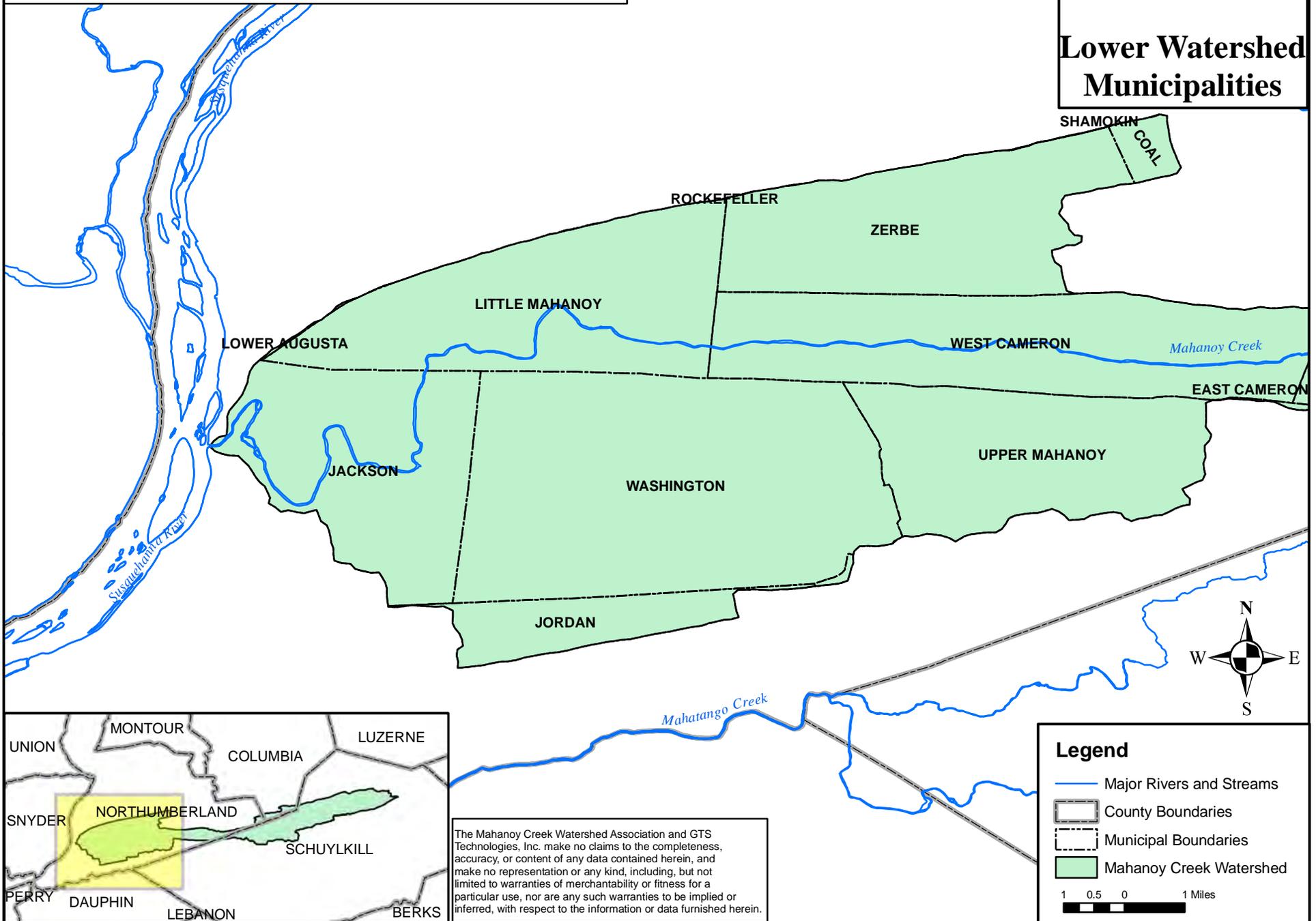
**Legend**

- Population Centers
- Major Rivers and Streams
- Interstates
- - - County Boundaries
- ⋯ Municipal Boundaries
- Mahanoy Creek Watershed

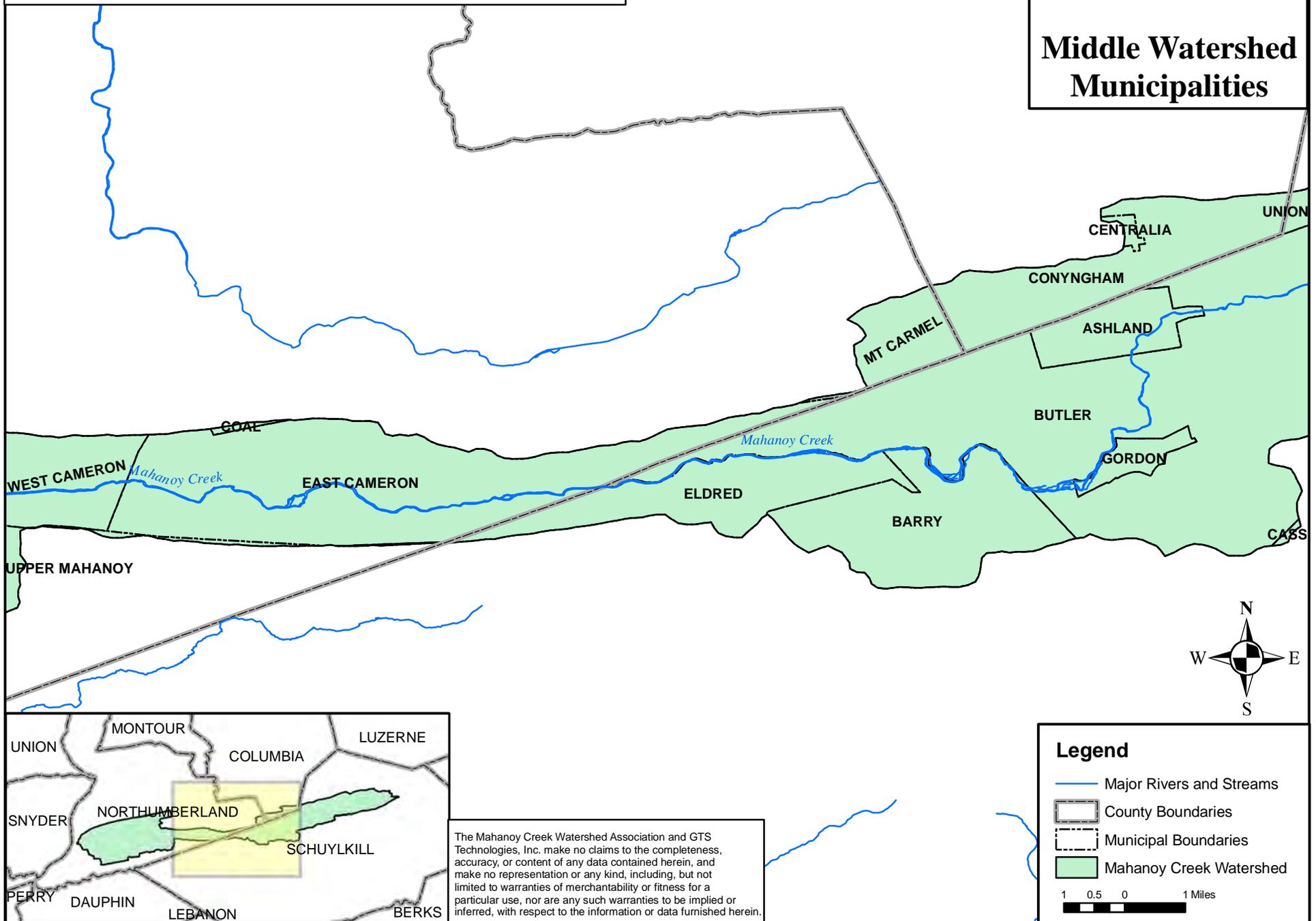
4 2 0 4 Miles

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Lower Watershed Municipalities



Middle Watershed Municipalities

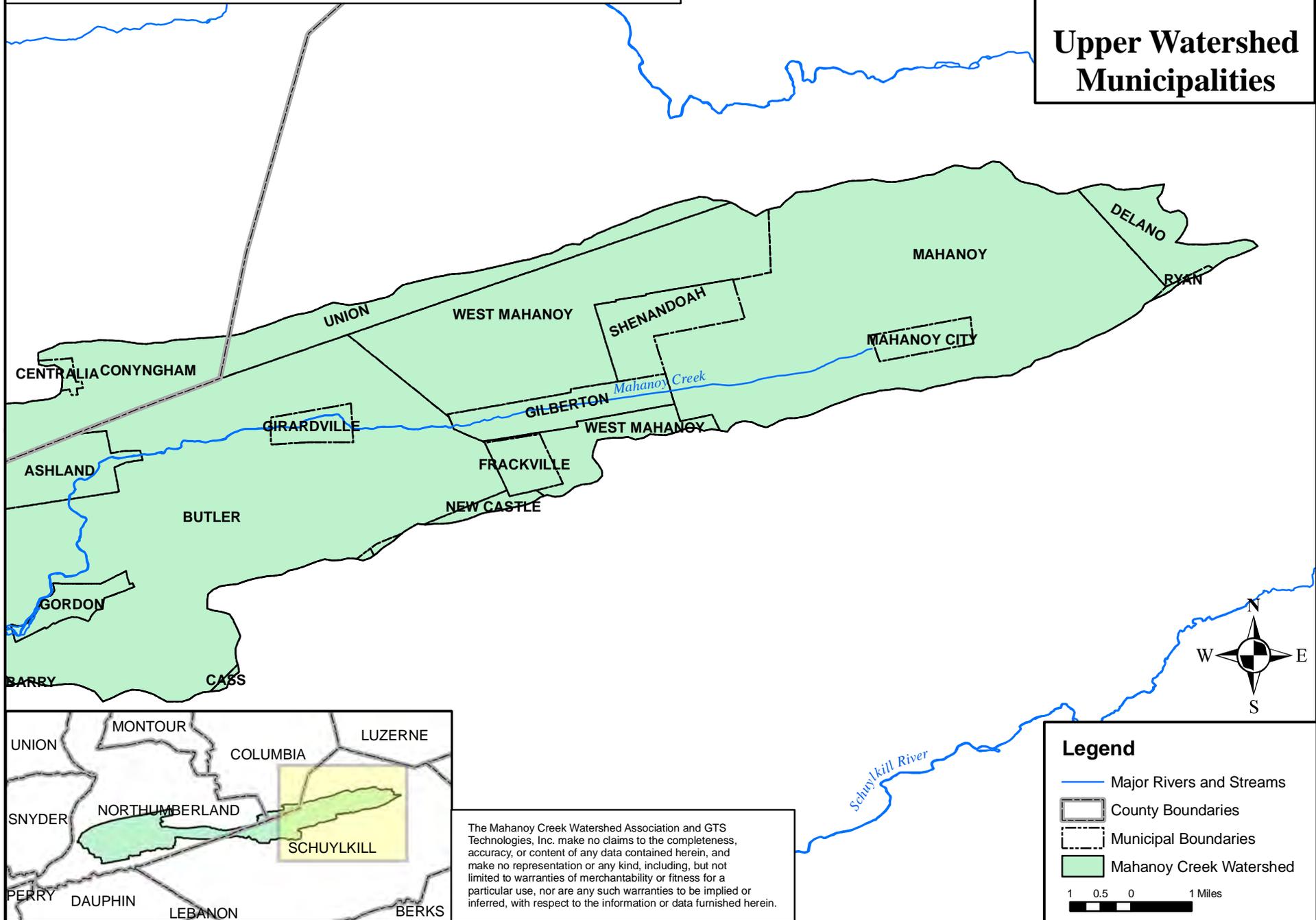


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# Mahanoy Creek Watershed Conservation Plan

## Figure 1-5

### Upper Watershed Municipalities

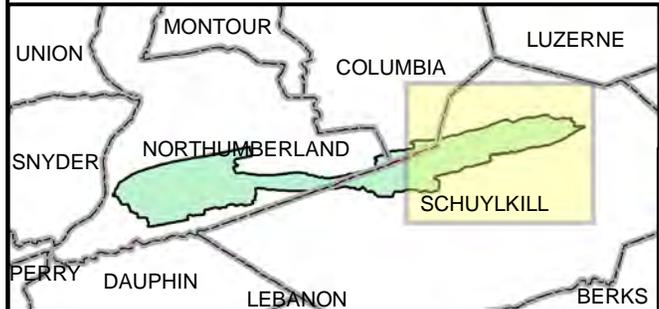


**Legend**

- Major Rivers and Streams
- County Boundaries
- Municipal Boundaries
- Mahanoy Creek Watershed

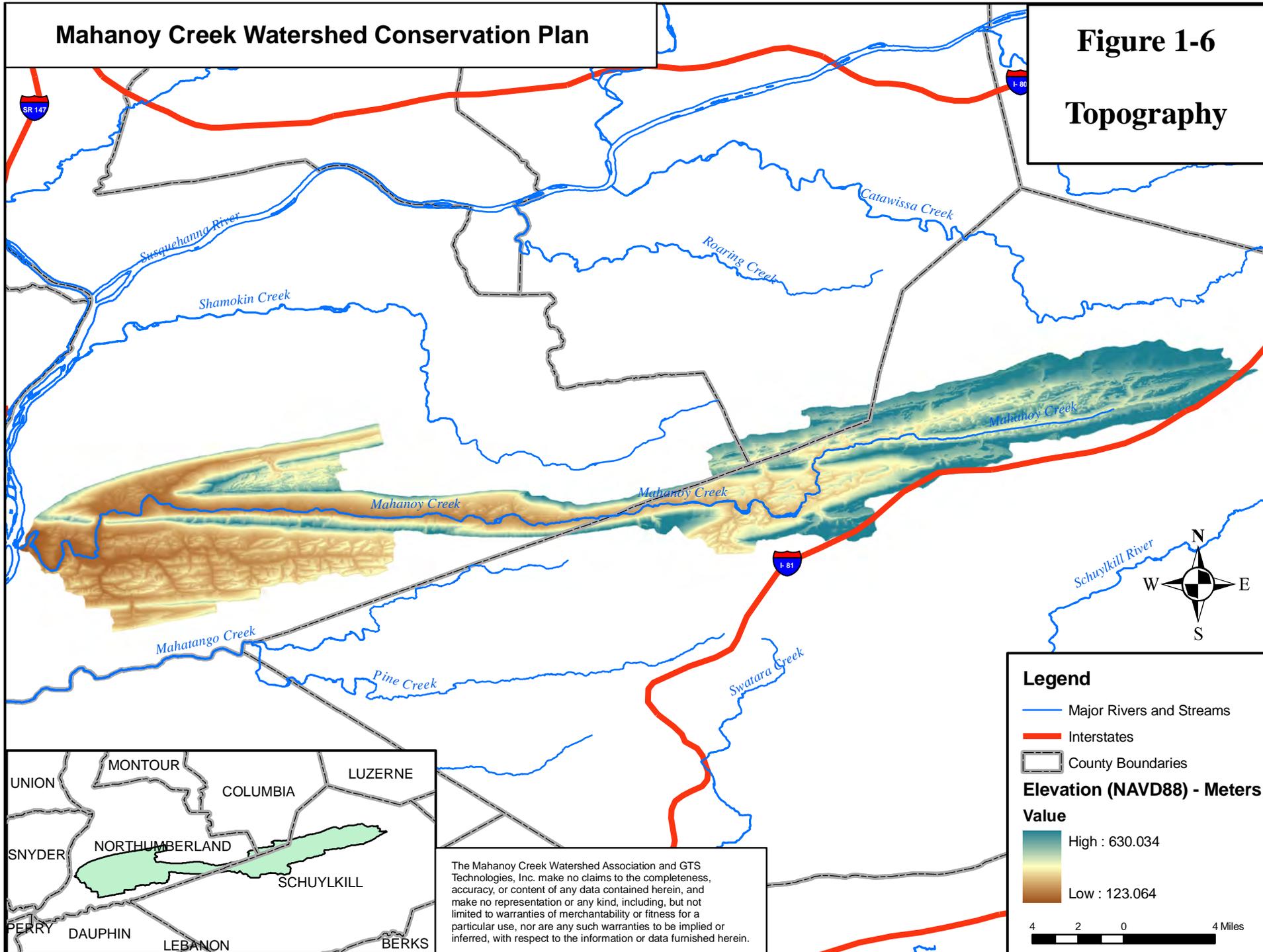
1 0.5 0 1 Miles

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# Mahanoy Creek Watershed Conservation Plan

## Figure 1-6 Topography



**Legend**

- Major Rivers and Streams
- Interstates
- County Boundaries

**Elevation (NAVD88) - Meters**

**Value**

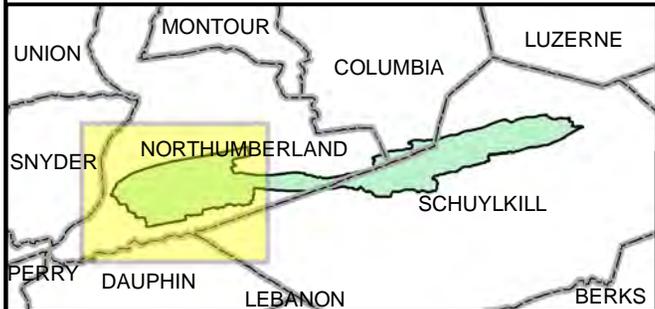
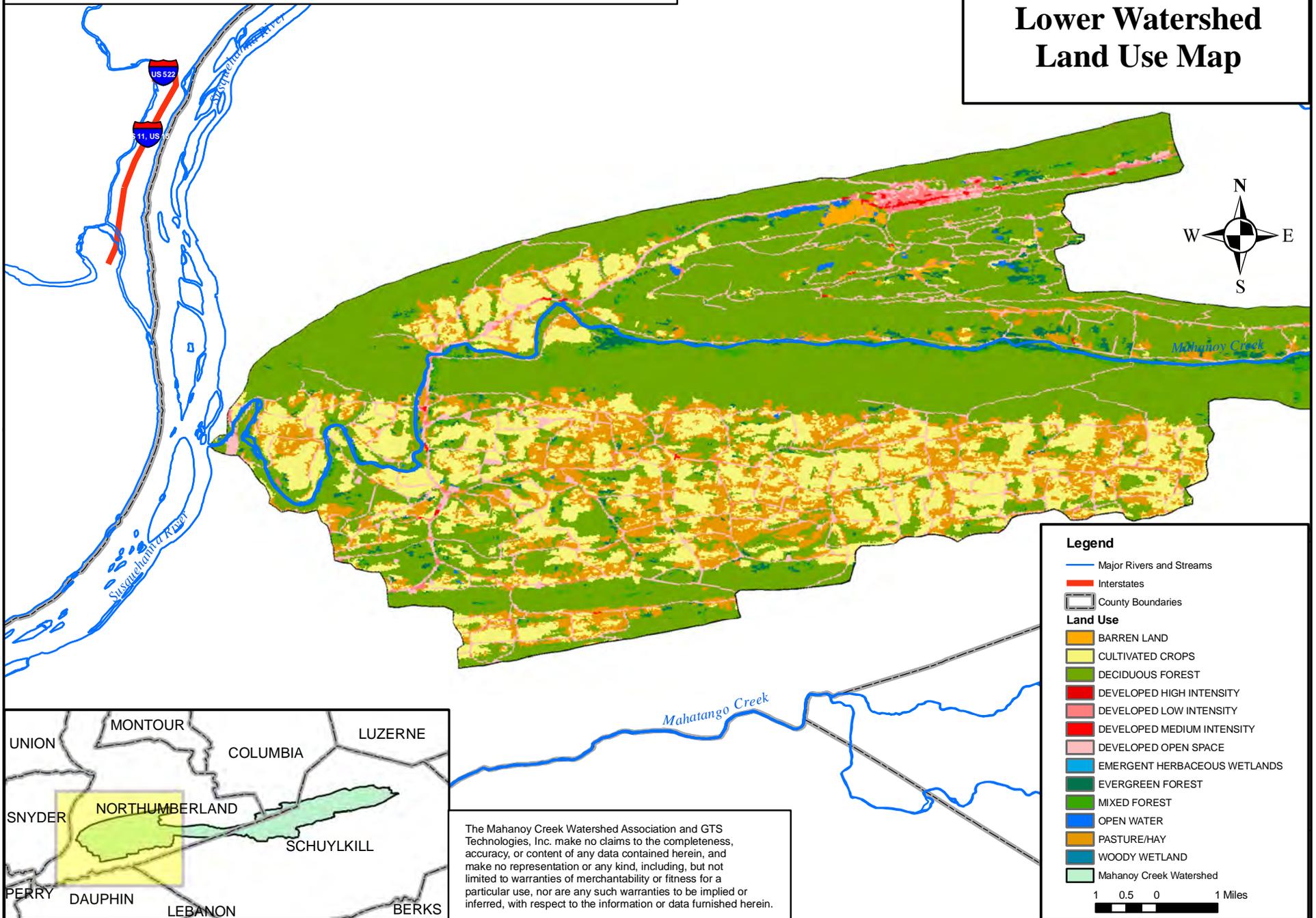
- High : 630.034
- Low : 123.064

4 2 0 4 Miles

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# Mahanoy Creek Watershed Conservation Plan

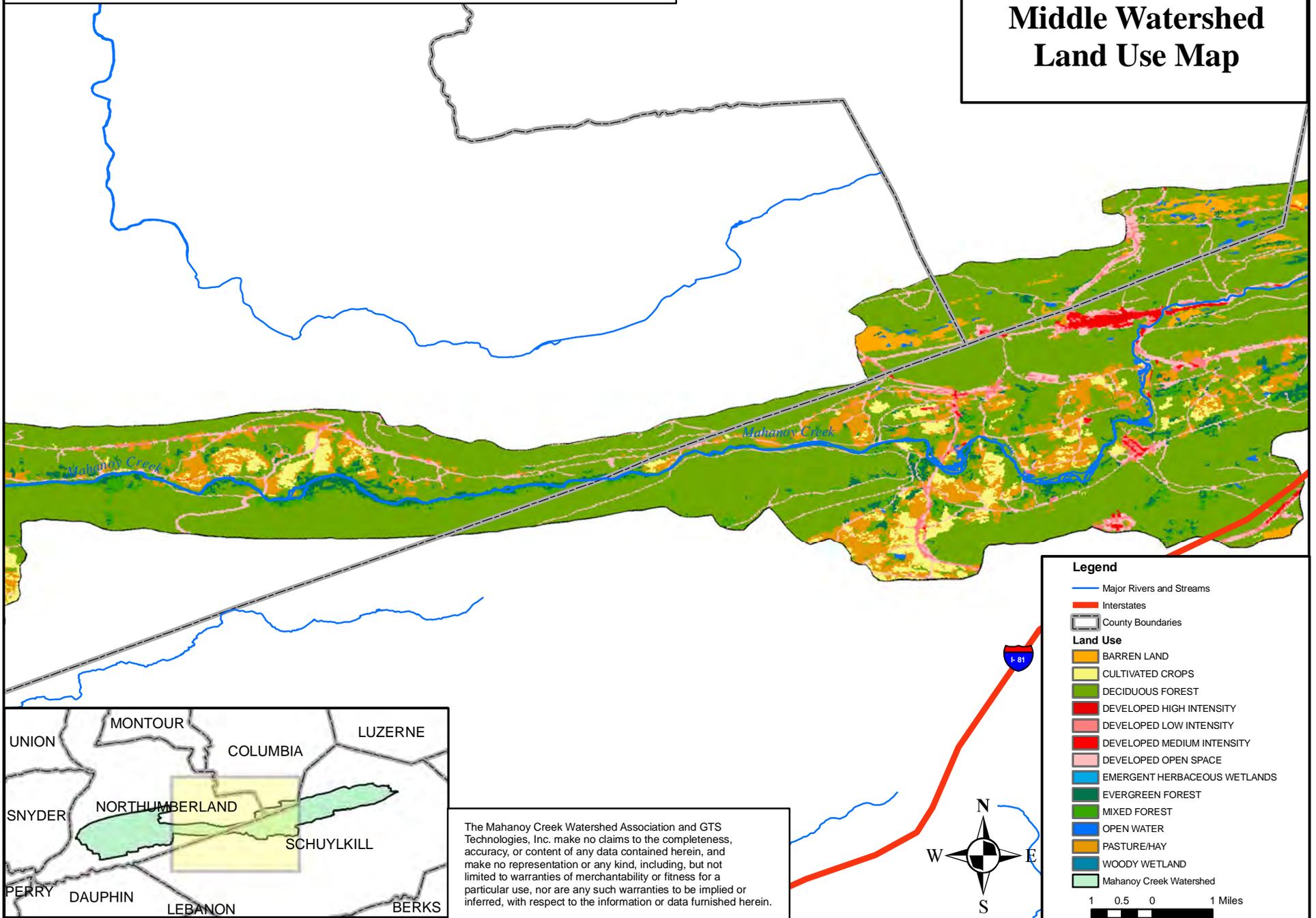
## Figure 1-7 Lower Watershed Land Use Map



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# Mahanoy Creek Watershed Conservation Plan

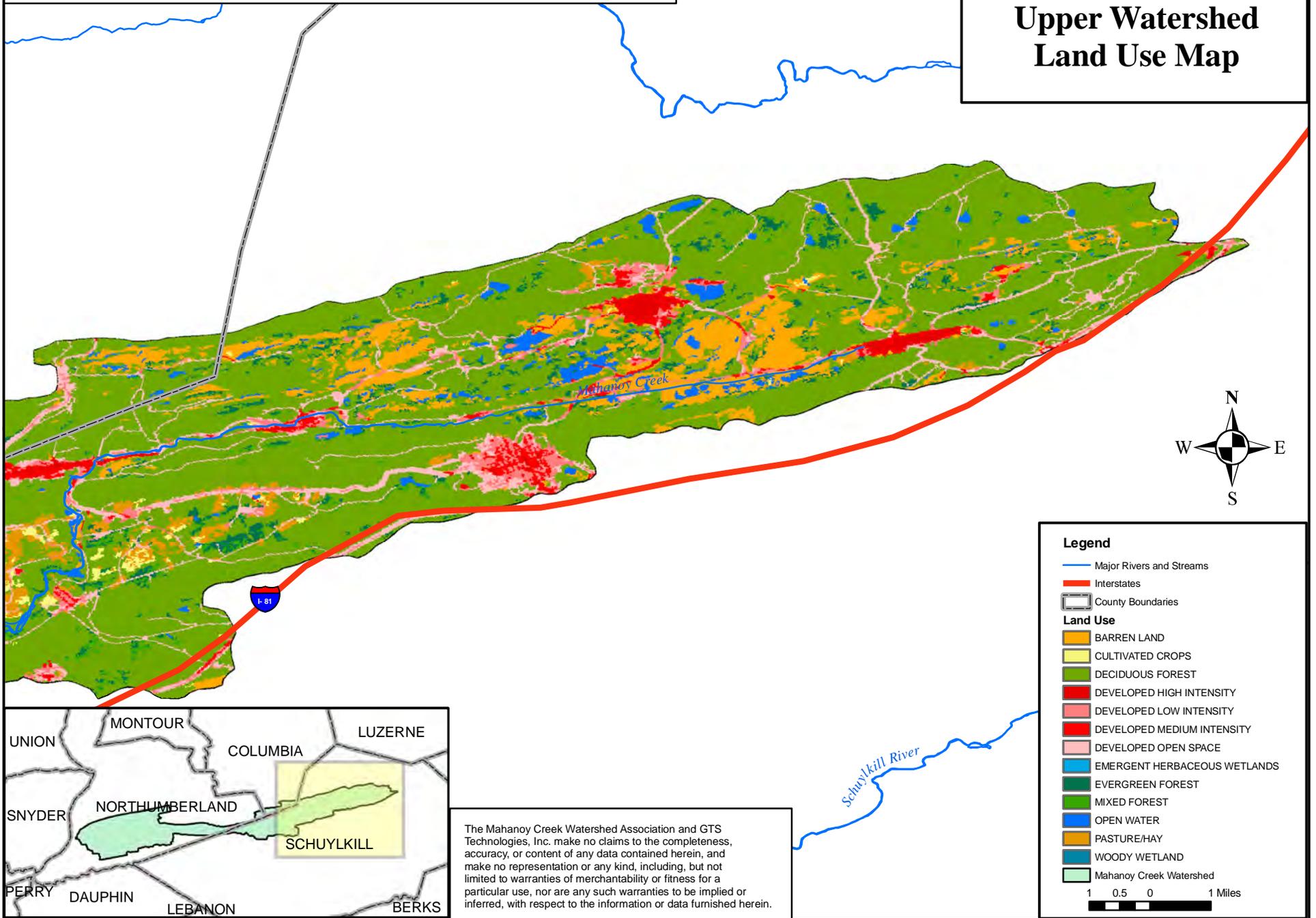
## Figure 1-8 Middle Watershed Land Use Map



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# Mahanoy Creek Watershed Conservation Plan

## Figure 1-9 Upper Watershed Land Use Map



**Legend**

- Major Rivers and Streams
- Interstates
- County Boundaries

**Land Use**

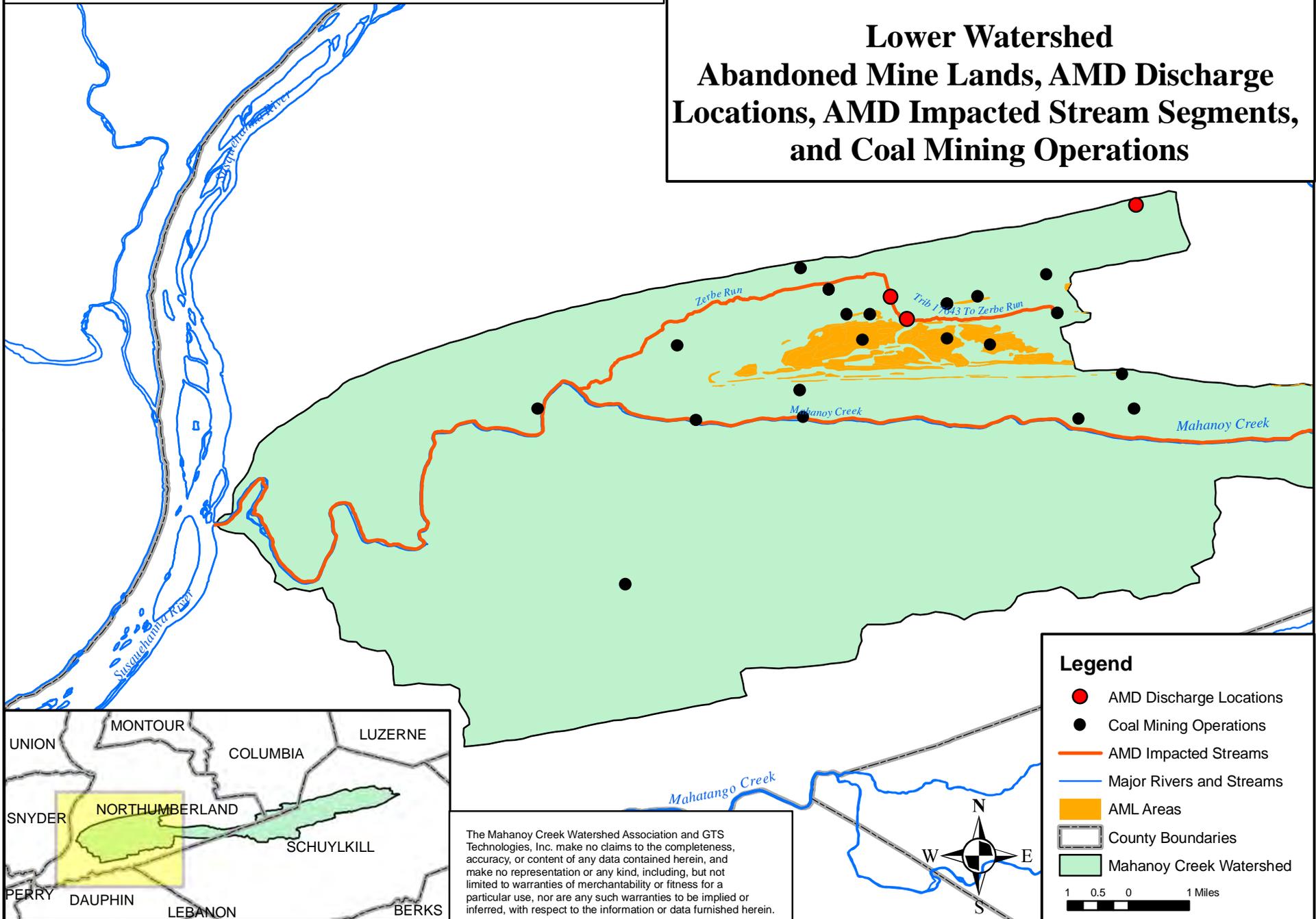
- BARREN LAND
- CULTIVATED CROPS
- DECIDUOUS FOREST
- DEVELOPED HIGH INTENSITY
- DEVELOPED LOW INTENSITY
- DEVELOPED MEDIUM INTENSITY
- DEVELOPED OPEN SPACE
- EMERGENT HERBACEOUS WETLANDS
- EVERGREEN FOREST
- MIXED FOREST
- OPEN WATER
- PASTURE/HAY
- WOODY WETLAND
- Mahanoy Creek Watershed

