West Branch Susquehanna River Watershed

State of the Watershed Report

Completed by the West Branch Susquehanna River Task Force

February 11, 2005

A Message From:

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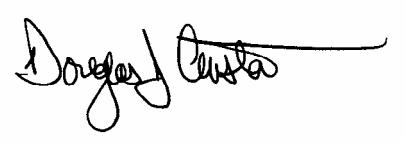
Pennsylvania is renowned for its natural beauty, environmental resources and bounty of outdoor recreational opportunities that draw so many people to experience all that makes Penn's Woods so grand.

Northcentral Pennsylvania was once a major supplier of timber, coal and other raw goods that helped fuel an emerging nation. The resulting pollution problems in the watershed were a legacy our forefathers did not anticipate, but today the area is poised to again capitalize on its natural resources.

Governor Edward G. Rendell launched the West Branch Susquehanna River Watershed Initiative to protect a 12-county area that boasts more than 2 million acres of public land and offers unlimited recreational and economic opportunities for Commonwealth residents and visitors. The initiative is designed to restore water quality, enhance recreational opportunities, ensure clean drinking water for residents, revitalize degraded habitat and preserve some of the most pristine open space in the state.

The first assignment of the West Branch Susquehanna River Task Force was to prepare this "State of the Watershed Report" to identify problems facing the region, and the main stem and tributaries of the West Branch Susquehanna River. The report addresses current water quality concerns, particularly from abandoned mine lands in the watershed, and also presents an inventory of completed and proposed restoration-related projects by member agencies and watershed groups. Also included is a report on fish-stocking activities, water quality monitoring and assessment, and an examination of funding sources to establish enhanced protection for the region.

We thank the members of the West Branch Susquehanna River Task Force for their diligence and hard work in preparing and presenting this report.



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I. Introduction: Task Force Representation, Mission and Goals

During his campaign in 2002 and then again as Governor in 2004, Edward G. Rendell visited North Central Pennsylvania and immediately recognized the enormous recreational, economic and environmental potential of the region. He also witnessed the devastating impacts abandoned mine drainage (AMD) had on local communities and ecosystems in the West Branch Susquehanna River watershed.

At the same time that the Commonwealth's interest in this watershed was increasing, National Trout Unlimited (TU) also was recognizing the potential and the challenges of this watershed. Drawing upon the experience gained in a smaller watershed within this basin, TU proposed a partnership of interested agencies and organizations to restore the West Branch Susquehanna River.

As a result of the growing interest in restoring this area to its full potential, PA Department of Environmental Protection (DEP) Secretary Kathleen A. McGinty created the West Branch Susquehanna River Task Force, charging it with the responsibility of assisting and advising DEP and its partners in the AMD restoration effort in the region.

The Task Force, which held its initial meeting on September 10, 2004, is composed of state and federal agencies, conservation organizations and other entities concerned with the restoration of the West Branch Susquehanna River (see list of members, below). In support of Secretary McGinty's charge, the West Branch Susquehanna River Task Force has developed, and is committed to carrying out, the following mission and goals:

Mission:

The mission of the West Branch Susquehanna Task Force is to restore water resources impacted by abandoned mine lands and mine drainage within the West Branch Susquehanna River basin, ultimately improving the quality of life for those living in and visiting the watershed.

Goals:

1. Develop a comprehensive assessment and restoration plan for the West Branch Susquehanna watershed, with a primary focus on abandoned mine lands and mine drainage.
2. Provide support and technical assistance for efforts to address abandoned mine drainage within the West Branch Susquehanna watershed, with an initial emphasis on the completion of projects underway in the Bennett Branch Sinnemahoning and Kettle Creek watersheds.
3. Build public support within the West Branch Susquehanna watershed for a broad restoration effort.
4. Secure adequate funding to carry out a West Branch restoration initiative

Task Force Members

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Julien Gaudion	PA Department of Environmental Protection
Stuart Gansell	PA Department of Environmental Protection
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Shirley Sholtis	PA Department of Environmental Protection
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Mark Blacknell*	PA Department of Conservation & Natural Res.
Rick Carlson	PA Department of Conservation & Natural Res.
Tom Ford*	PA Fish and Boat Commission
Douglas Austen	PA Fish and Boat Commission
Bradley Myers*	PA Game Commission
Tom Usiadek*	PA Department of Community & Economic Dev't.
Amy Wolfe*	Trout Unlimited
Steve Moyer	Trout Unlimited
David Heicher*	Susquehanna River Basin Commission
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David Hamilton*	U.S. Office of Surface Mining
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Nick Pinizzoto*	Western Pennsylvania Conservancy
Alison McKechie*	Pennsylvania Environmental Council
Deb Simko*	Western PA Coalition for Abandoned Mine Reclamation
Michael Hewitt*	Eastern PA Coalition for Abandoned Mine Reclamation
John Dawes*	Western Pennsylvania Watershed Program

* - Agency/organization lead point of contact

The purpose of this report by the Task Force is to provide an overview of the causes for water quality impairment within the West Branch Susquehanna River watershed. Because AMD is the largest single cause for water quality degradation throughout the West Branch watershed, it is the primary focus of the Task Force, and thus of this report. With this report, the Task Force seeks to set the stage for a coordinated effort aimed at the restoration of water resources impacted by abandoned mine lands and mine drainage within the West Branch Susquehanna River basin. The efforts of the West Branch Susquehanna River Task Force are separate from, but in coordination with, the tourism efforts of the Governor’s Pennsylvania Wilds Task Force.

II. Watershed Background and Current Water Quality Conditions

The West Branch Susquehanna watershed drains an area of approximately 4.466 million acres, just under 7,000 square miles, ranging from Carrolltown in Cambria County to Northumberland in Northumberland County and includes significant portions of Cambria, Clearfield, Elk, Cameron, Potter, Clinton, Centre, Tioga, Sullivan, Lycoming, Union, and Montour Counties (see Figure 1). The basin contains more than 1.4 million acres of State Forest Land, more than 250,000 acres of State Game Lands and over 29,000 acres of State Park Land, along with a scattering of small urban centers. There are a few larger urban centers, including Williamsport, State College, Lock Haven, and Clearfield. Population within the watershed is approximately 580,000 people.

