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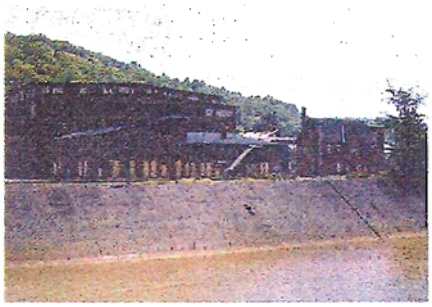
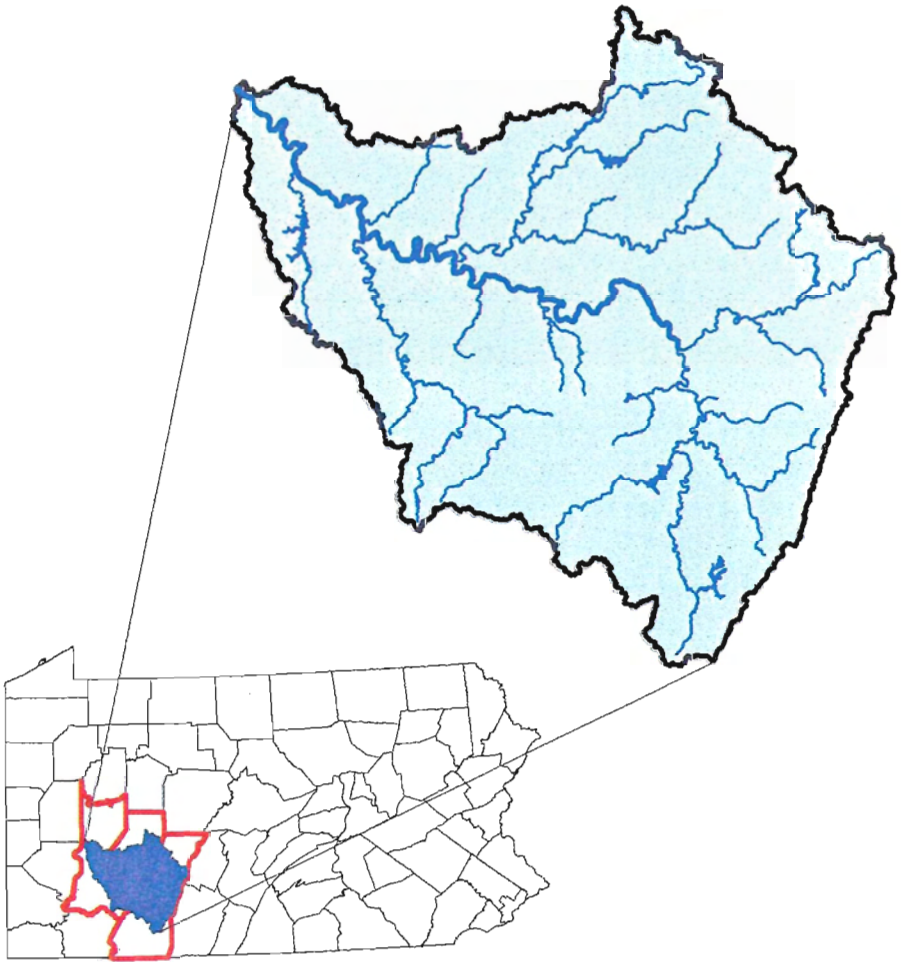


THE RIVERS
CONSERVATION PROGRAM

PENNSYLVANIA
DEPARTMENT OF CONSERVATION
AND
NATURAL RESOURCES

Legacy

FINAL
KISKI-CONEMAUGH
RIVER BASIN CONSERVATION PLAN



Scenic Beauty

Recreation

THE KISKI-CONEMAUGH RIVER BASIN ALLIANCE
WINDBER, PENNSYLVANIA

July, 1999

This project was financed in part by a grant from the Keystone Recreation, Park and Conservation Fund under the administration of the Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.

THE PENNSYLVANIA RIVERS
CONSERVATION PROGRAM

FINAL
KISKI-CONEMAUGH
RIVER BASIN CONSERVATION PLAN

THE KISKI-CONEMAUGH RIVER BASIN ALLIANCE
WINDBER, PENNSYLVANIA

Prepared By:
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July 1999

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

The Basin and Plan

The Kiskiminetas-Conemaugh River Basin includes some of the most scenic areas of Pennsylvania. The basin's streams drain some of the state's highest mountain ridges and have created some of its deepest river gorges. Within this area are a remarkable variety of natural, cultural, and recreational resources. The wealth of coal in the Kiski-Conemaugh River Basin made the region a key to America's industrial development but has left a legacy of abandoned mine drainage, making the basin the most degraded drainage area in Pennsylvania. Recent progress in treating abandoned mine discharges coupled with natural improvement in water quality has caused an awakening among many of the region's residents, who are beginning to recognize the great potential these long-ignored waterway and greenway corridors possess.

The challenge of addressing the basin's abandoned mine drainage and other environmental issues, coupled with the potential for recreation and economic development, has spawned the need for a Kiski-Conemaugh River Basin Conservation Plan. In April of 1997, in an effort to remediate the environment after years of abuse, a coalition of nine environmental groups concerned with the conservation and preservation of the Kiski-Conemaugh Basin established the Kiski-Conemaugh River Basin Alliance (K-C Alliance) to address this need. This plan, prepared in accordance with the guidelines of the Pennsylvania Department of Conservation and Natural Resources (DCNR) Rivers Conservation Program, is a result of that effort.

The DCNR has developed the Rivers Conservation Program to conserve and enhance river resources through the development and implementation of locally initiated plans. This program provides technical and financial assistance to municipalities and river support groups to carry out planning, implementation, acquisition, and development activities. A Pennsylvania Rivers Registry has been established as one component of this program. The registry is designed to promote river conservation and to recognize rivers or river segments in communities that have completed a Rivers Conservation Plan.

The River Conservation Plan identifies significant natural, recreational and cultural resources. Issues, concerns, and threats to these resources are investigated as part of plan development, and appropriate management efforts are recommended. In order for a river to be placed on the registry, it must have an approved plan with local municipal support. Registry status must be obtained from the DCNR to qualify for further DCNR grants for implementation, development, or acquisition.

History

The Kiski-Conemaugh River Basin and its tributaries are rich in history. The river valleys provided a corridor for the historic Pennsylvania Mainline Canal and the Pennsylvania Railroad. The iron and steel industry in Johnstown relied entirely on the canal in the first half of the 19th century to get its products to market. When the Pennsylvania Railroad opened, Johnstown steelmakers not only obtained year-round access to more markets, but also one of their biggest customers – the

railroad. The region produced many of the steel rails for America's westward expansion and much of the coal for America's Industrial Revolution and growth into a world power. Johnstown, the largest city in the Kiski-Conemaugh River Basin, was the commercial and civic heart of the region, and the center of an extensive network of coal and ore mines, steel mills, coke ovens, limestone quarries, and railroads. In the late 19th and early 20th centuries, the western Pennsylvania coalfields produced about one-fourth of the nation's coal.

Restoration

With the recent decline of the coal and steel industry, recreation and tourism is emerging as a viable source of economic revenue in the Kiski-Conemaugh Basin. Bed and Breakfasts, kayaking and canoeing opportunities, hiking and biking trails, and historic sites all have seen recent success in the region. The steady improvement of the environment also caused an improvement in the quality of life and well being of the communities and residents of the region. This renewed sense of community pride coupled with recent environmental remediation projects throughout the region has introduced new levels of optimism for economic and environmental improvement into the next century.

The Future

It is important that as the 21st century approaches, the focus of communities continue to be on the exciting future the Kiski-Conemaugh Basin has in store and not about laying blame as to who is responsible for the environmental problems caused by the region's long and storied industrial heritage. Now is the time to join forces and lay the foundation for future remediation and implementation projects that will allow the region to continue it's transformation from the coal and steel industry to the tourism and recreation industry.

BACKGROUND

The K-C Alliance is a cooperative effort of five watershed organizations and four other environmental organizations within the basin. The watershed organizations include:

- Blacklick Creek Watershed Association;
- Conemaugh Valley Conservancy;
- Loyalhanna Watershed Association;
- Roaring Run Watershed Association; and
- Stonycreek-Conemaugh River Improvement Project (SCRIP).

The other environmental organizations are:

- Cambria County Conservation and Recreation Authority;
- Southwestern Pennsylvania Heritage Preservation Commission;

- Southern Alleghenies Conservancy; and
- Somerset County Conservancy.

The members of K-C Alliance understand the interdependence between water quality and all of the activities that occur in the Kiski-Conemaugh Basin and recognize that, by working together, progress in one area of the Kiski-Conemaugh River Basin is often linked to progress in other areas of the basin. Improvement in water quality upstream will improve economic development and recreational opportunities downstream. Watershed groups in the upper part of the basin can make a stronger case for funding when they can show a linkage with economic and environmental progress downstream.

The K-C Alliance has developed a statement of goals to use as the impetus for development of a river conservation plan funded by the DCNR Rivers Conservation Program. Goals are as follows:

1. Conservation, restoration and enhancement of the entire Kiski-Conemaugh River Basin and its tributaries.
2. Remediation of abandoned mine discharges and improvement of water quality.
3. Wise management and protection of wildlife habitats, farmland, forests and wetlands. The remarkable diversity of animal and plant life in the Kiski-Conemaugh River Basin emphasizes the importance of the river basin as a habitat.
4. Balanced development of the basin's water, land and cultural resources for recreation, tourism and economic revitalization.
5. Education of the basin's population concerning the importance of environmental and cultural resources and how it correlates with economic and recreational opportunities in the region. Achieve an understanding of the watershed as an ecological physical-planning unit.
6. Provide unified advisory input into management plans developed by federal, state, and local agencies for basin resources.
7. Improvement of community facilities, services and "quality of life" attributes for all residents of the basin.
8. Foster communications and inter-governmental cooperation among the communities within the basin.

The River Conservation Plan has been developed through the coordinated efforts of the K-C Alliance and GAI Consultants, Inc. The K-C Alliance Advisory Council which consists of over 50 members contributed to the data collection effort. Three rounds of public meetings in over 20 locations have been held throughout the planning process, with an additional round of meetings

to follow the release of the final plan. These public meetings facilitated the development of a regional consensus of what the public felt were issues and/or opportunities that need to be addressed in their communities. The public consensus is reflected throughout the plan. In addition to the strong public support, there has also been overwhelming support by the municipalities within the basin. Of the 126 municipalities in the basin, 96 have officially adopted resolutions supporting the efforts of the K-C Alliance.

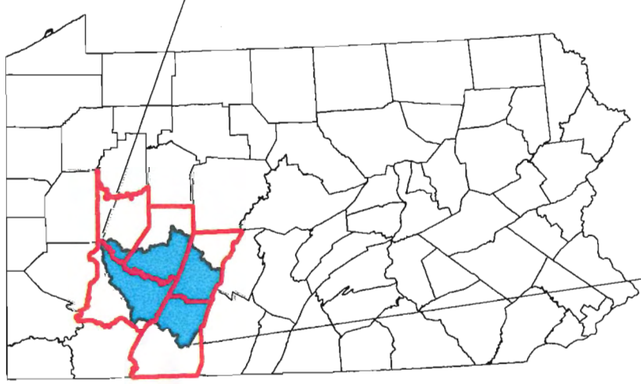
This document represents the Final Kiski-Conemaugh River Basin Conservation Plan. One of the objectives of the K-C Alliance has been to not only recommend potential management options (projects) for inclusion in the final plan – but to actually *implement* projects before the plan was completed. Through the efforts of the K-C Alliance and Congressman John Murtha, over $285,000 from the United States Forest Service, the DCNR Rivers Conservation Program, and Canaan Valley Institute have been used to implement projects in the basin since the inception of the plan in 1997. Projects include tree plantings, trail improvements, safety railing, footbridges, community park improvements, stream bank revegetation, whitewater park development, geographic information systems development, environmental education workshops, and "dry" fire-hydrant projects. The completion of these "early" implementation projects has rejuvenated the grassroots and community organization efforts in the basin and instilled a sense of accomplishment and hope for future projects.

Following submission of the final comprehensive plan, the DCNR River Conservation Program will review the plan for acceptance in the Pennsylvania Rivers Registry Program. Once accepted, the Kiski-Conemaugh River Basin Conservation Plan will be eligible for matching funds from DCNR for implementation of projects identified in the plan. The completion of a plan for the Kiski-Conemaugh River Basin allows the member organizations of the K-C Alliance and others to leverage funding from other organizations which acknowledge the effort and level of detail taken to complete a comprehensive study.

GEOGRAPHIC AND DEMOGRAPHIC ATTRIBUTES

The Kiskiminetas-Conemaugh River Basin drains an area of 1,887 square miles from the highest mountain ridges in Pennsylvania through some of the state's deepest river gorges as shown on Map 1. Originating on the Allegheny Front at elevations exceeding 2,900 feet are streams feeding the Stonycreek and Little Conemaugh Rivers, which meet in Johnstown to form the Conemaugh River. After the Conemaugh flows through Conemaugh Gorge and Packsaddle Gap, it is joined by Blacklick Creek; then Loyalhanna Creek meets the Conemaugh River at Saltsburg to form the Kiskiminetas River, which empties into the Allegheny River at Freeport, 30 miles upstream of the Point in Pittsburgh. It is the largest sub-basin of the Allegheny River, draining 16 percent of the Allegheny's total drainage area. There are 122 river miles from the headwaters of the Stonycreek River to the mouth of the Kiskiminetas on the Allegheny River. The basin's steep terrain makes it one of the most flood-prone areas in America.