1 0.5 0 1 Miles

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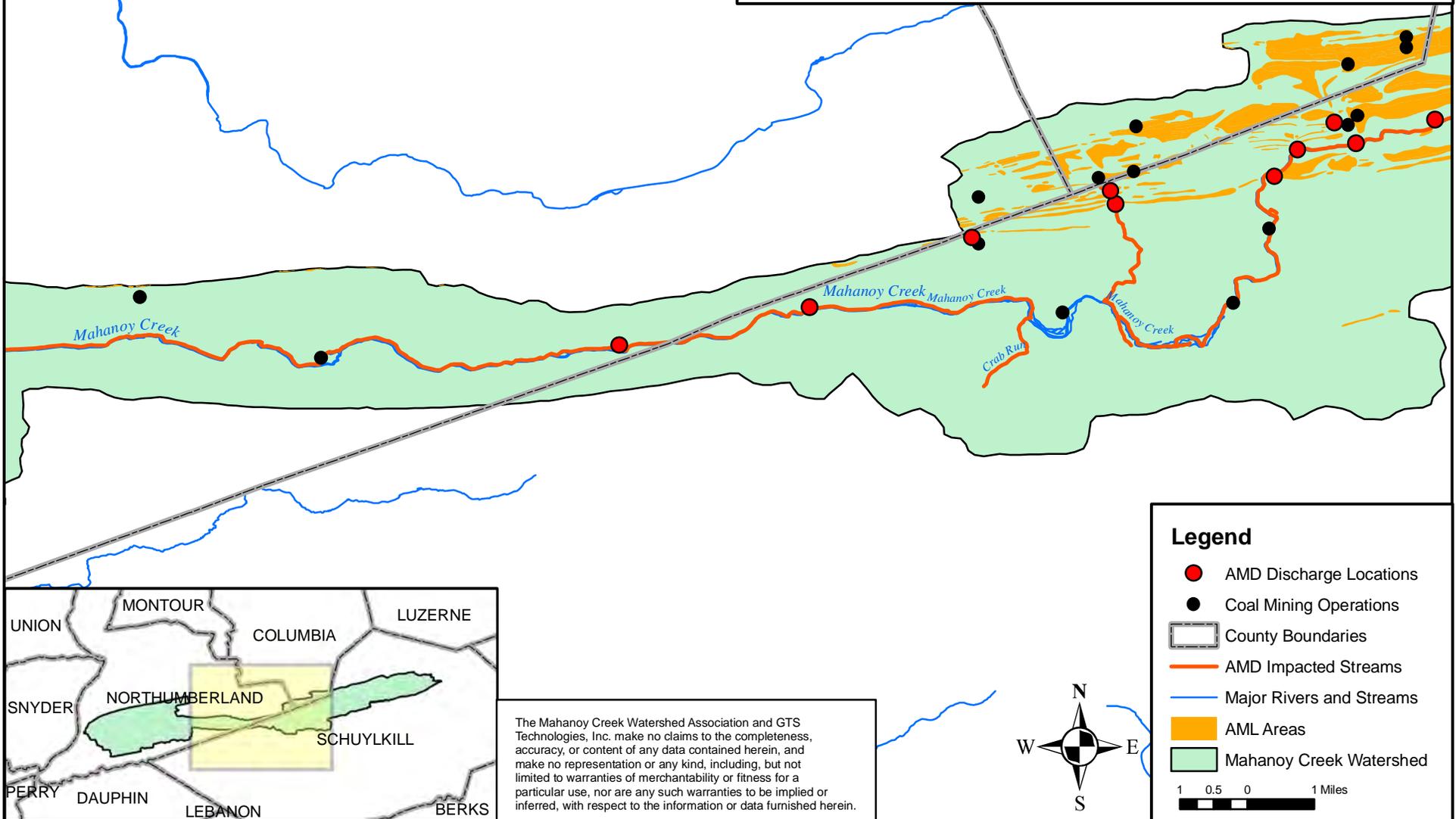
Figure 1-10

**Lower Watershed  
Abandoned Mine Lands, AMD Discharge  
Locations, AMD Impacted Stream Segments,  
and Coal Mining Operations**

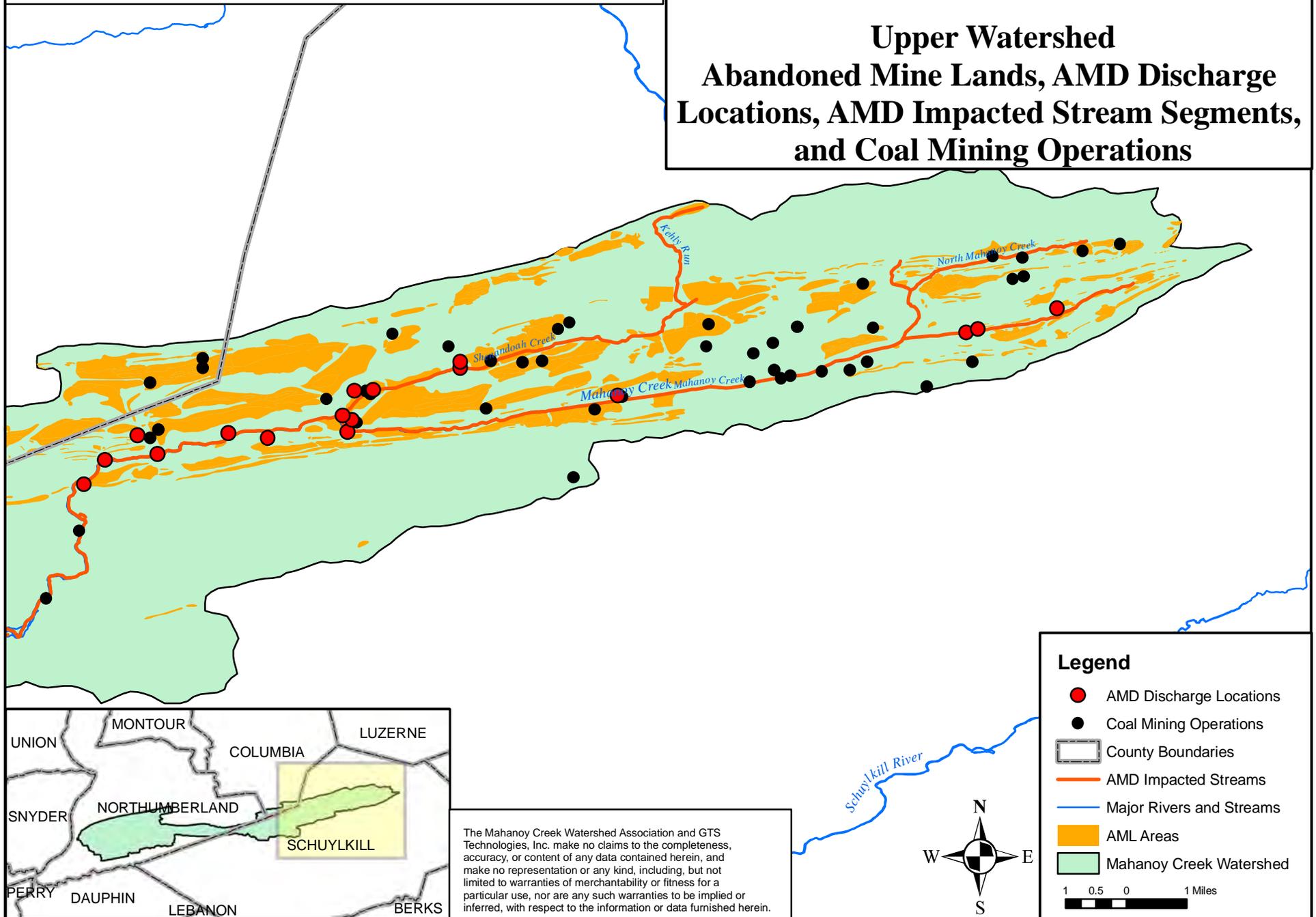


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**Middle Watershed  
Abandoned Mine Lands, AMD Discharge  
Locations, AMD Impacted Stream Segments,  
and Coal Mining Operations**



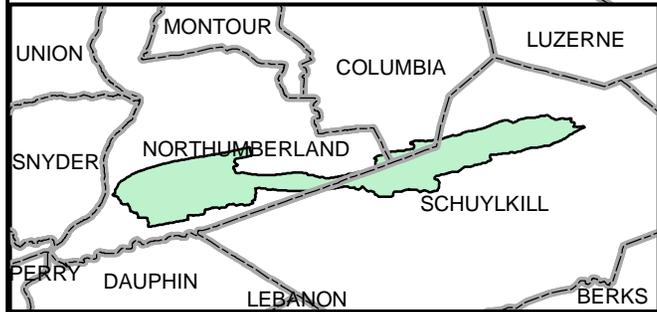
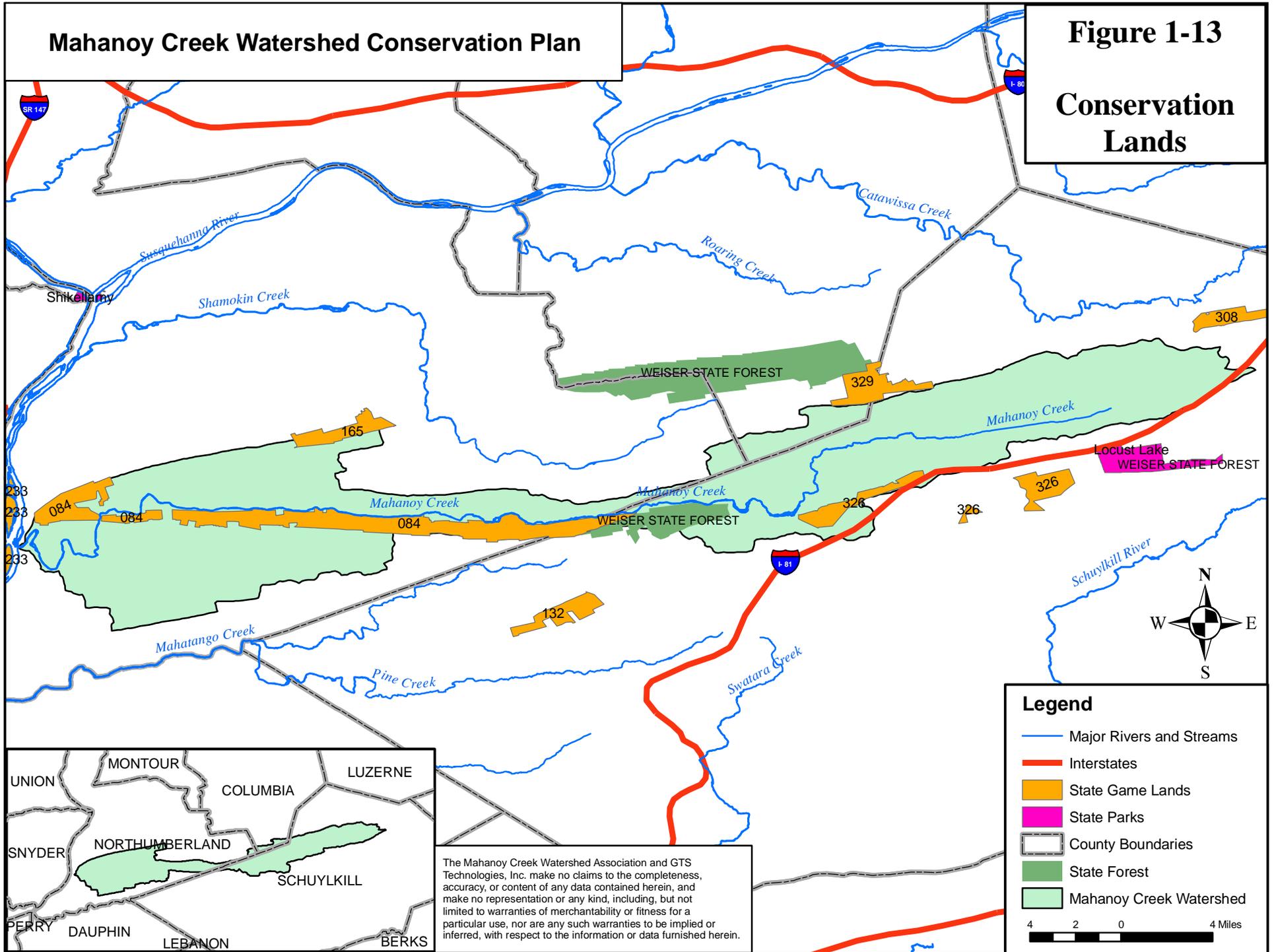
**Upper Watershed  
Abandoned Mine Lands, AMD Discharge  
Locations, AMD Impacted Stream Segments,  
and Coal Mining Operations**



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# Mahanoy Creek Watershed Conservation Plan

## Figure 1-13 Conservation Lands



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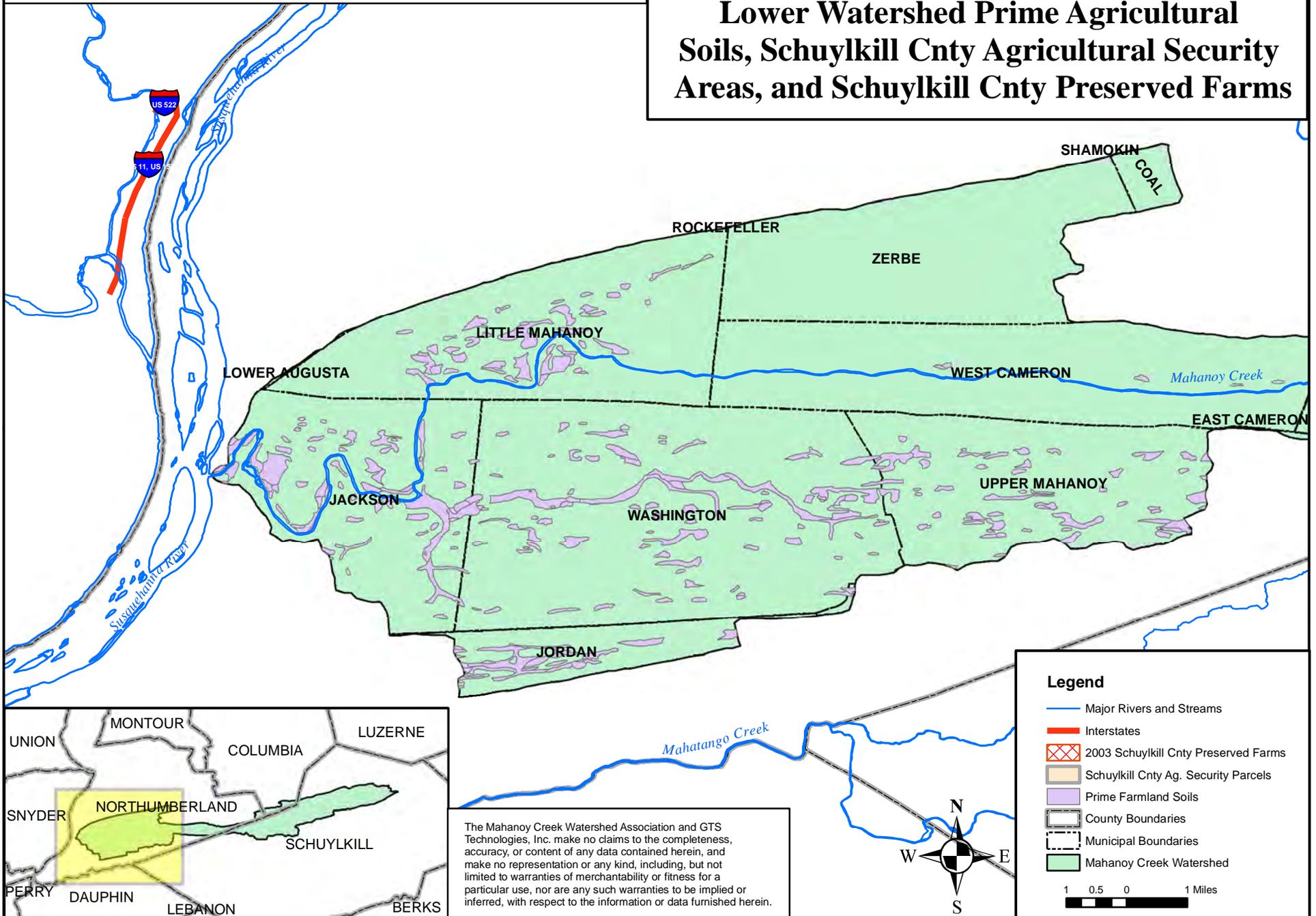
**Legend**

- Major Rivers and Streams
- Interstates
- State Game Lands
- State Parks
- County Boundaries
- State Forest
- Mahanoy Creek Watershed

4 2 0 4 Miles

# Mahanoy Creek Watershed Conservation Plan

## Figure 1-14 Lower Watershed Prime Agricultural Soils, Schuylkill Cnty Agricultural Security Areas, and Schuylkill Cnty Preserved Farms

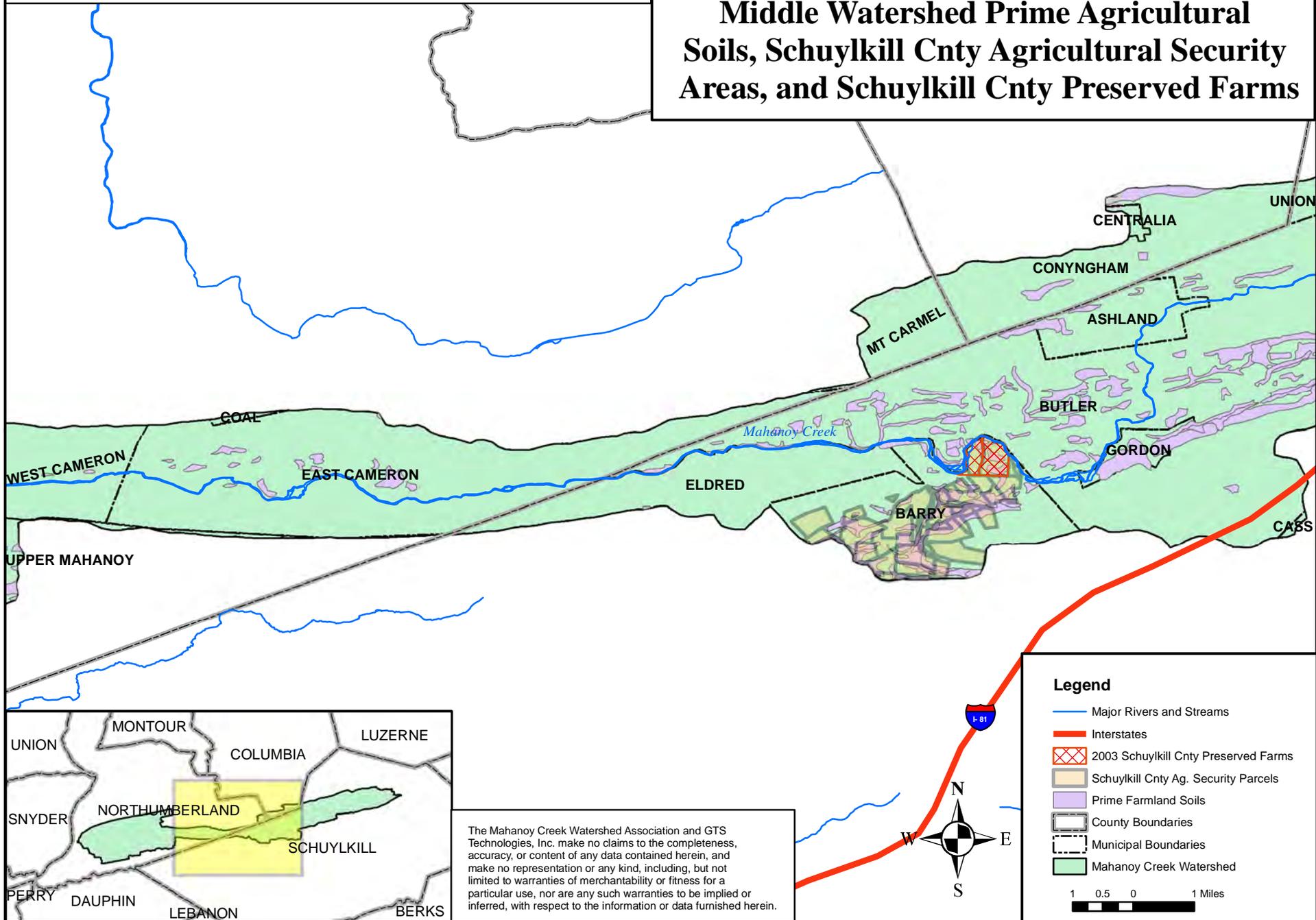


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### Legend

- Major Rivers and Streams
  - Interstates
  - 2003 Schuylkill Cnty Preserved Farms
  - Schuylkill Cnty Ag. Security Parcels
  - Prime Farmland Soils
  - County Boundaries
  - Municipal Boundaries
  - Mahanoy Creek Watershed
- 1 0.5 0 1 Miles

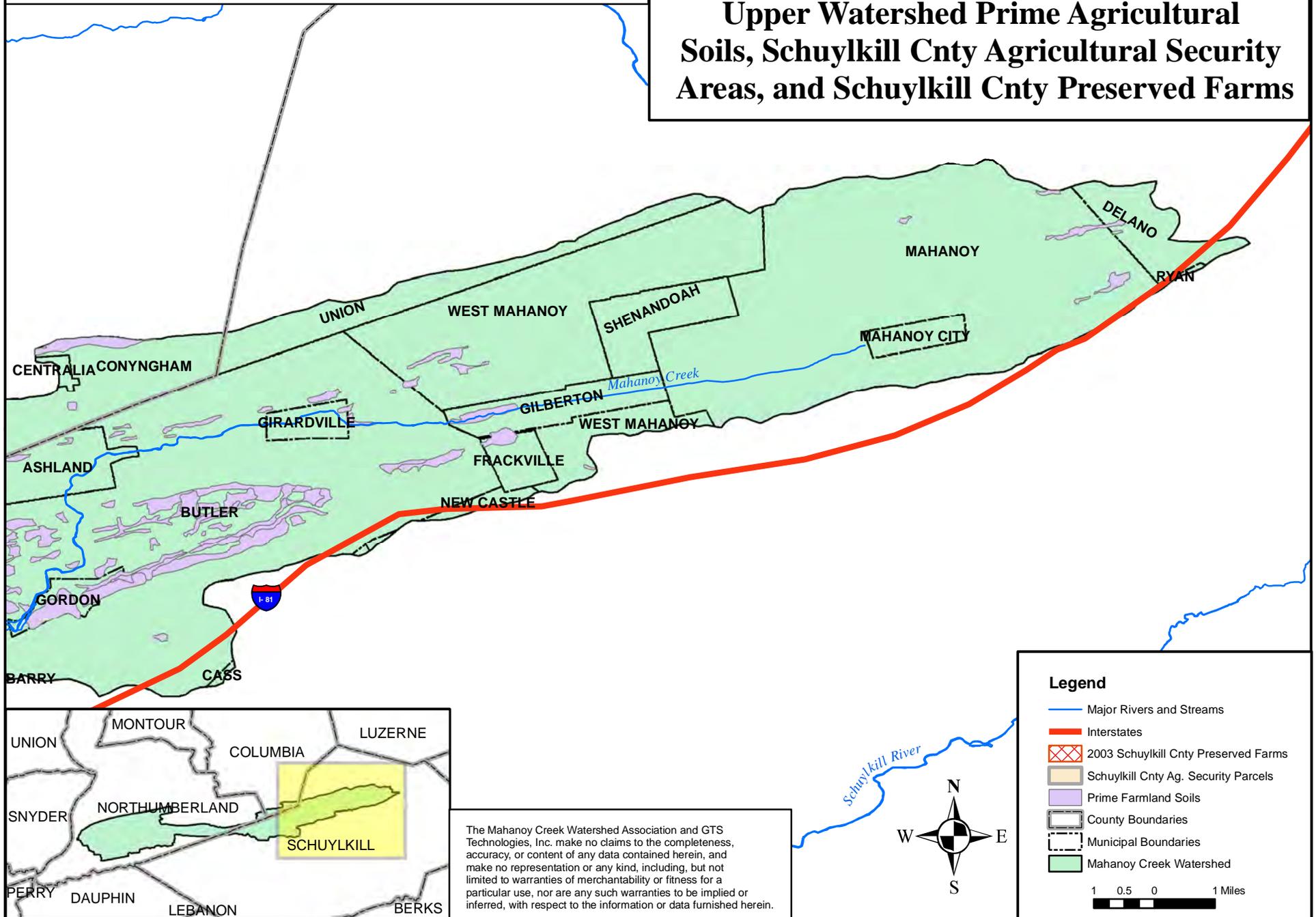
**Figure 1-15**  
**Middle Watershed Prime Agricultural**  
**Soils, Schuylkill Cnty Agricultural Security**  
**Areas, and Schuylkill Cnty Preserved Farms**



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# Mahanoy Creek Watershed Conservation Plan

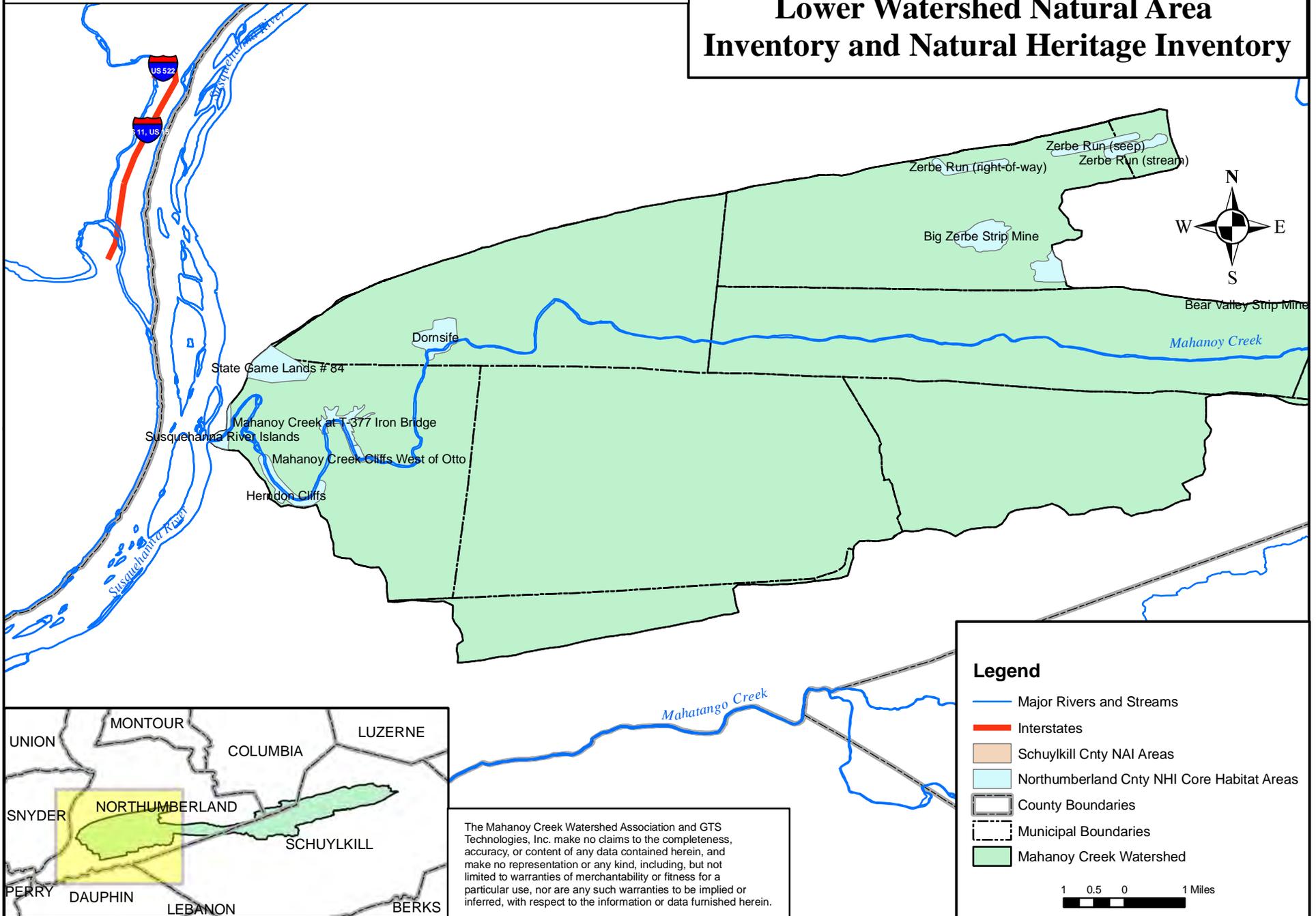
## Figure 1-16 Upper Watershed Prime Agricultural Soils, Schuylkill Cnty Agricultural Security Areas, and Schuylkill Cnty Preserved Farms