The West Branch watershed, home to three distinct ecoregions (Northern Appalachian Plateau Uplands, North Central Appalachians, and Central Appalachian Ridges and Valleys), is truly a gem nestled in the Commonwealth's interior that has the tremendous potential to provide a mecca of outdoor recreational opportunities. Unfortunately, that potential is impacted by the pollution and other problems left behind from historic unregulated coal mining activities that once provided a boon to local industry and communities. The legacy that remains today is in the form of abandoned mine drainage (AMD), which is the cause for 57% of the pollution to the West Branch's impaired waterways (see Figure 2). More than 1,000 miles of the main stem and tributaries have documented AMD impairment (source: PA's 305(b) list of impaired streams). The watershed has many tributaries that have significant abandoned mine lands (AML) and AMD impacts. The primary mining impacted subbasins, which are shown on Figure 3, include Chest Creek, Anderson Creek, Clearfield Creek, Moshannon Creek, Mosquito Creek, Bennett Branch Sinnemahoning Creek, Beech Creek, Kettle Creek, Babb Creek (tributary of Pine Creek), and a portion of Loyalsock Creek. There are many small tributaries that empty directly into the main stem of the West Branch that are also mining impacted. The West Branch becomes severely impacted in the very headwaters, in Cambria County.

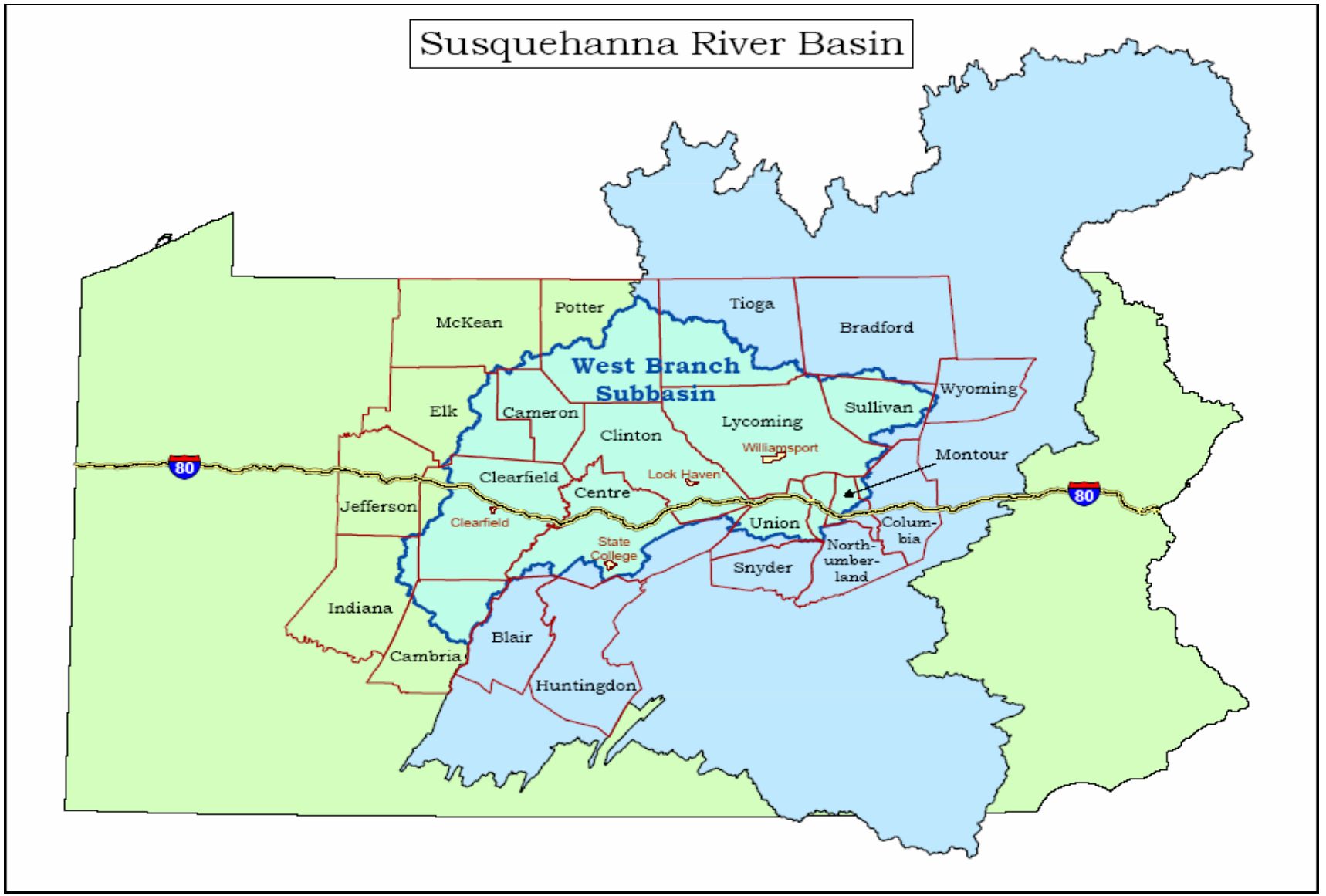

Figure 1: West Branch Susquehanna River Watershed Location

While AMD is by far the most serious water quality problem, other impacts do exist. A review of the DEP's 305(b) list of impaired waters shows agriculture as the second largest source of impairment. Tributaries with agricultural-related impairments include Chest Creek, Burgoon Run (tributary of Clearfield Creek), sections of Spring Creek, Little Fishing Creek and Fishing Creek (tributaries of Bald Eagle Creek), and several tributaries that enter the West Branch in the lower reaches (Winfield Creek, Turtle Creek, Buffalo Creek, Limestone Run, Chillisquaque Creek, Muddy Run, Warrior Run, and Delaware Run). Parts of Spring Creek are also impaired due to urban run-off/storm water.

Another major source of impairment appears to be atmospheric deposition. Mosquito Creek and its tributaries are impacted. Some tributaries to Pine Creek, Sinnemahoning, Loyalsock, and Lycoming Creek are also impaired due to atmospheric deposition. Other sources listed include channelization, flow regulation/modification, upstream impoundments/flow alteration, bank modification, erosion, wastewater, golf courses, industrial point sources, road run-off and removal of vegetation.