The population in the Kiski-Conemaugh River Basin has declined in recent decades but still stands at over 329,000 people in the 1990 census. The basin encompasses parts of Armstrong, Cambria, Indiana, Somerset, and Westmoreland Counties in southwestern Pennsylvania. The largest towns in or near the basin include Johnstown, Ebensburg, Somerset, Indiana, Greensburg, Latrobe, Blairsville, Apollo, and Vandergrift. Map 2 shows major urban and transportation features in the basin. Map 3 shows major streams and watersheds within the basin.



Location Map

Kiski-Conemaugh River Basin

Major Municipalities

Major Streams

County Boundary

Kiski-Conemaugh Basin Boundary

N

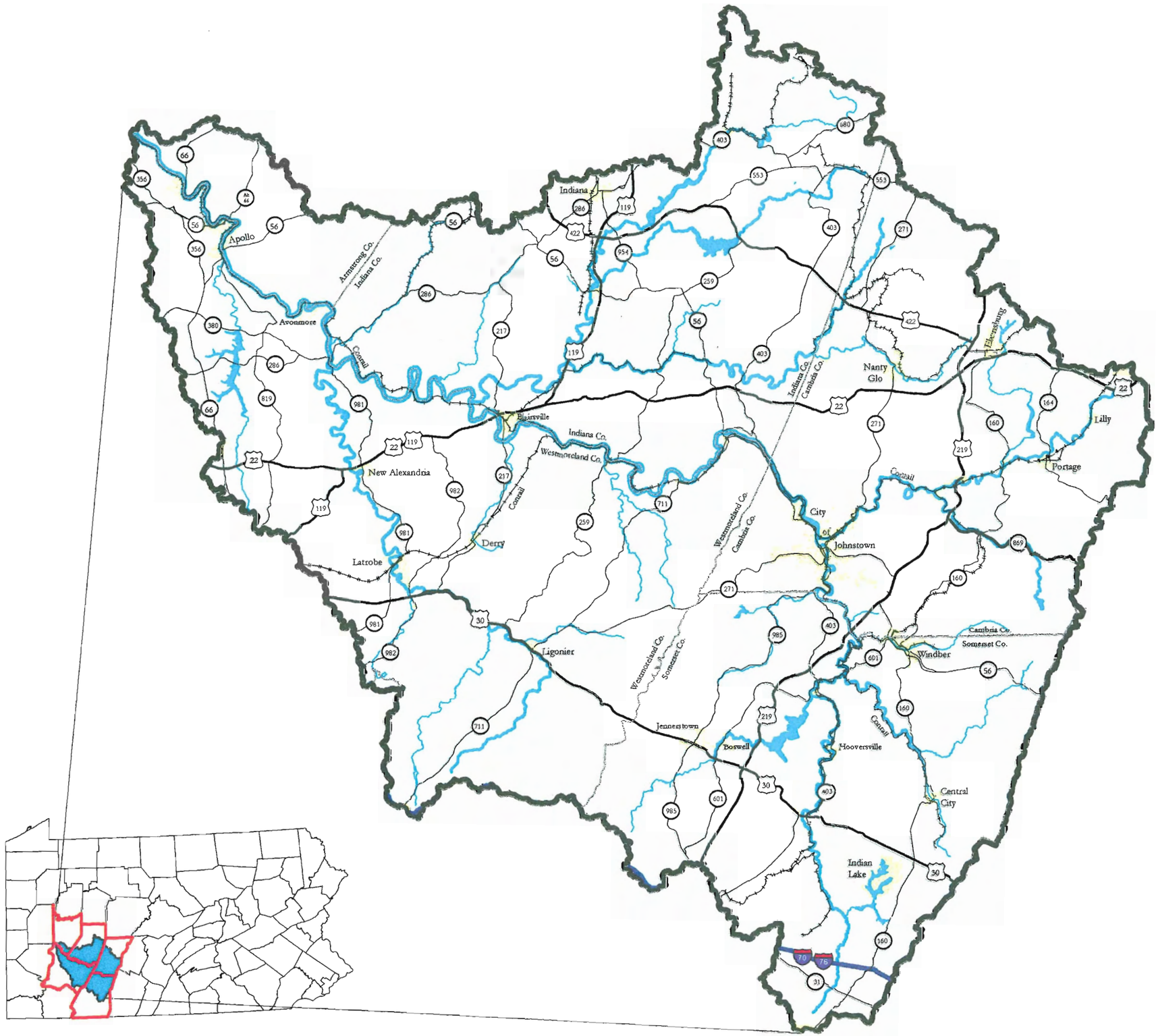
2 0 2 4 6 8 10 Miles

Map Number 1

Kiski-Conemaugh River Basin Alliance ~
Environmental Information Services - Windber, PA

Major Transportation Routes

Kiski-Conemaugh River Basin



PA Traffic Routes

U.S. Traffic Routes

Interstate Highway

Railroads

Municipalities

County Boundary

Kiski-Conemaugh Basin Boundary

N

2 0 2 4 6 8 10 Miles

Map Number 2

Kiski-Conemaugh River Basin Alliance ~
Environmental Information Services ~ Windber, PA

Watershed Districts~ Management Agents

Kiski-Conemaugh River Basin

Major Municipalities

Kiskiminetas River Mainstem Watershed~ Roaring Run Watershed Association

Conemaugh River Mainstem Watershed~ Conemaugh Valley Conservancy

Loyalhanna Creek Watershed~ Loyalhanna Watershed Association

Stonycreek & Little Conemaugh Rivers Watershed~ Stonycreek-Conemaugh River Improvement Project

Blacklick Creek Watershed~ Blacklick Creek Watershed Association

N

2 0 2 4 6 8 10 Miles

Map Number 3

Kiski-Conemaugh River Basin Alliance ~ Environmental Information Services ~ Windber, PA

RESOURCE ISSUES

Investigations conducted for and public input obtained for this plan have identified a number of issues, concerns and constraints that are important to rivers conservation within the basin. Major themes and key issues are summarized below. For purposes of identifying issues and implementing actions at the local level, the basin has been divided into five management watersheds, as shown on Map 3. Issues raised by the public are identified in detail by management watershed in Section VI of the plan.

Land Resources

The effect of land resources on the basin's streams as a result of direct impact to water quality and use, and as a result of aesthetic and ecosystem values, are important factors in this plan. Key issues include:

- The basin is desperately in need of land-use planning for critical areas including steep slopes, floodplains, wetlands and for erosion, stormwater and flood control. The basin is essentially rural and land use controls are typical for such an area: less than 40 percent of the basin's municipalities have zoning and subdivision controls, and fewer have comprehensive planning. Proper land use planning through zoning or other tools are needed to protect and enhance water quality and river-related values.

- Much concern has been expressed throughout the basin for maintaining streams and riverbanks that are free of trash and for otherwise beautifying basin watercourses. The introduction of refuse from illegal trash dumping was noted as a problem in several areas. The desire for an expanded basin-wide volunteer River Keepers program was expressed at several public meetings.

- Buffering with vegetative filter strips is critical in protecting the basin's streams from sediments, nutrients and thermal pollution; it is a first line of defense in protecting streams and rivers.

- Other major land resource issues addressed in this plan include roads/river access, viewshed protection, sustainable forestry and timbering practices, golf courses, and hazardous wastes.

Water Resources

The surface waters of the basin include outstanding recreational and ecological resources. However, waters throughout a large portion of the basin are degraded by abandoned mine drainage (AMD). AMD is polluted water discharged from abandoned mines. Typically, this water has a low pH (and high acidity) and high levels of metals such as iron, aluminum, manganese, and other pollutants. The conditions resulting from these chemical characteristics are toxic to animal and plant life. Abandoned mine drainage is viewed as the single greatest river conservation issue in the basin. AMD and other pollutants seriously compromise the integrity and use of the basin's aquatic resources. Key issues include:

- AMD is viewed as the single greatest river conservation issue in the basin. Map 4 illustrates the potential extent of this problem, which results from the effects of both surface mines and deep mines. The majority of other river-related conservation initiatives depend upon the successful remediation of AMD, which may include land reclamation as well as water treatment solution options. The abatement of AMD degradation must be given the highest priority in recommending actions and management options. A critical need in implementing remediation efforts is the identification and prioritization of problem areas and the development of abatement cost evaluations. This information can then be used to obtain funding and implement specific remediation projects.

- While not as critical as AMD, sewage pollution is a matter of considerable local concern in the basin. Both malfunctioning on-lot septic systems and inadequate municipal sewage treatment systems are affecting water quality. A comprehensive evaluation of sewage effluent problems is needed to identify communities where municipal systems are lacking, where municipal treatment is inadequate, and concentrated areas where septic tanks are substantially affecting streams.

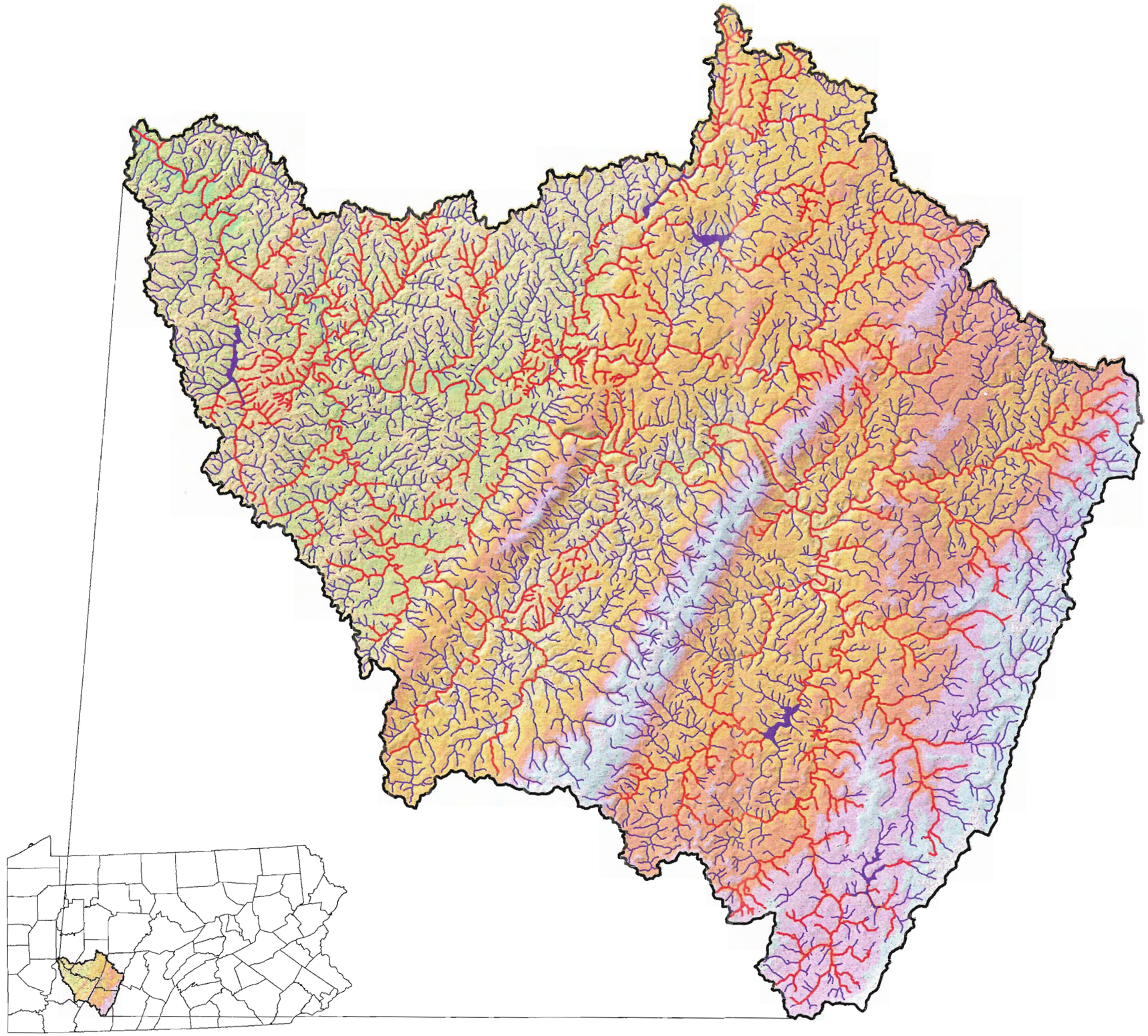
- Non-point source pollution from agricultural and other runoff is a problem in a number of areas. Concern for runoff containing hazardous waste and pesticides has been expressed in several areas. A comprehensive effort at identifying and addressing these problems has been initiated in the Stonycreek/Little Conemaugh Rivers Watershed, but this type of information is lacking throughout much of the basin.

- Erosion and sedimentation have been identified as problems in a number of areas. Land use controls and educational efforts are needed to help address this problem.

- The Kiski-Conemaugh Basin is known as the site of some of the worst floods in American history. Although many flood control projects have been implemented, flooding continues to be a problem in some areas. A comprehensive evaluation of flooding problems is needed to prioritize and document flooding and sedimentation problems. To permit a comprehensive solution to problems and allow for prioritization of projects, these problems need to be evaluated on a watershed, rather than a municipal basis.

- A comprehensive stormwater management plan is needed for the basin. Flood convergence has at times proven to be catastrophic due to the topography of the basin. Proper planning is needed so that future development does not increase flood potential.

- The maintenance of flows downstream of flood control reservoirs at levels suitable for recreational uses was also noted as an issue worthy of further investigation.