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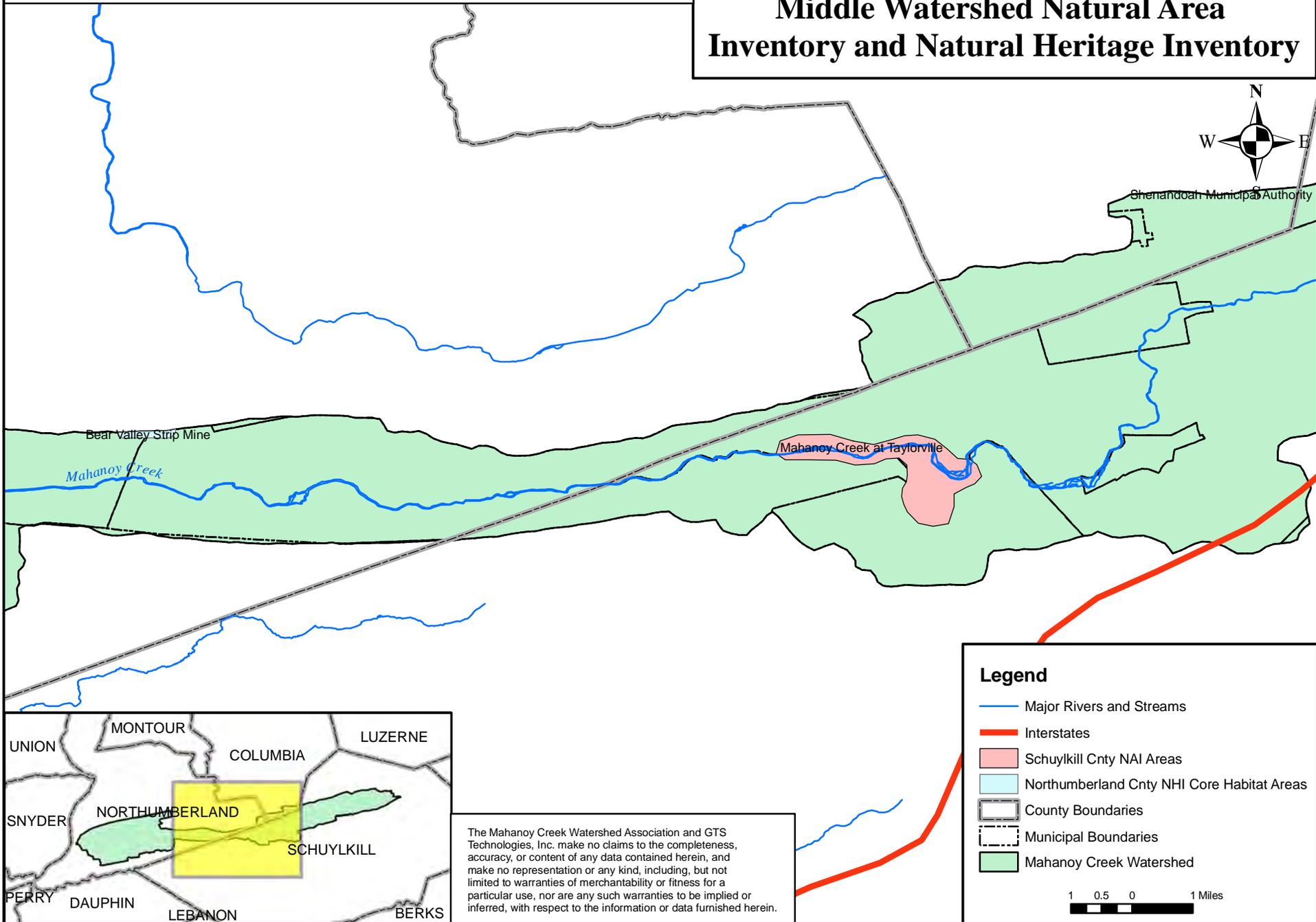
# Mahanoy Creek Watershed Conservation Plan

## Figure 1-17 Lower Watershed Natural Area Inventory and Natural Heritage Inventory



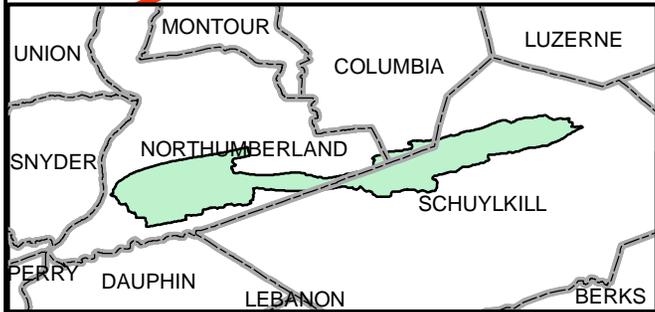
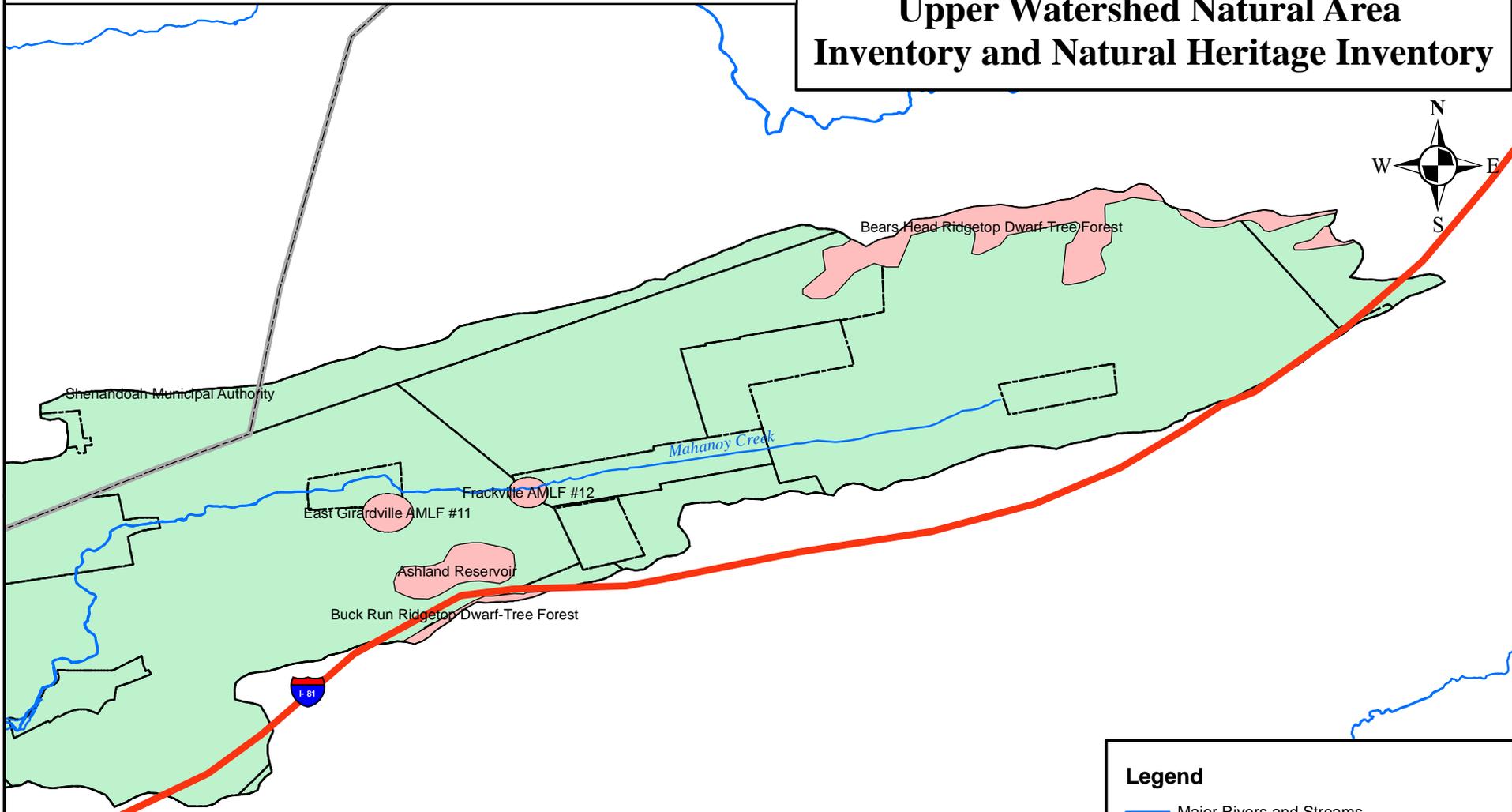
The Mahanoy Creek Watershed Association and GTS Technologies, Inc. make no claims to the completeness, accuracy, or content of any data contained herein, and make no representation or any kind, including, but not limited to warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied or inferred, with respect to the information or data furnished herein.

**Figure 1-18**  
**Middle Watershed Natural Area**  
**Inventory and Natural Heritage Inventory**



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**Figure 1-19**  
**Upper Watershed Natural Area**  
**Inventory and Natural Heritage Inventory**



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**Legend**

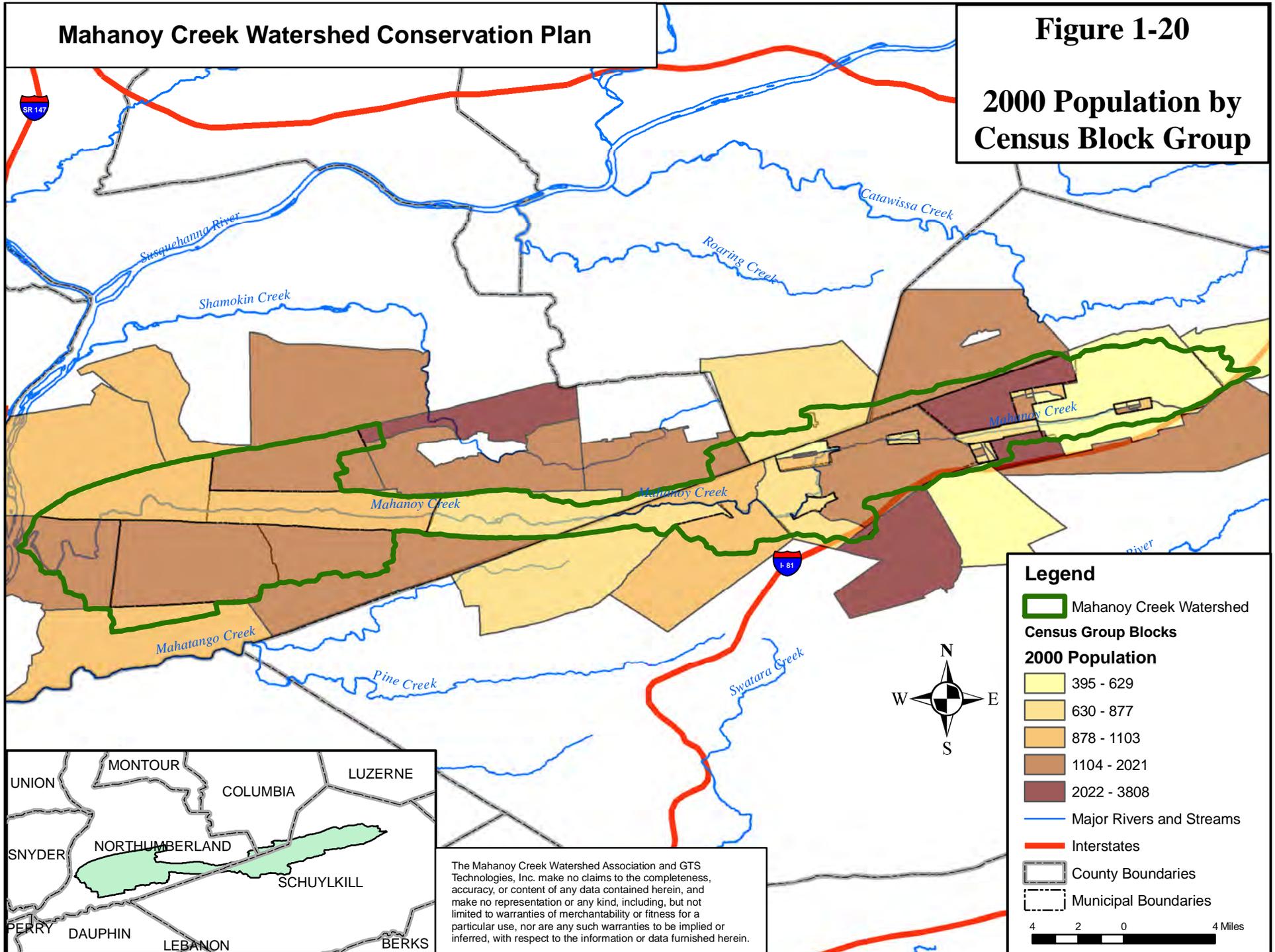
- Major Rivers and Streams
- Interstates
- Schuylkill Cnty NAI Areas
- Northumberland Cnty NHI Core Habitat Areas
- County Boundaries
- Municipal Boundaries
- Mahanoy Creek Watershed



# Mahanoy Creek Watershed Conservation Plan

## Figure 1-20

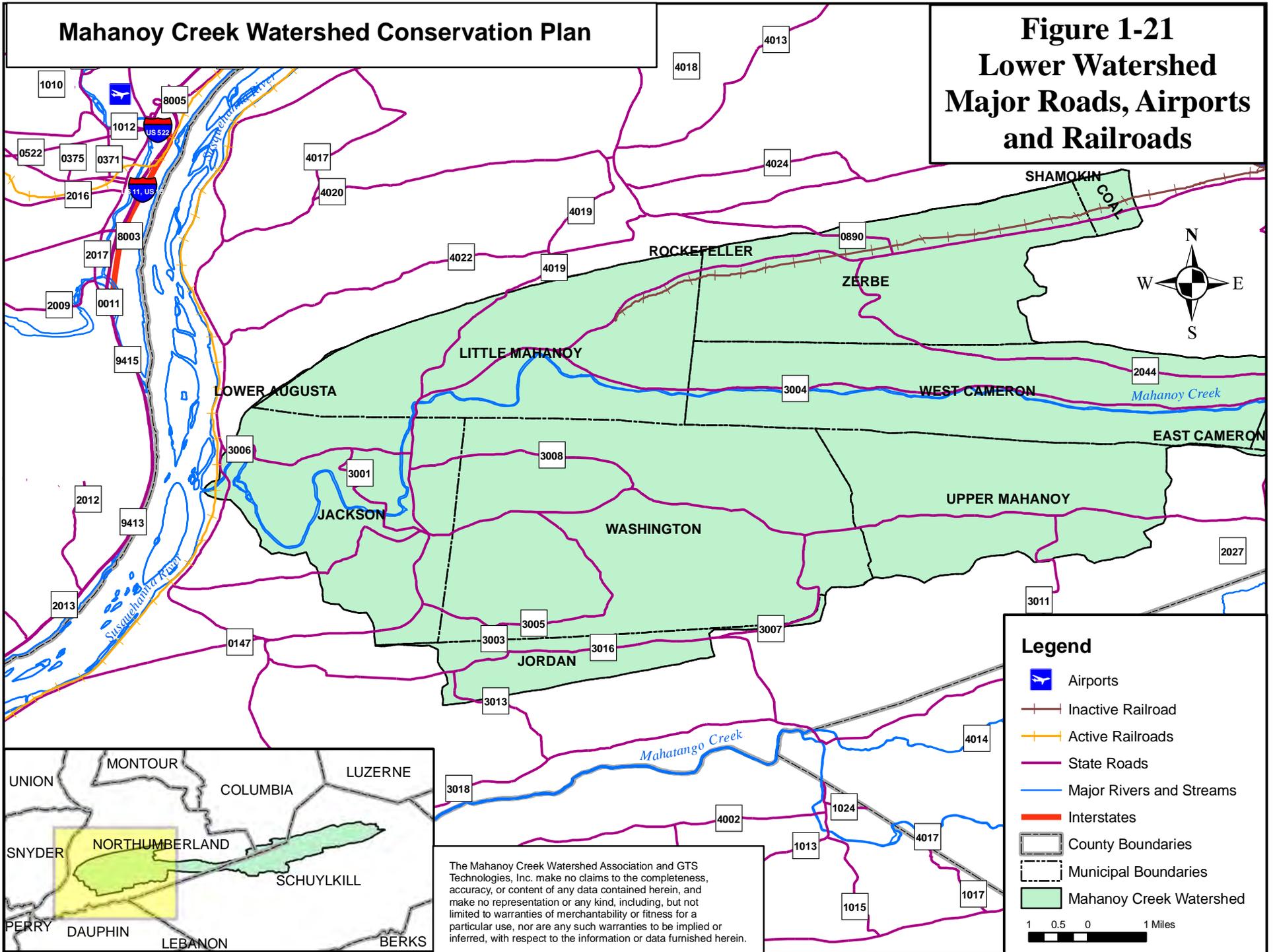
### 2000 Population by Census Block Group



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# Mahanoy Creek Watershed Conservation Plan

## Figure 1-21 Lower Watershed Major Roads, Airports and Railroads



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### Legend

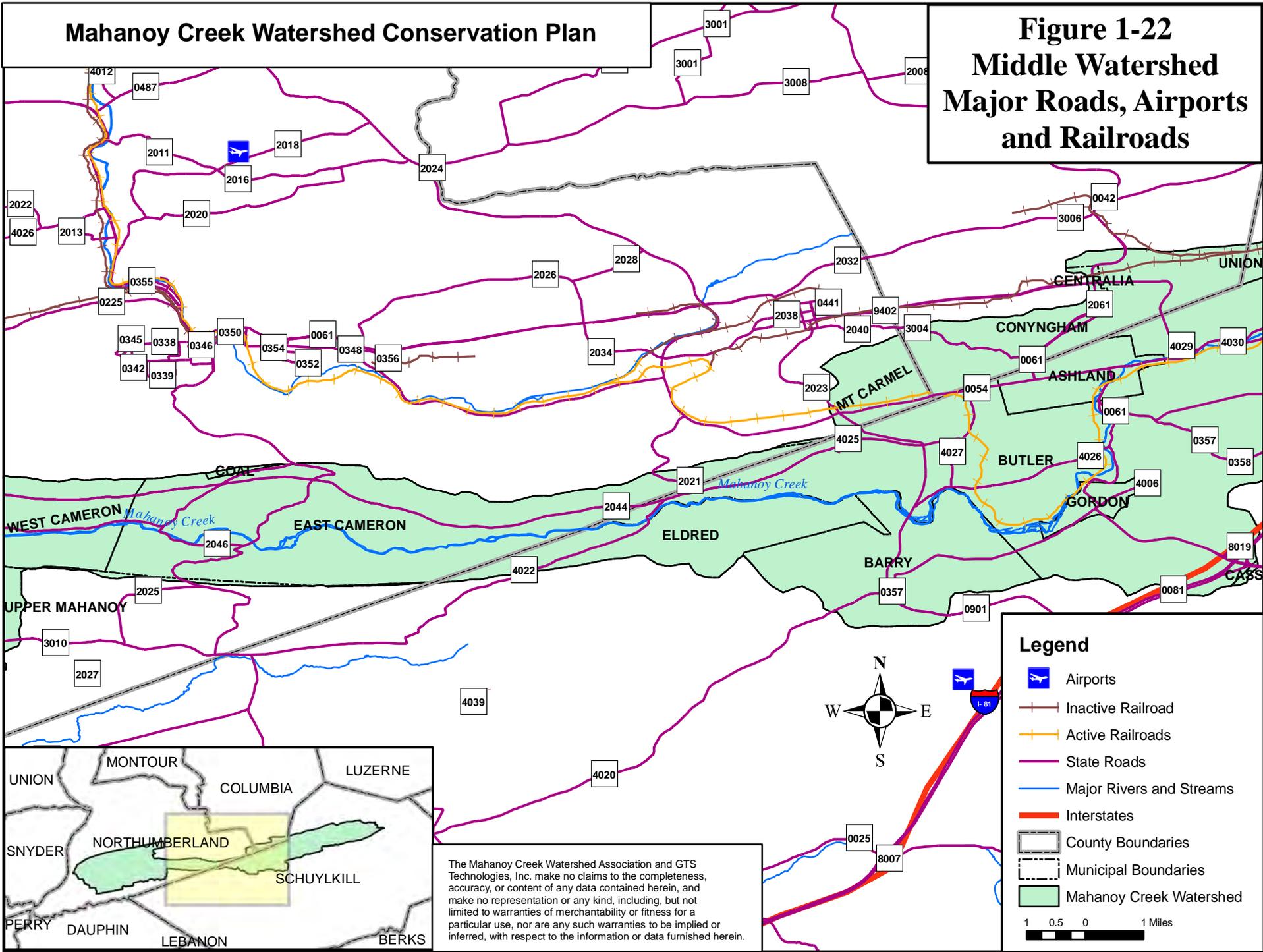
-  Airports
-  Inactive Railroad
-  Active Railroads
-  State Roads
-  Major Rivers and Streams
-  Interstates
-  County Boundaries
-  Municipal Boundaries
-  Mahanoy Creek Watershed

1 0.5 0 1 Miles



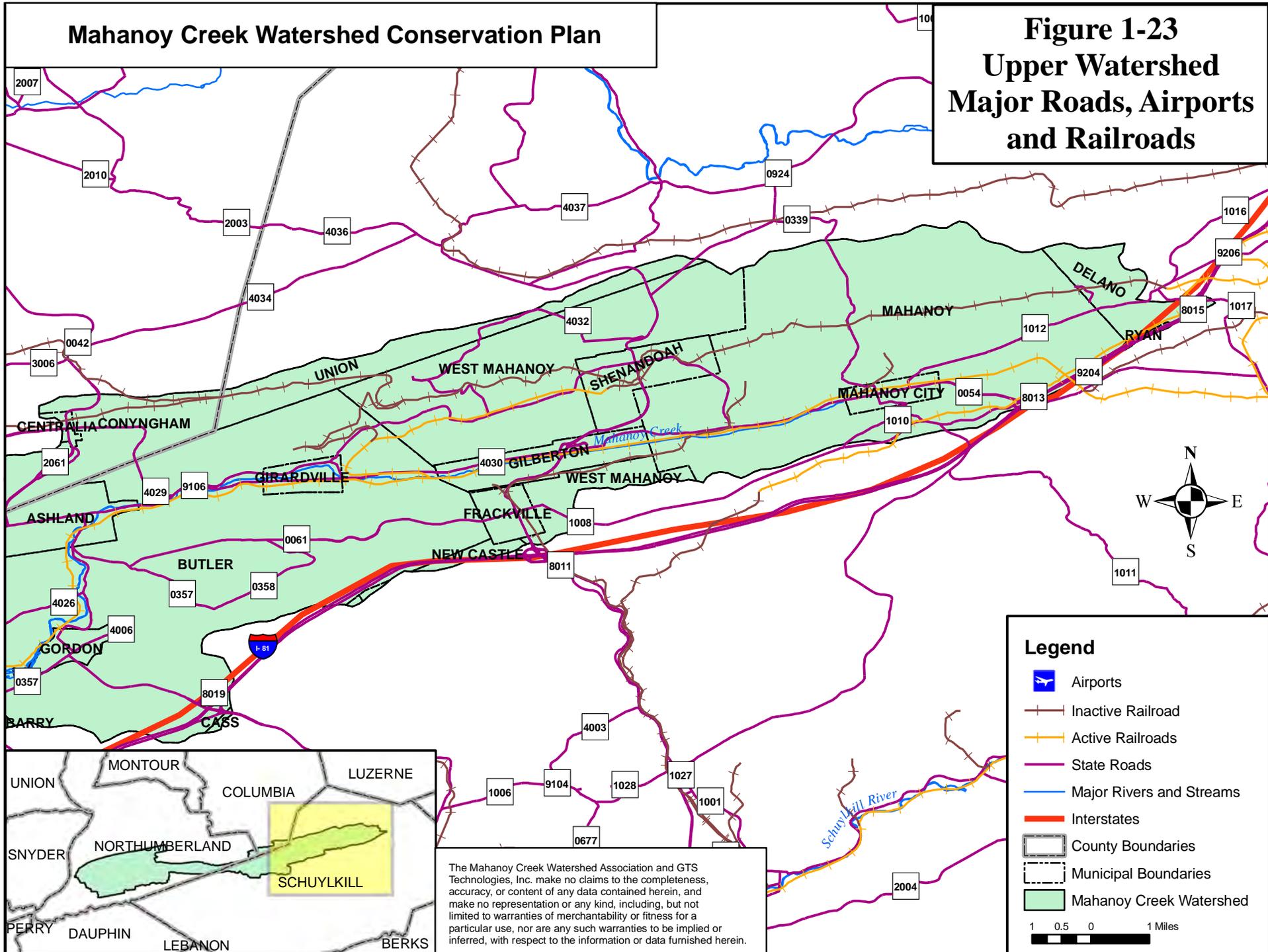
# Mahanoy Creek Watershed Conservation Plan

## Figure 1-22 Middle Watershed Major Roads, Airports and Railroads



# Mahanoy Creek Watershed Conservation Plan

## Figure 1-23 Upper Watershed Major Roads, Airports and Railroads



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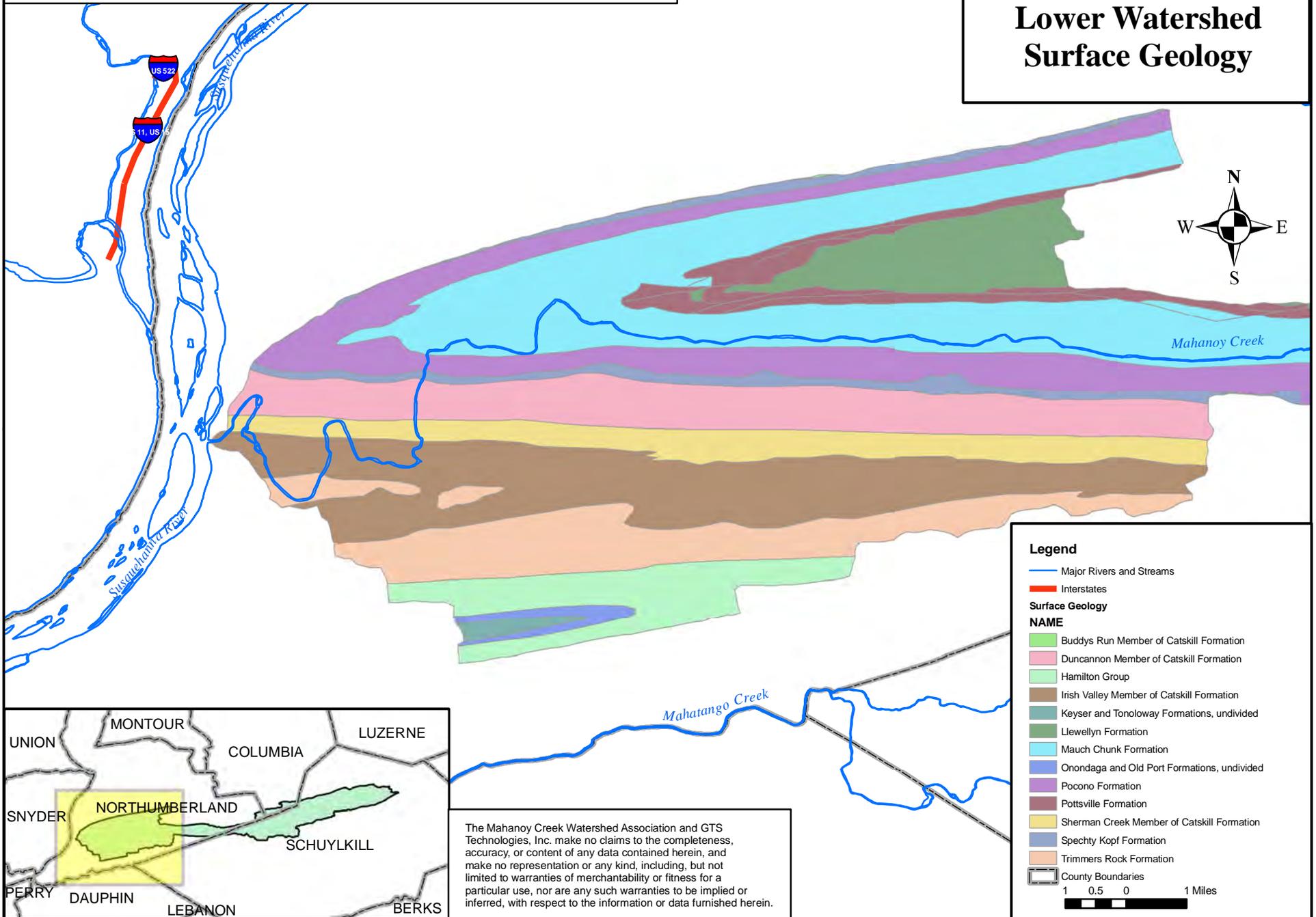
**Legend**

- Airports
- Inactive Railroad
- Active Railroads
- State Roads
- Major Rivers and Streams
- Interstates
- County Boundaries
- Municipal Boundaries
- Mahanoy Creek Watershed

1 0.5 0 1 Miles

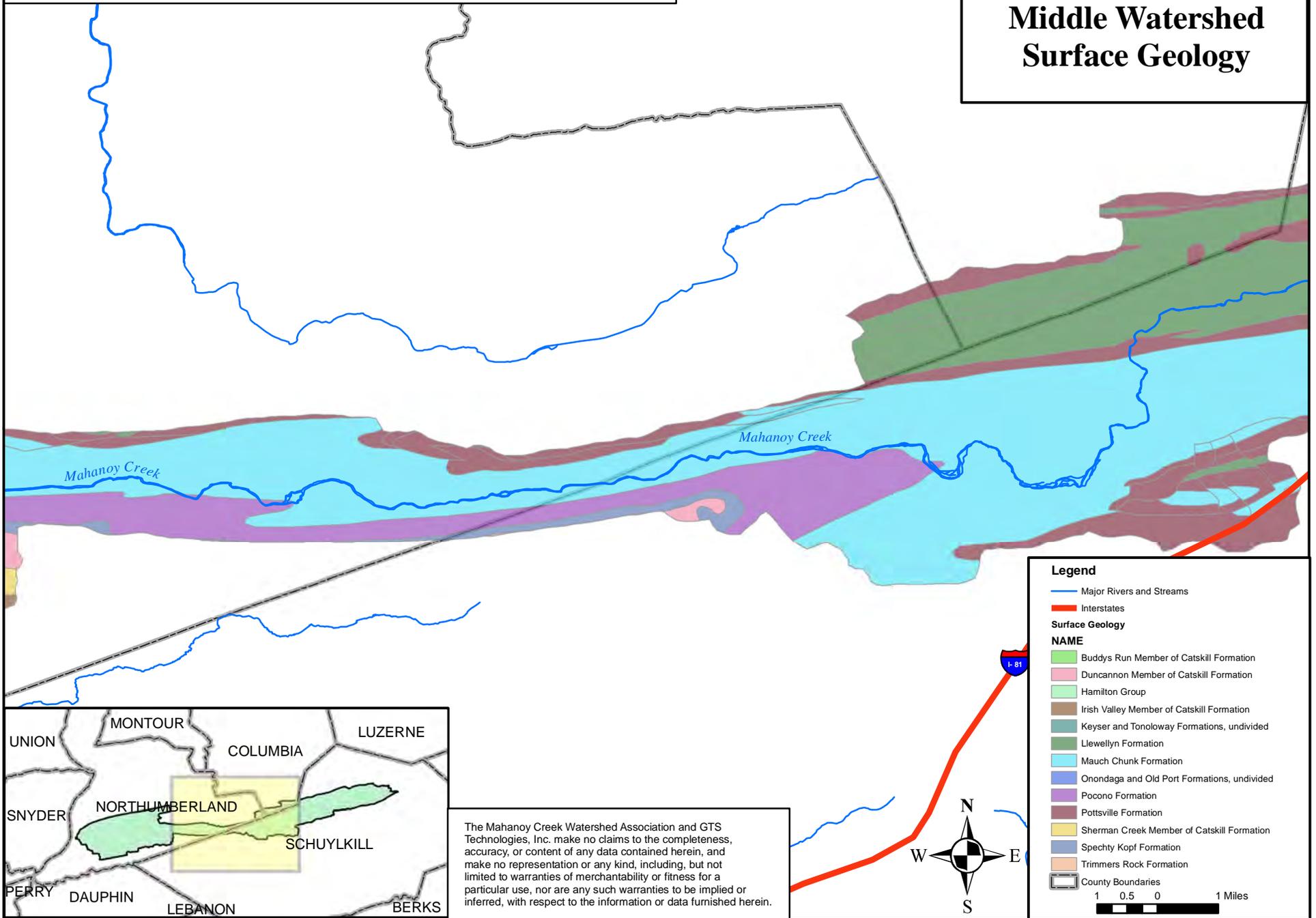
# Mahanoy Creek Watershed Conservation Plan

## Figure 2-1 Lower Watershed Surface Geology



# Mahanoy Creek Watershed Conservation Plan

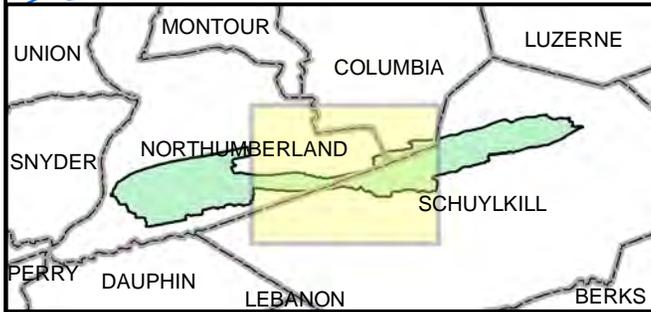
## Figure 2-2 Middle Watershed Surface Geology