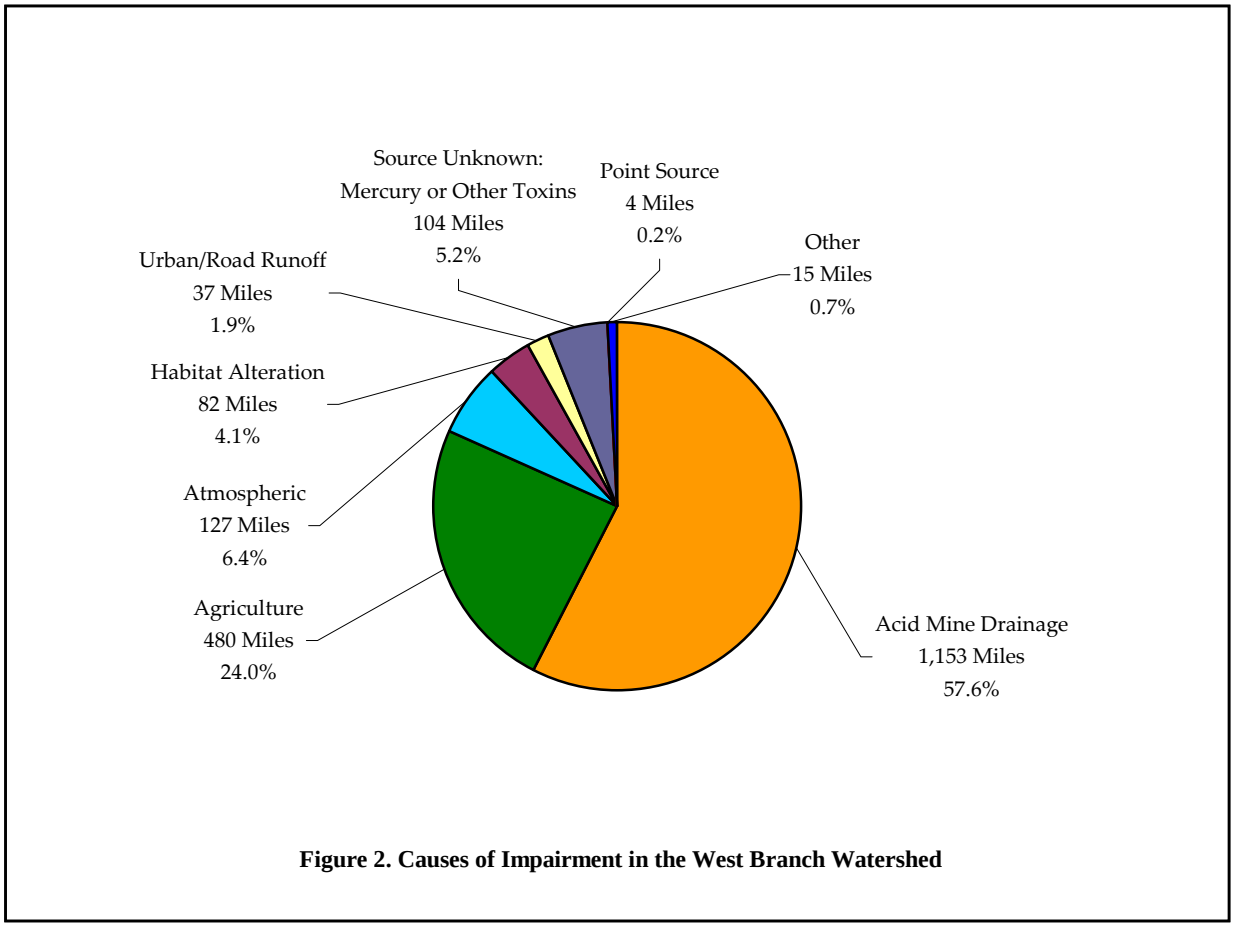

Figure 2. Causes of Impairment in the West Branch Watershed

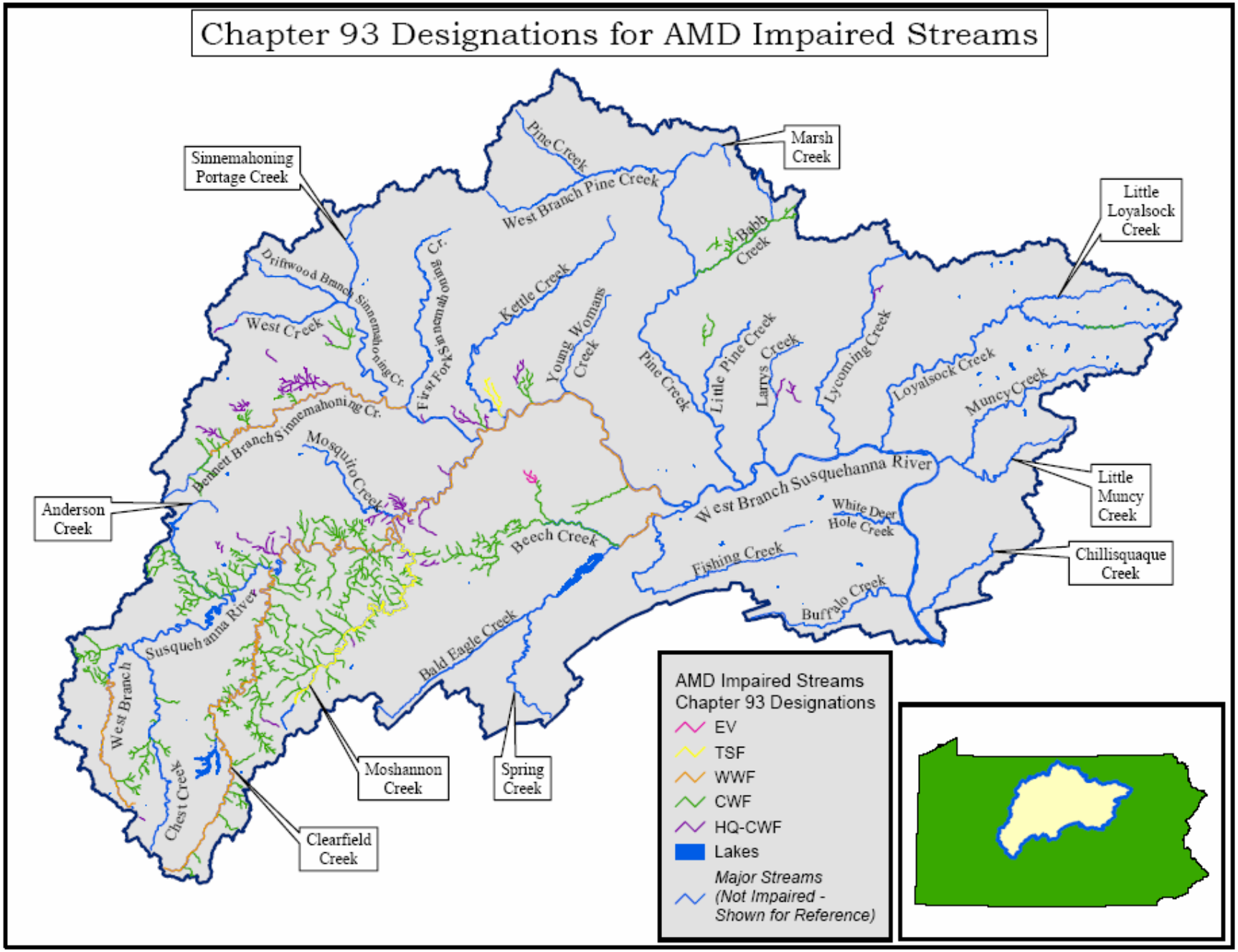
Chapter 93 Designations for AMD Impaired Streams
Sinnemahoning Portage Creek
Pine Creek
Marsh Creek
West Branch Pine Creek
Little Loyalsock Creek
Babb Creek
Driftwood Branch Sinnemahoning Cr.
West Creek
First Fork Sinnemahoning Cr.
Kettle Creek
Young Womans Creek
Pine Creek
Little Pine Creek
Larrys Creek
Lycoming Creek
Loyalsock Creek
Muncy Creek
Bennett Branch Sinnemahoning Cr.
Mosquito Creek
Anderson Creek
West Branch Susquehanna River
Little Muncy Creek
White Deer Hole Creek
Beech Creek
Fishing Creek
Chillisquaque Creek
Buffalo Creek
Susquehanna River
West Branch
Chest Creek
Bald Eagle Creek
Moshannon Creek
Spring Creek
Clearfield Creek
AMD Impaired Streams
Chapter 93 Designations
EV
TSF
WWF
CWF
HQ-CWF
Lakes
Major Streams
(Not Impaired -
Shown for Reference)