Streams Potentially Affected By Abandoned Mine Drainage

Kiski-Conemaugh River Basin

Non AMD Affected Streams

Potential AMD Affected Streams

Elevation Range (feet)

- 695 ft - 953 ft
- 953 ft - 1210 ft
- 1210 ft - 1466 ft
- 1466 ft - 1725 ft
- 1725 ft - 1981 ft
- 1981 ft - 2240 ft
- 2240 ft - 2496 ft
- 2496 ft - 2756 ft

Kiski-Conemaugh Basin Boundary

N

2 0 2 4 6 8 10 Miles

Map Number 4

Kiski-Conemaugh River Basin Alliance ~
Environmental Information Services - Windber, PA

Biological Resources

Recovery of degraded aquatic ecosystems is the most substantial river-related biological issue in the basin. The appropriate stewardship of other components of the basin ecosystem, such as important habitats and rare species, is also of concern. A number of recovery, enhancement and stewardship needs exist in the basin. These include:

- Many basin streams could show appreciable improvement if acid flows from AMD or other sources are neutralized. This is particularly true for some headwaters trout streams that are affected by acid rain. A program to identify and treat streams that could benefit from limestone alkalinity addition is needed, where appropriate.

- A basin-wide program to use limestone in all water-related construction applications, where appropriate, could also have a substantial effect upon the neutralizing of acidic waters. The revision of ordinances to promote the use of limestone construction in appropriate situations could be used to implement this program.

- A comprehensive water quality and biologic sampling program is needed in the basin to identify problems and measure remediation success.

- As stream improvements occur, coordination will be necessary between the Pennsylvania Fish and Boat Commission (PFBC), watershed groups, and other conservation and sports organizations to ensure that appropriate fishery restoration efforts occur. Fishery resources need to be considered in county and local planning efforts. Increased public access to fishing and boating resources is a need throughout the basin. The effects of roadways, particularly dirt roads, needs to be considered in planning and management efforts.

Cultural Resources

Cultural resources within the basin include recreational facilities and opportunities, historic and archaeological resources, and educational opportunities. The economic impacts associated with rivers conservation issues through tourism and marketing are also addressed here. Major issues include:

Recreation. The continued development of river-related recreational opportunities is viewed as an important need throughout the basin. Many opportunities exist for the development of greenways, hiking and bike trails, and water trails. Greater public access to streams and lakes is needed for boating and fishing.

Hiking, biking, horse and water trails offer a unique opportunity to link historical, recreational, and scenic areas in the basin. While a number of trails have been developed, many additional trails and linkages are needed to realize the full recreational potential of the region. Many potential trails have been identified in the report *Heritage Trails: Strengthening a Regional Community* (National Park Service 1995).

As a result of input for this plan, several trails, greenways, and other areas have been identified as of particular importance to the basin and merit particular attention. These include:

- Conemaugh River Greenway;
- Kiski-Conemaugh River Greenway Feasibility Study;
- Johnstown Urban Greenway;
- Mainline Trail/ Path of the Flood Trail;
- Ghost Town Trail System;
- Roaring Run Trail;
- Conemaugh Dam Trail;
- Loyalhanna Nature Trail;
- Stonycreek River Canyon Whitewater Park;
- Duman Lake Park; and
- Conemaugh Gorge, Packsaddle Gap, Loyalhanna Gorge, Blacklick Creek Gorge, Kiski River Hillsides, and Stonycreek River Gorge and Canyon.

The Stonycreek River Gorge and Canyon are unique natural areas and should be nominated as state Wild and Scenic Rivers.

Historic and Archaeologic Resources. An extensive array of historic and archaeologic resources exists within the basin. Efforts to identify, preserve, and connect these resources, particularly those associated with river locations, are needed.

The remains of the Pennsylvania Mainline Canal offer the opportunity to develop a hiking/bike trail and greenway that will preserve and protect historic resources and provide one of the most outstanding outdoor experiences in the state. The opportunity to preserve as much of the canal system as possible within the basin should be pursued.

Plans have been developed and are being implemented for the America's Industrial Heritage Project and the Allegheny Ridge Heritage Park. The efforts to fully develop and implement these plans should be assisted and encouraged.

Educational Opportunities. The abatement of AMD and the resulting ecological recovery of the basin's rivers and streams provide an unparalleled educational opportunity. There is a need to provide facilities and programs to interpret these successes, as well as to provide interpretation of other natural and cultural components of the basin. This can be accomplished through encouraging the use of existing environmental education facilities (such as Powdermill Nature Reserve and Disaster's Edge) as well as the development of new sites and programs. Expansion of classroom education on these issues is also desired, as is further development of a comprehensive website for the basin. Educational efforts directed toward household hazardous waste issues are needed.

Tourism/Marketing. Unemployment and outmigration have been major problems within the basin in the past few decades. The improvement of water quality and development of recreational and educational facilities provides an opportunity for economic development. This economic potential could be realized through growth of the tourism industry, as well as through industrial

growth and expansion. Proper planning is needed to ensure that growth occurs in ways that conserve resources and enhance the quality of life for basin residents.

Data are needed on the economic value of recreational resources and improved water quality to the local and regional economy. One study was completed by the Southwestern Pennsylvania Heritage Preservation Commission in 1996, and several studies are currently underway or in the planning stages to collect this type of information. This information needs to be disseminated to encourage business and industrial development in the basin. Quality of life is also an important factor in business location decisions. Further efforts to publicize the basin's river-related recreational and educational opportunities are needed.

PRELIMINARY MANAGEMENT OPTIONS

Section VII of the plan presents a ten-year recommended plan of action based upon available resources, their problems and potential, and the interest shown by local groups in the basin. The intent of these actions is to restore, maintain and enhance basin resources. Particular emphasis has been placed on programs for which a local group can reasonably be expected to act as the local sponsor. Issues addressed in the plan include:

- land resources;
- water resources;
- biological resources;
- recreation resources;
- historic/archaeologic resources;
- education/promotion; and
- management.

The plan includes actions and potential management options identified as basin-wide actions or as watershed-specific needs. Summary tables are provided in Appendix A of the plan for the basin and for each management watershed that identify the recommended action, priority, potential management options and responsibilities, timetable and potential funding options.

Table ES-1 provides an overview of major basin-wide programs and priorities recommended in the action plan. Many of the basin-wide plan components have watershed-specific applications, which are identified further in the individual watershed action plans. Further detail on the basin-wide plan and watershed-specific plans is contained in Section VII and Appendix A of the plan. Priorities have generally been set based on public input and the need to provide clean water in the basin. The suggested priorities have been established recognizing that there are limited financial and man-power resources available to execute the plan, and that some type of ordering is required. Legal and financial requirements and opportunities, as well as participants available to implement the plan, can be expected to change over time. These changes could modify priorities.

The abatement of AMD degradation is the greatest single need within the basin and has been given the highest priority in recommending actions and management options. The resolution of this problem is critical to the successful implementation of many other action plan items. A number of actions are recommended at both the basin and watershed levels to address this problem. These

include the identification and prioritization of problem areas, abatement cost evaluations, and implementation of specific remediation projects.

It is expected that priorities and opportunities will change as a result of the implementation of the action plan, and in response to changing environmental and social conditions. Therefore, this plan must continue to evolve. The members of the K-C Alliance intend to update the plan every five years to reflect these changes.

Table ES-1

SUMMARY OF MAJOR BASIN-WIDE PROGRAMS

Action Item	Priority Level*	Timetable**
Land Resources		
Vegetative Stream Buffering Program	1	2 years
River Keepers Program	1	2 years
Land Use Planning	1	2 years
Roads/River Access	2	In Progress
Hazardous Waste Program	3	3 years
Viewshed Protection	2	5 years
Sustainable Forestry Initiative	2	5 years
Green Golf Course Initiative	3	5 years
Water Resources		
Watershed Characterization Model	1	Completed
Mine Drainage Reevaluation Program	1	2 years
Non-Point Source Pollution Control	2	2 years
Stormwater Control	3	5 years
Flood Problem Identification	2	5 years
Sewage Evaluation	2	2 years
Biological Resources		
Alkalinity Program	2	2 years
Use of Limestone in Construction Program	2	2 years
Biological Monitoring	2	2 years
Fishery Management	2-3	2-5 years
Important Habitats Program	2-3	2-5 years
Species of Concern Program	3	5 years
Recreational Resources		
Trail Development	1-2	Varies
Conemaugh River Greenway/Kiski-Conemaugh Greenway	1	2 years
Johnstown Urban Greenway	1	1 year
Mainline Trail/Path of the Flood Trail	1	2 years
Scenic Gorges and Hillsides	1	5 years

Table ES-1 (Continued)

SUMMARY OF MAJOR BASIN-WIDE PROGRAMS

Action Item	Priority Level*	Timetable**
Historic/Archaeologic Resources		
Pennsylvania Main Line Canal	1	2 years
Heritage Areas	2	Varies
Allegheny Ridge Heritage Park	2	Varies
Historic Sites	3	Varies
Education/Promotion		
Newsletter and News Articles	2	1 year
Classroom Education	2	In Progress
Website Development	3	Varies
Household Hazardous Waste Education	3	5 years
Tourism/Marketing	2-3	Varies
Management		
Plan Update	1	5 years

* 1 represents highest priority.

**Timeframe shown represents completion of initial planning efforts/start of implementation.

SECTION I

I. PROJECT AREA CHARACTERISTICS

A. DESCRIPTION

The basin of the Kiskiminetas and Conemaugh Rivers is located in west-central Pennsylvania and drains the western slopes of the Allegheny Mountains and the hills of the Pittsburgh Plateau. It is the largest subbasin of the Allegheny River, covering 1,887 square miles, an area constituting 16 percent of the Allegheny River drainage area. A combination of the Kiskiminetas-Conemaugh and Stonycreek Rivers generally flows northwest from headwaters near Berlin in Somerset County, a distance of about 122 miles to the Allegheny River.

Along the way, major tributary waters are received from the Little Conemaugh River, beginning near Cresson in Cambria County and confluencing with the Stonycreek River in Johnstown to form the Conemaugh River; from Blacklick Creek (and its major tributary Two Lick Creek) which begins just east of Nanty Glo in Cambria County and confluences with the Conemaugh River at the Conemaugh River Reservoir; and Loyalhanna Creek which begins just east of Ligonier in Westmoreland County and confluences with the Conemaugh River at Saltsburg to form the Kiskiminetas River. The Kiski-Conemaugh Basin encompasses parts of five counties and includes Armstrong, Westmoreland, Indiana, Cambria and Somerset Counties. The basin has a population of about 329,314.

The basin drains portions of 126 municipalities. The largest towns in or with suburbs in the basin include Johnstown, Central City, Windber, Ebensburg, Portage, Nanty Glo, Somerset, Indiana, Latrobe, Ligonier, Derry, Blairsville, Apollo, Leechburg, and Vandergrift.

The Kiski-Conemaugh River Basin's steep terrain and the fact that the mainstem rivers have eroded steep canyons across ranges of the Allegheny Mountains make this one of the most flood-prone areas in America. The worst flooding disaster in the nation's history occurred in Johnstown in the year 1889 when 2,209 persons lost their lives. Also, the area's wealth of coal made the region rise to an industrial power. The legacy of abandoned mine drainage now makes the basin the most polluted drainage area in all of Pennsylvania.

The Kiski-Conemaugh River Basin and its tributaries are rich in history. The main river corridor provided access through the scenic Allegheny Mountains for the historic Pennsylvania Mainline Canal and the Pennsylvania Railroad. This corridor tied 19th Century communities along the east coast to Pittsburgh and the west. The region produced many of the steel rails for America's westward expansion, and much of the coal for America's industrial development and growth into a world power.

B. TOPOGRAPHY AND GEOLOGY

The Kiski-Conemaugh Basin is situated in the Appalachian Plateau physiographic province, which is separated from the Ridge and Valley province to the east by the Allegheny Front (near Cresson). The Allegheny Front is a crest forming the western edge of the Appalachian Mountains. The Allegheny Front also forms the eastern border of the Kiski-Conemaugh Basin. The basin crosses two subsections of the Appalachian Plateau, the Allegheny Mountains Section to the east of

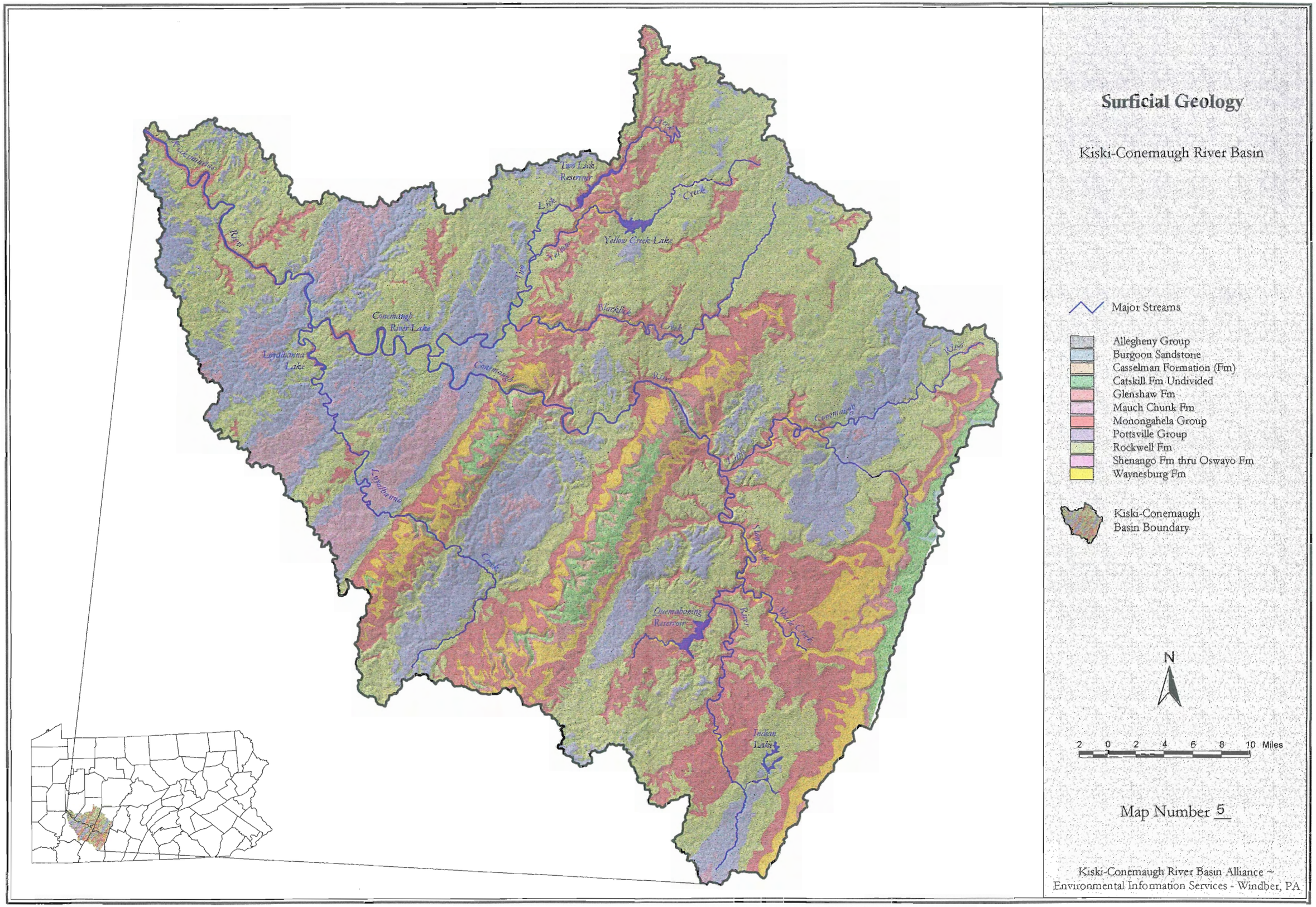
the Indiana-Cambria County border and the Pittsburgh Low Plateau Section to the west. The topography of the Allegheny Mountains Section is characterized by wide ridges separated by broad valleys. Relief is moderate to high, ranging from just over 2,993 feet above mean sea level (MSL) along the Allegheny Front above Stonycreek, to 1,000 feet MSL along the Conemaugh River east of Blairsville. Two major structural folds, the Laurel Hill and Chestnut Ridge Anticlines form two of the major topographic features in the basin [United States Army Corps of Engineers (USACOE) 1994].