### Legend

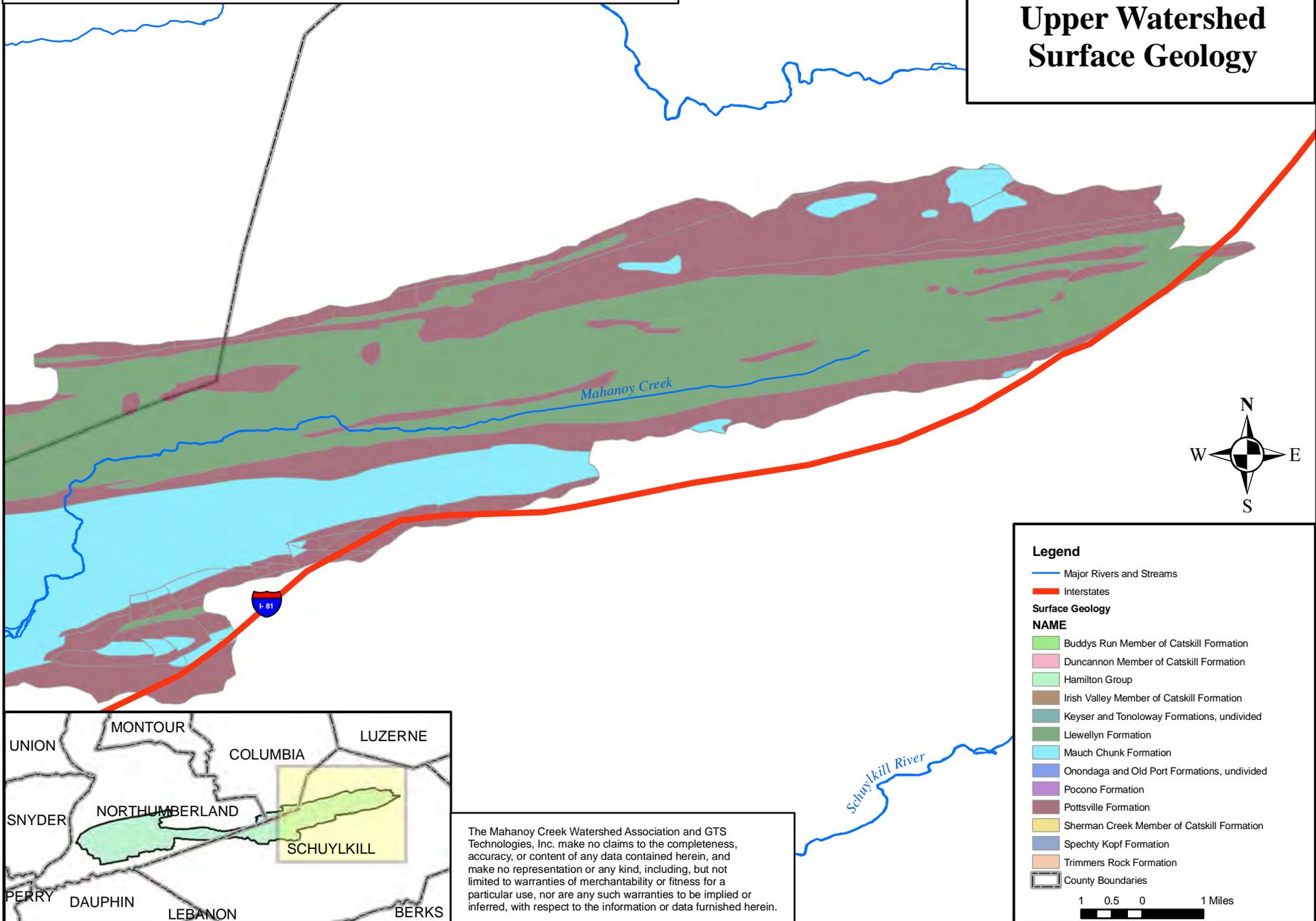
- Major Rivers and Streams
  - Interstates
  - Surface Geology**
  - NAME**
  - Buddys Run Member of Catskill Formation
  - Duncannon Member of Catskill Formation
  - Hamilton Group
  - Irish Valley Member of Catskill Formation
  - Keyser and Tonoloway Formations, undivided
  - Llewellyn Formation
  - Mauch Chunk Formation
  - Onondaga and Old Port Formations, undivided
  - Pocono Formation
  - Pottsville Formation
  - Sherman Creek Member of Catskill Formation
  - Specht Kopf Formation
  - Trimmers Rock Formation
  - County Boundaries
- 1 0.5 0 1 Miles

The Mahanoy Creek Watershed Association and GTS Technologies, Inc. make no claims to the completeness, accuracy, or content of any data contained herein, and make no representation or any kind, including, but not limited to warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied or inferred, with respect to the information or data furnished herein.



# Mahanoy Creek Watershed Conservation Plan

## Figure 2-3 Upper Watershed Surface Geology



**Legend**

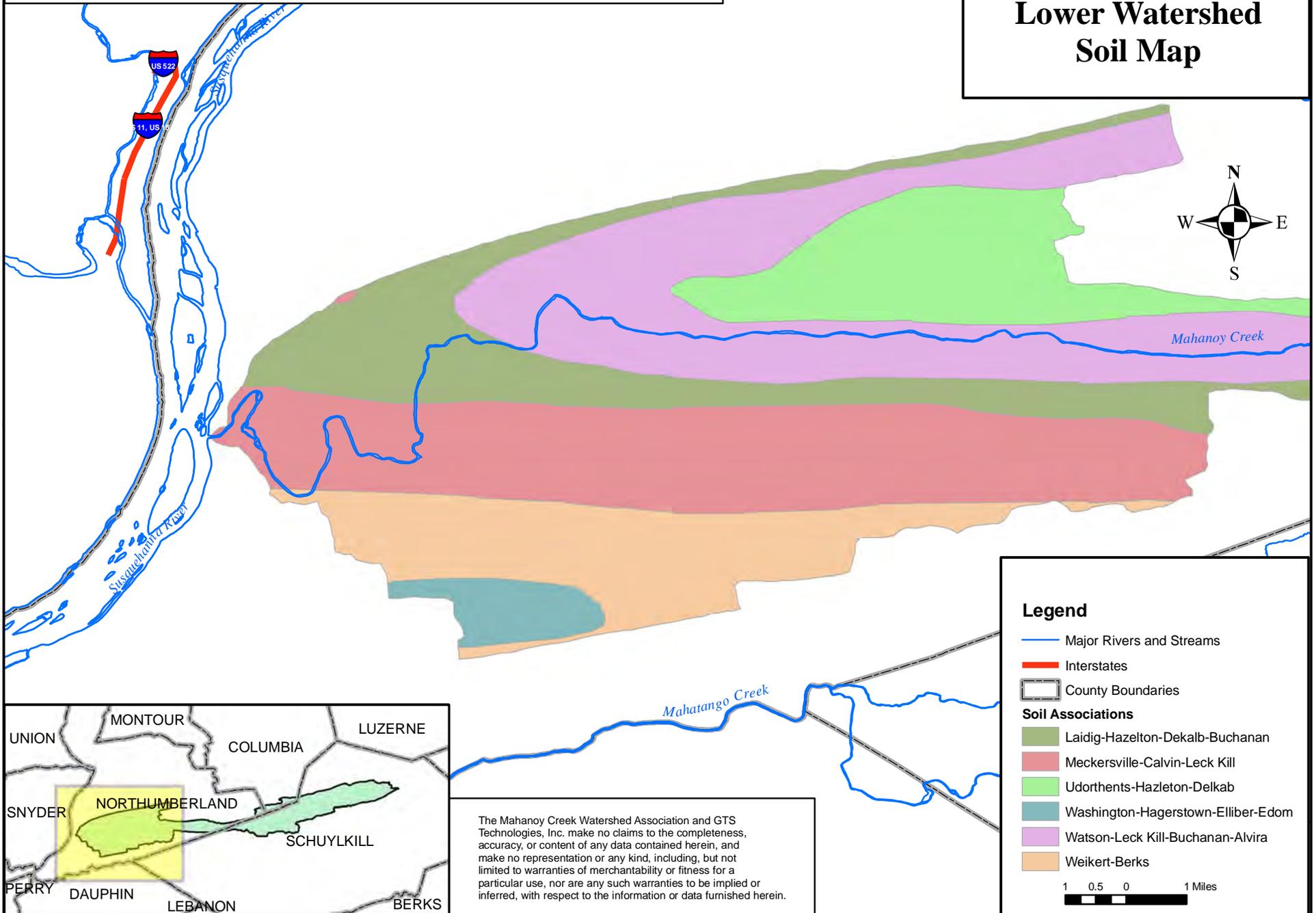
- Major Rivers and Streams
- Interstates
- Surface Geology**
- NAME**
- Buddys Run Member of Catskill Formation
- Duncannon Member of Catskill Formation
- Hamilton Group
- Irish Valley Member of Catskill Formation
- Keyser and Tonoloway Formations, undivided
- Llewellyn Formation
- Mauch Chunk Formation
- Onondaga and Old Port Formations, undivided
- Pocono Formation
- Pottsville Formation
- Sherman Creek Member of Catskill Formation
- Spechtly Kopf Formation
- Trimmers Rock Formation
- County Boundaries

1 0.5 0 1 Miles

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# Mahanoy Creek Watershed Conservation Plan

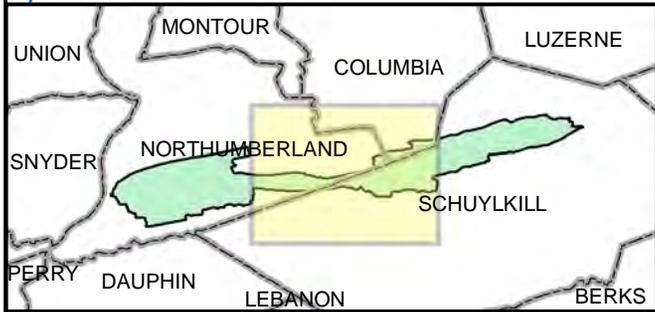
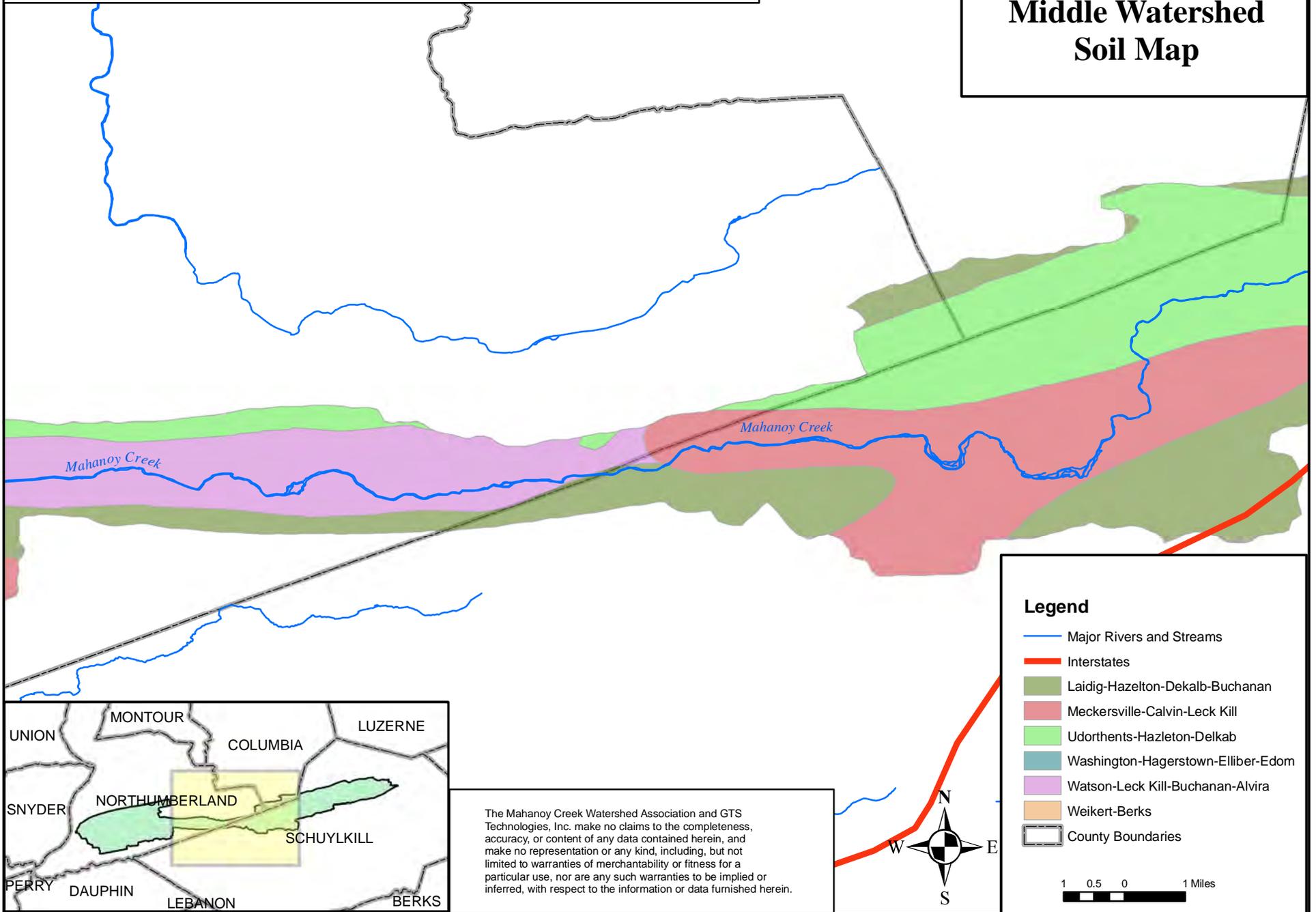
## Figure 2-4 Lower Watershed Soil Map



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# Mahanoy Creek Watershed Conservation Plan

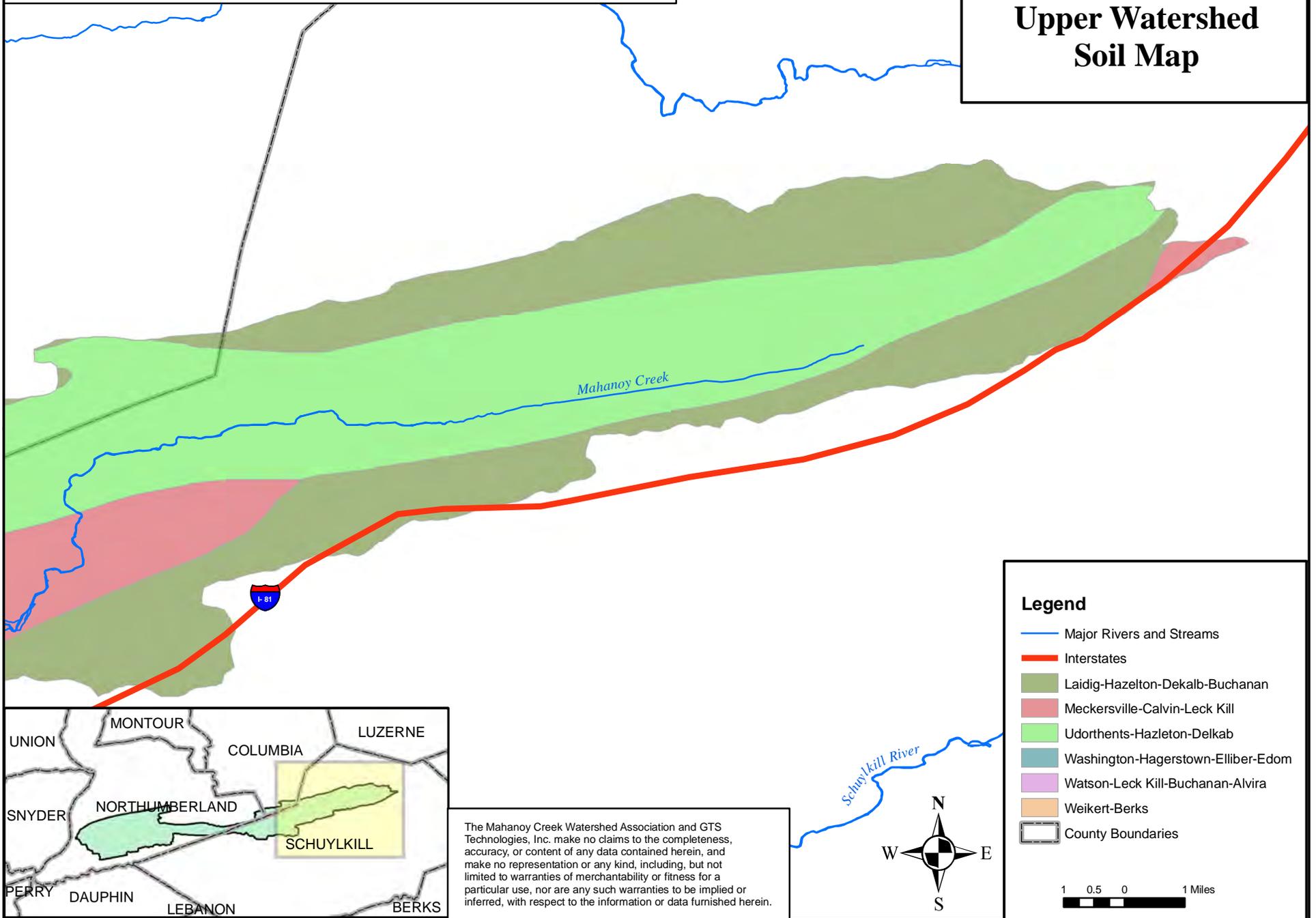
## Figure 2-5 Middle Watershed Soil Map



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# Mahanoy Creek Watershed Conservation Plan

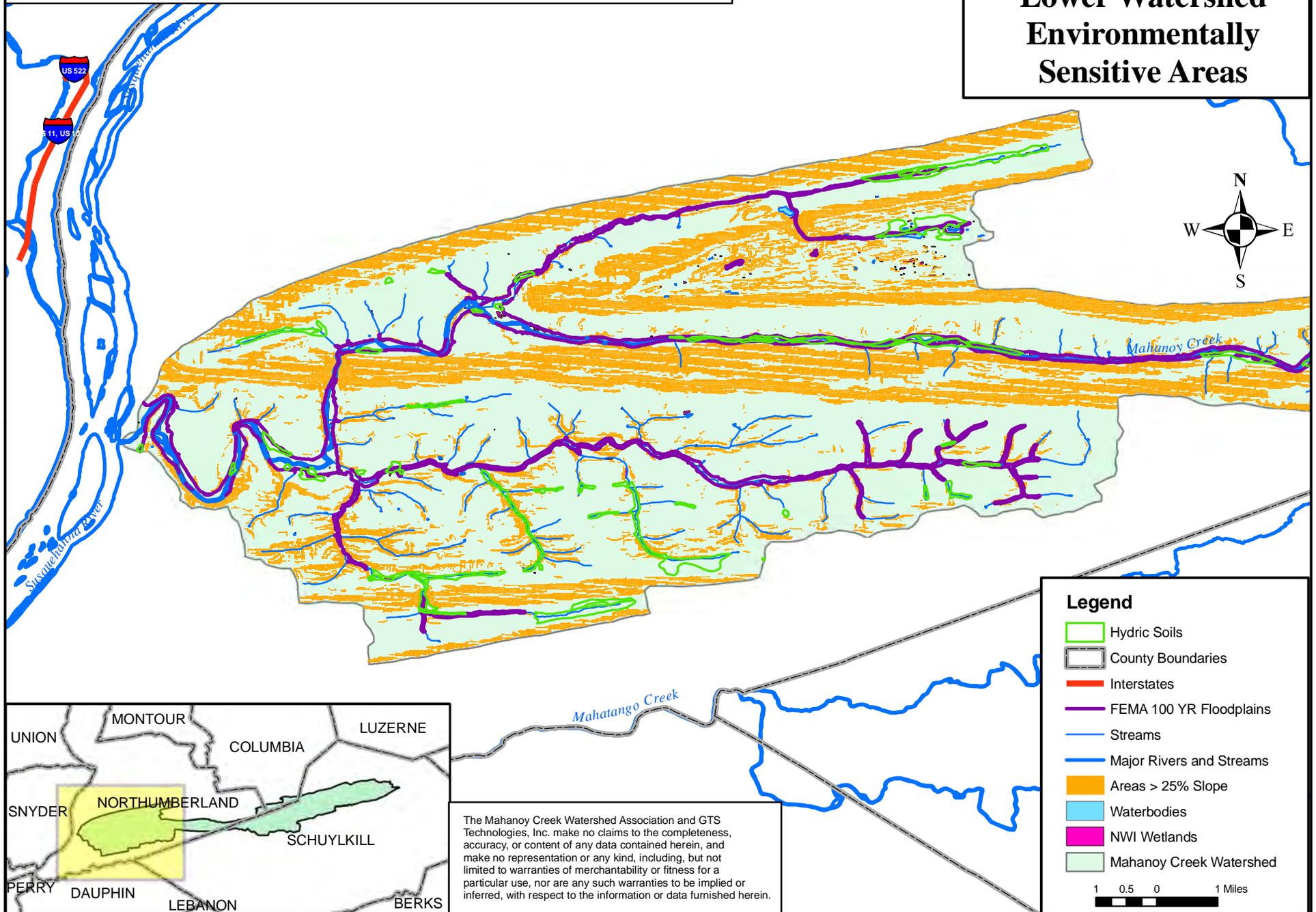
## Figure 2-6 Upper Watershed Soil Map



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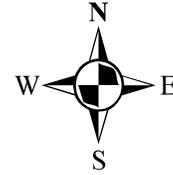
# Mahanoy Creek Watershed Conservation Plan

## Figure 2-7 Lower Watershed Environmentally Sensitive Areas

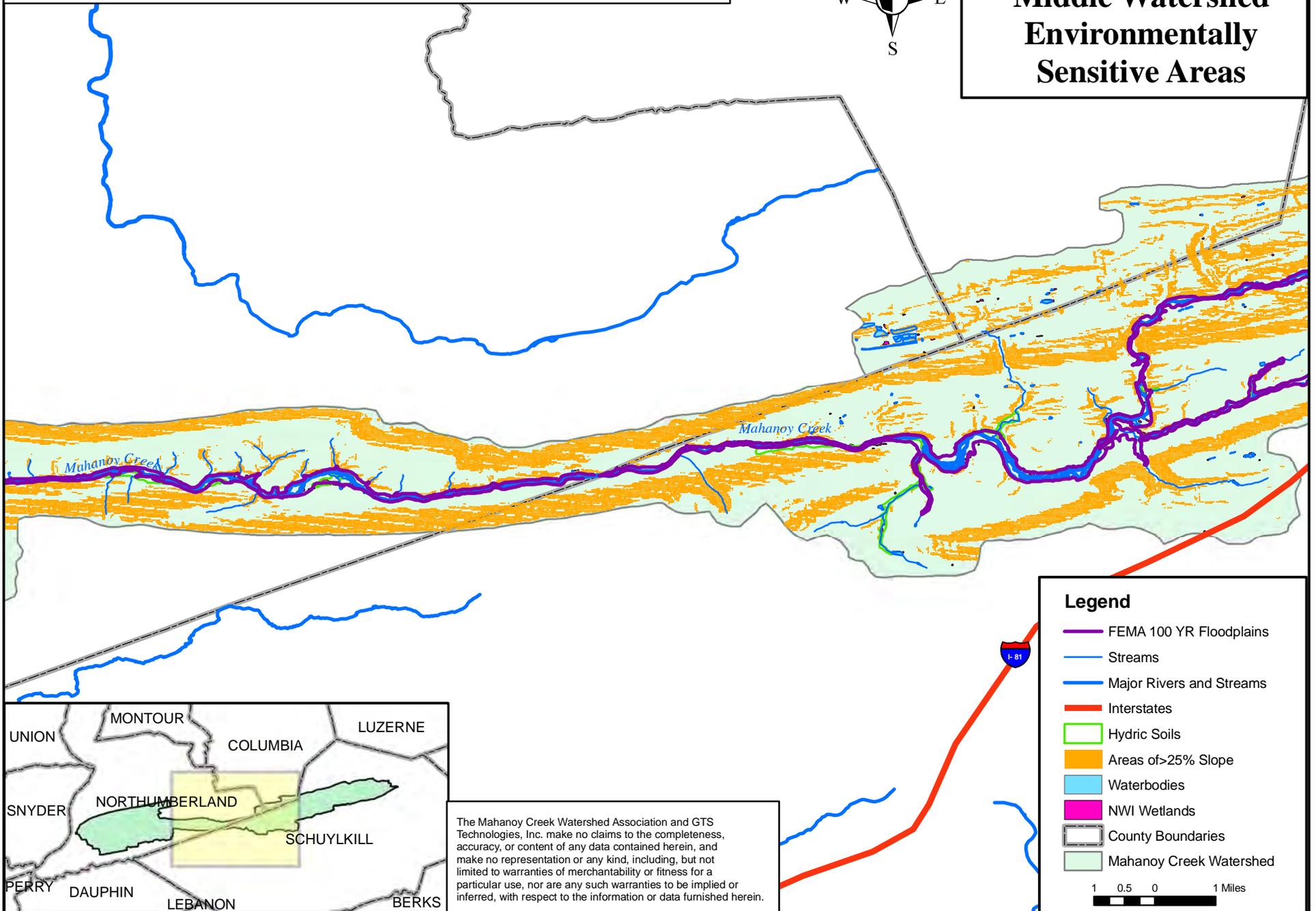


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# Mahanoy Creek Watershed Conservation Plan



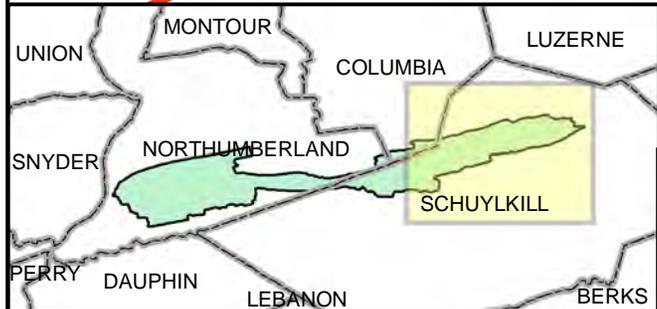
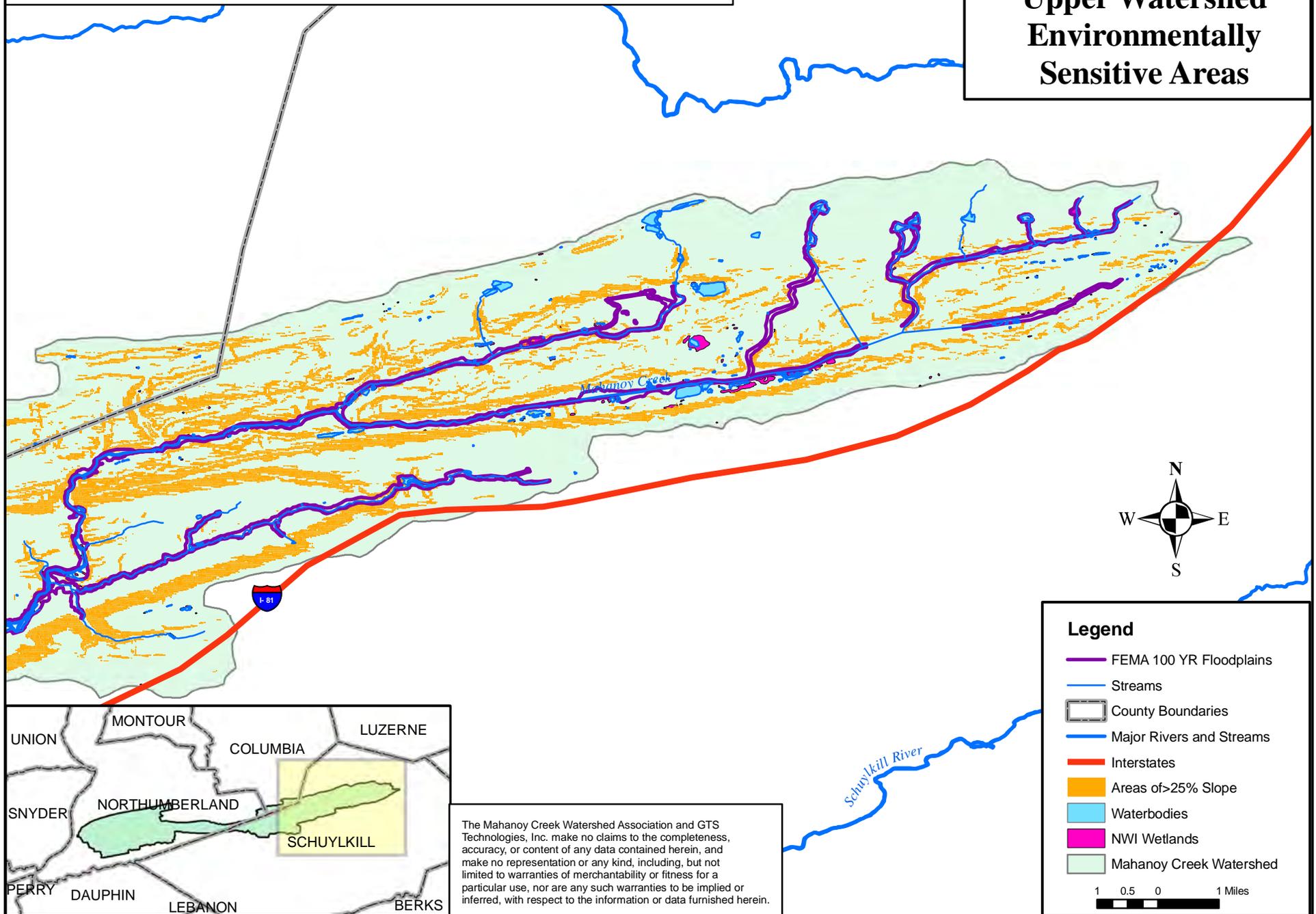
## Figure 2-8 Middle Watershed Environmentally Sensitive Areas



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# Mahanoy Creek Watershed Conservation Plan

## Figure 2-9 Upper Watershed Environmentally Sensitive Areas



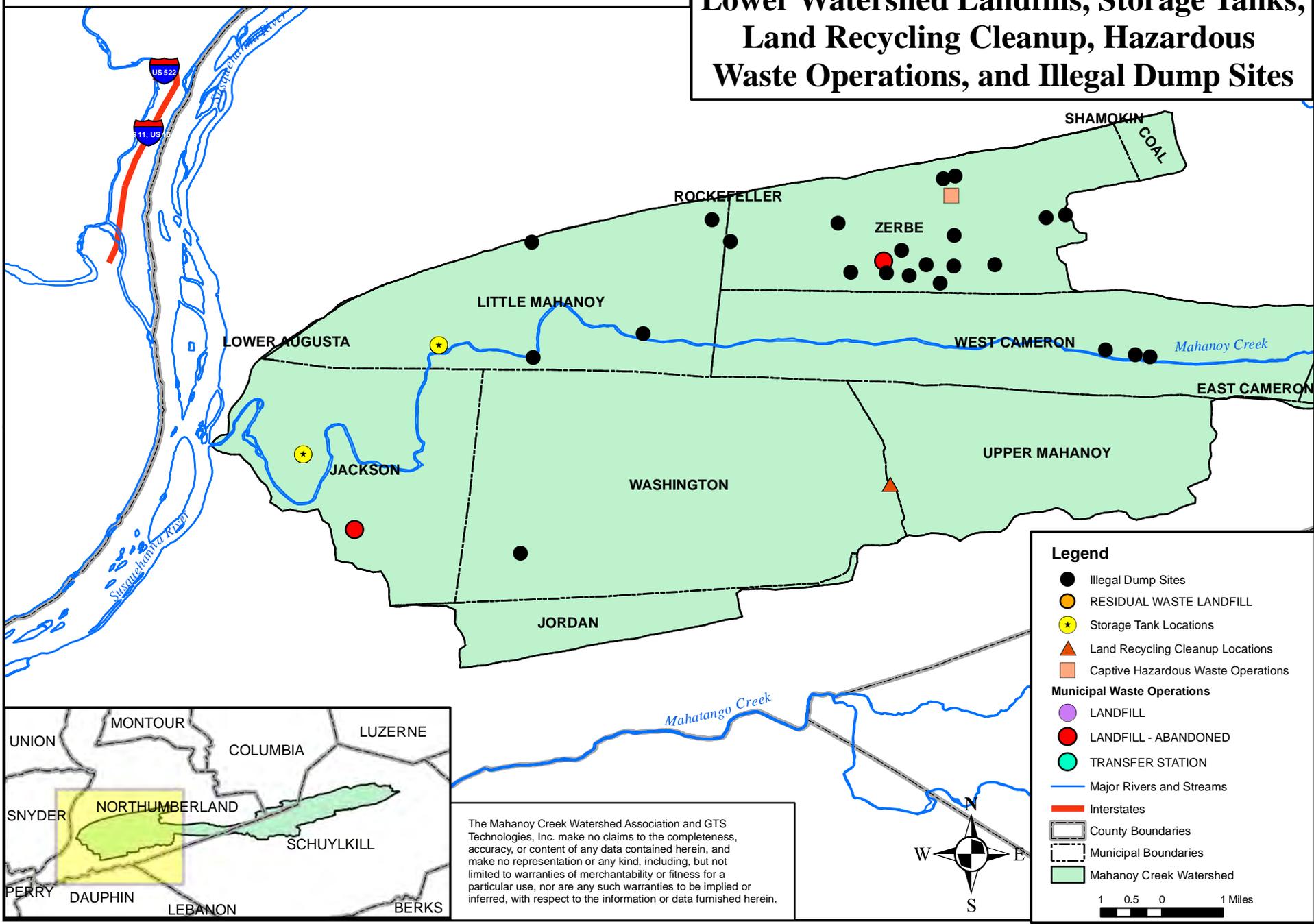
The Mahanoy Creek Watershed Association and GTS Technologies, Inc. make no claims to the completeness, accuracy, or content of any data contained herein, and make no representation or any kind, including, but not limited to warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied or inferred, with respect to the information or data furnished herein.