Figure 3

III. Potential Restoration Benefits

The benefits from abatement of AMD impacts to the West Branch watershed are numerous, with one of the most obvious being improved fishing opportunities. The potential for fishery restoration on all AMD impacted streams throughout the West Branch is phenomenal due to the fact that most of these have been assessed as potential trout-stocking, high quality coldwater fishery, or exceptional value, and the headwaters of most streams above the AMD are classified as Class A wild trout fisheries (see Figure 3). PA Code Chapter 93 stream designations for West Branch waterways include 1,249 miles of Exceptional Value streams; 5,229 miles of High Quality-Cold Water Fisheries; 73 miles of High Quality-Trout –Stocked Fisheries; 3,971 miles of Cold Water Fisheries; 359 miles of Trout –Stocked Fisheries; and 1,208 miles of Warm Water Fisheries.

Water quality degradation is the main reason for impairment of aquatic life throughout most of the West Branch watershed, whereas the physical stream habitat is in relatively good condition. Successful restoration efforts in the West Branch will yield positive economic benefits that in turn will translate into a better way of life for the local communities. Analyses completed by the PA Fish and Boat Commission (PAFBC) estimate the total recreational use loss at $16,404,228 per year (source: PAFBC, 2004). Clearly, restoration of the West Branch watershed will have a significant impact on the local communities from improved fishing opportunities alone.

In addition to the fishing potential, the West Branch watershed has tremendous potential for other recreational and tourism uses. Nearly two million acres of publicly owned land is located within this watershed (see Figure 4). Pennsylvania's restored elk herd is also located within the West Branch watershed. The Commonwealth has recently developed a tourism initiative, known as Pennsylvania WILDS, to attract people to this beautiful area. In addition, the Lumber Heritage Region is developing a 240 mile-long West Branch water trail. Interest in nature walks, hiking, wildlife photography, bird watching, picnicking and camping are on the rise nationwide. Swimming, kayaking, canoeing, wading, picnicking, camping, hiking, photography and similar activities, are dependent upon, or enhanced by, high quality water resources. Reclamation of abandoned mine lands can open up many new recreation areas.

Other benefits from AMD abatement and AML restoration include providing for increased use of restored lands and the resulting increase in property values and quality of life for those living in the area, improved wildlife habitat and hunting opportunities, job creation as restoration construction projects are completed (in Pennsylvania it is estimated that for every million dollars spent for AML construction contracts, about 27 people are employed directly or indirectly; in addition, nearly every such contract is with a Pennsylvania company employing Pennsylvania labor; source PADEP), increased forest and agricultural production and the resulting economic benefit, and the use of waste coal piles in the watershed for power generation, which reduces the need to mine in undisturbed areas to keep up with energy demands. Additionally, other possible industrial applications exist in the utilization of the enormous pools of water stored in abandoned deep mines in the watershed by industries and municipalities with high water quantity requirements.

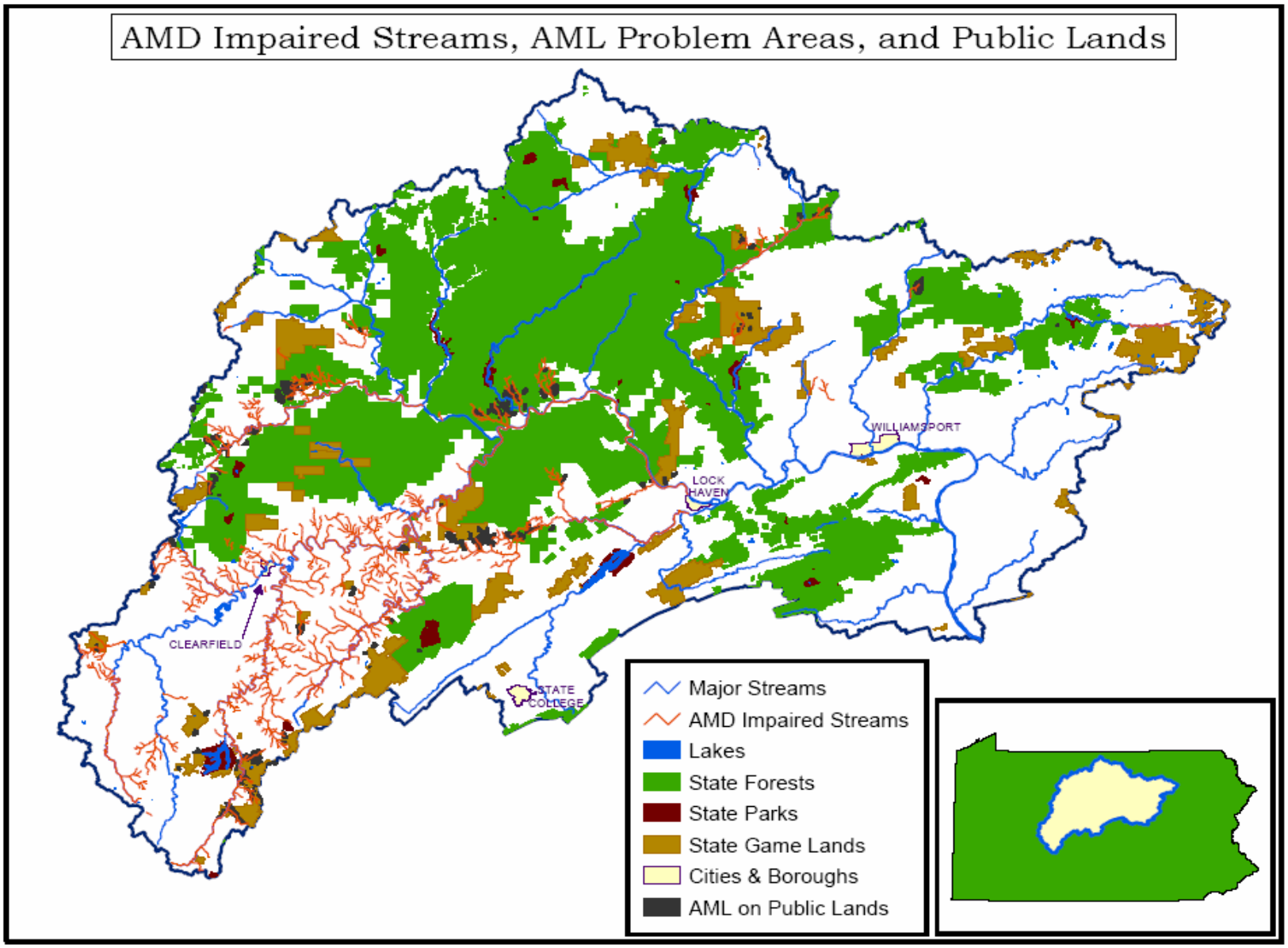
AMD Impaired Streams, AML Problem Areas, and Public Lands
WILLIAMSPORT
LOCK HAVEN
CLEARFIELD
STATE COLLEGE
Major Streams
AMD Impaired Streams
Lakes
State Forests
State Parks
State Game Lands
Cities & Boroughs
AML on Public Lands