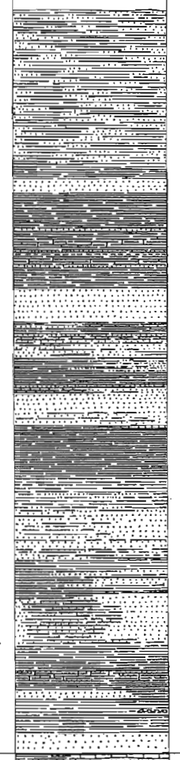
Topography in the Pittsburgh Low Plateau Section consists of smooth, undulating hills with numerous narrow, relatively shallow valleys. Overall, relief is low to moderate, ranging from 1,195 feet MSL south of Blairsville to 957 feet MSL at the confluence of the Kiskiminetas River with the Allegheny River. Folding of strata is shallow in the Low Plateau.

Map 5 illustrates the major surficial geological components of the basin. The oldest strata, belonging to the Pocono Group of Mississippian Age, typically are encountered in the eastern portion of the basin. The youngest rock from the Monongahela Group of Pennsylvania Age are located at various locations throughout the basin. The crests of Chestnut Ridge and Laurel Mountains are formed by the massive, resistant sandstones of the Catskill and Rockwell Formations. All of the rock is sedimentary in origin and consists of thin sequences of shale, limestone, sandstone and coal. Map 6 includes generalized geologic columns of the basin, one for the Allegheny Mountains Section and one for the Pittsburgh Low Plateau Section.

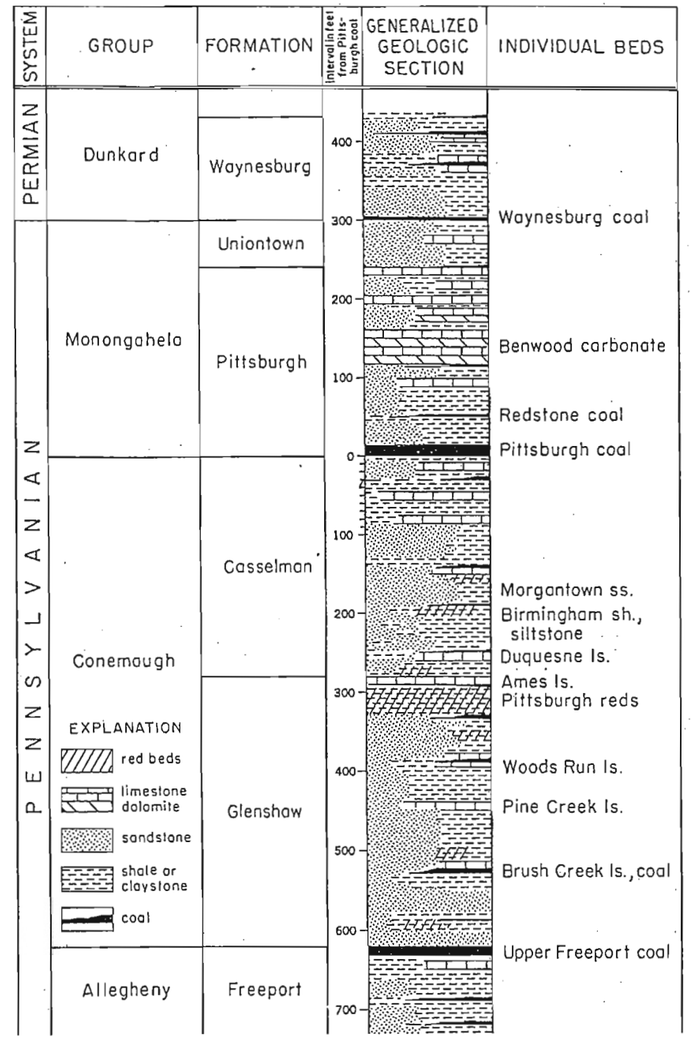
Mineral resources in the basin are abundant and have aided the region's development. Coal is by far the most important. Several coal seams have been mined within the basin. However, only three beds are thick and persistent enough to be economically important. Three coal seams of variable thickness within the Kittanning Formation of the Allegheny Group outcrop in the basin. Most of the mining of these strata has occurred in Cambria County, principally in the stream valleys around and north of Johnstown. About 200 feet above the Kittanning coal is the Lower Freeport seam. Both the Upper and Lower Freeport seams, ranging from two to four feet in thickness, have been deep mined throughout much of the basin. The Freeport seams outcrop only in the Allegheny Mountain Section of the basin. They have been extensively mined in Cambria County, particularly in the southern part of the county around Johnstown. About 700 feet above the Upper and Lower Freeport coal is the Pittsburgh Coal seam. This seam is usually over six-feet thick and is economically the most valuable coal in the basin. The Pittsburgh coal has been deep mined from south of Blairsville, to New Alexandria, to Delmont and is found in synclinal folds. Strip mining at the edges of the coal outcrops is prevalent throughout the basin.

Oil and gas production also occurs in the Kiski-Conemaugh Basin, mostly in Indiana, Westmoreland and Armstrong Counties. Indiana County is a major gas-producing area. Two rock units in the basin, the Vanport Limestone and the Loyalhanna Limestone in the Pocono Group are of commercial grade limestone. The Loyalhanna Limestone is the rock source for several commercial operations along the western flank of Chestnut Ridge near Ligonier.

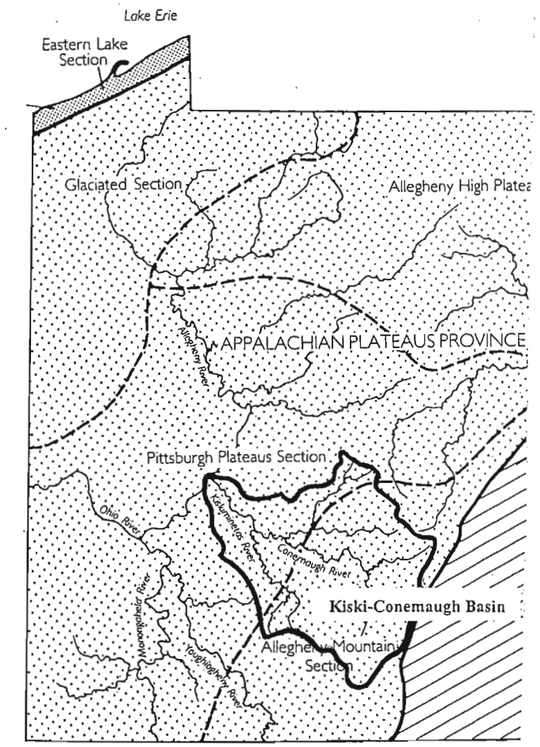

Surficial Geology
Kiski-Conemaugh River Basin
Major Streams
Allegheny Group
Burgoon Sandstone
Casselman Formation (Fm)
Catskill Fm Undivided
Glenshaw Fm
Mauch Chunk Fm
Monongahela Group
Pottsville Group
Rockwell Fm
Shenango Fm thru Oswayo Fm
Waynesburg Fm
Kiski-Conemaugh Basin Boundary
N
2 0 2 4 6 8 10 Miles
Map Number 5
Kiski-Conemaugh River Basin Alliance ~
Environmental Information Services - Windber, PA
Two Lick Reservoir
Yellow Creek Lake
Conemaugh River Lake
Loyalhanna Lake
Quemahoning Reservoir
Indian Lake
Conemaugh
Lick
Creek
Blacklick
Loyalhanna
Stonycreek
Shade Creek
River

Series.	Formation.	Symbol.	Columnar Section.	Thickness in Feet.	Members.
PENNSYLVANIAN	Conemaugh formation.	Ccm		850–960±	Wilmore sandstone. Summerhill sandstone. Morgantown ("Ebensburg") sandstone. Ames limestone. Harlem (?) coal. Red shale. Saltsburg sandstone. Bakerstown coal. Buffalo sandstone. Gallitzin coal. Upper sandstone. Mahoning coal. Flint clay. Lower sandstone. } Mahoning sandstone.
	Allegheny formation.	Ca		220–290	Upper Freeport coal and limestone. Butler sandstone. Lower Freeport coal and limestone. Upper Kittanning coal. Johnstown limestone (cement bed). Middle Kittanning coal. Lower Kittanning coal and clay Kittanning sandstone. Brookville and Clarion coals.

Generalized Columnar Section in the Allegheny Mountains Section (from USGS, 1910)



Generalized Columnar Section in the Pittsburgh Low Plateau Section



Physiographic Regions
(from Merritt, 1987)

Generalized Columnar Sections

Kiski-Conemaugh River Basin

Map Number 6

Kiski-Conemaugh River Basin Alliance - Windber, PA

C. MAJOR TRIBUTARIES

For river conservation planning and management purposes, the Kiski-Conemaugh Basin has been delineated into five major drainage areas. From the headwaters downstream, these include the following:

Management Watershed	Drainage Area (sq. miles)
Stonycreek River/Little Conemaugh River	659
Blacklick Creek (including Two Lick Creek)	419
Conemaugh River (mainstem and minor tributaries)	297
Loyalhanna Creek	298
Kiskiminetas River (mainstem and tributaries)	214
TOTAL	1,887

Stonycreek River and the Little Conemaugh River confluence at the Johnstown "Point" forming the Conemaugh River. The Stonycreek River has a length of 43.4 miles and an average slope of 38 feet per mile. The Little Conemaugh River has a length of 29.2 miles and an average slope of 53 feet per mile. The Conemaugh River flows northwesterly for a distance of 52.4 miles to the U.S. Army Corps of Engineers' (USACOE) Conemaugh River Dam. The tributaries in this section of the basin are very steep, with an average slope approximately four times that of the Conemaugh River channel. The side slopes within the Conemaugh River portion of the basin are 700 feet per mile in an east-west direction (USACOE 1994). Due to these steep ground slopes and the consequent rapidity with which surface water reaches stream channels, the opportunity for infiltration into the soil is reduced. Time of concentration for flood flows is also reduced. These factors of stream slope and ground configuration are conducive to a rapid rate of runoff.

Blacklick Creek discharges into the Conemaugh River Dam and has a length of about 42.3 miles (including the North Branch), with an average slope of 26 feet per mile. Loyalhanna Creek confluences with the Conemaugh River at Saltsburg to form the Kiskiminetas River and has a length of 40.7 miles, with an average slope of 21 feet per mile. The Kiskiminetas River flows northwesterly and has a length of 27 miles, with an average slope of 3.5 feet per mile. The upper portion of the Kiski-Conemaugh River Basin is one of the most critical flood producing areas in the nation; the basin contributes substantially to the flood potential of the Allegheny River system.

A further breakdown of the basin reveals that there are a total of 25 major subwatersheds which have drainage areas greater than 25 square miles. These are listed in Table 1 and shown on Map 7. A total of 60 designated high-quality, exceptional value, or trout-stocked fishery waters are located within the basin [Pennsylvania Department of Environmental Protection (DEP), Chapter 93 Water Quality Standards]. These are listed in Table B-1 in Appendix B.

Table 1

MAJOR WATERSHEDS (≥ 25 SQUARE MILES) WITHIN THE KISKI-CONEMAUGH RIVER BASIN

Watershed	Area (Square Miles)
Kiskiminetas River Mainstem	115
Beaver Run	54
Blacklegs Creek	45
Loyalhanna Creek Mainstem	226
Ninemile Run	39
Mill Creek	33
Conemaugh River Mainstem	187
Aultmans Run	28
McGee Run	28
Hendricks Creek	54
Two Lick Creek	127
Blacklick Creek Mainstem	112
Yellow Creek Mainstem	65
North Branch Blacklick Creek	69
South Branch Blacklick Creek	46
Little Conemaugh River Mainstem	95
South Fork Little Conemaugh River	64
North Branch Little Conemaugh River	31
Stonycreek River Mainstem	188
Ben's Creek	49
Shade Creek Mainstem	29
Paint Creek	36
Clear Shade Creek	31
Dark Shade Creek	37
Quemahoning Creek	99
Total	1,887

Source: Kiski-Conemaugh Alliance 1999.