**Legend**

- FEMA 100 YR Floodplains
- Streams
- County Boundaries
- Major Rivers and Streams
- Interstates
- Areas of >25% Slope
- Waterbodies
- NWI Wetlands
- Mahanoy Creek Watershed

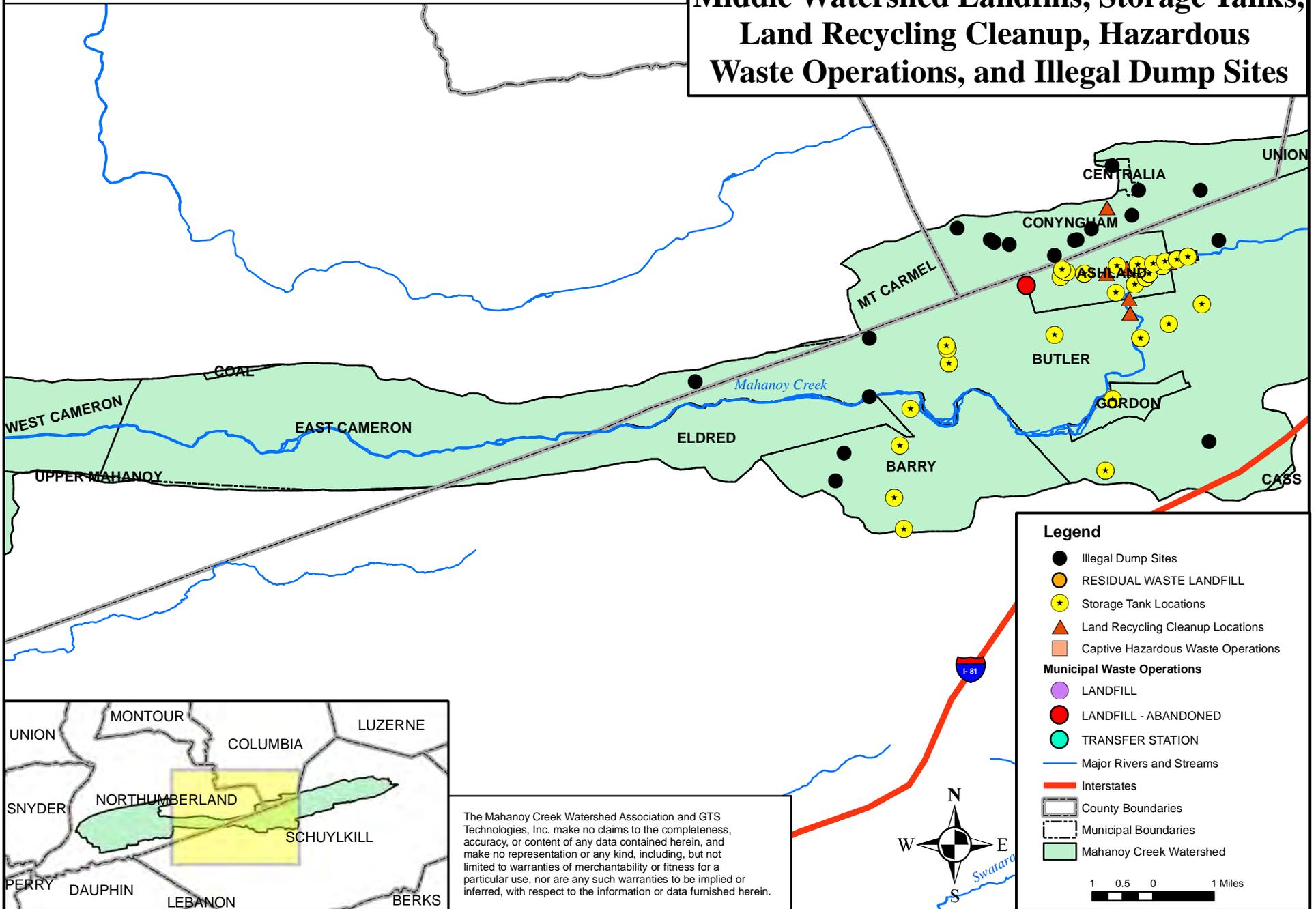
1 0.5 0 1 Miles

**Figure 2-10**  
**Lower Watershed Landfills, Storage Tanks,**  
**Land Recycling Cleanup, Hazardous**  
**Waste Operations, and Illegal Dump Sites**



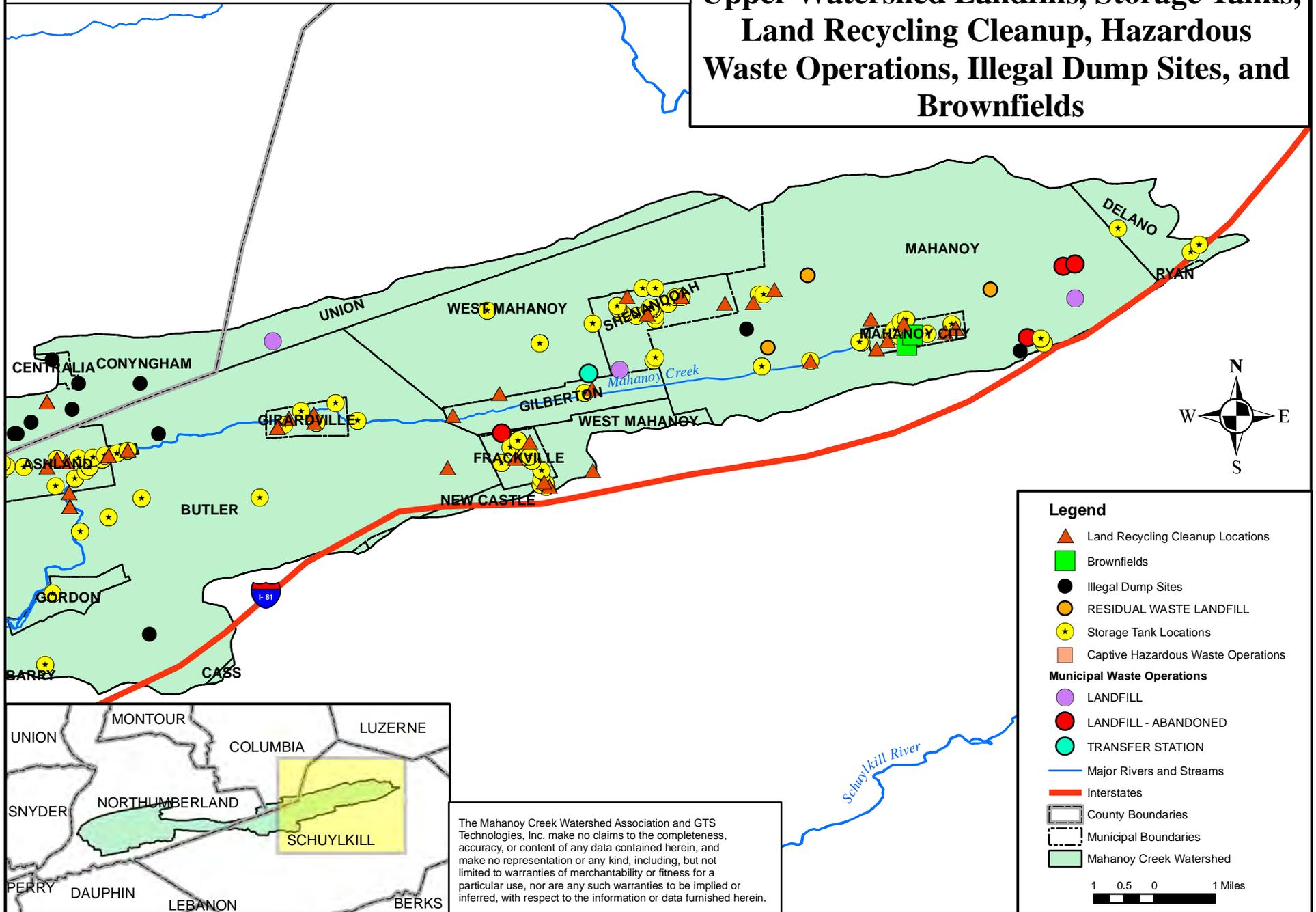
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**Figure 2-11**  
**Middle Watershed Landfills, Storage Tanks,**  
**Land Recycling Cleanup, Hazardous**  
**Waste Operations, and Illegal Dump Sites**



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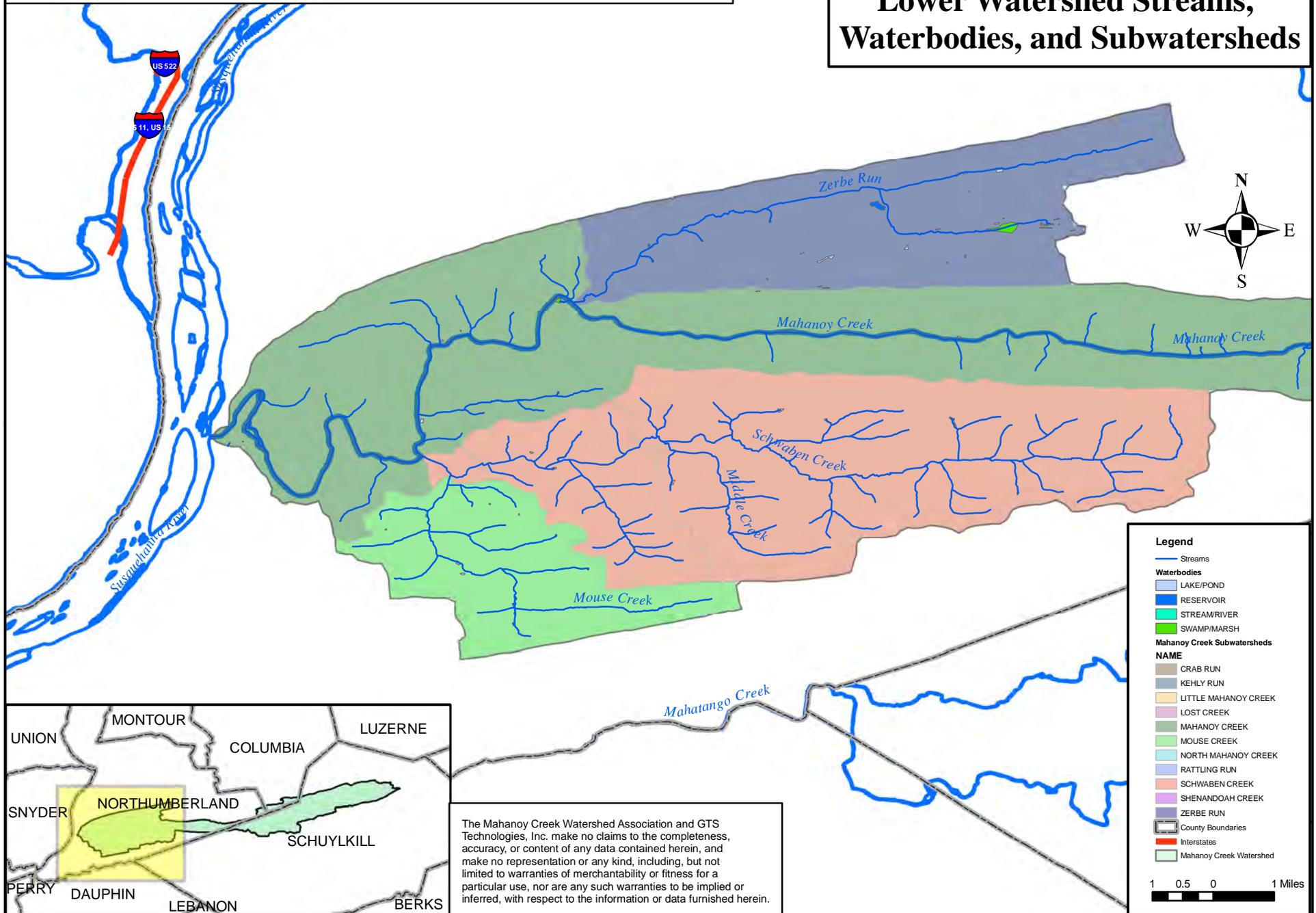
**Figure 2-12**  
**Upper Watershed Landfills, Storage Tanks,**  
**Land Recycling Cleanup,**  
**Hazardous Waste Operations, Illegal Dump Sites, and**  
**Brownfields**



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# Mahanoy Creek Watershed Conservation Plan

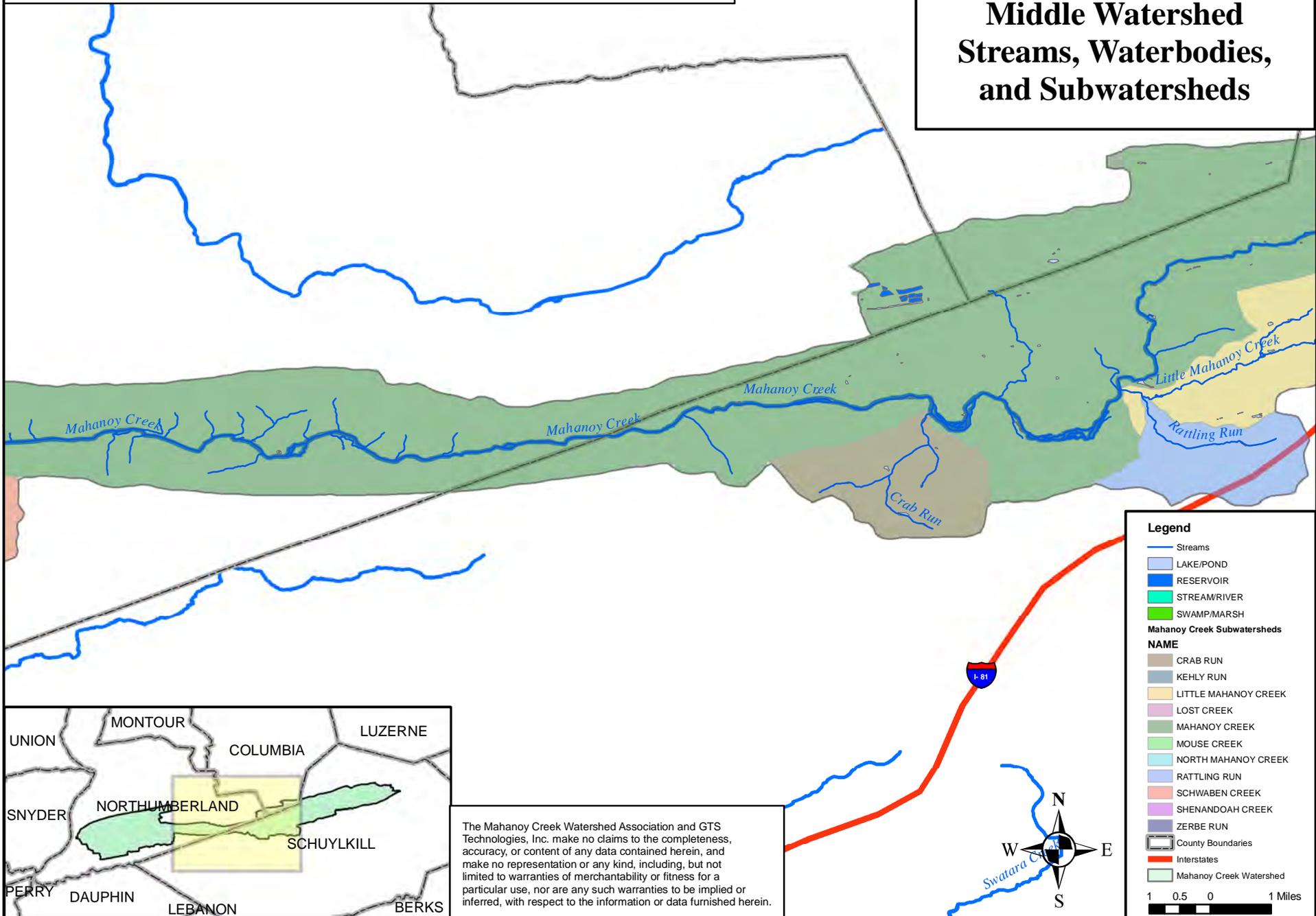
## Figure 3-1 Lower Watershed Streams, Waterbodies, and Subwatersheds



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# Mahanoy Creek Watershed Conservation Plan

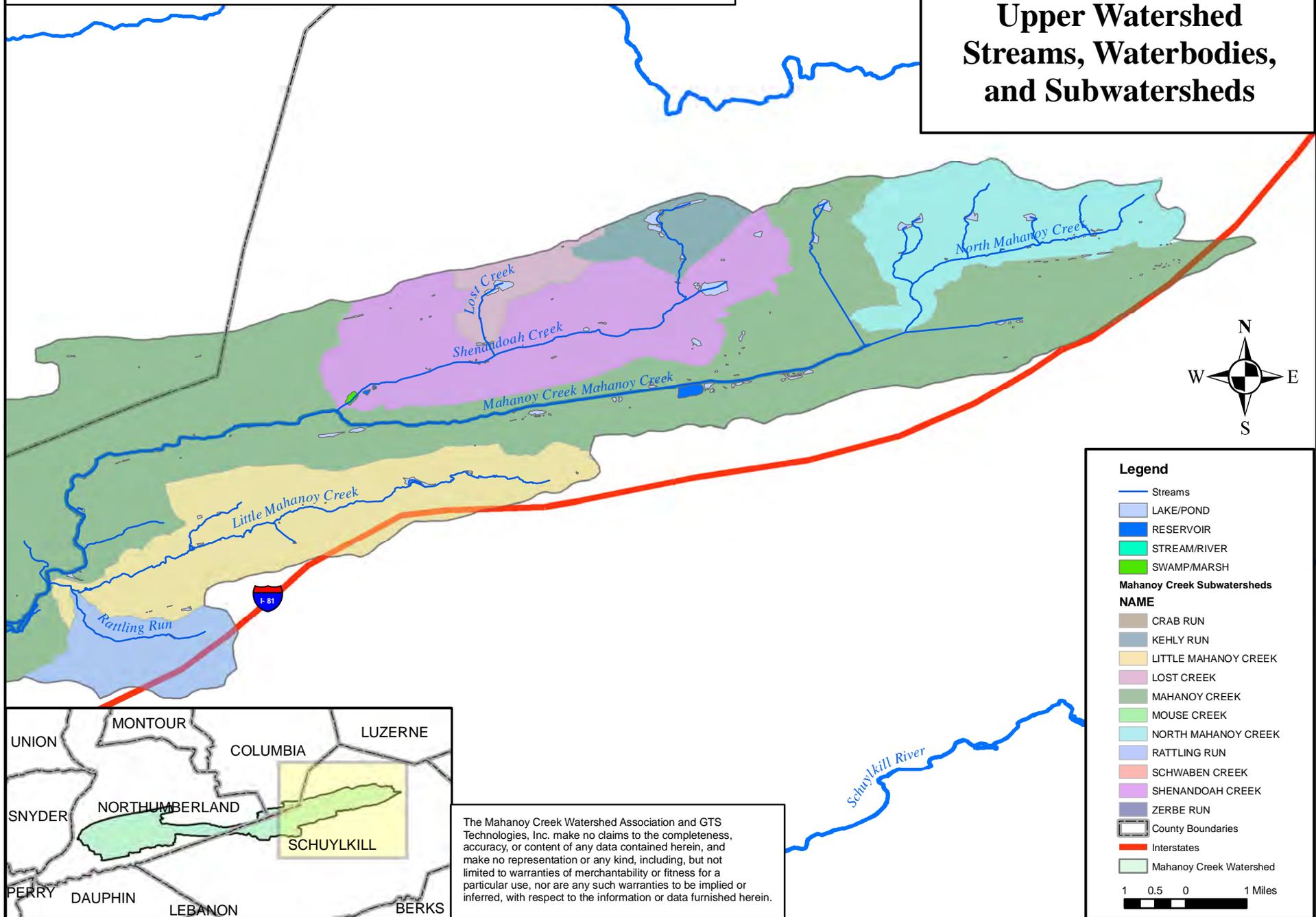
## Figure 3-2 Middle Watershed Streams, Waterbodies, and Subwatersheds



The Mahanoy Creek Watershed Association and GTS Technologies, Inc. make no claims to the completeness, accuracy, or content of any data contained herein, and make no representation or any kind, including, but not limited to warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied or inferred, with respect to the information or data furnished herein.

# Mahanoy Creek Watershed Conservation Plan

## Figure 3-3 Upper Watershed Streams, Waterbodies, and Subwatersheds



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**Legend**

- Streams
- LAKE/POND
- RESERVOIR
- STREAM/RIVER
- SWAMP/MARSH

**Mahanoy Creek Subwatersheds**

**NAME**

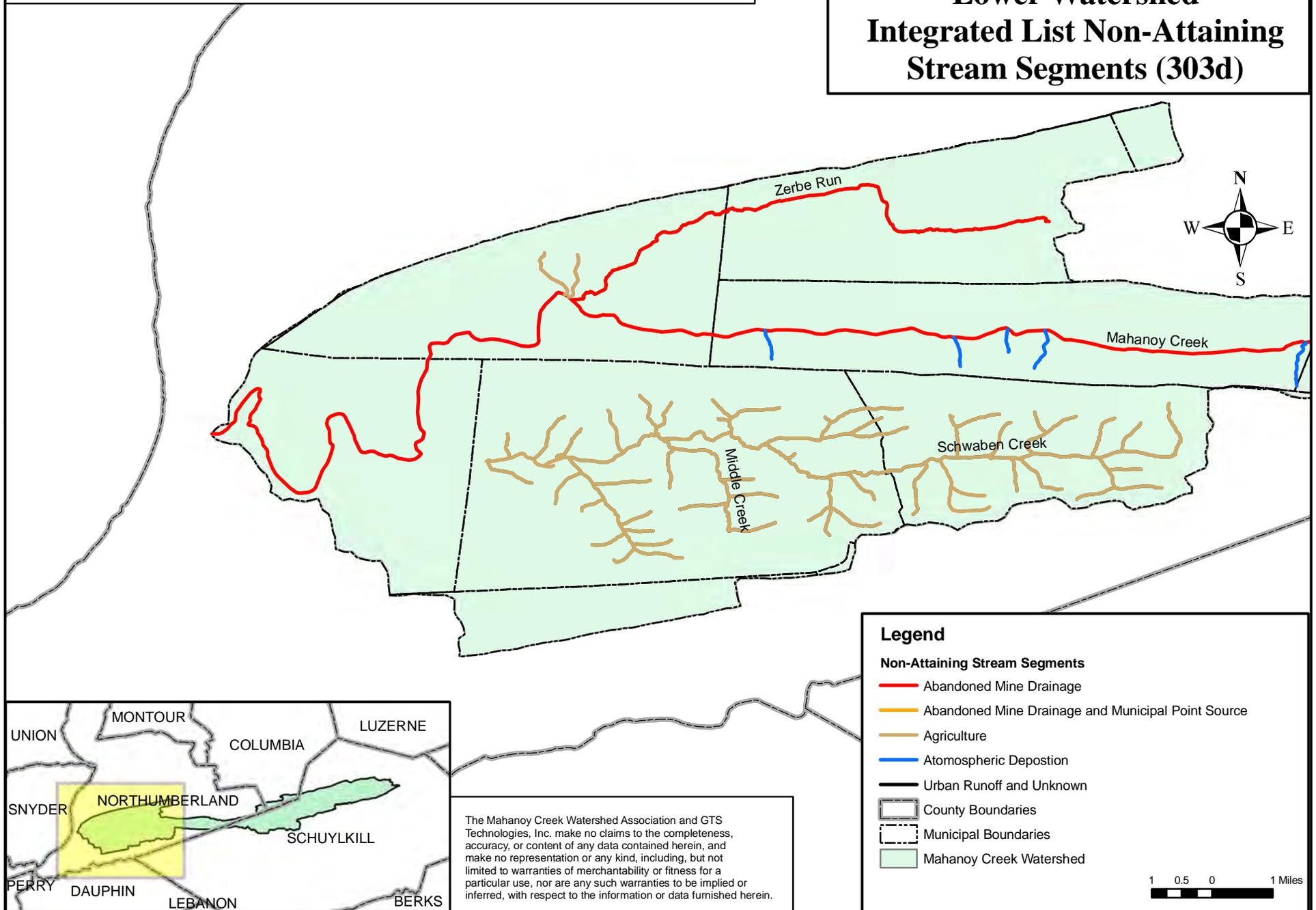
- CRAB RUN
- KEHLY RUN
- LITTLE MAHANNOY CREEK
- LOST CREEK
- MAHANNOY CREEK
- MOUSE CREEK
- NORTH MAHANNOY CREEK
- RATTLING RUN
- SCHWABEN CREEK
- SHENANDOAH CREEK
- ZERBE RUN

- County Boundaries
- Interstates
- Mahanoy Creek Watershed

1 0.5 0 1 Miles

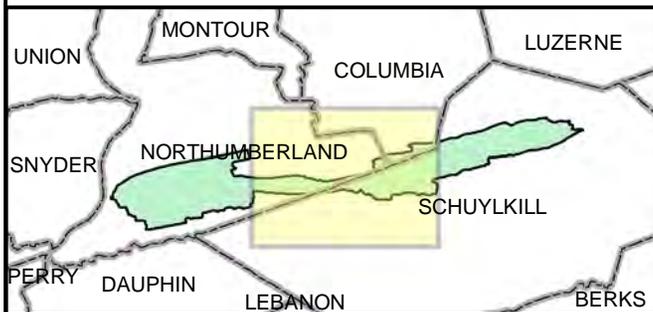
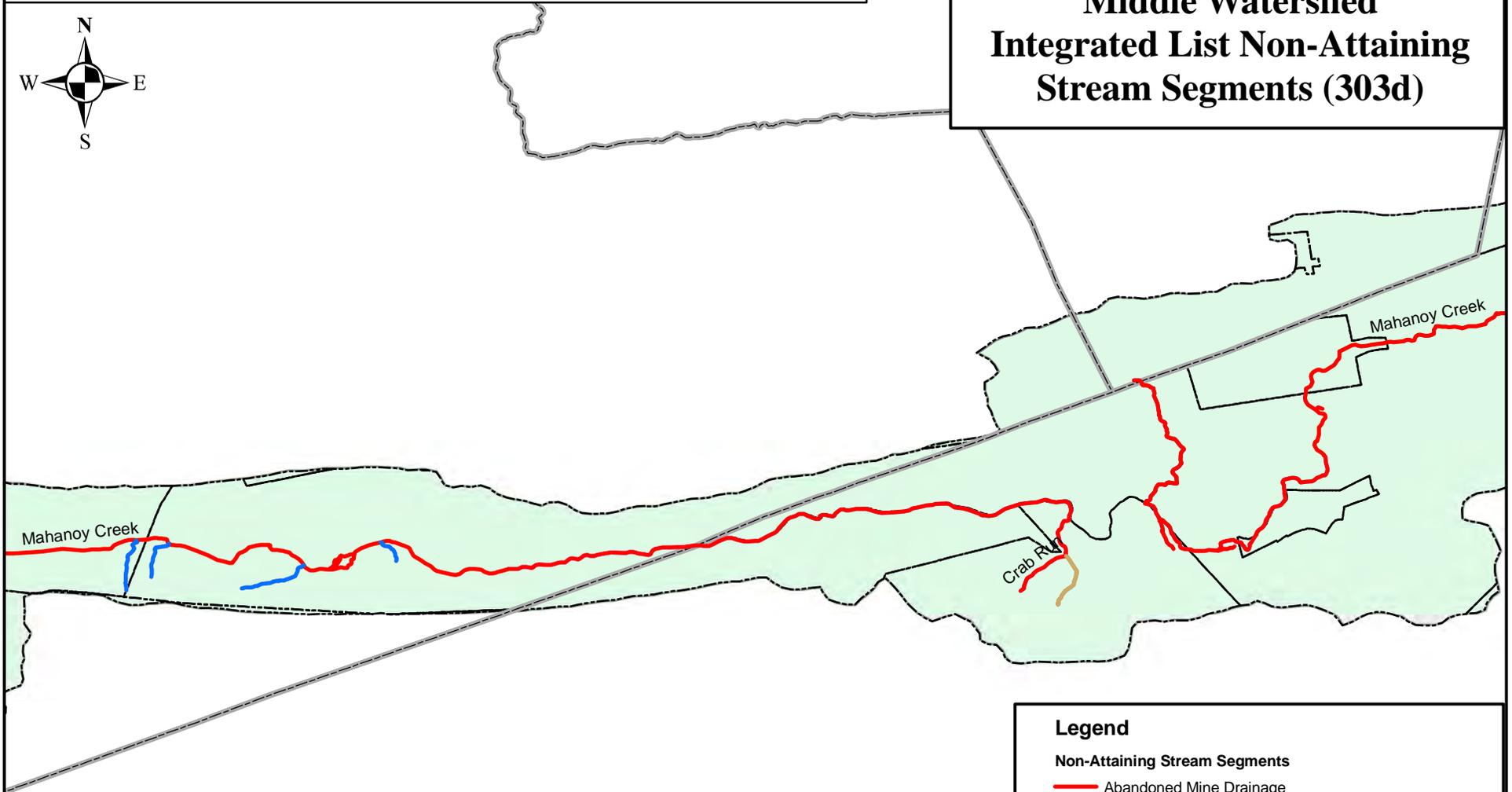
# Mahanoy Creek Watershed Conservation Plan

## Figure 3-4 Lower Watershed Integrated List Non-Attaining Stream Segments (303d)



# Mahanoy Creek Watershed Conservation Plan

## Figure 3-5 Middle Watershed Integrated List Non-Attaining Stream Segments (303d)

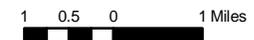


The Mahanoy Creek Watershed Association and GTS Technologies, Inc. make no claims to the completeness, accuracy, or content of any data contained herein, and make no representation or any kind, including, but not limited to warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied or inferred, with respect to the information or data furnished herein.