Figure 4

IV. Summary of Restoration Challenges and Costs

The challenge of restoring the watershed from AMD impacts is enormous. There are approximately 36,800 acres of unreclaimed abandoned mine land features within the West Branch watershed. These features include surface mine pits, highwalls, spoil piles, refuse piles mine openings, subsidence prone areas, and other miscellaneous mine features. There are approximately 887 known mine drainage discharges with a combined flow of just over 300,000 gallons per minute. The DEP Bureau of Abandoned Mine Reclamation has estimated that water quality restoration of the entire West Branch watershed will require capital costs ranging from $279,292,500 to $464,394,305 and annual operation and maintenance costs ranging from $21,779,560 to $54,779,302. Reclamation of all abandoned mine land features is estimated at an additional $287,784,416 (excerpted from "A detailed analysis of watershed restoration costs for the Bennett Branch Sinnemahoning Creek and Kettle Creek Watersheds and a preliminary analysis of watershed restoration and abandoned mine land (AML) reclamation costs for the entire West Branch Susquehanna River Watershed", completed by DEP's Mineral Resources Deputate and dated March 5, 2004).

Fortunately, restoration of the main stem of the West Branch and select tributaries can be accomplished without addressing each individual AMD and AML problem in the watershed. A comprehensive restoration plan for the watershed that identifies and prioritizes all major discharges is absolutely essential for the purpose of directing limited financial resources to the high priority discharges and AML sites and will result in significantly lower restoration costs than discussed above. Furthermore, the restoration plan should identify the possibilities for creative uses of mine pools in industrial applications and the potential for recovery of metal resources from the discharges, which would reduce long-term operation and maintenance costs.

Remining in the watershed will also reduce the cost of restoration efforts. Remining, the extraction of remaining coal reserves from previously mined lands, is a significant contributor to AMD abatement activities within the West Branch Watershed. Remining operations must reclaim abandoned mine lands to current-day standards. Remining operations that affect pre-existing mine discharges must implement best management practices designed to reduce pollution loads. These practices include regrading and revegetation of abandoned surface mines, removal of coal refuse piles, "daylighting" of abandoned underground mines, addition of lime and other alkaline rock to neutralize acidity, and other techniques designed to reduce water pollution.

Between 1997 and 2003, an average of 382 acres of abandoned, unreclaimed mine lands each year was authorized for remining in the Upper West Branch watershed. The combined value of these remining operations was over $8 million, or $1,170,000 annually, which was performed by the mining industry at no cost to taxpayers. In addition to reclamation of abandoned mines, these remining operations have the added benefit of improving water quality from abandoned discharges. A recent study of remining operations in Pennsylvania (Smith, et. al., 2001) found that on average, remining operations caused a 61% decrease in acidity loads from abandoned discharges. The collective impact of these mining activities is a very significant factor in cleaning up abandoned mine drainage.

V. Overview of Ongoing Restoration Efforts and Future Needs

A number of conservation and watershed groups have formed within the West Branch basin, with the intent of restoring the headwaters and several sub-basins. They have recognized that the majority of the impairment is caused by AMD and have begun assessments and restoration projects to begin to restore these segments. Efforts are underway in the following areas: West Branch headwaters, Clearfield Creek, Anderson Creek, Bennett Branch Sinnemahoning Creek, Beech Creek, Kettle Creek, Cold Stream, Moshannon Creek, Loyalsock Creek, Montgomery Run, Moravian Run, Alder Run, Sterling Run and Babb Creek (tributary of Pine Creek).

A significant number of watershed restoration-related projects have been completed or are underway in the West Branch watershed, funded primarily by the various Task Force member agencies. These projects show that an incredible effort is already occurring, thanks to partnerships between federal and state funding agencies, conservation organizations, local governments and watershed groups (see Supplement to West Branch Susquehanna River Watershed, State of the Watershed Report, Agency Project Lists, 2005). Primary funding sources include the Commonwealth's Growing Greener program, the Federal Office of Surface Mining's Title IV AML program, EPA's 319 program and the U.S. Army Corps of Engineer's 206 program. Completion of a watershed-wide restoration plan needs to be a top priority of the Task Force in order to direct these limited resources to projects that will provide the most significant impact to the watershed restoration effort.

As mentioned previously, Trout Unlimited has taken a lead role in initial efforts to restore the West Branch Susquehanna River. This has included planning and being the primary funding entity, through private foundation sources, of a "West Branch Restoration Symposium". This symposium will be held in May 2005, with a goal of establishing a loosely organized coalition of grass-roots groups to assist in the West Branch restoration.

While much work has been completed, there is much more to be done. Each task force member has an important role to play, with an explanation of these roles provided in Appendix A. There are a significant number of additional potential partners who will likely be interested in partnering to complete projects towards restoration of the West Branch (see Appendix B for a list) and many funding sources (see Appendix C) to assist in this effort. The Task Force is willing to coordinate the efforts of these many groups and funding sources in order to meet the goals described earlier in this report.

Appendix A

The following paragraphs explain the roles of each participating member agency or organization of the task force.

Pennsylvania Department of Environmental Protection (DEP)
The Pennsylvania DEP is involved in many activities with far-reaching impacts on the West Branch Watershed. The Bureaus of District Mining Operations, Abandoned Mine Reclamation, Water Management and the Northcentral Regional Office each administer programs that have a role in restoring the West Branch.

District Mining Operations, through the Moshannon, Knox and Cambria District Offices, regulates mining and related activities in the watershed, including remining. Remining, the extraction of remaining coal reserves from previously mined lands, is a significant contributor to AMD abatement activities within the West Branch watershed. In addition, District Mining Operations' partners with watershed and other organizations to implement AMD abatement projects through Growing Greener and other grant sources. So far, 24 AMD-related projects costing $5 million have been completed or are in progress.