D. SOCIO-ECONOMIC PROFILE

1. Population Centers

Most of the largest communities in the basin are located adjacent to rivers and streams. These include Johnstown, Jennerstown, Boswell, Indian Lake, South Fork, Portage, Windber, New Florence, Blairsville, Nanty Glo, Clymer, Homer City, Ligonier, Latrobe, New Alexandria, Saltsburg, Avonmore, Apollo, Vandergrift, and Leechburg. Highland communities in the basin include Cresson, Ebensburg, Jennerstown, Boswell, Indiana, Berlin and Delmont. Table 2 lists the principal communities in the basin, by county.

Watersheds Greater Than 25 Square Miles

Kiski-Conemaugh River Basin

Watersheds Greater Than 25 Square Miles

Kiski-Conemaugh Basin Boundary

N

2 0 2 4 6 8 10 Miles

Map Number 7

Kiski-Conemaugh River Basin Alliance ~
Environmental Information Services - Windber, PA

Table 2

PRINCIPAL COMMUNITIES (1990)
KISKI-CONEMAUGH RIVER BASIN

Armstrong		Cambria		Indiana		Somerset		Westmoreland	
Community	**Pop.**	**Community**	**Pop.**	**Community**	**Pop.**	**Community**	**Pop.**	**Community**	**Pop.**
Kiskiminetas	5,456	Johnstown City	28,134	White Township	23,788	Somerset Township	8,732	Derry Township	15,446
Gilpin Township	2,804	Richland Township	12,694	Indiana Borough*	15,174	Conemaugh Township	7,737	Ligonier Township	6,979
Parks Township	2,739	Adams Township	6,869	Center Township	5,257	Windber Borough	4,756	Derry Borough	2,950
Leechburg Borough	2,504	Cambria Township	6,357	Green Township	4,095	Jenner Township	4,147	Fairfield Township	2,276
Apollo Borough	1,895	Westmont Borough	5,789	Blairsville Borough	3,652	Paint Township	3,488	Loyalhanna Township	2,171
North Apollo Borough	1,391	Upper Yoder Township	5,448	Burrell Township	3,573	Shade Township	3,177	St. Clair Township	1,603
South Bend Township	1,304	Jackson Township	5,186	Armstrong Township	3,048	Brothers Valley Township	2,395	New Florence Borough	855
Bethel Township	1,261	Portage Township	4,089	Cherry Hill Township	2,754	Quemahoning Township	2,301	Bolivar Borough	541

Notes:

*Includes Indiana University of Pennsylvania students.

Source: United States Department of Commerce 1991.

The Johnstown area at the beginning of the Conemaugh River is the basin's largest urban complex, followed by a line of communities including Saltsburg, Avonmore, Apollo, Vandergrift and Leechburg, among others, along the Kiskiminetas River. Latrobe and Ligonier are larger communities along Loyalhanna Creek. Map 2 locates major urban areas in the basin.

Table 3 identifies the 1990 populations in the counties of the basin, those living in urban and rural areas, and projected populations in the year 2000. Map 8 shows population distribution in the basin.

Table 3

POPULATION BY COUNTY AND URBAN/RURAL PROJECTED GROWTH

County	Urban	Rural	1990 Total	Projected* 2000
Armstrong	11,037	62,441	73,478	86,986
Cambria	84,092	78,937	163,029	152,563
Indiana	18,826	71,168	89,994	105,360
Somerset	15,229	62,989	78,218	85,724
Westmoreland	232,025	138,296	370,321	365,226
TOTALS	361,209	413,831	775,040	795,859

*Pennsylvania State Data Center, Pennsylvania Population Projections.

Source: United States Department of Commerce 1991.

The population in basin counties increased by 24,135 residents (3 percent) from 794,798 to 818,933 people between 1970 to 1980. The population then declined by 43,895 people (5.4 percent) over the last decade from a total of 818,933 to the 1990 population of 775,040. Population projections indicate that this decline should be reversed and a modest growth of about 20,819 people (2.6 percent) is expected during the 1990s decade. The 1990 population is split between 47 percent urban and 53 percent rural locations.

According to the 1990 Census of Population compilation by the K-C Alliance, about 329,314 people currently live within the boundaries of the Kiski-Conemaugh Basin. This constitutes about 40 percent of the population of the counties having territory in the basin. A detailed breakdown of population is found in Table B-2 in Appendix B, identifying municipal totals and trends.

2. Major Sources of Employment

Table 4 identifies selected employment and labor force characteristics of counties in the basin.

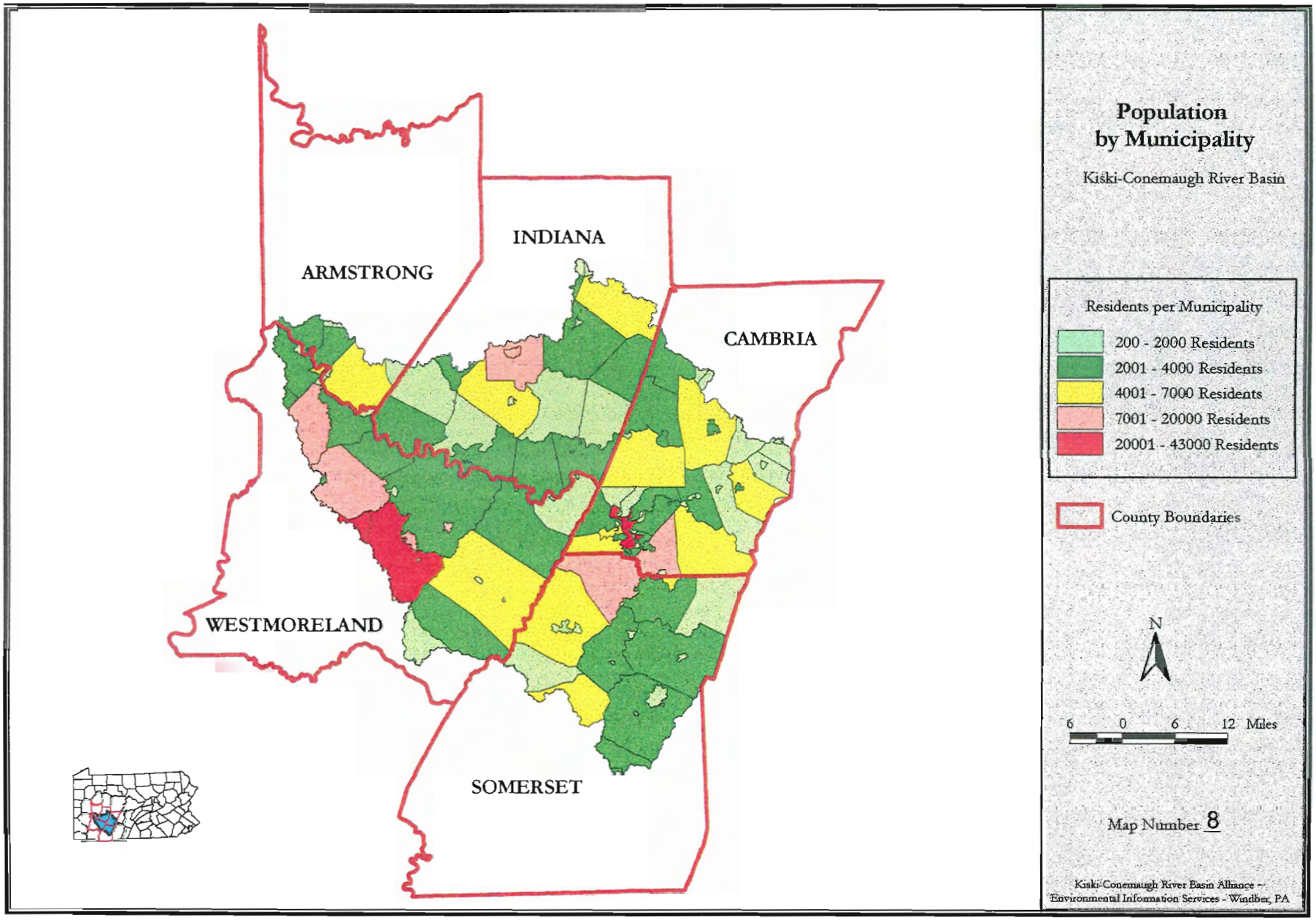

Population
by Municipality
Kiski-Conemaugh River Basin
Residents per Municipality
200 - 2000 Residents
2001 - 4000 Residents
4001 - 7000 Residents
7001 - 20000 Residents
20001 - 43000 Residents
County Boundaries
N
6 0 6 12 Miles
Map Number 8
Kiski-Conemaugh River Basin Alliance -
Environmental Information Services - Windber, PA
ARMSTRONG
INDIANA
CAMBRIA
WESTMORELAND
SOMERSET

Table 4

SELECTED EMPLOYMENT CHARACTERISTICS – 1990

	Armstrong County	Cambria County	Indiana County	Somerset County	Westmoreland County	Percent of 5-County Total
Total Persons in Labor Force	31,203	45,374	27,761	24,308	122,781	100%
Agriculture, Forestry and Fisheries	1,085	811	1,250	1,445	1,896	2.6%
Mining	1,640	2,390	3,111	1,093	1,214	3.8%
Construction	2,091	3,392	1,752	2,586	9,523	7.7%
Manufacturing	4,650	9,335	4,679	6,290	31,896	22.6%
Wholesale Trade	3,516	1,870	891	1,079	7,720	6.0%
Retail Trade	3,664	11,284	6,844	5,294	32,538	23.7%
Health Services	3,310	7,810	2,872	3,360	16,903	13.6%
Education Services	4,157	4,851	4,899	1,713	11,214	10.6%
Other Professional and Related Services	7,090	3,631	1,463	1,448	9,877	9.4%

Source: American Business Information, Inc. 1997.

The largest employment sectors include retail trade (23.7 percent) and manufacturing (22.6 percent) in basin counties. Health services (13.6 percent), educational services (10.6 percent) and professional services (9.4 percent) also offer large sectors of employment to basin workers. Mining, long a mainstay in the basin, has fallen to only 3.8 percent of the work force.

Median family income in 1989 for each of the basin counties and the state was:

Armstrong County	$27,024
Cambria County	$26,455
Indiana County	$27,893
Somerset County	$25,549
Westmoreland County	$31,360
State of Pennsylvania	*$34,856*

The largest employers are five area hospitals, several government offices, Pennsylvania Electric Company, Johnstown America Corporation, Allegheny Ludlum Steel, Alcoa, United Parcel Service, Elliott Turbo Machinery, and Westinghouse Electric. Table 5 lists the largest employers in each Kiski-Conemaugh Basin county.

E. LAND USE AND LAND CONTROL

1. Land Use

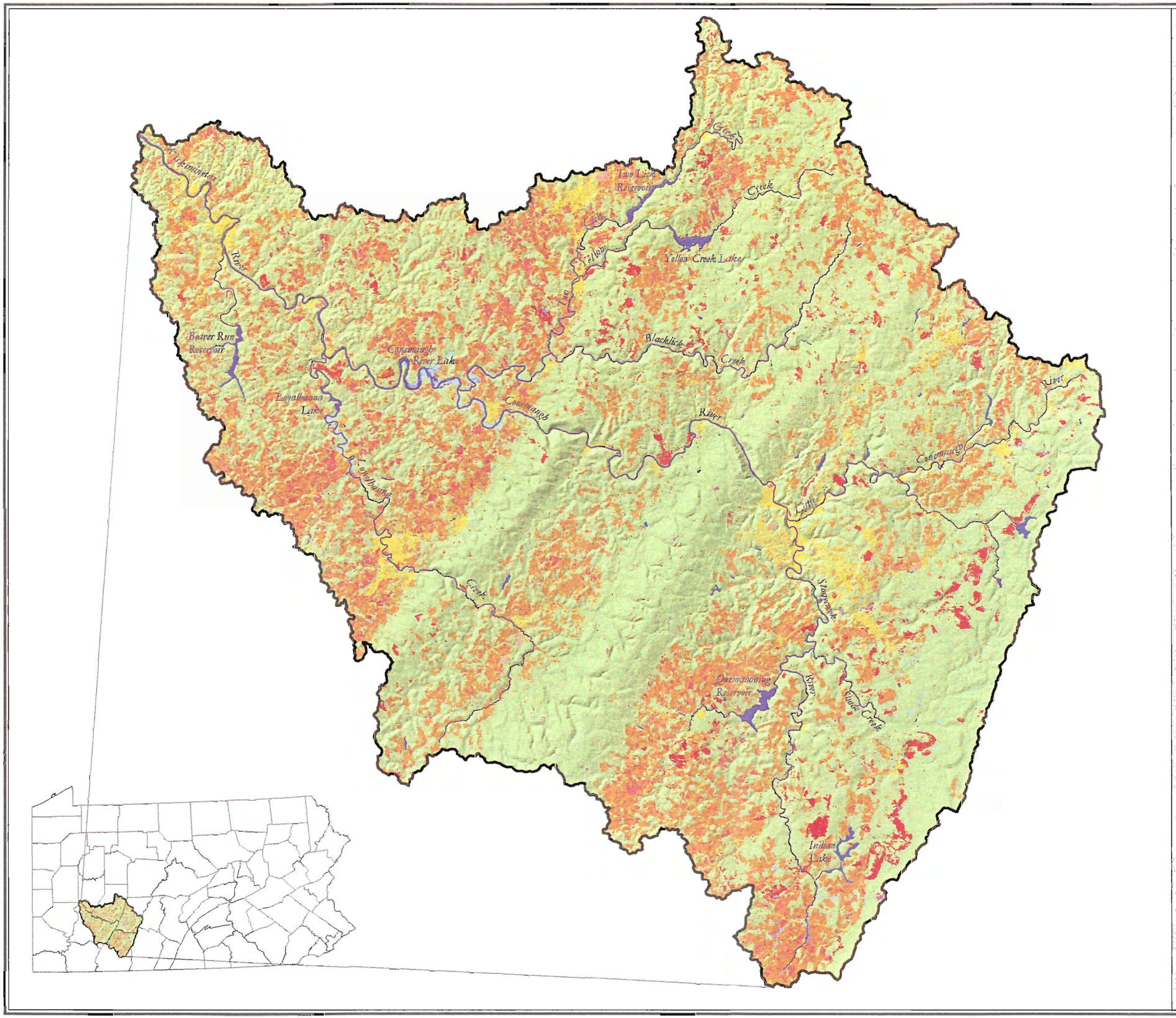
Land use in the Kiski-Conemaugh Basin has been generated for this project using landsat satellite photographs and Geographical Information System (GIS) techniques. Map 9 shows basin land use, while Table 6 lists different land-use totals by major watershed. As indicated in Table 6,