### Legend

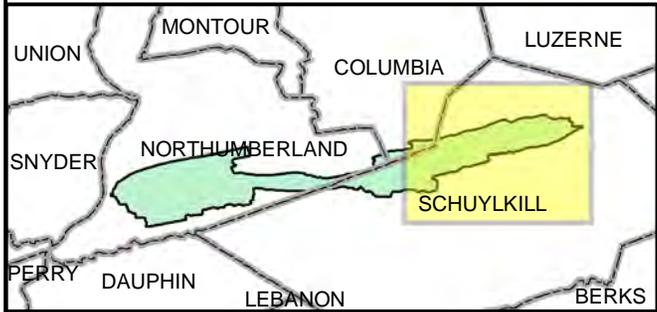
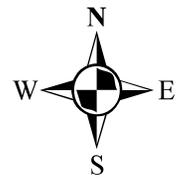
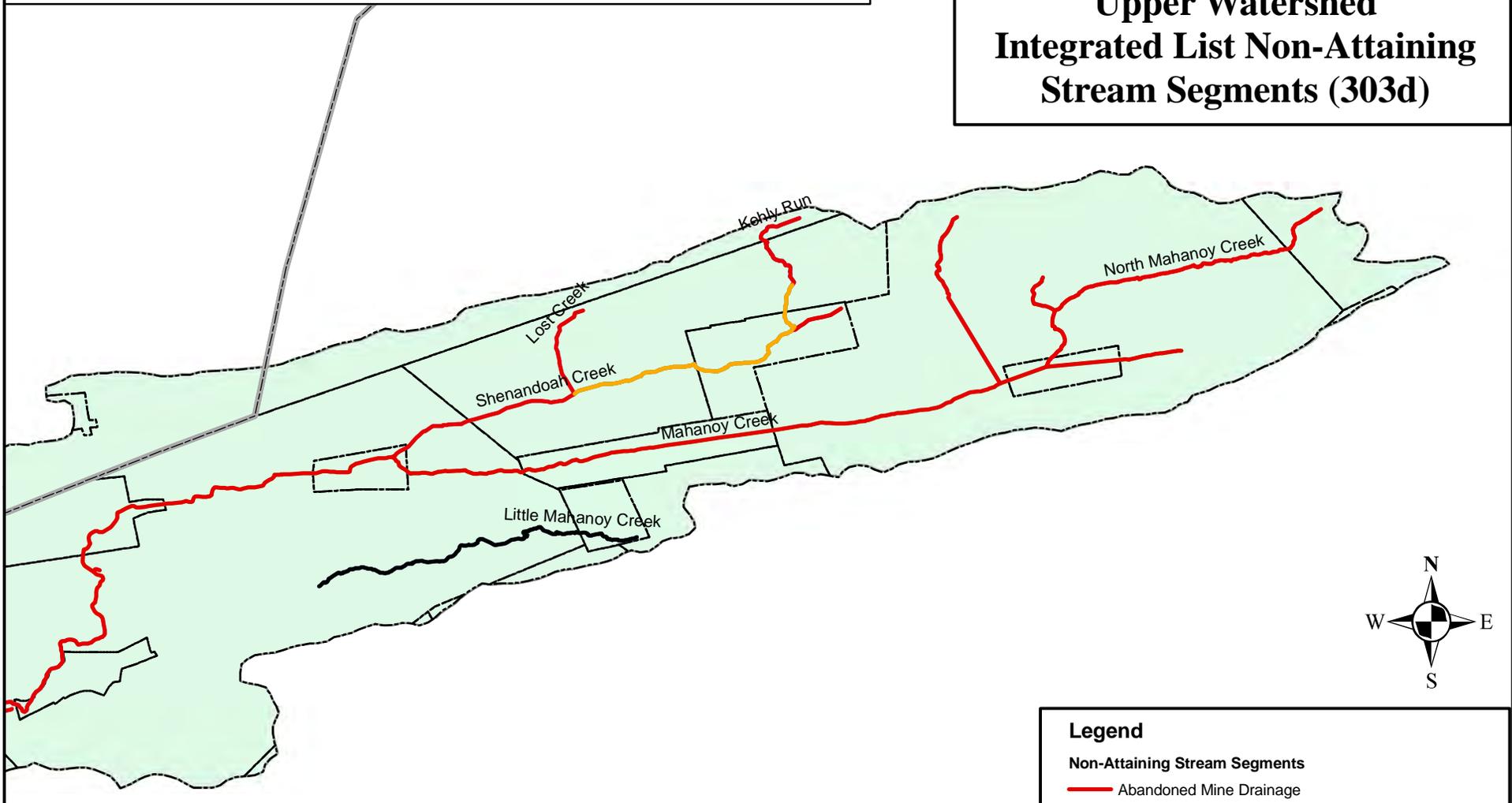
#### Non-Attaining Stream Segments

- Abandoned Mine Drainage
- Abandoned Mine Drainage and Municipal Point Source
- Agriculture
- Atmospheric Deposition
- Urban Runoff and Unknown
- County Boundaries
- Municipal Boundaries
- Mahanoy Creek Watershed



# Mahanoy Creek Watershed Conservation Plan

## Figure 3-6 Upper Watershed Integrated List Non-Attaining Stream Segments (303d)



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**Legend**

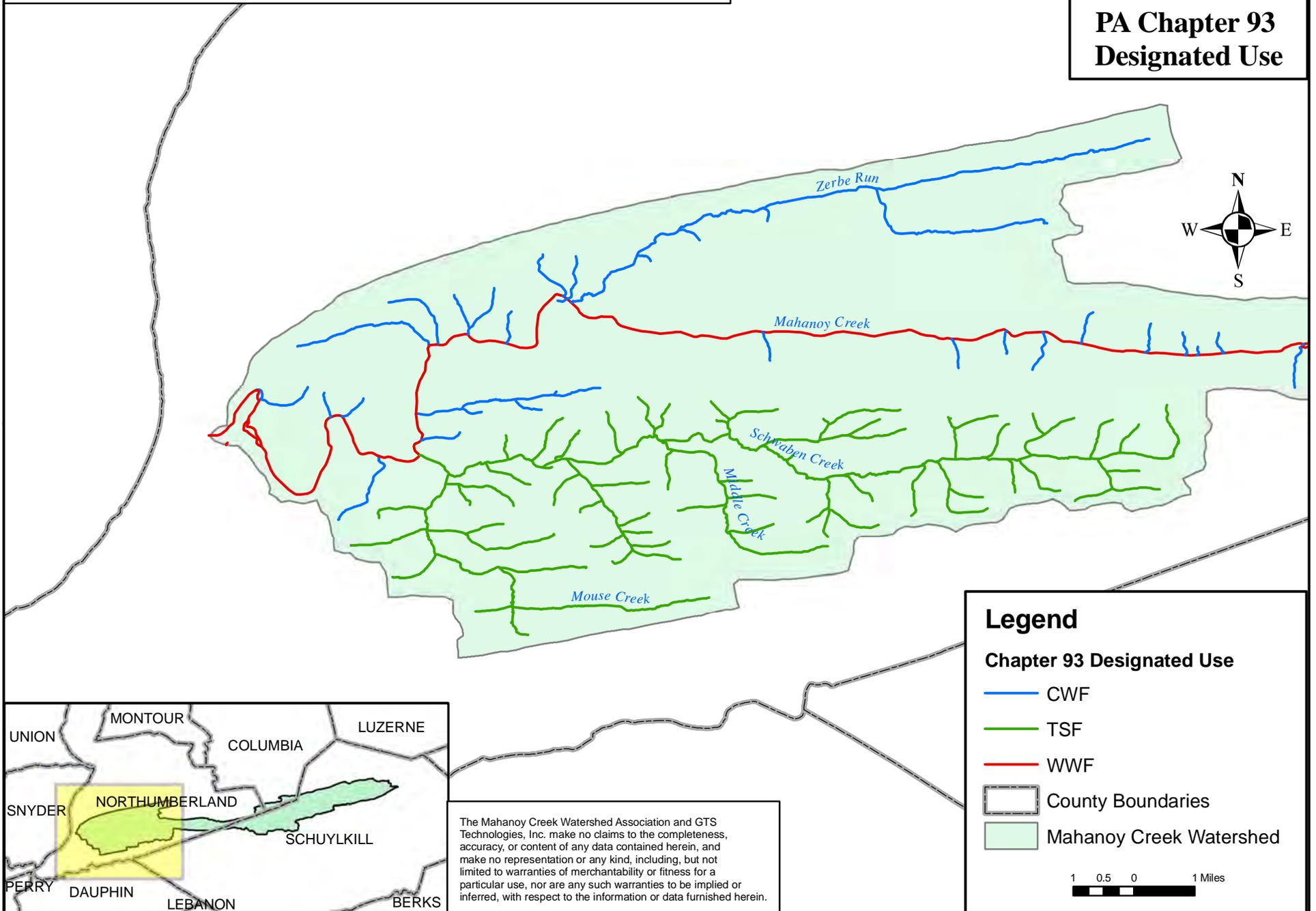
**Non-Attaining Stream Segments**

- Abandoned Mine Drainage
- Abandoned Mine Drainage and Municipal Point Source
- Agriculture
- Atmospheric Deposition
- Urban Runoff and Unknown
- County Boundaries
- Municipal Boundaries
- Mahanoy Creek Watershed

1 0.5 0 1 Miles

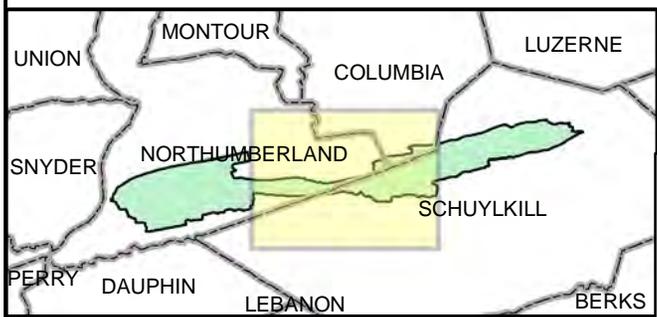
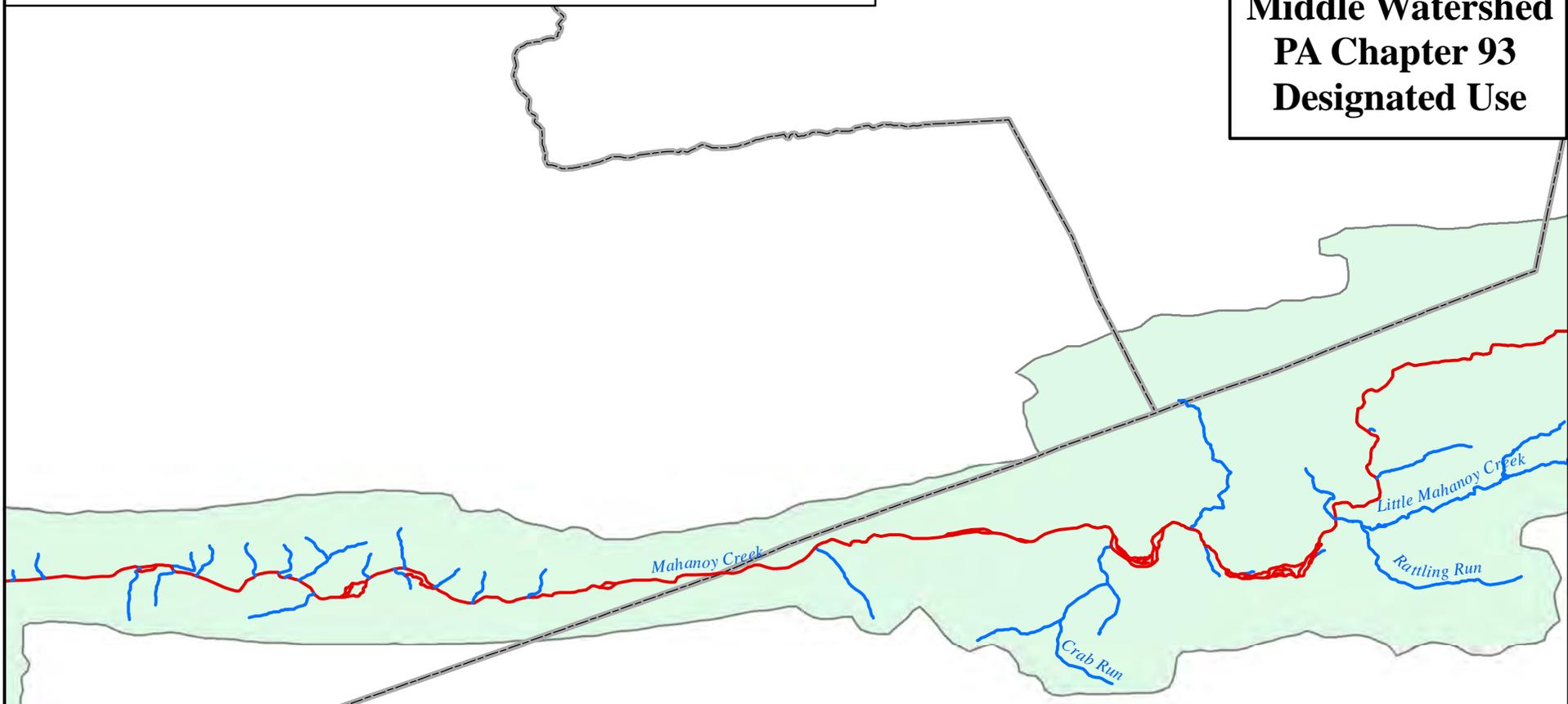
# Mahanoy Creek Watershed Conservation Plan

## Figure 3-7 Lower Watershed PA Chapter 93 Designated Use

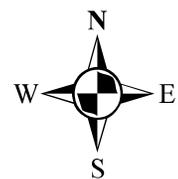


# Mahanoy Creek Watershed Conservation Plan

## Figure 3-8 Middle Watershed PA Chapter 93 Designated Use



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### Legend

**Chapter 93 Designated Use**

- CWF
- TSF
- WWF

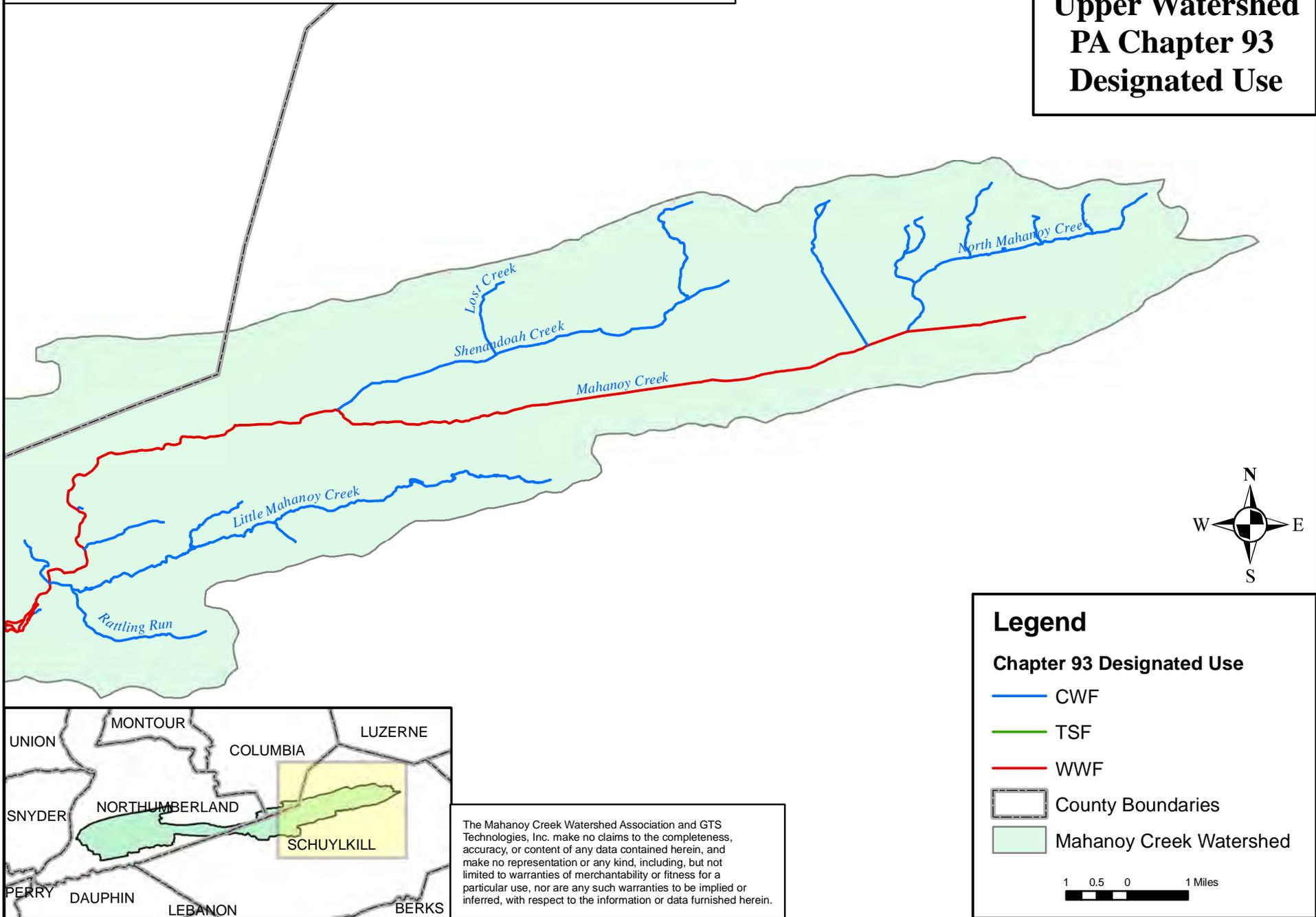
County Boundaries

Mahanoy Creek Watershed

1 0.5 0 1 Miles

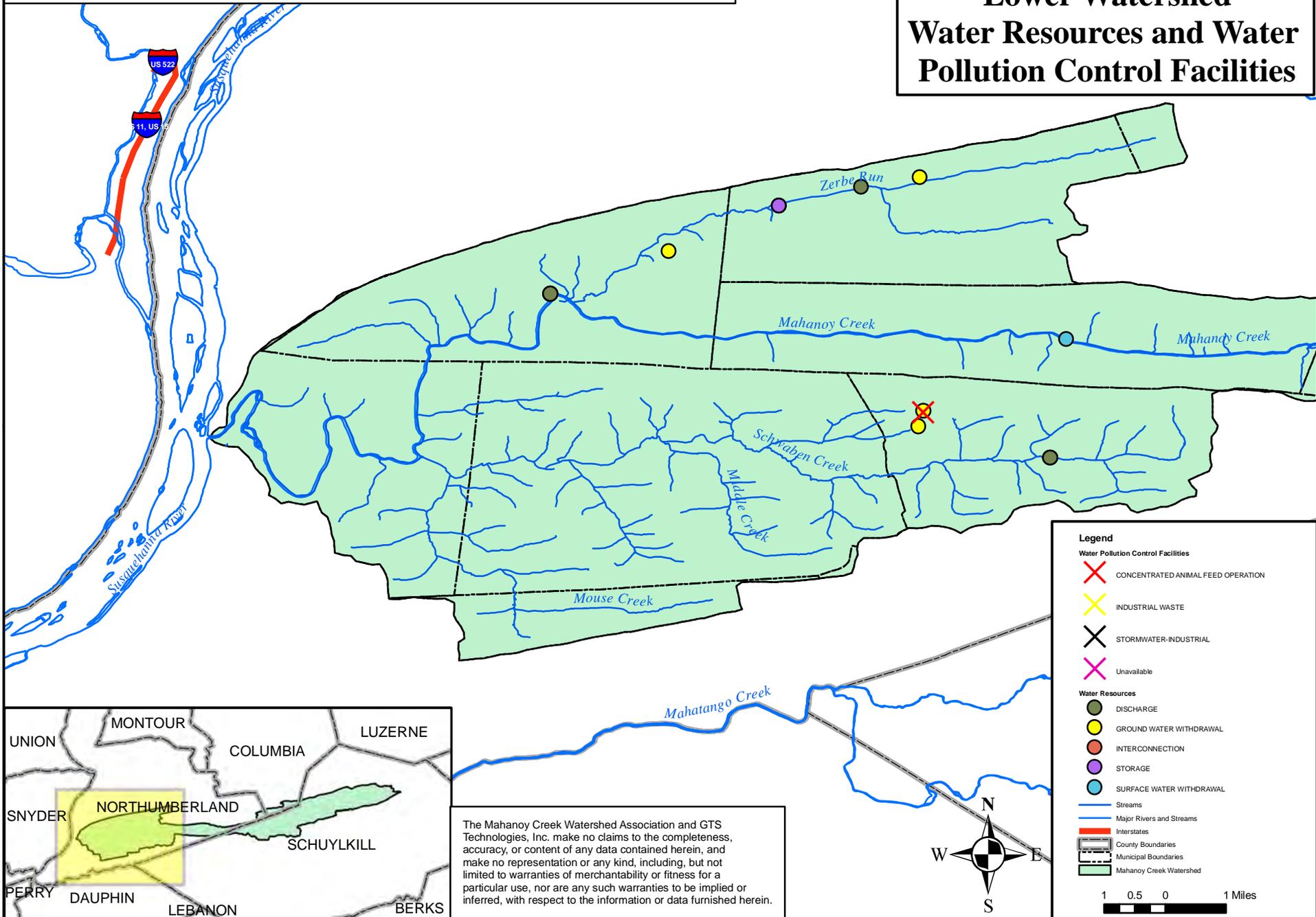
# Mahanoy Creek Watershed Conservation Plan

## Figure 3-9 Upper Watershed PA Chapter 93 Designated Use



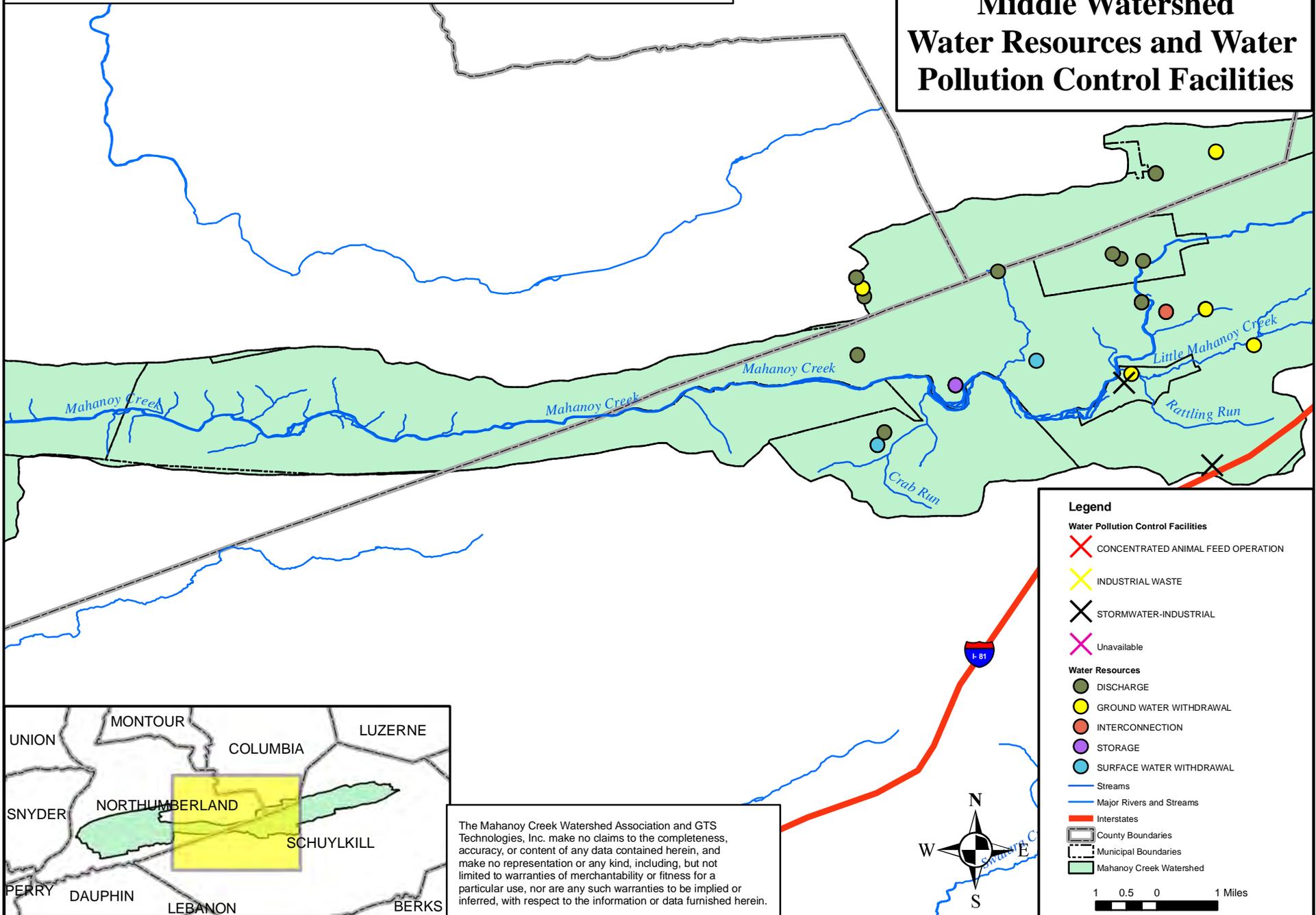
# Mahanoy Creek Watershed Conservation Plan

## Figure 3-10 Lower Watershed Water Resources and Water Pollution Control Facilities



# Mahanoy Creek Watershed Conservation Plan

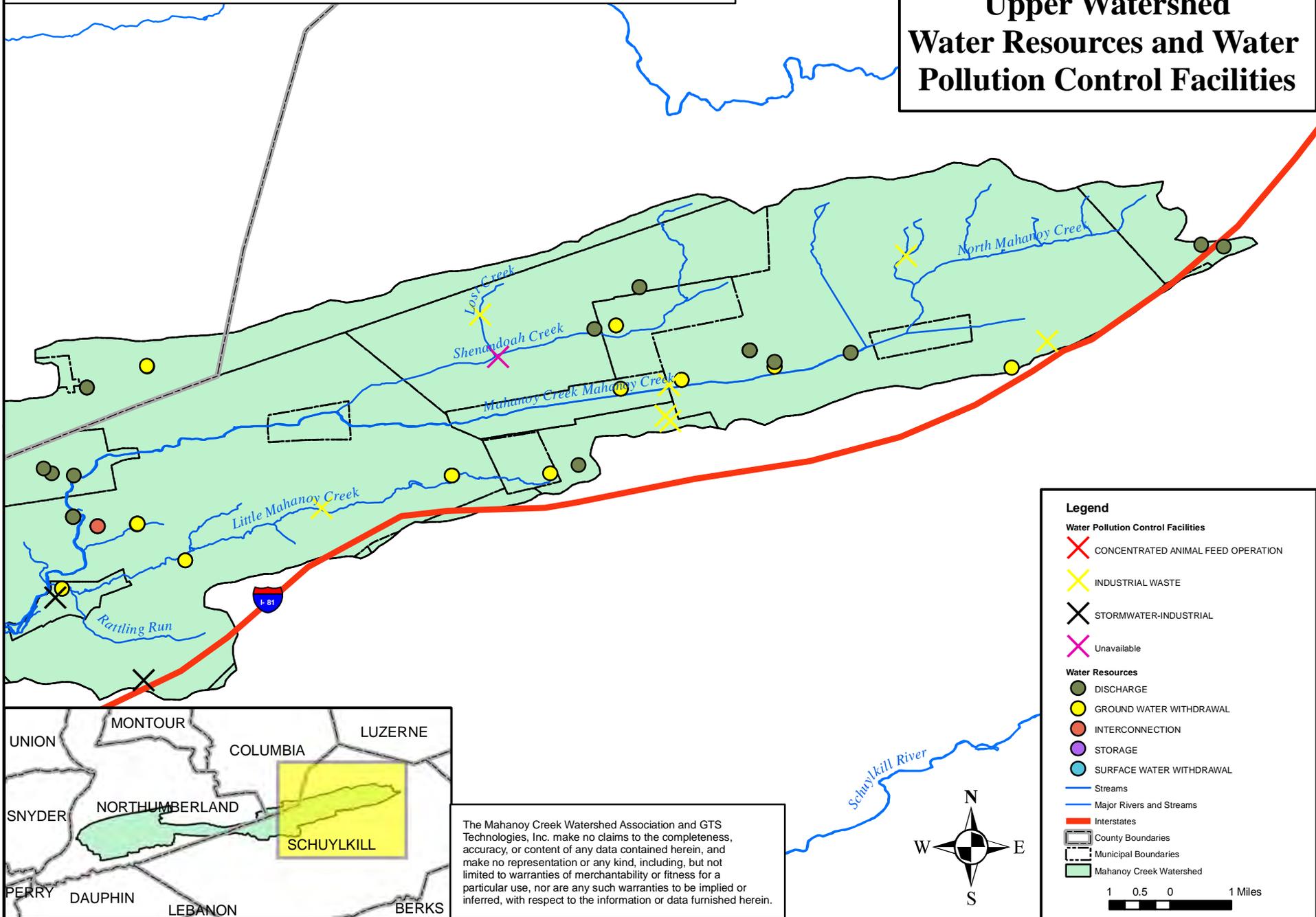
## Figure 3-11 Middle Watershed Water Resources and Water Pollution Control Facilities



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# Mahanoy Creek Watershed Conservation Plan