The Bureau of Abandoned Mine Reclamation (BAMR) administers the abandoned mine lands (AML) reclamation program. Funding for the work is received primarily from Title IV of the Federal Surface Mining Control and Reclamation Act of 1977, which is a grants program available from the U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement (OSM). These funds are used to reclaim eligible high priority abandoned mines. Projects are completed in order to protect public health, safety and general welfare from adverse effects of past coal mining. Funds are also provided from OSM through the Appalachian Clean Streams and Ten Percent Set Aside programs to treat/abate abandoned mine drainage that discharges to and pollutes waterways. BAMR has been actively involved in land and watershed reclamation efforts in the West Branch watershed, with a total of 93 projects completed. Recent efforts have focused on restoration of Kettle Creek and Bennett Branch Sinnemahoning Creek, as well as a large refuse pile reclamation project in the headwaters of the West Branch. BAMR is also interested in partnering with watershed groups and state, federal, and local agencies to advance watershed restoration.

The Northcentral Regional Office administers all DEP regulatory programs other than mining. It works with approximately 25 watershed associations and 12 county conservation districts within the West Branch watershed. These associations, conservation districts, and other non-profit organizations and local governments have received over 100 Growing Greener grants worth approximately $7 million to address non-point source pollution. The Northcentral Regional Office will continue to work with these groups to assist them in their restoration, protection, and organizational efforts. They are also working with these counties and watershed associations to implement the Chesapeake Bay Tributary Strategy.

DEP's Office of Water Management plans, directs and coordinates programs associated with the management and protection of the Commonwealth's water resources. Specific program areas of

responsibility include: surface and groundwater quantity and quality assessment and planning; soil and water conservation; coordination of policies, procedures and regulations which influence public water supply withdrawals and quality; sewage facilities planning, point source municipal and industrial discharges, encroachments on waterways and wetlands, dam safety, earth disturbance activities and control of storm water and nonpoint source pollution, and coordination of the planning design and construction of flood protection and stream improvement projects.

Pennsylvania Department of Conservation and Natural Resources (DCNR)

The DCNR is the state's lead land conservation and outdoor recreation agency and is responsible for the administration of approximately 2.4 million acres of state forest and state park lands. The highest concentration of these lands is within the West Branch Susquehanna watershed. Some of the state's most remote, wild, and scenic areas are associated with DCNR lands in this watershed. A major initiative of the Rendell Administration is to promote nature based tourism and improve the economic vitality of the rural communities in major portions of the West Branch watershed. The restoration and improvement of West Branch and its feeder streams from the impact of abandoned mine drainage is a key factor in realizing the true potential of recreation and tourism related benefits for the people in this region. Many of the problem areas are located on DCNR lands with the potential of providing recreation opportunities accessible to the general public. Over 160 miles of acid degraded streams exist on State Forest lands. The DCNR is currently partnering with DEP, TU, and other agencies and organizations to initiate stream clean-up projects.

Pennsylvania Fish and Boat Commission (PFBC)

The PFBC is the state's lead agency for the protection, conservation and enhancement of fish, reptiles, amphibians and aquatic organisms. The Commission is also the lead state agency for the management and promotion of fishing and boating opportunities. PFBC manages more than 33,000 acres of land in the Commonwealth containing 14 hatcheries, 62 publicly accessible lakes and 250 boating access areas. Fishing and boating opportunities abound in PA both on the lands managed by the Commission and other properties throughout the state. Fishing and boating contribute significantly to the Commonwealth's economy generating more than $2+ Billion annually in economic impact, $50+ million in general fund revenue and by supporting more than 14,000 jobs. In the role of protecting and enhancing the resource, the Commission works with partners in the West Branch Susquehanna watershed and throughout the Commonwealth to restore and enhance aquatic resources. The agency also provides technical assistance and expertise for fisheries management and habitat enhancement efforts and technical guidance and support for the provision of fishing and boating opportunities.

Pennsylvania Game Commission (PGC)

Of all state governmental agencies that oversee outdoor recreation, the Pennsylvania Game Commission is the one agency charged solely and specifically with protecting, conserving, and managing the diversity of wild birds and mammals and their habitats. The PGC also provides wildlife related education, services and traditional recreational opportunities for both consumptive and non-consumptive uses of wildlife, while maintaining and promoting Pennsylvania’s hunting and trapping heritage. This task force is important to the Pennsylvania Game Commission because establishing and maintaining a healthy environment is paramount to people, wildlife, habitats, and outdoor recreational opportunities. The PGC is the caretaker of

many acres of state game lands purchased through sportsman's dollars. Much of this land is located in, and along the West Branch corridor.

Department of Community and Economic Development (DCED)

The mission of the DCED is to empower business and communities to invest, succeed and thrive in an environment that affords a superior quality of life and increases opportunities for economic prosperity for all Pennsylvanians. The DCED, through programs that encourage the cleanup of environmental contamination at industrial sites and programs that provide funding to create new jobs and attract new business to the sites that have been remediated, make the DCED's participation vital to the restoration of the West Branch Susquehanna River.

Trout Unlimited

Trout Unlimited is a private, non-profit organization whose mission is to conserve, protect, and restore North America's trout and salmon fisheries and their watersheds. Since 1999, Trout Unlimited has been working with a multitude of partners through its Home Rivers Initiative to develop and implement a comprehensive and prioritized on-the-ground restoration program for the Kettle Creek watershed in northcentral Pennsylvania. Using the Kettle Creek Home Rivers Initiative as a model, Trout Unlimited initiated a West Branch Susquehanna Restoration Initiative in 2004 and has been working as a lead catalyst toward developing a comprehensive, prioritized watershed plan aimed at the restoration of coldwater streams and the ultimate recovery of the West Branch Susquehanna River. The potential for fishery restoration on all streams impacted by abandoned mine drainage throughout the West Branch is exceptional due to the fact that each stream has been assessed as a potential trout-stocking, high quality coldwater fishery, or exceptional value stream and the headwaters of most streams above the AMD are classified as Class A wild trout fisheries. Additionally, the physical stream habitat throughout much of the West Branch is already in relatively good condition. Trout Unlimited recognizes the significance of restoring clean, coldwater throughout the West Branch Susquehanna watershed that will yield positive recreational and economic benefits and in turn will translate into a better way of life for the local communities.