Table 5

LARGEST EMPLOYERS (1993)
KISKI-CONEMAUGH RIVER BASIN

Armstrong		Cambria		Indiana		Somerset		Westmoreland	
Name of Employer	**Total Employees**	**Name of Employer**	**Total Employees**	**Name of Employer**	**Total Employees**	**Name of Employer**	**Total Employees**	**Name of Employer**	**Total Employees**
Allegheny Ludlum Steel	1,200	Conemaugh Hospital	2,010	Indiana University of PA	1,706	Somerset Hospital	600	State Government Offices	2,500
Moonlight Mushrooms, Inc.	1,100	State Government Offices	2,000	Pennsylvania Electric Company	1,108	Fleetwood Folding Trailers	560	Allegheny Ludlum Steel	1,500
Eljer Plumbware	500	County Government	1,480	Indiana Hospital	1,036	Fetterolf Group	420	County Government	1,400
Oberg Manufacturing Company	360	Lee Hospital	1,400	Rochester & Pittsburgh Coal	821	Mincorp, Inc: PBS & Roxcoal, Inc.	420	Southwest Health Systems	1,300
PPG Industries	350	Pennsylvania Electric Co.	1,208	Season-All Industries	550	Gilmour Manufacturing Co.	400	Alcoa	1,200
Kensington Manufacturing	230	Johnstown America Corp.	1,100	FMC Corp.	505	Somerset State Hospital	375	Latrobe Hospital	1,200
Babcok & Wilcox	225	Federal Government Offices	1,050	Indiana Area School District	390	Snyder of Berlin	360	United Parcel Service (UPS)	1,200
Independent Tool and Die	190	Bestform Foundations, Inc.	980	PennDOT	372	Windber Hospital	350	Elliott Turbo Machinery	1,000
Dlubak, Inc.	140	Mercy Medical Center	815	Fisher Scientific Co.	370	Devilbiss Health Care, Inc.	300	Westinghouse Electric Company	1,000
Cook Pacemaker Corp.	125	Beth-Energy Mines, Inc.	460	Dietrich Industries	344	Highland Tank & Manufacturing Co.	300	Super Value	997

Source: Bureau of Research and Statistics, Pennsylvania Department of Labor and Industry 1993.



Land Cover

Kiski-Conemaugh River Basin

- Major Streams
- Water
- Developed
- Coal Mines/Quarries
- Transitional
- Forested
- Pasture/Hay
- Row Crops
- Other Grasses
- Woody Wetlands
- Emergent Wetlands
- Kiski-Conemaugh Basin Boundary

N

2 0 2 4 6 8 10 Miles

Map Number 9

Kiski-Conemaugh River Basin Alliance ~
Environmental Information Services - Windber, PA

Table 6

LAND USE IN THE KISKI-CONEMAUGH BASIN

Land-Use Category	Acres in Basin	Percent Distribution of Land in Each Watershed				
		Kiski Watershed	Loyalhanna Watershed	Conemaugh Watershed	Blacklick Watershed	Stonycreek/ Little Conemaugh Watershed
Low Density Development	30,276	3	2	2	2	12
High Density Development	4,178	< 1	< 1	< 1	< 1	< 1
Hay/Pasture/Grass	59,642	7	8	4	4	4
Row Crops	67,828	5	6	4	6	6
Mixed Pastures	134,546	12	12	9	12	12
Conifers	50,515	2	2	2	7	5
Mixed Forest	87,932	5	6	6	7	10
Deciduous Forest	722,889	64	63	70	59	56
Woody Wetlands	3,783	< 1	< 1	< 1	< 1	< 1
Emergent Wetlands	1,030	< 1	< 1	< 1	< 1	< 1
Water	8,080	1	< 1	1	< 1	1
Quarries/Strip Mines	23,649	1	1	1	2	3
Transitional	318	0	< 1	< 1	< 1	< 1
Total Acres	1,194,666	134,308	190,115	188,636	261,932	419,672

Note: Land use has been combined into fewer categories on Map 9 for illustrative purposes.

Source: Compiled by the K-C Alliance in 1998, using Landsat Photographs.

the largest land uses in the basin are for deciduous forest (61 percent), mixed pastures (11 percent), and mixed forest (7 percent) uses.

Overall, forested land (72 percent) and land in agricultural uses (22 percent) predominate in the basin. This is also true in each of the watershed subunits. Land use in the basin generally varies from east-to-west, with larger percentages of forested land in the eastern mountain areas, while residential and urban lands show larger percentages in the western low hill country. The larger communities in the basin are located in river or stream valleys.

As is typical in western Pennsylvania, most older urban areas are losing population to nearby suburban development. This trend is prevalent in the valley communities. The trend has amplified the land conversion to residential uses far beyond the land needed for the approximate 20,000 new residents expected in the 1990s decade.

2. Zoning and Land Use Control

The use of land in Pennsylvania is primarily controlled through local zoning ordinances. Direction is provided through comprehensive plans that are generated to identify municipal policies and to indicate conceptual land use. Subdivision ordinances are used to control and direct proper construction activities. Of the 126 municipalities in the basin, a total of 43 have zoning ordinances, 34 have comprehensive plans, and 44 have subdivision ordinances (Table 7). Map 10 identifies the municipalities in the basin with zoning ordinances.

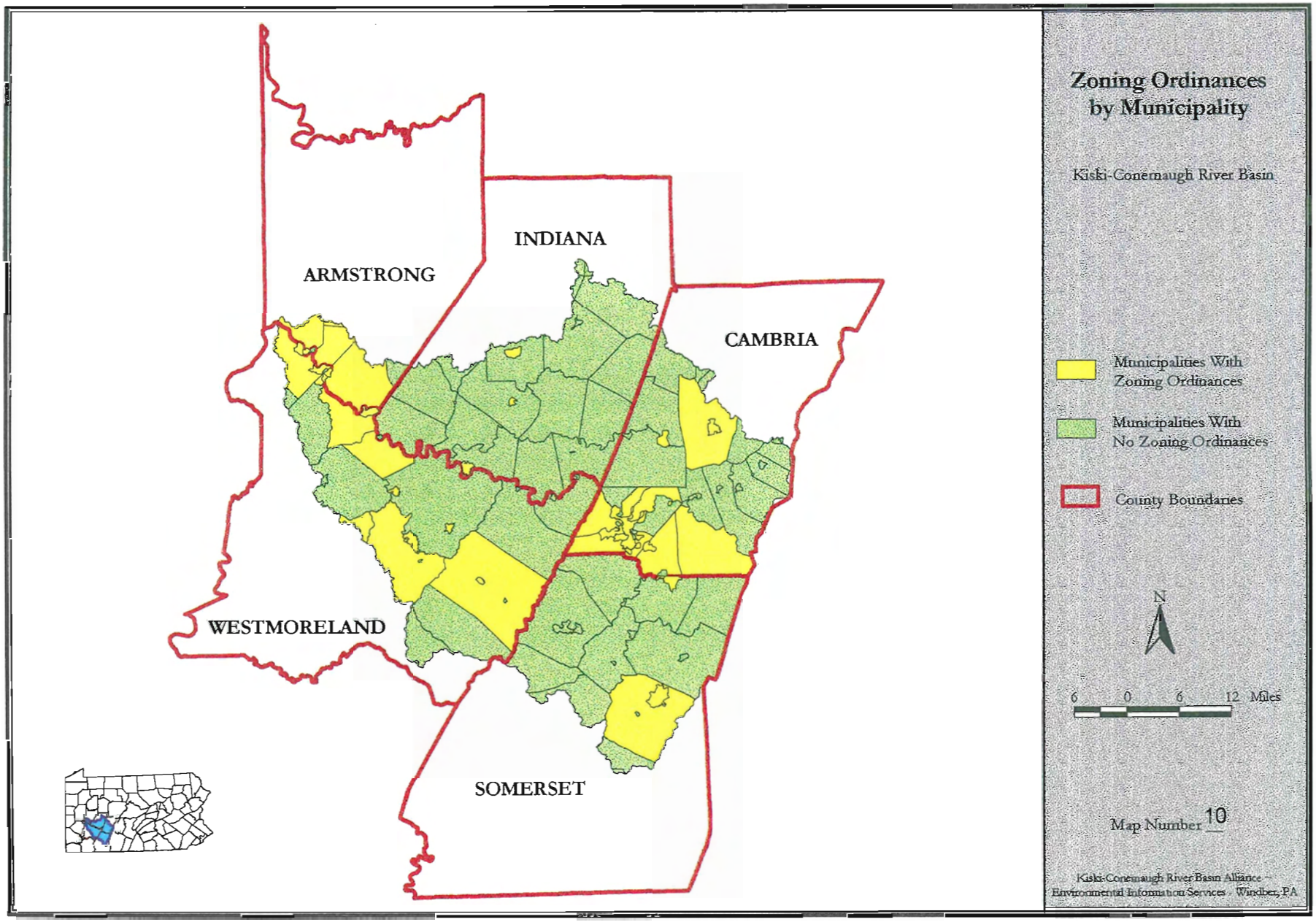
Table 7

Land Use Controls – Basin Municipalities

County	Total Basin Municipalities	Comprehensive Plan	Zoning Ordinance	Subdivision Ordinance
Armstrong	8	3*	6	0
Cambria	44	18	17	21
Indiana	23	0	3	3
Somerset	21	6	4	6
Westmoreland	30	7	13	14
Basin	126	34	43	44

*Two more plans are in the process of being developed.

Source: Compiled by the K-C Alliance, 1999.


Zoning Ordinances
by Municipality
Kiski-Conemaugh River Basin
Municipalities With
Zoning Ordinances
Municipalities With
No Zoning Ordinances
County Boundaries
N
6 0 6 12 Miles
Map Number 10
Kiski-Conemaugh River Basin Alliance
Environmental Information Services - Windber, PA
ARMSTRONG
INDIANA
CAMBRIA
WESTMORELAND
SOMERSET

Armstrong County has a county-wide subdivision ordinance that covers all of its municipalities. However, it does not have a comprehensive plan, or county zoning. Cambria County has a county subdivision ordinance covering municipalities without their own subdivision ordinance, an old comprehensive plan and no county zoning. Indiana County also has a county subdivision ordinance covering municipalities without their own subdivision ordinance, a 30-year old comprehensive plan, and no county zoning. The Indiana County Comprehensive Plan is currently being updated. Westmoreland County does not have an up-to-date comprehensive plan, or county zoning, but has a subdivision ordinance covering municipalities without their own ordinance.

Somerset County has a comprehensive plan and administers zoning around the US Route 219 interchange areas in Jenner, Quemahoning, and Somerset Townships. Additionally, a county-wide subdivision ordinance is administered by the Somerset County Planning Commission and is effective in municipalities not currently having their own subdivision ordinance.

3. Transportation System

The counties that are in the basin are reasonably served by a number of arterial and major collector roads. Map 2 locates highways serving the basin. Major east-west trending routes include US 22 and US 30. Major north-south trending routes include US 119 and US 219. Except for US 219, which is four lanes throughout the basin, these highway routes usually are two lanes. They provide access into and out of the basin and tie the area to the large markets of Pittsburgh and the mid-west, and to Philadelphia and the east coast. These routes are generally independent of basin streams, although US 30 follows Loyalhanna Creek through the Chestnut Ridge gap and US 119 follows Two Lick Creek for some distance near Homer City.

In the Johnstown area, State Routes 56 and 403 follow the Conemaugh River for about 10 miles. In the lower reaches of the Kiskiminetas, State Route 66 provides access to Apollo, Vandergrift, Leechburg and other river communities. Otherwise, county or local roads follow many of the basin's streams and rivers. Generally, the road system in the basin can be characterized as marginally adequate for access to streams and rivers, and for basin-wide access.

The main line of the old Pennsylvania Railroad (now Conrail) has been a primary impetus to the growth and vitality of the area. It was the primary reason that Johnstown and the communities of the upper Conemaugh and Little Conemaugh Rivers grew and prospered at the turn of the century. This railroad is the principal rail connector for the east coast markets in the Philadelphia area to the Pittsburgh and mid-west markets.

There are a number of small commercial airports in the basin. Larger airports are located at Johnstown and Latrobe. General utility airports are located in Ebensburg and Indiana.

F. OUTSTANDING OR UNIQUE FEATURES

Map 14 in Section V shows the locations of some of the basin's outstanding or unique scenic features. Scenery has been recognized as a natural resource in the United States since 1864 when the first state park, Yosemite Valley in California, was established. Pennsylvania's outstanding scenic and geologic features have been identified by the Pennsylvania Topographic and Geological

Survey and reported in Environmental Geology Report 7 (Geyer and Bolles 1979). The Kiski-Conemaugh Basin contains seven of these resources as identified following.