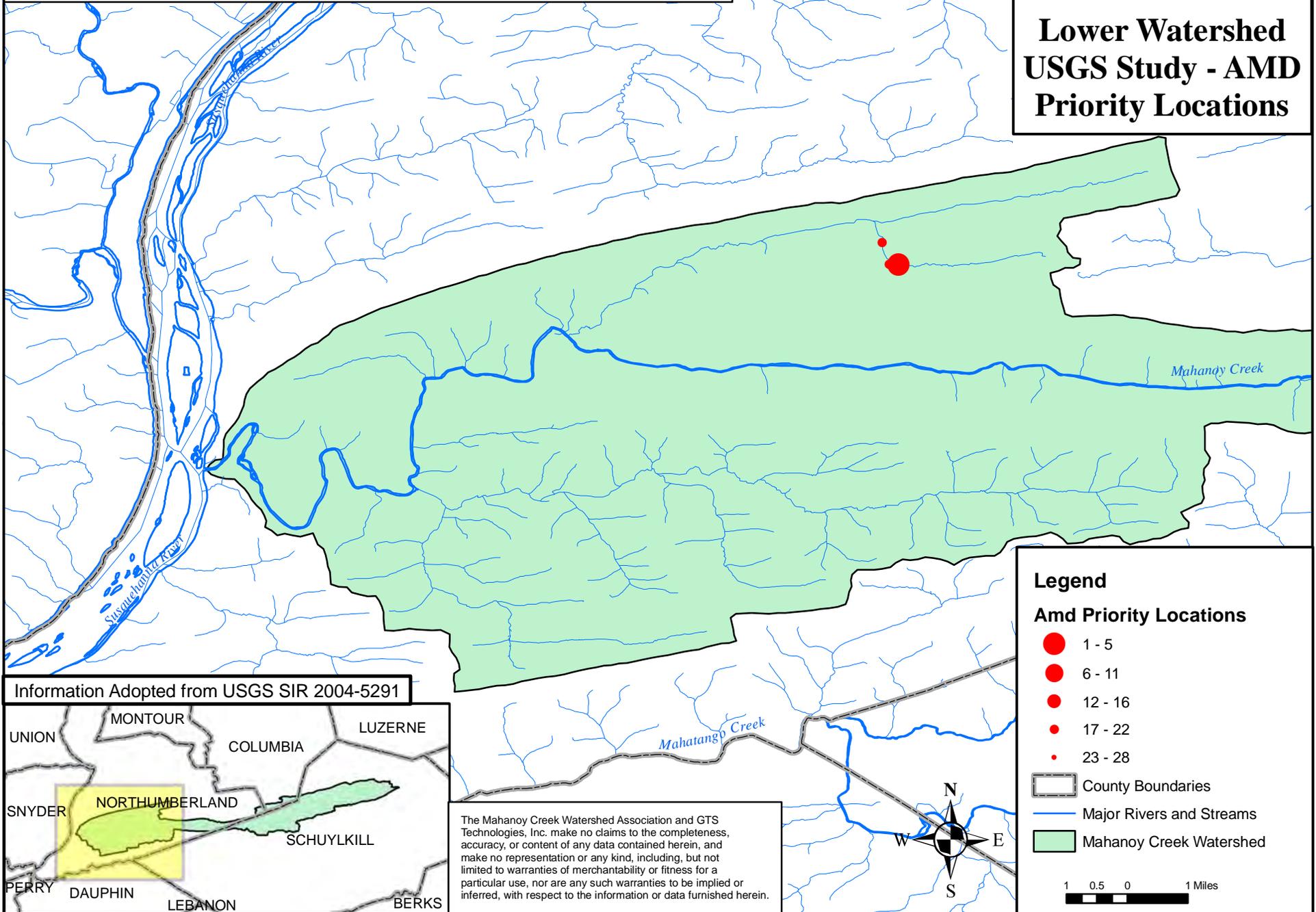
## Figure 3-12 Upper Watershed Water Resources and Water Pollution Control Facilities



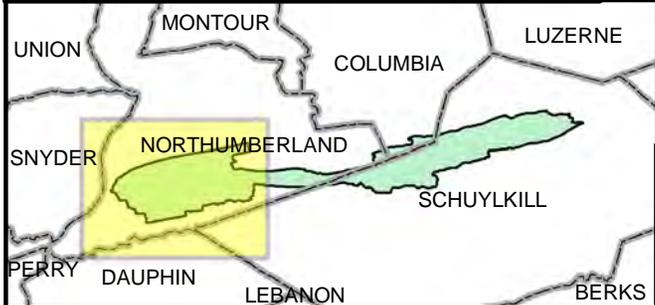
# Mahanoy Creek Watershed Conservation Plan

## Figure 3-13

### Lower Watershed USGS Study - AMD Priority Locations



Information Adopted from USGS SIR 2004-5291



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**Legend**

**Amd Priority Locations**

- 1 - 5
- 6 - 11
- 12 - 16
- 17 - 22
- 23 - 28

County Boundaries

— Major Rivers and Streams

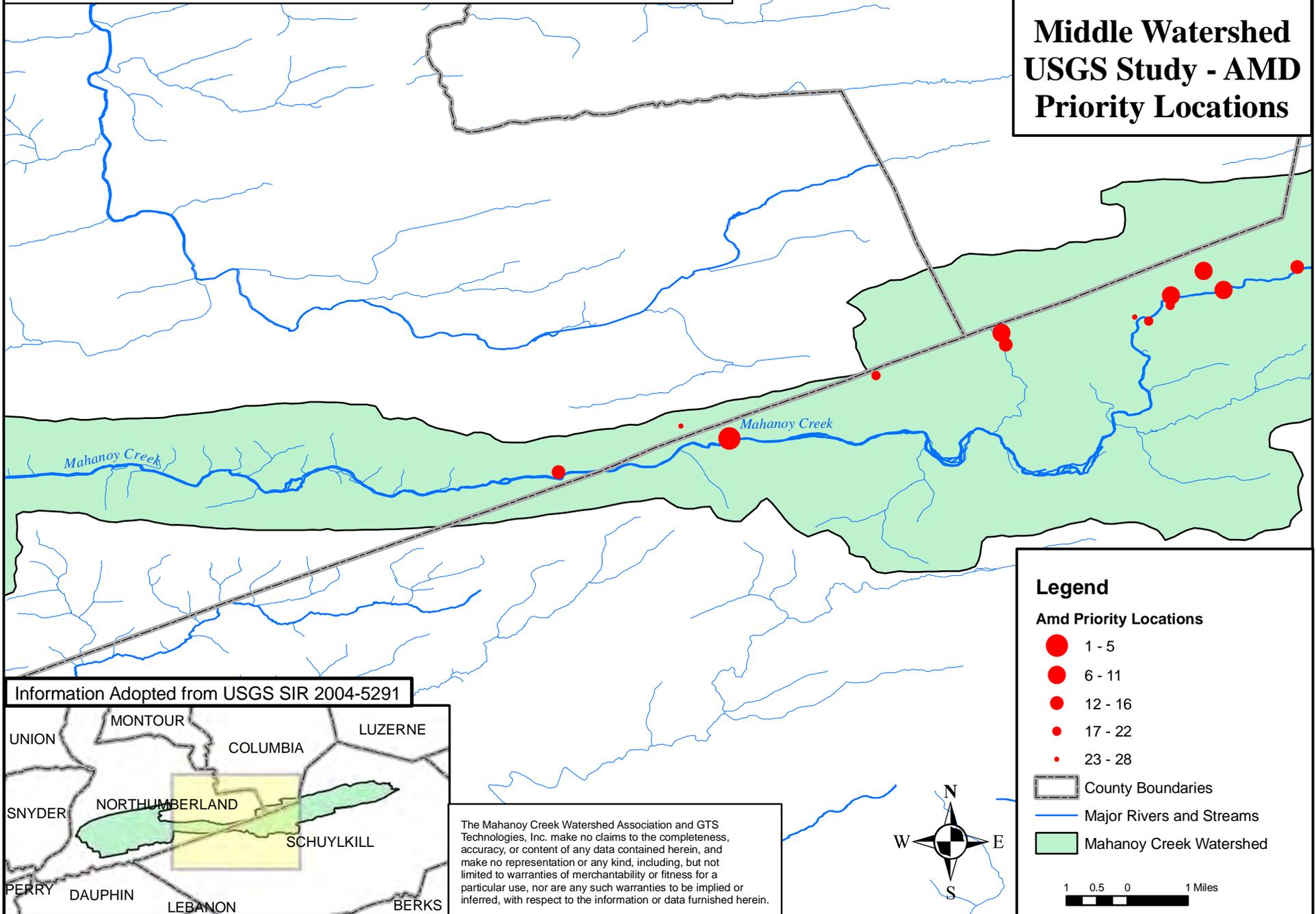
Mahanoy Creek Watershed

1 0.5 0 1 Miles

# Mahanoy Creek Watershed Conservation Plan

## Figure 3-14

### Middle Watershed USGS Study - AMD Priority Locations



Information Adopted from USGS SIR 2004-5291

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#### Legend

##### Amd Priority Locations

- 1 - 5
- 6 - 11
- 12 - 16
- 17 - 22
- 23 - 28

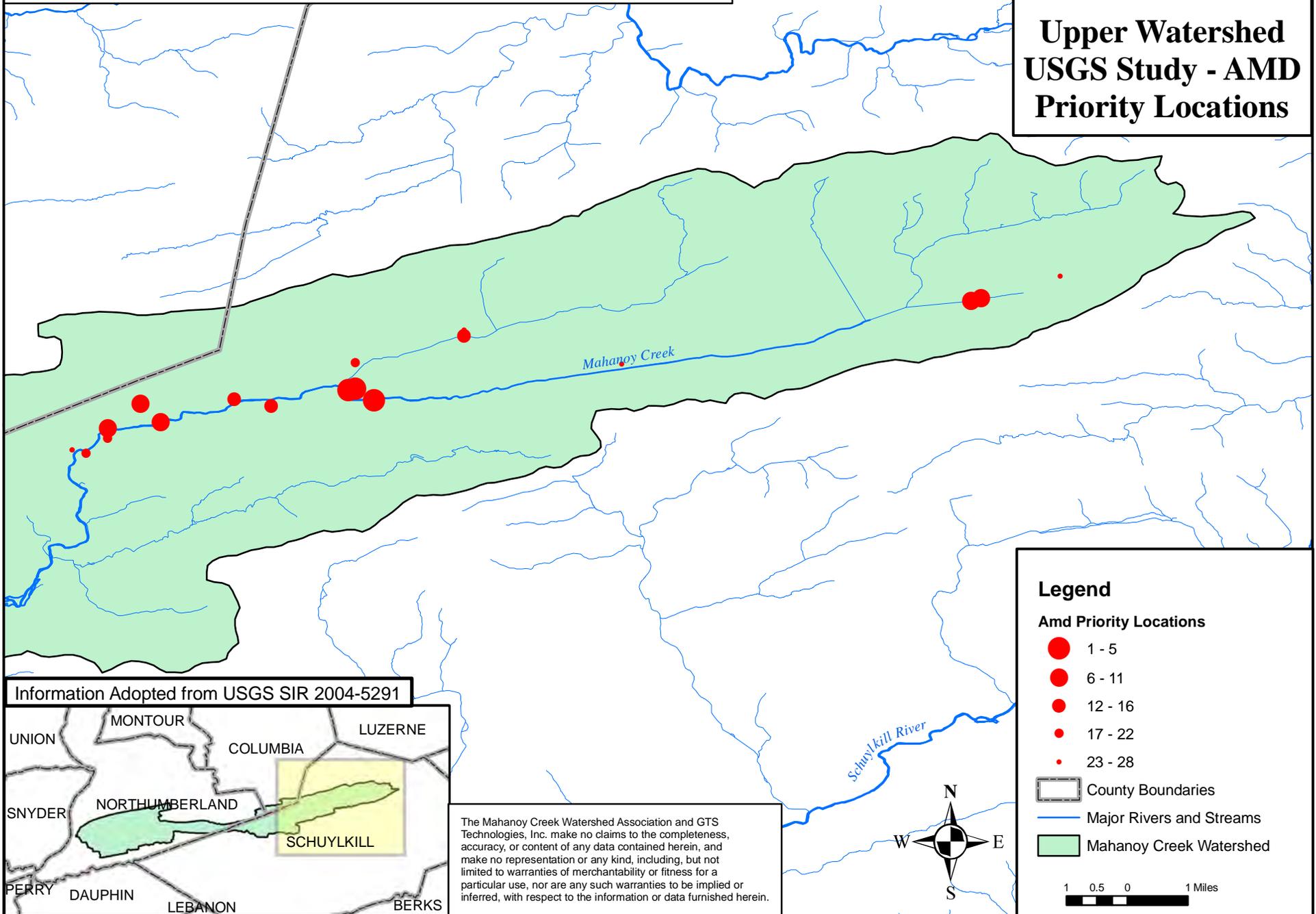
- County Boundaries
- Major Rivers and Streams
- Mahanoy Creek Watershed

1 0.5 0 1 Miles

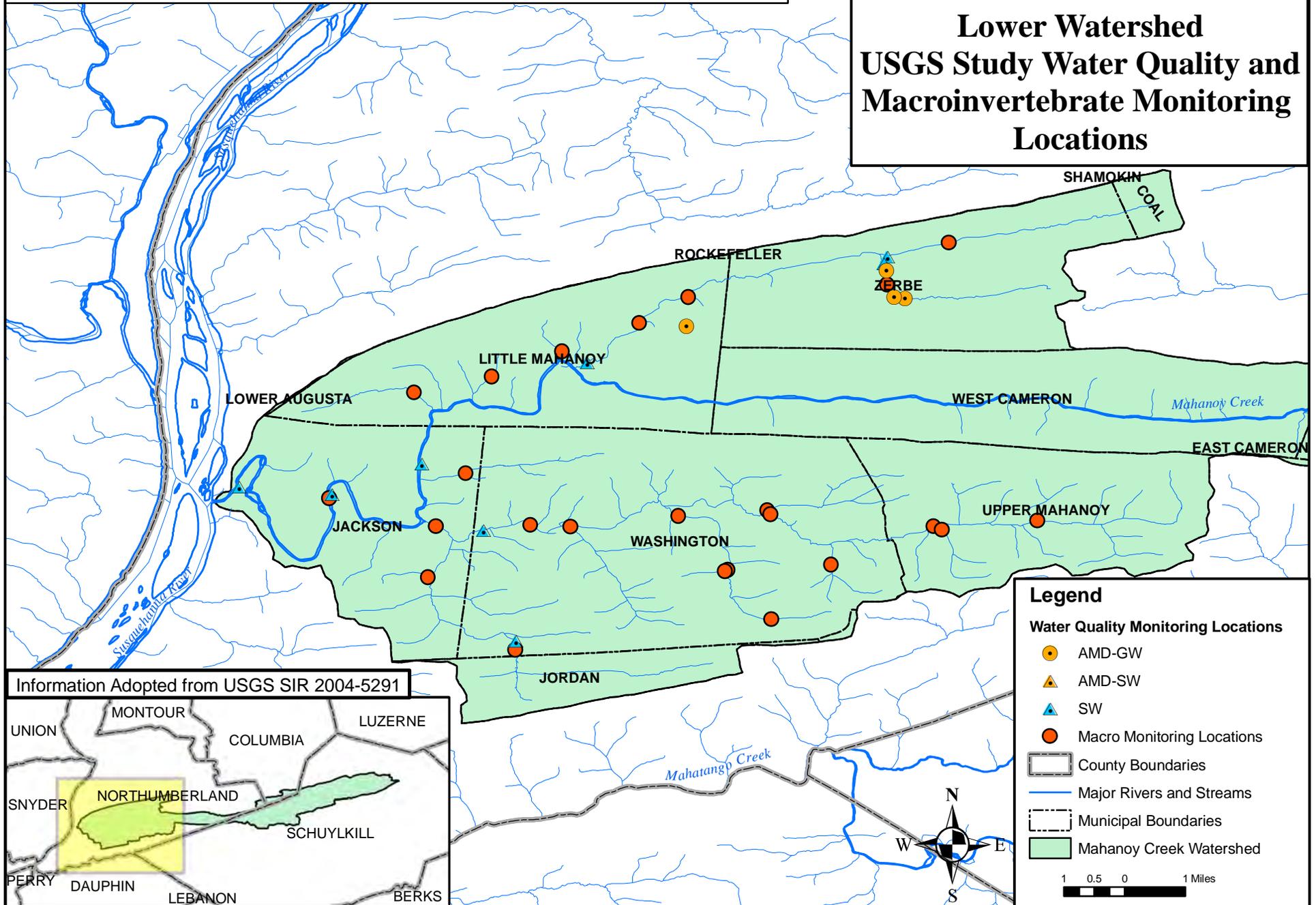
# Mahanoy Creek Watershed Conservation Plan

## Figure 3-15

### Upper Watershed USGS Study - AMD Priority Locations



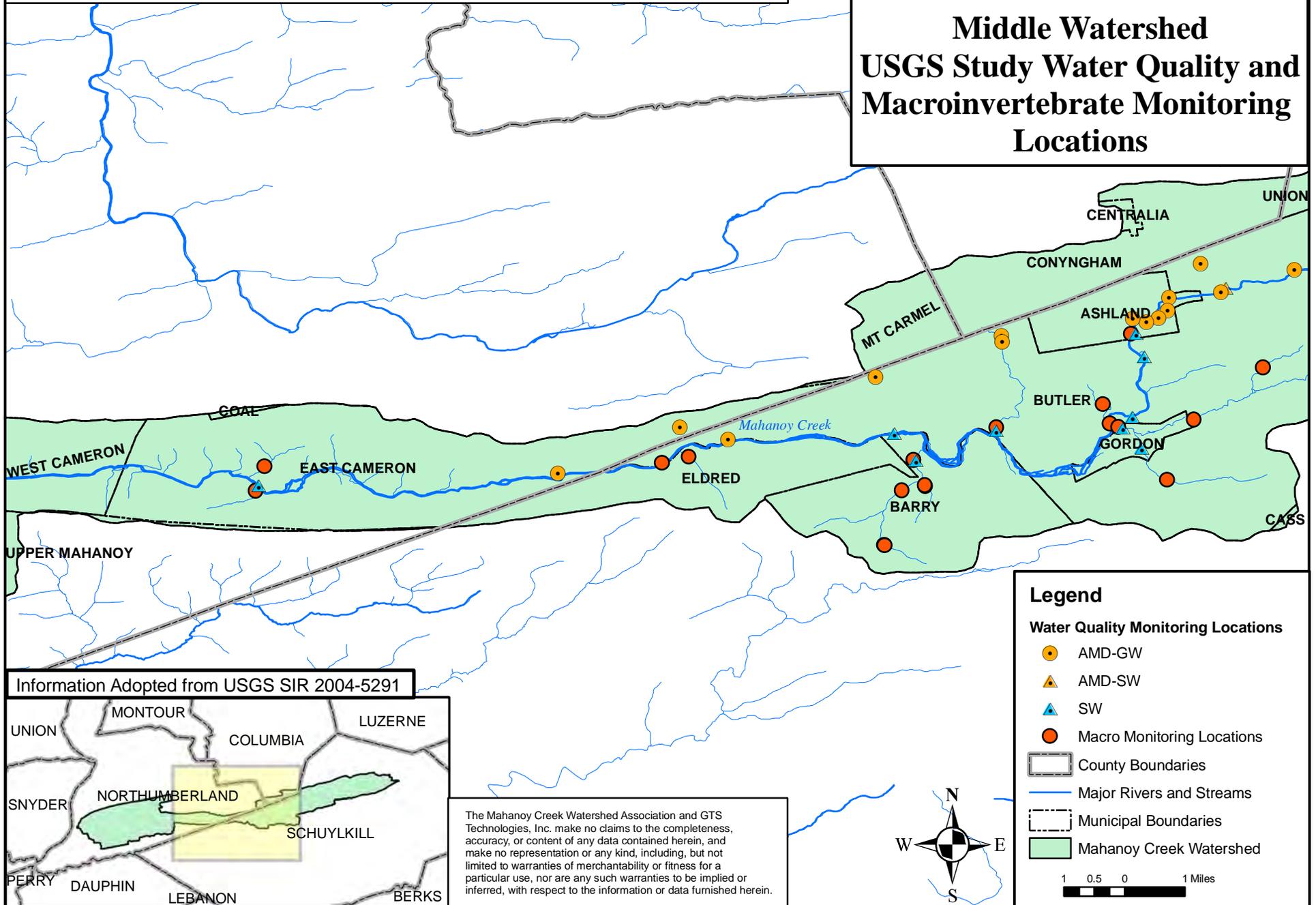
Lower Watershed  
USGS Study Water Quality and  
Macroinvertebrate Monitoring  
Locations



# Mahanoy Creek Watershed Conservation Plan

## Figure 4-2

### Middle Watershed USGS Study Water Quality and Macroinvertebrate Monitoring Locations



Information Adopted from USGS SIR 2004-5291

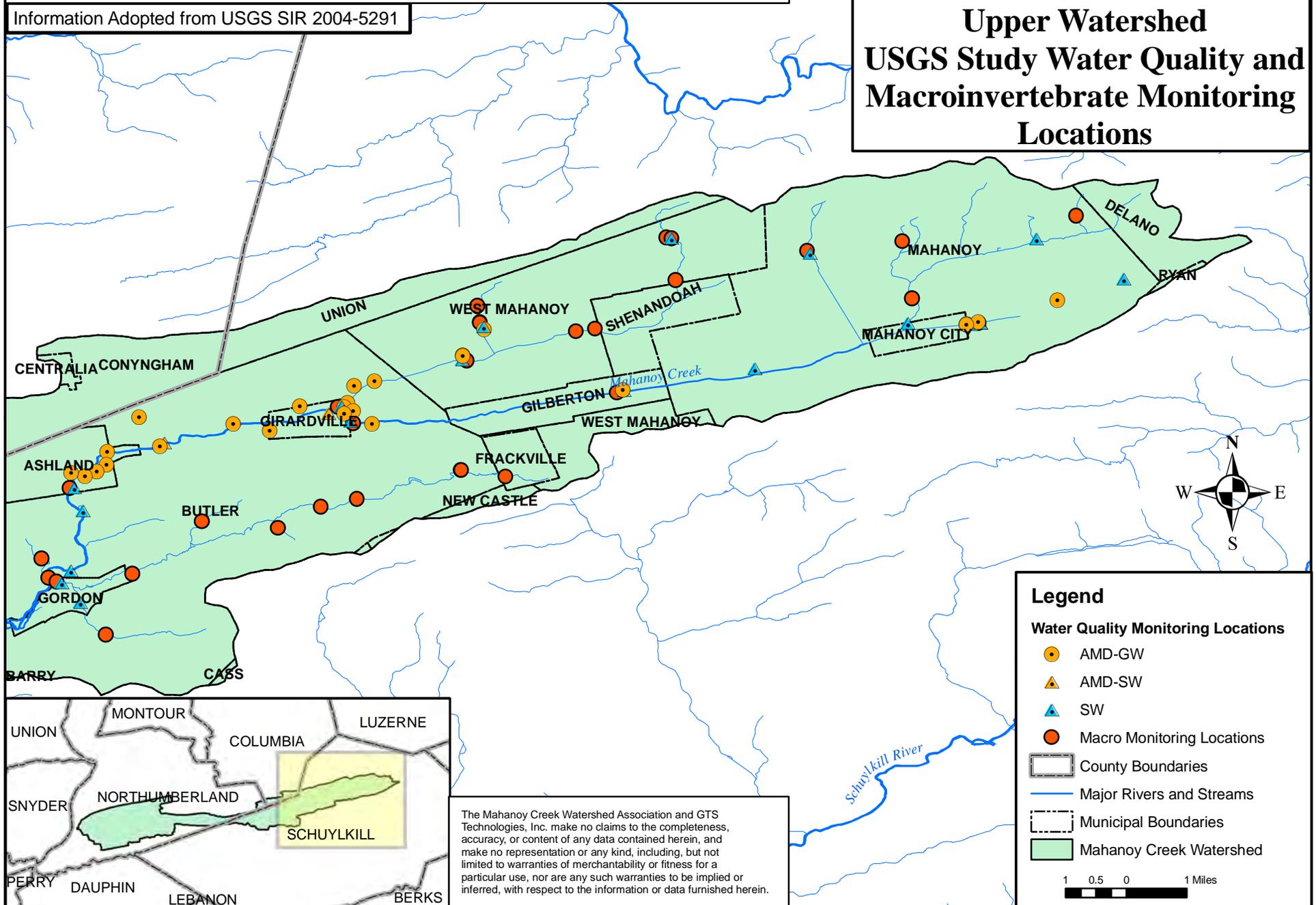
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# Mahanoy Creek Watershed Conservation Plan

Information Adopted from USGS SIR 2004-5291

## Figure 4-3

### Upper Watershed USGS Study Water Quality and Macroinvertebrate Monitoring Locations

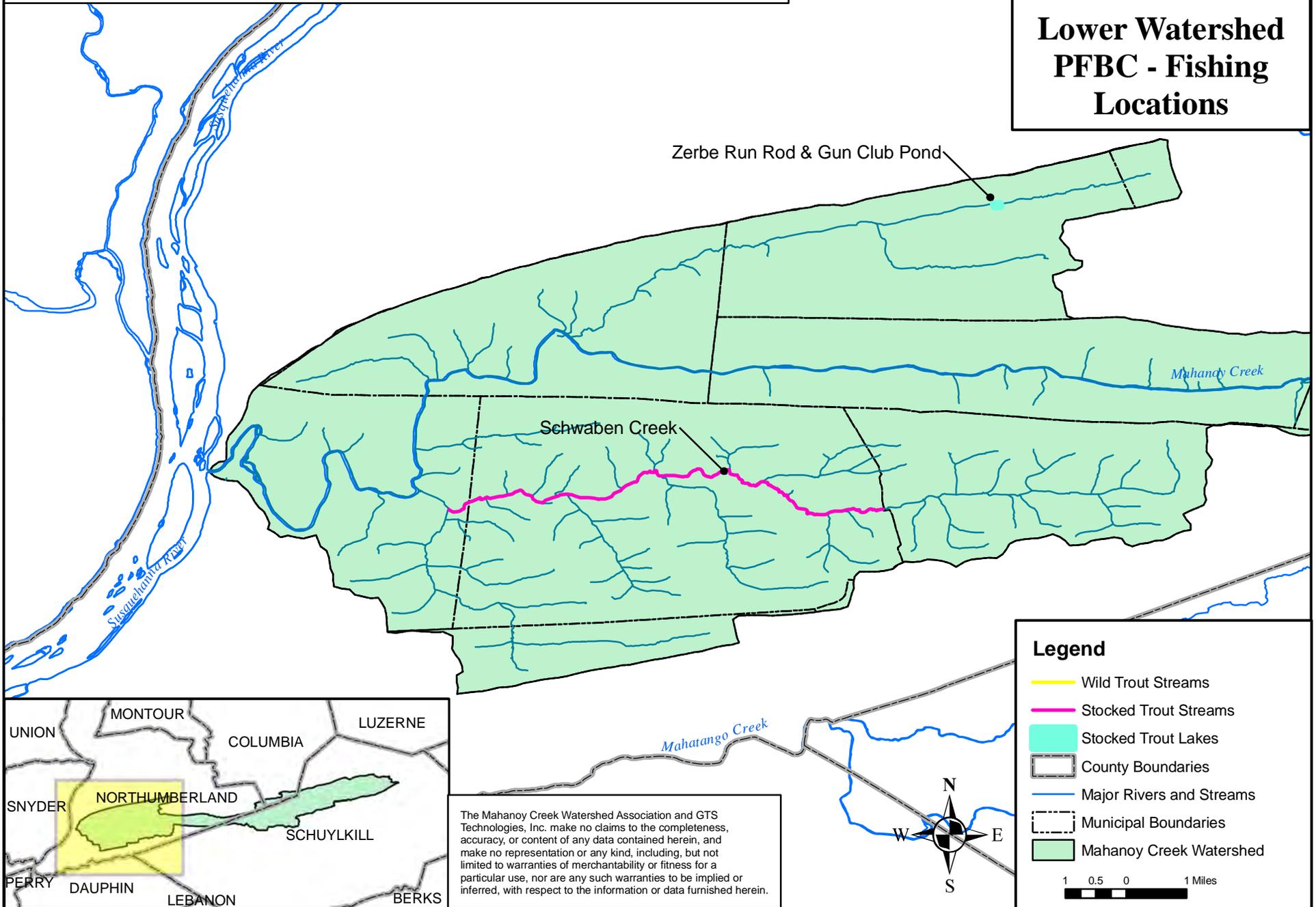


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# Mahanoy Creek Watershed Conservation Plan

## Figure 5-1

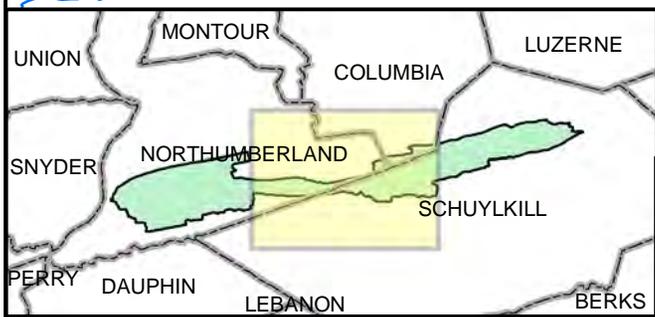
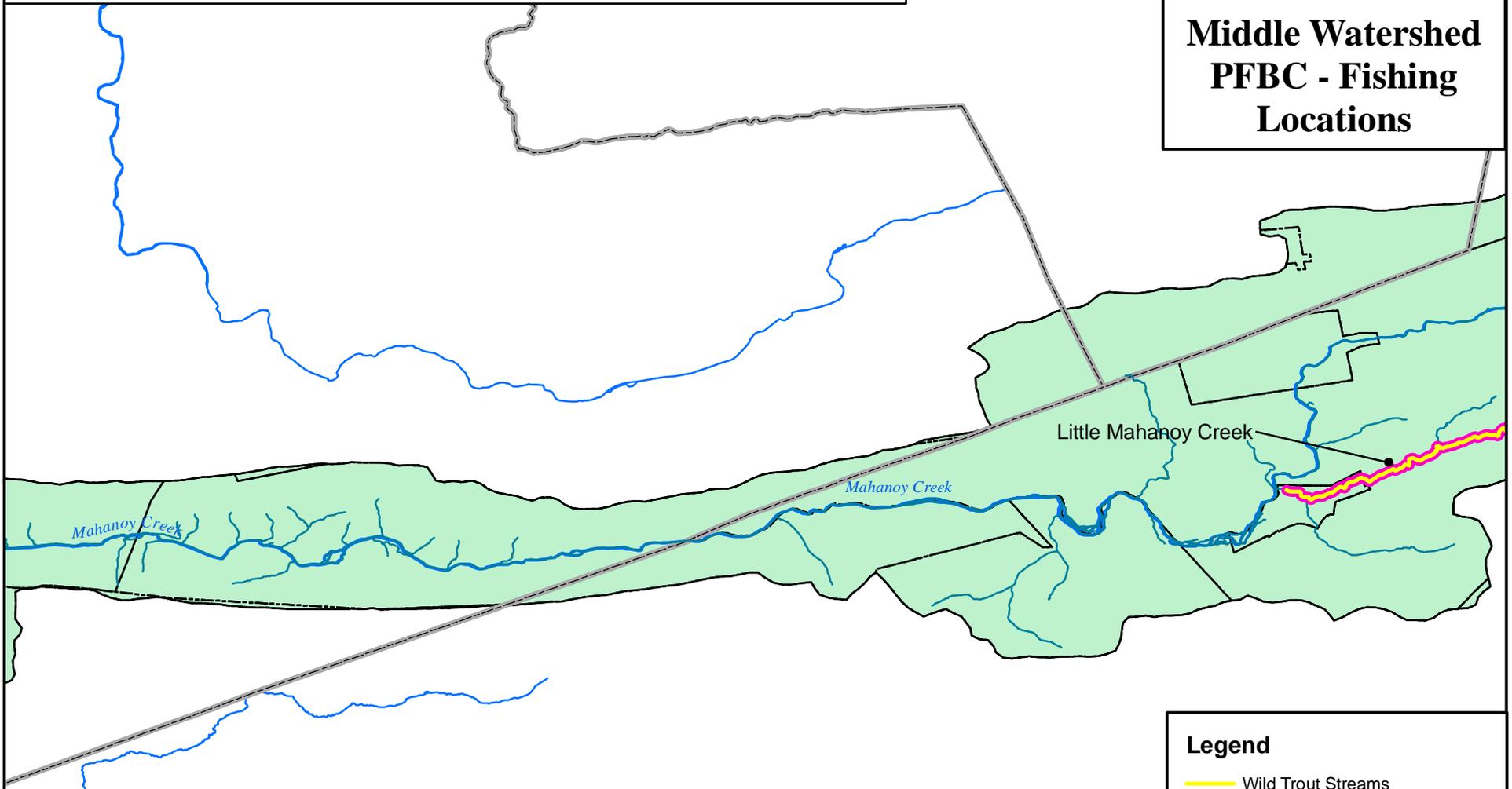
### Lower Watershed PFBC - Fishing Locations