Susquehanna River Basin Commission (SRBC)

The SRBC is a federal-interstate agency established under a compact – for a 100-year duration – signed on December 24, 1970, by the states of Pennsylvania, New York and Maryland and the federal government to protect and wisely manage the water resources of the Susquehanna basin. The basin covers a 27,510-square-mile area and is comprised of six major subbasins – the largest is the West Branch Susquehanna River Subbasin. The subbasin is starkly contrasted by having some of the Susquehanna basin's most aesthetic landscape and pristine waterways, while also having some of the most polluted waterways due to abandoned mine drainage (AMD). AMD remains the single largest source of pollution in the Susquehanna Basin. For decades, SRBC has been monitoring and assessing the water quality of West Branch Subbasin and also providing for enhanced flows during times of severe droughts. In 1985, 1994 and 2002, SRBC conducted studies to assess the water quality and biological conditions of the subbasin. Also, as of the end of 2004, SRBC has completed 29 Total Maximum Daily Loads (TMDLs) for named streams, sampled 76 named streams polluted by AMD for subsequent TMDL development, and has assessed the waterways in State Water Plan Subbasins 8A (Sinnemahoning Creek), 8B (Chest Creek and West Branch Susquehanna River headwaters), and 8C (Clearfield Creek) under the state's unassessed waters and statewide surface water assessment programs. As part of the

Commission's Chesapeake Bay monitoring program, SRBC has been monitoring sediment and nutrient loads from the West Branch Subbasin for nearly 20 years. This monitoring program has been further enhanced by the addition of three new monitoring sites in the West Branch Subbasin in late 2004.

U.S.D.I. Office of Surface Mining (OSM)

The OSM administers the Abandoned Mine Land Reclamation Fund. Congressional appropriations from this fund are transmitted to Pennsylvania through grants to the Pennsylvania Department of Environmental Protection, and through Watershed Cooperative Agreement Program (WCAP) grants to individual non-profit watershed groups. Through these programs, many AMD remediation projects have been constructed in the West Branch Susquehanna River watershed. Seven AMD remediation projects have been funded through the WCAP in the Babb and Kettle Creek watersheds. OSM will continue to support watershed restoration efforts in the West Branch Susquehanna River watershed through its grants programs, by providing technical expertise in evaluating the chemical characteristics of mine drainage and technical assistance in the selection of appropriate treatment technologies, and by participating in task force activities. OSM is also developing a GIS of all AMD passive treatment facilities in Pennsylvania. This database will be available by the end of February 2005. Information on treatment facilities in the West Branch Susquehanna River, which is maintained in this database, will be made available to the task force.

Western Pennsylvania Coalition for Abandoned Mine Reclamation (WPCAMR)

Formed in 1982, WPCAMR brings together an alliance of 24 County Conservation Districts and cooperative organizations in the bituminous coal region of Western Pennsylvania. The WPCAMR is a non-profit, non-partisan, local, state, federal, and industry partnership dedicated to improving water quality and endorsing the reclamation of abandoned mine lands. By working with many people - from watershed volunteers to technical remediation experts; from local government to state and federal agencies, from scout troops to high schools, colleges and universities, we have implemented many restoration projects. Each of our counties in the West Branch Susquehanna has a watershed specialist who has been trained in organizational start-up of watershed groups, monitoring, assessments, grant writing, project management and many other restoration efforts to ensure that the groups take a holistic approach to watershed restoration and protection. The WPCAMR assists these counties in the above activities as well as strategic planning, organizational development/sustainability, two educational activities: *AMD & Your Community* dedicated to local and county elected officials and *Ask Me about Pyrite* geared toward students of any age. In addition, there are several people representing the counties and WPCAMR who have been appointed to the Regional Water Resources Committees to make sure that the "water quality" portion of ACT 220 is as important as "water quantity" in developing the State Water Plan. The WPCAMR along with partners hosts the annual Statewide AMR Conference and is also home to the "One Stop Shop for all of your AMR needs" visit our website: www.amrclearinghouse.org

Eastern Pennsylvania Coalition for Abandoned Mine Reclamation (EPCAMR)

Formed in 1995 by concerned Conservation Districts, EPCAMR represents a coalition of Watershed Organizations from Reclamation partners, Co-Generation Plants, the Active Anthracite Mining Industry, Regional Non-Profit Organizations, and 16 County Conservation Districts and other cooperative organizations in the anthracite and northern bituminous coal

region of Eastern Pennsylvania. Counties covered by EPCAMR in Northeastern and North Central PA include: Tioga, Bradford, Susquehanna, Lycoming, Sullivan, Wyoming, Lackawanna, Luzerne, Northumberland, Carbon, Schuylkill, Columbia, Lebanon, Dauphin, Montour, and Wayne.

EPCAMR is a non-profit, non-partisan, local, state, federal, and industry partnership dedicated to:

- Improving water quality and endorsing the reclamation of abandoned mine lands in their region
- Promoting the spirit of cooperation among all parties with an interest in resolving AMD/AML problems
- Encouraging partnerships among the various governmental agencies (Federal, State, County, and Local), watershed associations, industry, and conservationists
- Provide technical reviews of proposed AMD/AML Projects and technical assistance from GIS/GPS technology to wetlands delineation and water quality monitoring practices
- Encouraging the remining and reclamation of abandoned mine lands, streams, and resources impacted by mining
- Educating, informing, and involving the public with mine drainage and mine reclamation issues
- Seeking and acquiring available sources of funding for restoration, reclamation, and assessment projects
- Providing assistance in developing watershed associations and coalitions interested in AMD/AMR

Similar to our sister organization WPCAMR, each of our counties in the West Branch of the Susquehanna has a watershed specialist who has been trained in organizational start-up of watershed groups, monitoring, assessments, grant writing, project management and many other restoration efforts to ensure that the groups take a holistic approach to watershed restoration and protection. EPCAMR Regional Coordinator is appointed to several state-wide advisory committees including the Susquehanna River Basin Commission's Water Quality Advisory Committee, the Non-Point Source Liaison Resource Extraction Sub-Committee and the Mining and Reclamation Advisory Board. The EPCAMR along with other partners co-hosts the annual Statewide AMR Conference and is also home to the "Orange Water Network" visit our website at www.orangewaternetwork.org

Pennsylvania Environmental Council (PEC)

For more than 30 years the Pennsylvania Environmental Council has made a difference in our state. Since its founding in 1970, the Council has played an active part in helping to improve, conserve and protect our waterways and their watersheds. The health of our waterways is dependent to a large degree on the condition of the land that surrounds them. A hallmark of the Council's work is the connection between land use and the environment as demonstrated by projects designed to promote sustainable use of land and resources. Although the West Branch Susquehanna has some of the most spectacular, it suffers from a long history of coal mining and has the dubious distinction of being known as having the most polluted waters in the Susquehanna basin due to abandoned mine drainage. PEC's primary objective is to assist stakeholder organizations through the integration of advocacy, assessment and education to

develop a prioritized, on-the-ground community approach that include the interests of all stakeholders and provides for the restoration and conservation of basin resources, which in turn improves the quality of life for all.