Conemaugh Gorge. Three miles northwest of the junction of the Little Conemaugh River and Stonycreek River in Johnstown is the Conemaugh Gorge. The Conemaugh River has eroded flat-lying sandstones, siltstones, and shales to form a "magnificent" gorge several miles in length through Laurel Hill ridge (Geyer and Bolles 1979). The geologic record of hundreds of millions of years is recorded in the rocks at this site. Routes 403 and 56 parallel the Conemaugh River through the gorge. The gorge is one of the most scenic in America, with the second highest local topography - ridge top to river elevation is 1,560 feet - in Pennsylvania.

Conemaugh Water Gap. About 1.7 miles west of Bolivar is an extremely scenic water gap called Packsaddle Gap that the Conemaugh River has eroded through Chestnut Ridge. Massive sandstones of Pennsylvania Age form the canyon rim, while sandy shales of Devonian age are exposed at the base. Again, the geologic record of millions of years is recorded in the exposed rock.

Loyalhanna Gorge. Three miles southeast of Latrobe is a three-mile long gorge cut by Loyalhanna Creek through Chestnut Ridge. Elevations range from 1040 feet at stream level to above 1900 feet on the rim. The river level drops about 100 feet in 3 miles and there are sections of boulder-strewn rapids, with Buttermilk Falls the largest and most spectacular. US Route 30 parallels Loyalhanna Creek in the gorge.

Bear Rocks. On the crest of Chestnut Ridge about eight miles west of New Florence is Bear Rocks. Approximately two acres of weathered sandstone crops out of the ridgeline. Weathered joints in the sandstone enlarged by weathering form a miniature "rock city" that is very scenic.

Suncliff. About 3.4 miles east of Brush Valley is a 100- to 200-foot cliff of alternating shale, sandstone, limestone, minor coal and clay that forms a unique and scenic rock exposure.

Bald Knob. About 1.5 miles west of the village of Laurel Summit is bald knob, the topographic crest of Laurel Hill. Sandstone outcrops of the Allegheny Group are exposed through weathering and provide a unique bald appearance since forest growth is retarded. There is a very scenic view of the surrounding valleys and mountains.

90-Foot Rocks. About 1.5 miles west of Laurel Summit within the gorge of Linn Run is an outcropping of sandstone of the Allegheny Group is a cliff that provides an excellent view of Linn Run Gorge and the Ligonier highlands. Nearby in the gorge, *Adams Falls*, *Grove Run Spring*, *Flat Rock* and *Wolf Rocks* are notable geologic features.

Mountain Ridges. In addition to the features noted in Environmental Geology Report 7, the anticlinal Allegheny Mountain ridges of Laurel Hill and Chestnut Ridge, and the Allegheny Ridge on the eastern boundary of the basin are areas of inordinate natural beauty offering many opportunities for scenic and recreational pursuits.

Additional Features. There are a number of additional scenic features within the basin that are not noted in Environmental Geology Report 7, but are worthy of mention for their aesthetic and other qualities. These include the gorges of the Stonycreek River (Shanksville vicinity), Little

Conemaugh River, Blacklick Creek (through Chestnut Ridge), and the Stonycreek River Canyon (Faustwell vicinity). Scenic waterfall features in the basin include Buttermilk Falls (Buttermilk Falls Natural Area, Indiana County), Sandy Falls (Paint Creek), Rattling Run Falls (near Apollo), Yoder Falls (near Carpenter's Park), and Roaring Fork Falls (near Hillsboro). Several scenic areas occur along the Kiskiminetas River, including the hillsides between Salina and Apollo and the Kiski Bluffs opposite Saltsburg.

A scenic overlook of the Packsaddle Gap is located along the Conemaugh River near Alum Bank. The DCNR has been made aware of this site and funding to protect the overlook is being pursued.

SECTION II

II. LAND RESOURCES

A. SOIL CHARACTERISTICS

The soils within the basin are primarily residual and colluvial products of the weathering of the underlying sedimentary bedrock. These include silty clays, silty sands, and clayey sands. Slopes range from 3 to 100 percent. Soil depths vary with topography. Near the crests of ridges soils are generally coarse grained and less than three feet thick. Soils in valleys are finer grained and average more than five feet in depth, with locally thicker layers of colluvium. Alluvial deposits along streams consist of silty to clayey sands up to five feet thick.

Table B-3 in Appendix B presents general characteristics and limitations of soil associations in the basin. Additional information concerning specific soil characteristics and their limitations and suitability can be found in the respective county soil surveys.

B. OWNERSHIP

Information on publicly-owned lands was compiled for the basin to include Pennsylvania State Parks, Pennsylvania State Forests, Pennsylvania State Game Lands, Pennsylvania Fish and Boat Commission properties, and National Parks. Major public lands within the basin are shown on Map 11.

Approximately seven percent of the basin is in public ownership according to this data. The remaining 93 percent is considered to be privately owned. Public lands constitute six percent of the corridor defined to include all areas within ¼ mile of a major stream or river. Privately-owned properties comprise the remaining 94 percent of this corridor. The locations of public lands within ¼-mile of major streams or rivers are shown on Map 11.

C. CRITICAL AREAS

1. Steep Slopes

Steep slopes of 25 percent or more occur throughout the basin, but typically occur in stream valleys as well as on mountain ridges in the eastern portion of the basin. These steep slopes are particularly susceptible to landslide and erosion problems, and their frequent location near streams make these problems a particular concern. While most of these areas are presently vegetated and undeveloped, increasing urban development as well as inappropriate timbering practices can create problems in the future. Approximately 8,185 acres within the basin have slopes of 25 percent or more. Map 12 shows the relative locations of these areas.

D. LANDFILLS

The DEP has issued permits to nine landfills within the basin. These include four municipal waste and five residual waste landfills. Table 8 provides a summary of these facilities.

Table 8

PERMITTED LANDFILLS

Facility Name	Type	County	Watershed
Latrobe Steel	Residual Waste	Westmoreland	Loyalhanna Creek
Teledyne/Vasco	Residual Waste	Westmoreland	Loyalhanna Creek
Smith's Landfill	Residual Waste	Westmoreland	Loyalhanna Creek
Penelec Conemaugh	Residual Waste	Indiana	Conemaugh River
Laurel Highlands Landfill	Municipal Waste	Cambria	Blacklick Creek
Homer City Power Station	Residual Waste	Indiana	Blacklick Creek
Mostller Landfill	Municipal Waste	Somerset	Stonycreek/Little Conemaugh Rivers
RCC Landfill	Municipal Waste	Somerset	Stonycreek/Little Conemaugh Rivers
Southern Alleghenies Landfill	Municipal Waste	Somerset	Stonycreek/Little Conemaugh Rivers

Source: Pennsylvania Department of Environmental Protection 1998.

E. HAZARD AREAS

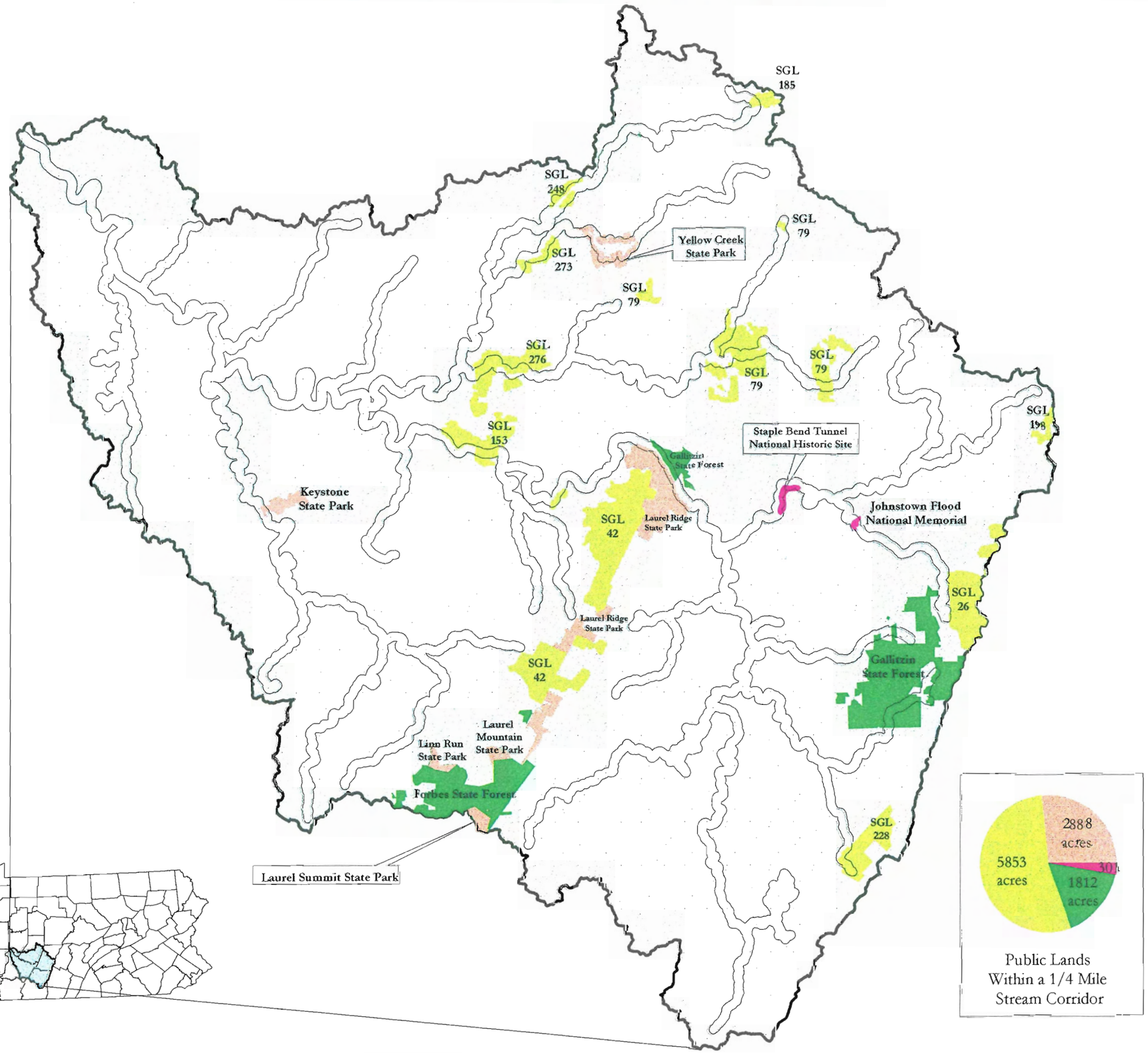
1. Waste Sites

No Superfund sites as identified on the National Priorities List are located within the basin [U.S. Environmental Protection Agency (EPA) 1998]. The Superfund Program was created as a result of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This legislation establishes broad authority for the federal government to respond to problems posed by the release, or threat of release, of hazardous substances, pollutants, or contaminants. The National Priority List (NPL) defines what are commonly known as the "Superfund" site listings. A number of sites identified as hazardous waste sites by the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) are located within the basin (Right To Know Network 1998). CERCLIS contains information on hazardous waste sites, site inspections, preliminary assessments and remedial status. These facilities are identified in Table B-4 in Appendix B.

Radioactive contamination occurred at three sites in the Kiskiminetas River Watershed. A site adjacent to the river in Apollo has been remediated and is available for re-use. Remediation is underway at a site in Parks Township; three buildings are being decommissioned and one has been razed. Remediation needs are now being determined for a third, shallow, low-level disposal site.

Public Lands Within A 1/4 Mile Major Stream Corridor

Kiski-Conemaugh River Basin



National Park Service

State Forests

State Game Lands (SGL)