# Mahanoy Creek Watershed Conservation Plan

## Figure 5-2

### Middle Watershed PFBC - Fishing Locations



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#### Legend

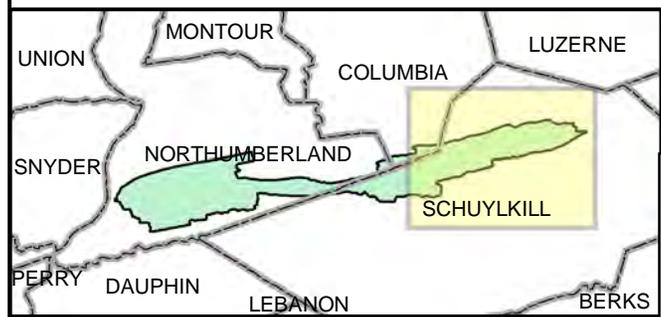
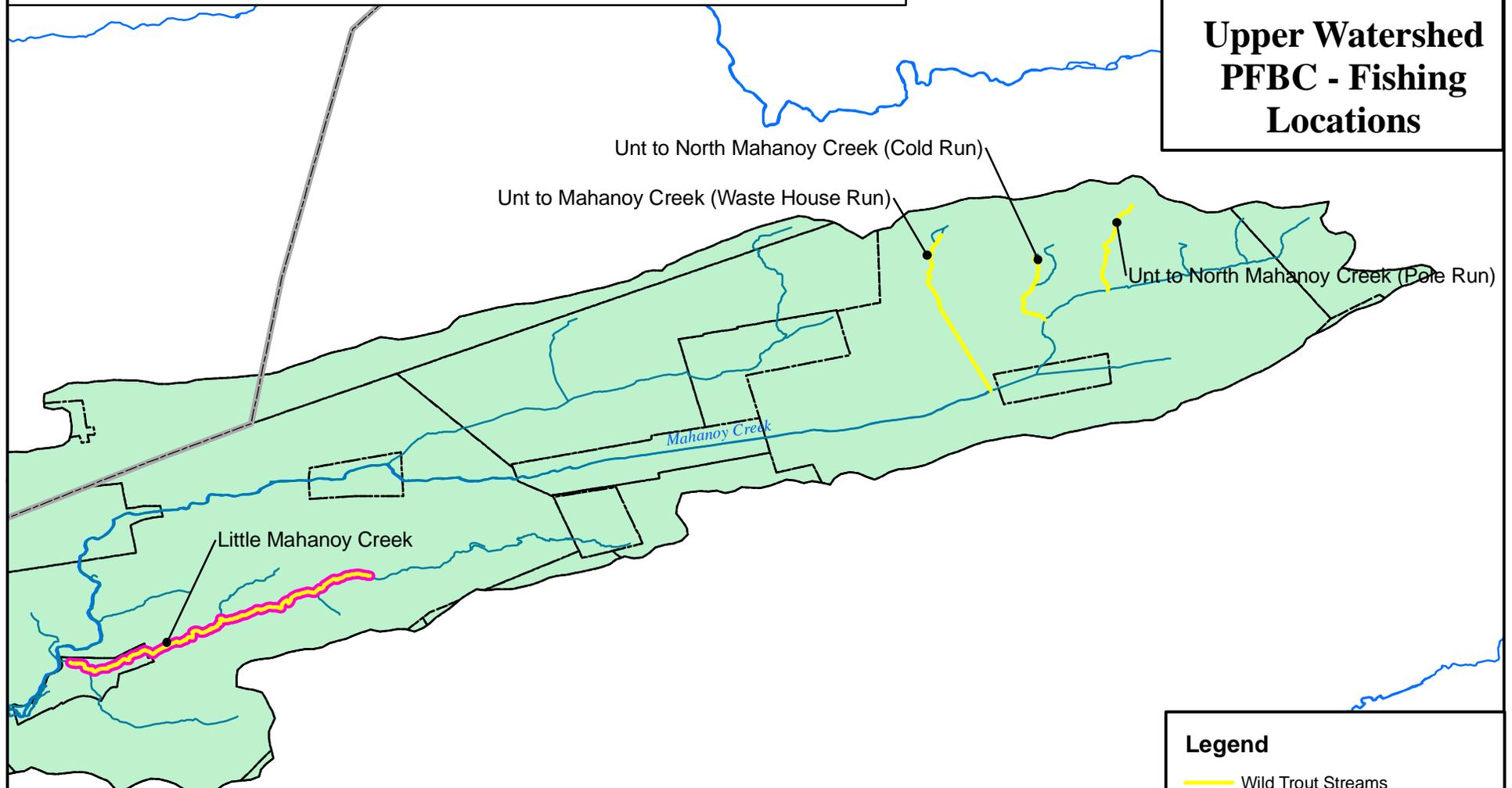
- Wild Trout Streams
- Stocked Trout Streams
- Stocked Trout Lakes
- County Boundaries
- Major Rivers and Streams
- Municipal Boundaries
- Mahanoy Creek Watershed

1 0.5 0 1 Miles

# Mahanoy Creek Watershed Conservation Plan

## Figure 5-3

### Upper Watershed PFBC - Fishing Locations



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**Legend**

- Wild Trout Streams
- Stocked Trout Streams
- Stocked Trout Lakes
- County Boundaries
- Major Rivers and Streams
- Municipal Boundaries
- Mahanoy Creek Watershed

Schuylkill River

1 0.5 0 1 Miles

# Appendix E

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## **Appendix E - Summary of Published Reports**

The following reports were used, in part, in the development of this Plan. A general summary description of each report is included. This list is not meant to be a comprehensive list of all documents/reports that cover the Mahanoy Creek Watershed but is a list of the documents believed to contain information that falls within the PA DCNR C2P2 Rivers Conservation Plan Scope of Work. Specific and detailed information and data contained in these reports have not been reproduced in total within this Plan. Therefore, please refer to these reports for more detailed information.

### **2008 Northumberland County Natural Heritage Inventory Update**

This report updates the 2003 Natural Areas Inventory. The update supplies revised and expanded information for some species of special concern and natural areas, as well as adding and removing species and sites as deemed appropriate. This report was prepared by the Western Pennsylvania Conservancy's Pennsylvania Natural Heritage Program office for the Northumberland County Planning Commission.

### **2007 Mahanoy Creek Watershed TMDL report**

This report presents the calculations, methodologies and rationales for Total Maximum Daily Load (TMDL) determinations for impaired waterways in the watershed. Impaired waters considered are based on PA DEP's 1996, 1998, and draft 2002 Pennsylvania Section 303(d) lists and 2000 305(b) report. These lists and the determination of TMDLs are required by the federal Clean Water Act and EPA implementing regulations. This report was prepared for PA DEP.

### **2007 Decision Rationale, Total Maximum Daily Loads, Mahanoy Creek Watershed, For Acid Mine Drainage Affected Segments**

This report reviews water quality and impairment data submitted to U.S. EPA by PADEP. It also explains EPA's decision to approve PADEP's Total Maximum Daily Loads (TMDLs) for the watershed. The report was prepared by Region III, U.S. EPA.

### **2006 Schuylkill County Comprehensive Plan**

This plan was adopted by the Board of Commissioners on February 22, 2006. The plan report consists of an introductory chapter, "Background/Planning Process," and with subsequent chapters on existing conditions, a growth management plan and an implementation strategy. Specific topics include land use, change patterns, natural resources, historic & landscape resources, mining resources, population, housing, employment, transportation, community facilities, infrastructure & utilities, development suitability, open space, agricultural resources and environmental protection. Subjects of study are described and discussed in terms of current conditions, goals & objectives and future plans. This plan was developed concurrently with the 2006 Schuylkill County Open Space and Greenway Plan. This document was prepared by the Schuylkill County Planning & Zoning Commission with assistance from consulting firm McCormick Taylor.

**2006 Schuylkill County Open Space and Greenway Plan**

This plan was developed concurrently with the 2006 Schuylkill County Comprehensive Plan. The plan was adopted by the Board of Commissioners on February 22, 2006. The plan examines opportunities and challenges in open space and greenway planning, preservation and implementation. The Board of Commissioners authorized this study in response to “a basic population shift in Schuylkill County, with older settlements losing population and new housing construction taking place in outlying areas.” The plan report provides relevant analyses of existing conditions, goals & objectives, regional coordination, priorities and specific features and areas proposed for protection. This document was prepared by the Schuylkill County Planning & Zoning Commission with assistance from consulting firm McCormick Taylor.

**2005 USGS Mahanoy Creek Basin AMD report, SIR 2004-5291**

The formal title of this report is *Effects of Abandoned Coal-Mine Drainage on Streamflow and Water Quality in the Mahanoy Creek Basin, Schuylkill, Columbia, and Northumberland Counties, Pennsylvania, 2001*. This study examines, in detail, locations, contaminant concentrations, biological impacts and remediation alternatives for AMD in the watershed. This report was written by C. Cravotta and published as U.S. Geological Survey (USGS) Scientific Investigations Report 2004-5291.

**2005 Northumberland County Comprehensive Plan**

This plan was adopted by the Board of Commissioners on June 28, 2005. The plan report consists of an introduction and sections dedicated to demographics, housing conditions, land use, community facilities, transportation, economic development, intergovernmental cooperation, energy and historic preservation. Each topic is examined in terms of current conditions, goals & objectives and future plans. The plan was completed the Northumberland County Planning Commission.

**2004 Columbia County Natural Areas Inventory**

This report inventories known occurrences of species of special concern and significant high-quality habitat natural areas in Columbia County. In addition to a brief general overview of the natural history of the county, detailed information for each species or area is provided. The report was prepared by the Pennsylvania Science Office of the Nature Conservancy.

**2004 Watershed Restoration Action Strategy, State Water Plan Subbasin 06B (Susquehanna River), Northumberland and Schuylkill Counties**

This document reports AMD-related water quality status of waters in the Mahanoy Creek and Shamokin Creek basins. The plan also presents past projects and studies in the watersheds and treatment options for known untreated discharges and waters. This report was prepared by the PADEP Bureau of Watershed Management.

**2003 Draft Northern Schuylkill Rail to Trail Feasibility Study**

The purpose of the study was to evaluate the feasibility of establishing a trail system in the northernmost area of Schuylkill County. The report includes existing conditions analysis, feasible extent of expanded trail system, projected usage information, key linkages, constraints, construction cost estimates and potential funding sources. Recommendations for specific trail segment alignments, project phasing and operations and maintenance are also provided. The study was prepared by Simone Collins Landscape Architecture for the North Schuylkill Council of Governments.

**2003 Northumberland County Natural Areas Inventory**

This report inventories known occurrences of species of special concern and significant high-quality habitat natural areas in Northumberland County. In addition to a brief general overview of the natural history of the county, detailed information for each species or area is provided. The report was prepared by the Pennsylvania Science Office of the Nature Conservancy.

**2003 Schuylkill County Natural Areas Inventory**

This report inventories known occurrences of species of special concern and significant high-quality habitat natural areas in Schuylkill County. In addition to a brief general overview of the natural history of the county, detailed information for each species or area is provided. The report was prepared by the Pennsylvania Science Office of the Nature Conservancy.

**2002 Schuylkill County Water Supply Study**

This study was prepared to assess the viability of community water suppliers in the county, provide information on proposed repairs and enhancements, assist water suppliers with regulatory compliance and provide data needed for a county comprehensive land use plan. Report contents include current water use, inventory of suppliers, water sources, safe yield, distribution systems, in-system water quality, conservation practices, capital funding needs and sources, recommended solutions and implementation strategies, cost estimates, growth projections and related economic development topics. This report was prepared by Vitillo Corporation for the county.

**Northumberland County Implementation Plan for the Chesapeake Bay Tributary Strategy (No Published Date)**

This report provides general and detailed information regarding the major factors which contribute to significant water quality degradation in the county. Land use and associated contaminant loading figures are presented for agricultural operations in the county. The report states that agriculture constitutes the largest contributor of excess nutrients and sediment to the waterways in the county. This report also briefly reviews AMD and other pollution sources as well.



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**1975 Mahanoy Creek Scarlift Report**

This report is based on water quality and other studies which began in 1973. This report provides information regarding the location, extent and nature of AMD discharges and mining-related surface impacts in the watershed. Also included are proposed treatment methods and cost estimates. This report was prepared by consulting firm Sanders & Thomas, Inc., for PADER.

# Appendix F

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## **Appendix F – Current Trends within the Watershed**

During the development of this plan, GTS has monitored development and trends throughout the watershed. Some of the current trends include the development of the Bolich Wetland Project and the Northumberland OHV Park. Articles and information pertaining to these trends, the watershed and future development are included as part of this appendix.

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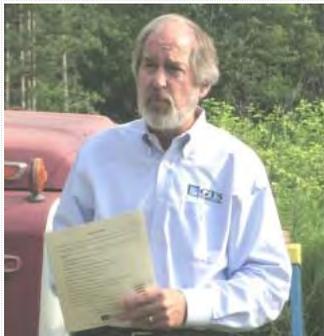
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Here is Some Good News...

# Mahanoy Creek watershed part of comprehensive restoration plan

BY JOHN E. USALIS (STAFF WRITER JUSALIS@REPUBLICANHERALD.COM)  
Published: July 21, 2009

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LAVELLE - While decades of environmental abuse, including acid mine drainage and sewage discharges, have left their mark on the Mahanoy Creek, a comprehensive plan will be developed to reverse the damage and bring it back to life again.

The Mahanoy Creek Watershed Association, along with state, local and community representatives, held a press conference Monday morning at the Bolich Wetland Treatment Site in Barry Township to announce the Mahanoy Creek Rivers Conservation Plan.

Kerry Leberknight, vice president and study committee coordinator of GTS Technologies, Harrisburg, announced the launch of the plan that will determine how best to preserve, restore and enhance the watershed for almost 45,000 residents in Schuylkill, Northumberland and Columbia counties. The Mahanoy Creek watershed begins east of Mahanoy City, travels west through Gilberton, Girardville and Ashland in Schuylkill County, goes past Trevorton in Northumberland County and enters the Susquehanna River near Herndon.

"Today, we're starting a journey. It's a journey into the past. It's a journey to bring back the past so that we can start restoring the watershed and start determining what types of things we need to do so that everyone can enjoy it," Leberknight said. He praised the association for 11 years and thousands of volunteer hours in restoring sections of the creek.

"Our goal is to restore the Mahanoy Creek watershed for the people of this watershed system and restore it to its past glory where we can enjoy the beautiful scenery," Leberknight said. "I've been told there were fishing derbies in the watershed many years ago. Hopefully we can get back to that so that families can move throughout the watershed and hike, enjoy picnics and fish along the stream."

He said the direction of the watershed restoration will depend on what the studies reveal.

"We're not quite sure what we'll see, what natural resources are there, what the problems and concerns we'll find along the way," he said.

Leberknight said there are also positive aspects to the watershed, and the positives and negatives will be catalogued in the studies that will include surveys from residents as to what they want to see in a restoration plan.



JOHN E. USALIS/Staff Photo Dr. Charles A. Cravotta III, left, a hydrologist/geochemist with the U.S. Geological Survey, explains the results of surveys made of the Mahanoy Creek watershed area during Monday's press conference at the Bolich Wetland Treatment Site, Barry Township. Listening to Cravotta are Kerry Leberknight, center, GTS Technologies vice president, and Joseph N. Nardella, water resources manager.

There are three public meetings planned to seek input. The first will be at 7 p.m. July 29 at the Girardville Municipal Building.

"One of the purposes of the meeting is to give a briefing on the state of the watershed, give them an idea about the planning document and the process involved in completing it, but also to, very importantly, listen," said Leberknight. "If we do our job right, we're going to be pointing out things that may get them excited about improving the watershed. The public is going to give us input and we're going to listen to their ideas and suggestions and concerns."

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Leberknight suggested that as a plan is put together and implementation begins, there could be an annual "Mahanoy Creek Watershed Sojourn," where people will be able to learn more about the watershed and see what is being done to restore and improve it.

Dr. Charles A. Cravotta III, a hydrologist/geochemist with the U.S. Geological Survey, spoke on various aspects of the watershed. He explained the differences in water quality and other aspects along the creek, including finding different species of fish in the stream.

Leberknight said conservation plan costs \$120,000, with \$60,000 from the state Department of Conservation and Natural Resources and \$20,000 from the state Department of Community and Economic Development. The remaining \$40,000 will be provided locally through in-kind services.

Leberknight thanked the strong support for the watershed's restoration, including the late state Sen. James J. Rhoades, Sen. David G. Argall, state Reps. Neal P. Goodman, D-123, and Tim Seip, D-125, the Schuylkill County Commissioners and Schuylkill Conservation District.

"I would be remiss if I didn't thank Marge Bolich," said Leberknight. "We're on her property right now. We can see her commitment as a retired educator to environmental restoration and stewardship."

Attending the press conference was watershed association President Roseann Weinrich, who strongly supports this project.

"I think this Rivers Conservation Plan will be a very, very powerful tool for the association, and it will help a lot of other people besides us, like the downtown revitalization groups, the historical societies, community groups and nature lovers. It's just a little something for everybody," said Weinrich.

Weinrich is very enthusiastic about the work the association has done and is planning to do in the near future.

"I feel like we're on a roll, especially with this and our nature trail," she said. "We also just submitted an application for a Growing Greener grant to expand this (Bolich Wetland Treatment Site) by another acre. The future looks clear and bright."

The final Rivers Conservation Plan is expected to be submitted to DCNR on March 19, 2010.

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## Public apprised of watershed plans

BY LISA COONEY (CORRESPONDENT)

Published: July 31, 2009

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GIRARDVILLE - About 40 residents attended the first public meeting regarding the Mahanoy Creek Rivers Conservation Plan.

Gathering at borough hall, they learned about plans to "protect, restore and enhance" the Mahanoy Creek Watershed during a presentation by Kerry Leberknight, vice president and study committee coordinator, and Joe Nardella, water resources/project manager, both of GTS Technologies, Harrisburg.

The plan will assess and inventory land, water and resources within the watershed, then assess land use and recreational and economic opportunities.

"This is your area, your home, ultimately your future. The planning process involves listening to you, your thoughts, your ideas, your suggestions, your insights. How would you like to see the plan used? What would you like included in the plan and how do we apply the plan," Leberknight said.

"The immediate thing to do is protect what we already have without things getting worse. Then restore. We have to prioritize what we want to restore. Then we go into looking into enhancing whatever, whether it is trails, access, picnic areas, fishing areas. So this will be a multi-years process," he said

Once the plan is developed, additional funding can be sought to implement it, Leberknight said. The development of the conservation plan costs \$120,000. The state Department of Conservation and Natural Resources provided \$60,000 and the state Department of Community and Economic Development added \$20,000. The remaining \$40,000 is to be provided locally through in-kind services.

Nardella said mine works lie under 42 square miles of the watershed and there are 32 known water discharges. Contaminations include sewage, metals and groundwater. The watershed includes 28 municipalities in three counties and spans 54 miles of streams within the Susquehanna and Chesapeake Bay basins.

Three large maps of the 157-square-mile watershed illustrated various features. One map marked all public roadways. Another showed all known active and abandoned mining sites along the creek and another showed state game lands, forests and nearby state parks.

Among the suggestions offered for the plan was the abatement and neutralization of acid mine drainage, monitoring water safety and seeking the cooperation of businesses and landowners for the plan. It was suggested that better communication be developed between those on the east and west sides of the watershed who may have different concerns such as farming instead of mining.

Two more public meetings are planned for November 2009 and January 2010. These meetings will take place at different sites along the watershed. Leberknight said the estimated time for completion of the plan is March 2010.

"I'd love to see 300 people here but I am very pleased with the turnout. It is very important for us to get the input from the public for the plan," said Jim Chappell, Ashland, project coordinator for the Mahanoy Creek Watershed Association.

In addition to those who live in Schuylkill County, others from Elizabethtown, Centre County and Shamokin were also at the meeting.

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### 18 arrested in drug sweep

SHENANDOAH - A drug raid in the Frackville-Shenandoah area Thursday morning resulted in 18 alleged street-level drug dealers being taken into custody. Schuyl-kill County District Attorney James Goodman said 25 arrest warrants were prepared for the drug s  
(read more) ►

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# **BOLICH HIKING TRAIL**

## **MAHANOY CREEK**

Located in Pennsylvania's Eastern Middle field of the Anthracite coal region, the Mahanoy Creek is a 54-mile long stream that is part of the lower Susquehanna River Basin and Chesapeake Bay Watershed. Water quality in the Mahanoy Creek has been severely degraded by the Anthracite Coal Mining Industry. 25% of the watershed's 157 square miles has been strip mined and many of the deep mines have been flooded and are the major source of pollution in the stream. The Creek is impaired by this abandoned mine drainage that releases huge amounts of iron, aluminum, manganese and acidity into the stream via numerous boreholes and seeps. These metals precipitate out and coat the stream substrate, eliminating habitat for macro invertebrates, thus hindering other aquatic life. The creek presents a veritable rainbow of colors, ranging from pumpkin pie orange to antifreeze green to almost clear. In spite of the AML pollution, the stream is home to over 23 species of fish, although most of the biodiversity exists downstream, as most metals have been removed at that point. Providing the energy source that powered the steel mills so crucial to our country's development has resulted in environmental damage to our watershed that will take years and millions of dollars to correct.

## **MAHANOY CREEK WATERSHED ASSOCIATION**

Mahanoy Creek Watershed Association (MCWA), founded in 1998, is a 501(c)(3) organization with approximately 100 unpaid volunteer members, dedicated to remediating environmental damage associated with 150 years of anthracite coal mining and promoting the stream as a valuable recreational and educational resource. It is our philosophy that providing the 51,000 residents in the watershed the opportunity to see its beauty will encourage greater public support for our abatement efforts.

MCWA is currently in the process of developing a Rivers Conservation Plan, which will act as a guide for restoration and management of the watershed. The plan will guide protection of the watershed, provide educational and recreational opportunities, and grant an improvement in overall quality of life for the residents of the region. The plan will provide for a greenway and trails linked to regional systems, plus mine drainage abatement and environmental education opportunities. MCWA has successfully utilized grant funding to raise awareness of AML problems in the watershed's communities by setting up a monitoring program for local high school students and constructing a passive treatment wetland area to treat abandoned mine drainage. We have also sponsored numerous stream cleanups at several sites along the creek, including the infamous Girardville Garbage Barge, which consisted of a 27.5-ton island across the creek. The creek could be crossed over the island of garbage (if you dared), and ecological succession was occurring, evidenced by a tree and other vegetation growing amidst the island of plastic and household items. For our efforts, we received an award from the Pennsylvania Lens on Litter program, but the most important part of the cleanup effort (besides removal of a tremendous environmental eyesore) was the community involvement and the raising of awareness.

To date, MCWA's efforts at remediation and raising public consciousness have not been solely due to public funding, as we have had phenomenal support from local businesses and individuals via supplies, equipment donation and personal time. One example, the Bolich Wetland Project (which lies adjacent to the proposed Hiking Trail), was completed with \$66,000 public funding and an excess of \$100,000 in donated goods and services from local business and industry. Truly, without these donations, our wetland project would never have seen completion. The Herculean cleanup of the Girardville Garbage Barge could not have been completed without donations of equipment, stone (to secure the banks and construct a road to the barge), trucking services, dumpsters, garbage bags, safety equipment, gloves and food from local businesses and individuals. Through continued community support, there truly is hope for the future.



## THE PROJECT

The proposed Bolich Hiking Trail lies adjacent to the 1.5 acre Bolich Project, a passive wetland treatment area that receives approximately 500 gallons of AMD impacted water per minute. Water enters the wetland area with 16 mg/L of iron and leaves with 0 mg/L. The site is utilized by several local high schools for water testing and for environmental studies of wetlands in habitat creation and pollution abatement. Additionally, many locals visit the wetland to enjoy a walk around the pond while enjoying nature. It is our goal to construct a one-mile hiking trail along the Mahanoy Creek at the Bolich property. We propose a road 10 feet wide and 1 mile long, built on a 12" bed of base material and capped with 2" of limestone. This limestone capping will add an alkaline leachate to the creek, increasing the pH and contributing to abatement of the acidity problem. We believe that this trail will improve recreational enjoyment at an area already utilized for this purpose, and encourage healthy lifestyles via physical exercise and enhanced educational opportunities. In proposing the budget, we have included numerous volunteer and donated services. MCWA feels that this hiking trail will serve as a model for future trail construction as we follow through with our Rivers Conservation Plan. It will be the first of many trails along Mahanoy Creek. Enjoyment of natural resources promotes stewardship of those same resources and will result in greater community involvement regarding cleanup efforts. On many different levels, from recreation to education to remediation, the proposed hiking trail would truly be a win-win situation.

## BUDGET

For construction of a one-mile hiking trail along the Mahanoy Creek on the Margarett Bolich property in Barry Township, Schuylkill County, Pennsylvania:

MATERIALS	COST PER	TOTAL COST
600 tons of 1 B limestone capping material, installed (for a 2" walking surface)	\$12/ton hauled	7200.00
3600 tons base material to construct road (10' width, 1 mile length, 12" thick)		0 (donated)
Fuel cost (for trucking donated base material)		1250.00
Equipment		0 (donated)
Labor		0 (donated)
		8450.00



Total costs for the proposed one-mile hiking trail are in excess of the \$5,000 grant. However, we hope to find the additional funding through several local philanthropic organizations (Schuylkill Community Trust, Reidler Family Trust Fund). These organizations have supported many of our watershed projects over the years and we are confident that support will continue with this most worthwhile project. There is a vast amount of money being saved through all of the donated goods and services. It appears that this hiking trail would be a major bargain at \$5,000.

If awarded funding through the National Trails Fund, we would begin construction of proposed trail in early spring of 2009 and complete the trail by early summer 2009. If weather conditions permit, we could possibly begin clearing area by early winter. All work during the winter would be weather dependent. We are quite adaptable, as all of the work would be voluntarily done by our membership.



## The Patriot-News

### Turning coal mines into gold mines

Sunday, June 20, 2010

**BY JOHN BEAUGE**

**For The Patriot-News**

A half century ago, anthracite coal mining was a major industry in Northumberland County.

Abandoned strip mines that dot the landscape are monuments to those days and are places where hundreds of people like Barry Yorwarth of Paxinos and Jeff Nye of the Elysburg area have taken their off-road vehicles over the years.

For the past 13 years, the two also have worked to see their idea of converting the blots on the landscape into a world-class, off-highway vehicle park for ATVs, dirt bikes, full-sized vehicles and snowmobiles become a reality.

Now, with the backing of the county commissioners and others, their dream is getting closer to becoming a reality. Supporters say an organized park would be an economic boon for the area and also help control illegal activities that now occur in the largely unmonitored, abandoned strip mines.

Northumberland County Commissioner Kurt Masser believes a multimillion-dollar park developed on the 6,000 acres the county owns between Trevorton and Mount Carmel would be an economic gold mine.

"It would breathe new life into an area hurt from the loss of the coal and garment industries," he said.

Pashek Associates of Pittsburgh in partnership with Pennoni Associates of Mechanicsburg has been retained using a \$200,000 state Department of Conservation and Natural Resources grant to develop a master site plan by the end of the year.

The plan will include a description of activities, needs of the area, economic impacts, costs, security, design considerations and maintenance. Meetings and interviews will be held to obtain public input.

All avenues of funding will be explored to pay costs of developing the park, which would include marked trails, restrooms, picnic facilities and security devices, said Kathy Jeremiah, county grants planner.

Hiking, bicycling and horseback riding trails are proposed on the more pristine land on the backsides of bowls containing the abandoned strip mines, Masser said.

He hopes the park, which he said will be self-sustaining, will open next year.

The project can be fast tracked because "we have the ground," he said, adding that they actually have too many trails. "We're so far ahead of the game its fantastic."

Yorwarth claims to have promises from organizers of national events to use the park if it is developed.

For Yorwarth, 52, off-roading has been a lifelong love.

"My dad, when we were living on a farm, bought me my first Jeep when I was 13," said Yoworth, 52. "I've been playing with that stuff ever since."

Nye, 48, started with minibikes as a youngster and said "when I could afford it, I bought my first Jeep."

Both stressed they want to see the park developed responsibly.

"We want to be good neighbors," Yoworth said. "I wouldn't want someone driving in my backyard." Off-road vehicles will be restricted to valleys between two mountains.

"There will be buffer zones on both sides," Nye added.

"We will manage it for recreational use for everybody," Yoworth said. There will be controls on noise from vehicles, and if dust becomes a problem, the activity will be shut down, the road watered or the venue changed to correct the situation, he promised.

Supporters say changes to the area will be for the positive.

"It's going to mean an entire transformation of communities that surround the area," Jeremiah predicted. Scheduled events could bring thousands of people into the area, she said.

Randy Carl of Coal Twp., an off-road enthusiast who drives the area, agreed an organized park could be a real plus.

"People in this area don't know what they have in their backyards," Carl said. "It's an uncontrolled environment at this point. The biggest problem is local people bringing their garbage out here."

Sgt. Sean McGinley, commander of the state police substation at Stonington, is also a supporter. He hopes an organized park would make the old strip mine area safer.

Police have done hundreds of investigations in that area in the past decade, he said. He estimates 99 percent of those who operate off-road vehicles there do so in an unsafe manner.

"You see dozens of campfires in the summer," McGinley said. "It's party central. We lack the resources to deal with it."

Postings about the area on the Internet are also drawing more people, he said.

"People are pitching tents for a week or two," he said.

Pearse Umlauf, founder and chief executive officer of the National Off-Road Association based in California, agreed that the local community stands to benefit from an organized off-road park.

"It will be an economic center of commerce for local businesses, not to mention the potential jobs it'll create," Umlauf said. "OHV enthusiasts from across the United States will flock to this new park just for the opportunity to run new trails."

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# Ashland to apply for historical marker at Mother's Memorial

BY JOHN E. USALIS (STAFF WRITER JUSALIS@REPUBLICANHERALD.COM)  
Published: July 16, 2010

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E-MAIL THIS SHARE THIS YAHOO! BUZZ

ASHLAND - If all goes well, the Ashland Boys Association could have a state historical marker placed at the Mothers' Memorial by the Labor Day weekend of 2011.

During Wednesday's meeting, Ashland Borough Council heard the plan to secure the marker from the Pennsylvania Historical and Museum Commission by the ABA/Ashland Mummers Club.

Attending the meeting were club members James Klock and Adam J. Bernodin III, who are compiling the information for the application to the PHMC.

"The deadline for the application is Jan. 5, and if the application is approved in the spring, we'll have the dedication on ABA Day next year," said Bernodin.

In a letter to the borough, club President James Stepanchick said the request for a marker would recognize the historical significance of the organization. The planned location would also recognize the ABA's work in erecting the memorial, the only one of its kind in the world to honor mothers.

"Our goal is to place the PHMC historical marker in front of the Mothers' Memorial site," Stepanchick wrote. "The Ashland Boys Association was responsible for erecting this beautiful statue that shines in our community every day since 1938. It was the perfect gift given to Ashland (in honor of their mothers) during the Great Depression. They also renamed South Third Street in honor of Dr. John L. Hoffman, the 1938 Ashland Boys Association Home Staff president, when the Mothers' Memorial was erected - Hoffman Boulevard."

Council plans to recognize an "Organization of the Month" and a "Citizen of the Month" at each meeting. The first nominees approved were the American Hose Company as August Organization of the Month for its sponsorship of the annual fireworks display. Council approved the nomination of Philip Groody of the American Hose Company as August Citizen of the Month for his work in organizing the fireworks program with his committee. The awards will be presented at the August meeting.

Council acted on the following agenda items:

- Approved a request from Ashland Community Enterprises, operator of Pioneer Tunnel, for police and fire police coverage on Tuesday for a visit by WNEP meteorologist Joe Snedeker at noon during his "Go Joe 13" bicycle run to raise funds for the St. Joseph Center in Scranton.
- Announced that the borough's website is up and running. The address is [www.ashlandborough.com](http://www.ashlandborough.com). Borough Manager Thomas Joyce said the website is a work in progress, and credited its development to Joseph McGinley during his senior year at North Schuylkill Junior-Senior High School.
- Appointed Francis Menne as the new president pro tem unanimously. Menne fills the vacancy left by the resignation of Mary Catherine Flannery a few months ago.

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