Western Pennsylvania Conservancy (WPC)

WPC is a non-profit conservation organization established in 1932. The mission of the organization is to Save the Places We Care About by Connecting People to the Natural World. WPC has long recognized the importance of protecting pristine areas and restoring those that are degraded within the West Branch Susquehanna watershed, one of Pennsylvania's most scenic and naturally significant areas. WPC has worked diligently to protect important lands within the watershed, and in addition, completed Natural Heritage Inventories for many of the counties within the basin. In 2001, WPC developed a Watershed Assistance Center, which focuses primarily on dealing with water quality issues. Through the Watershed Assistance Center, WPC has assisted numerous grassroots conservation organizations with protecting and restoring their local watersheds within the West Branch. In addition to providing technical assistance, WPC is currently conducting a watershed assessment for Anderson Creek. As part of this work, WPC is collecting data needed to implement the Watershed Restoration Analysis Model (WRAM), a program developed by Penn State University in cooperation with DEP's Bureau of Watershed Management. WRAM is a pollution loading-based assessment tool that predicts the downstream effects of treating specific sources of AMD. Because of WPC's extensive experience working with the many aspects of restoring and protecting the watersheds and the lands they encompass, the organization is uniquely positioned to assist the West Branch Susquehanna River Task Force with developing and implanting a plan for the watershed.

Western Pennsylvania Watershed Program (WPWP)

The Western PA Watershed Program is a small grants Program funded by philanthropy, interested in supporting environmental groups and watershed associations in site-specific restoration projects. The majority of the grant-making budget goes for abandoned mine drainage abatement. Having been a grant-maker for 11 years, WPWP is expanding into the Susquehanna River Basin with small grants. Each of these grants must leverage or match agency programs and enable the watershed association to administer an agency (DEP, DCNR) grant. Having supported the Rivers Conservation Plan for the West Branch, WPWP is particularly interested in using the plan as a list of AMD sites needing abatement. The governing Board of Advisors uses a headwaters approach to remediation. Support of local leadership is an intent of the Program. Other Program areas include streambank stabilization, riparian buffers, non-point source pollution abatement, and convening. A web site, WPAWP.org, provides information on how to apply for a grant. To date WPWP has participated in funding the restoration of 480 miles of previously dead streams due to abandoned mine drainage. WPWP works integrally with previously listed partners.

Appendix B

Potential Partners List

The following list includes government agencies, watershed and environmental groups and others who may be interested in partnering to complete projects towards restoration of the West Branch, in addition to those already participating in the task force.

Government Agencies

U.S.D.A. Natural Resources Conservation Service
U. S. Army Corps of Engineers
PA State Conservation Commission
Representatives from Counties and Municipalities
City of Baltimore
SEDA-Council of Governments
Upper/Middle Susquehanna Water Resources Regional Committee
Cambria County Conservation and Recreation Authority

County Conservation Districts

Bradford County Conservation District
Cambria County Conservation District
Cameron County Conservation District
Centre County Conservation District
Clearfield County Conservation District
Clinton County Conservation District
Elk County Conservation District
Indiana County Conservation District
Lycoming County Conservation District
Montour County Conservation District
Northumberland County Conservation District
Potter County Conservation District
Sullivan County Conservation District
Tioga County Conservation District
Union County Conservation District

U.S.D.A. Resource Conservation and Development Councils

Endless Mountains RC&D
Headwaters RC&D Council, Inc.
Southern Alleghenies RC&D

Business/Industry

Geisinger Health System
Pennsylvania Power and Light
Reliant Energy
River Hill Energy

Colleges

Bucknell University
Lock Haven University (West Branch Institute)
Lycoming College (Clean Water Institute)
Mansfield University
Mount Aloysius College
Pennsylvania College of Technology
Penn State University (Center for Watershed Stewardship)
Saint Francis University

Environmental Organizations

Chesapeake Bay Commission
Chesapeake Bay Foundation
Clearwater Conservancy
God's Country Chapter of Trout Unlimited
Merrill Linn Conservancy
Northcentral PA Conservancy
PA Chapter- Rocky Mountain Elk Foundation
PA Cleanways, Inc
PA Organization for Watersheds and Rivers
Southern Alleghenies Conservancy
Spring Creek Chapter of Trout Unlimited
Stream Restoration, Inc.
Susquehanna Greenway Partnership
Wood Duck Chapter of Trout Unlimited

Watershed Organizations within the West Branch Area

Anderson Creek Watershed Association
Babb Creek Watershed Association
Beech Creek Watershed Association
Bennett Branch Watershed Association
Black Hole Creek Watershed Association
Bucktail Watershed Association
Buffalo Creek Watershed Association
Chest Creek Watershed Alliance

Chilisquaque/Limestone Run Watershed Association
Clearfield Creek Watershed Association
Dunwoody-Big Bear Fish and Game Clug
Emigh Run/Lakeside Watershed Association
Greater Nippenose Valley Watershed Association
Hubler Run Watershed Association
Kettle Creek Watershed Association
Little Clearfield Creek Watershed Association
Loyalsock Creek Watershed Association
Lycoming Creek Watershed Association
Montgomery Run Watershed Association
Moshannon Creek Watershed Association
Mosquito Creek Sportsmen's Association
Muncy Creek Watershed Association
Pine Creek Headwaters Protection Group
Pine Creek Preservation Association
Spring Creek Watershed Community
Sugar Valley Watershed Association
West Branch Susquehanna River Rescue
White Deer Creek Watershed Association

Appendix C

Potential Funding Sources

Agency	Program	Comments
Federal		
Army Corps of Engineers	Section 206	35% local match
Natural Res. Cons. Service	P.L. 566	50% local match, watershed size limit; must show positive cost/benefit
EPA	319	Administered by DEP
Office of Surface Mining	Title IV	Administered by DEP, limited to Priority 1 & 2 hazards
Office of Surface Mining	Title IV	Administered by DEP, addresses AMD through 10% and ACSI funding
Office of Surface Mining	Title IV	Small AMD program administered by OSM
Fish and Wildlife Service	Shad Restoration	
National Park Service	Chesapeake Bay Gateway	50% non-fed match, up to $150,000
State		
Dept. of Env. Protection	Growing Greener	Watershed restoration emphasis
Dept. of Cons. & Natural Res	Growing Greener	
Dept. of Comm & Econ Dev	Industrial Sites Reuse	Grants/loans for cleanup of environmental contamination
Dept. of Comm & Econ Dev	Small Business First	Loans for job creation post remediation
Dept. of Comm & Econ Dev	Pollution Prevention Assist.	Loans for installation of pollution prevention equipment for existing ongoing operations
Dept. of Comm & Econ Dev	Machinery/Equip. Loans	For job creation post remediation
Dept. of Comm & Econ Dev	First Industries Program	For new tourism business post remediation
PA Infrastructure Investment Authority	Pennvest	Infrastructure loans
Other		
Trout Unlimited	W. Br. AMD Rest. Init.	Private funding sources
Western PA Watershed Program	W. Br. AMD	Philanthropy