State Parks

1/4 Mile Major Stream Buffer

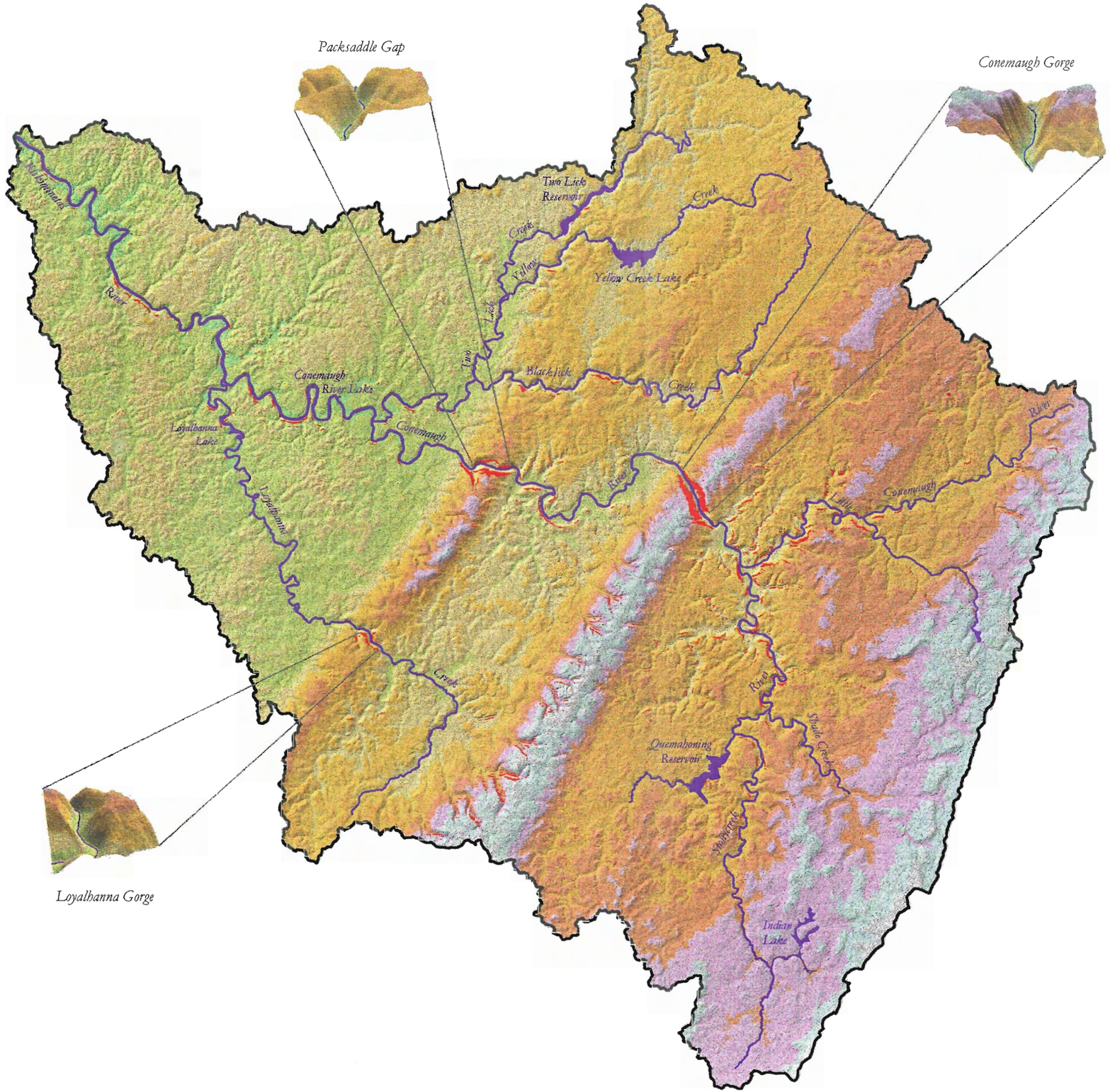
Kiski-Conemaugh Watershed Boundary

N

2 0 2 4 6 8 10 Miles

Map Number 11

Kiski-Conemaugh River Basin Alliance ~ Environmental Information Services - Windber, PA



Slopes Greater Than or Equal to 25%

(Three Deepest Gorges Highlighted)

Kiski-Conemaugh River Basin

Major Streams

Slopes > 25%

Elevation Range (feet)

- 695 ft - 953 ft
- 953 ft - 1210 ft
- 1210 ft - 1466 ft
- 1466 ft - 1725 ft
- 1725 ft - 1981 ft
- 1981 ft - 2240 ft
- 2240 ft - 2496 ft
- 2496 ft - 2756 ft

Kiski-Conemaugh Basin Boundary

N

2 0 2 4 6 8 10 Miles

Map Number 12

Kiski-Conemaugh River Basin Alliance ~ Environmental Information Services - Windber, PA

Radioactive contamination was reported along the railroad between Blairsville and Torrance. This contamination reportedly was the result of materials produced during the Manhattan Project in the 1940s. This area is not presently listed on the NPL or CERCLIS lists.

2. Abandoned Mines and Quarries

Abandoned coal mines, both surface and deep mines, occur throughout the basin and are the primary cause of water quality degradation. The Pennsylvania Bureau of Abandoned Mine Reclamation has identified a total of 486 abandoned mine problem areas in the basin, including 189 in the Stonycreek River/Little Conemaugh River watershed, 51 in the Conemaugh River watershed, 142 in the Blacklick Creek watershed, 49 in the Loyalhanna Creek watershed, and 55 in the Kiskiminetas River watershed. These areas are shown on Map 13. Problems within these areas include vertical openings, unreclaimed strip areas, flooded pits and openings, highwalls, refuse piles, mine and refuse pile fires, subsidence and slide prone areas, and acid mine discharges.

About 647,818 acres or 54 percent of the basin has been mined. The 1998 *Findings for the Inventory and Monitoring Phase of the Resource Recovery Program* identified and ranked the 100 "worst" AMD discharges in western Pennsylvania based upon total metals loading. Seventeen of the 40 worst discharges are located within the basin as identified in Table 9. Among the hundreds of other abandoned mine discharges or drainage sources in the basin, there are a number of others that warrant individual recognition due to the severity of the impact that they have on water quality. These are listed in Table 10.

In several areas, such as at Colver and Revloc in the Blacklick Creek Watershed, cogeneration plants have been constructed to utilize mine refuse piles as a fuel source.

Limestone and sandstone have been quarried at various locations within the basin. The only abandoned quarry listed by the DEP is the Davidson Sand and Gravel Baggaley Quarry. This limestone quarry was located in Unity Township, Westmoreland County in the Loyalhanna Creek watershed.

Extensive controversy occurred concerning a proposed limestone quarry on Chestnut Ridge in 1996-97. The proposed quarry was located between Ligonier and Derry and is no longer under consideration for development under the original proposal. However, the land is for sale and, therefore, could still be developed as a quarry or other use.

3. Sinkholes

The Kiski-Conemaugh Basin is underlain by clastic rocks. Soluble rocks make up only a small part of the stratigraphic column, and true limestone topography does not occur (White 1976). Limestone outcrops are generally confined to the mountain ridges, and despite extensive cavern development, karst is almost completely absent. Consequently, there are few sinkholes or other karst features.

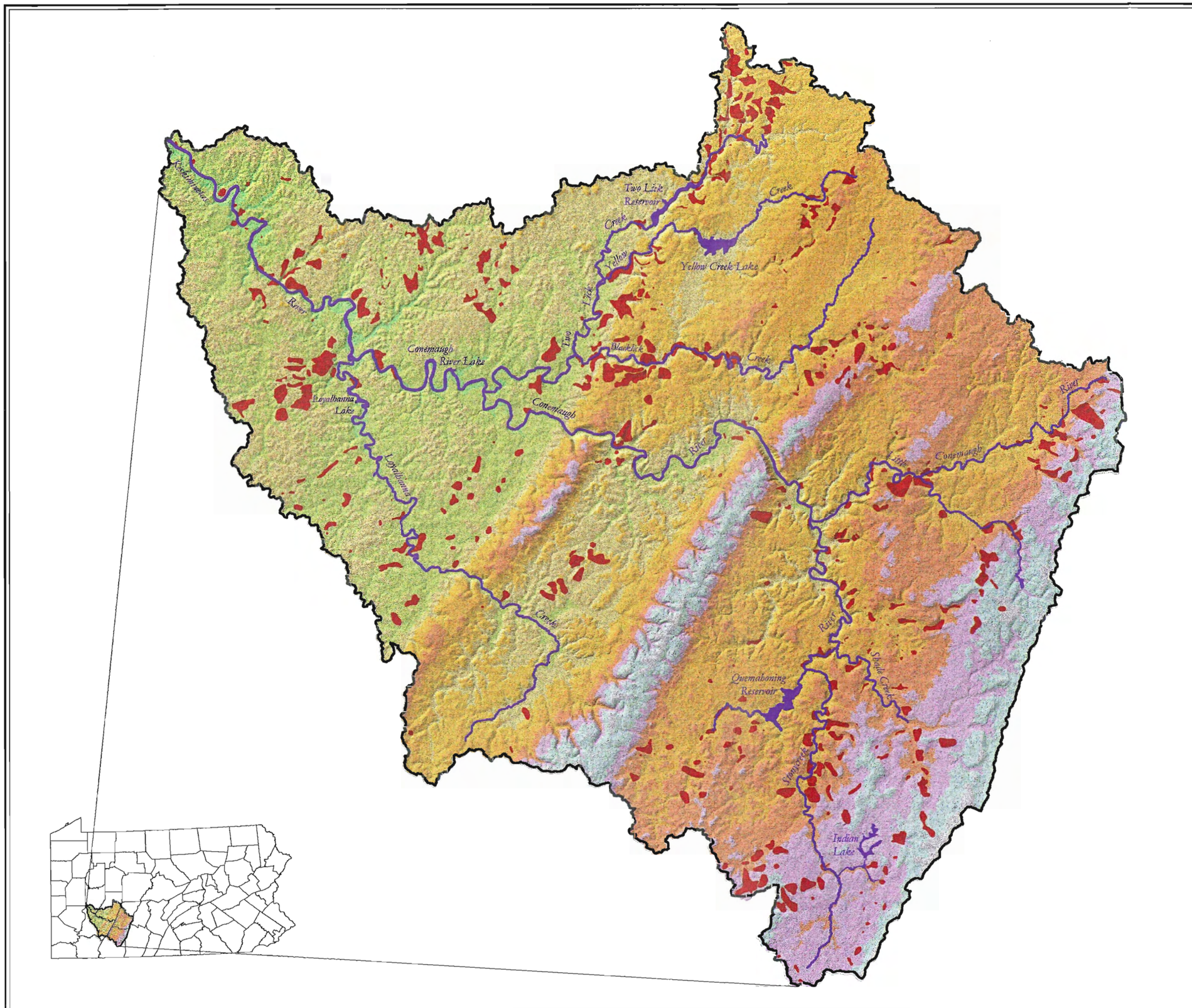
Table 9

MAJOR ABANDONED MINE DISCHARGES AS IDENTIFIED IN RESOURCE RECOVERY STUDIES

Basin Rank	Discharge	Total Loading* (kg/month)	Watershed
1	South Fork/Topper Run	141,793	Stonycreek/Little Conemaugh Rivers
2	Crabtree Run	99,183	Loyalhanna Creek
3	Saxman Run	79,332	Loyalhanna Creek
4	North Branch Blacklick Creek	70,204	Blacklick Creek
5	Sulphur Creek	66,650	Stonycreek/Little Conemaugh Rivers
6	Central City/Shade Creek	46,432	Stonycreek/Little Conemaugh Rivers
7	Two Lick Creek	42,827	Blacklick Creek
8	Saxman Run	42,167	Loyalhanna Creek
9	Spring Run (near Portage)	37,657	Stonycreek/Little Conemaugh Rivers
10	Sulphur Creek	34,395	Stonycreek/Little Conemaugh Rivers
11	Hughes Borehole	30,637	Stonycreek/Little Conemaugh Rivers
12	Blacklick Creek	29,696	Blacklick Creek
13	Trout Run (near Portage)	28,010	Stonycreek/Little Conemaugh Rivers
14	Big Run (near Avonmore)	22,005	Kiskiminetas River
15	Pot Ridge/Paint Creek	21,064	Stonycreek/Little Conemaugh Rivers
16	Whiskey Run/Blacklegs	17,017	Kiskiminetas River
17	Truxall (Trucks)	14,434	Kiskiminetas River

*Sum of all metals yielded from the site

Source: Southern Alleghenies Conservancy, 1998.



Abandoned Mine Land Problem Areas

Kiski-Conemaugh River Basin

Major Streams

Abandoned Mine Land Problem Areas

Elevation Range (feet)

- 695 ft - 953 ft
- 953 ft - 1210 ft
- 1210 ft - 1466 ft
- 1466 ft - 1725 ft
- 1725 ft - 1981 ft
- 1981 ft - 2240 ft
- 2240 ft - 2496 ft
- 2496 ft - 2756 ft

Kiski-Conemaugh Basin Boundary

N

2 0 2 4 6 8 10 Miles

Map Number 13

Kiski-Conemaugh River Basin Alliance ~
Environmental Information Services - Windber, PA

Table 10

ADDITIONAL MAJOR ABANDONED MINE DISCHARGES

Discharge Name	Receiving Stream	Watershed
Leechburg Mining Company Refuse Pile	Kiskiminetas River	Kiskiminetas River
Wolford Run	Wolford Run	Kiskiminetas River
Monk Mine	Monastary Run	Loyalhanna Creek
Revloc Refuse Pile	South Branch Blacklick Creek	Blacklick Creek
Loraine Refuse Pile	Pergrin Run	Blacklick Creek
BethEnergy #31 Refuse Pile	Pergrin Run/South Branch Blacklick Creek	Blacklick Creek
Webster Mine	Pergrin Run	Blacklick Creek
Red Mill Discharge	Elk Creek	Blacklick Creek
Vintondale Refuse Pile	South Branch Blacklick Creek	Blacklick Creek
Tide Area Discharges	Yellow Creek	Blacklick Creek
Lower Yellow Creek Discharges	Yellow Creek	Blacklick Creek
Oven Run Discharges	Oven Run	Stonycreek/Little Conemaugh Rivers
Pokeytown Run Discharges	Pokeytown Run	Stonycreek/Little Conemaugh Rivers
Central City	Dark Shade Creek	Stonycreek/Little Conemaugh Rivers
Kokomo Run Discharges	Kokomo Run	Stonycreek/Little Conemaugh Rivers
Ehrenfeld	Little Conemaugh River	Stonycreek/Little Conemaugh Rivers
Beaverdale	South Fork	Stonycreek/Little Conemaugh Rivers
Trout Run Discharges	Trout Run	Stonycreek/Little Conemaugh Rivers

Source: United States Geological Survey 1996; Barbin 1995; SCRIP 1998.

SECTION III

III. WATER RESOURCES

A. MAJOR TRIBUTARIES

The Kiskiminetas River is the ultimate receiving stream of waters within the Kiski-Conemaugh Basin. The Kiskiminetas River is formed by the confluence of the Conemaugh River and Loyalhanna Creek. Major tributaries of the Conemaugh River include the Stonycreek River, Little Conemaugh River, and Blacklick Creek. General features of these tributaries are discussed in this section. Further detail in these streams and their important tributaries is provided in Appendix B.

The Stonycreek River and Little Conemaugh River meet at Johnstown to form the Conemaugh River. These two watersheds are the SCRIP area of concern, and include a drainage area of 659 square miles with a population of approximately 144,300. Both watersheds are typified by high gradients. The Stonycreek River is the larger of the two watersheds and flows generally northwestward. The river is 43.4 miles long and drains 469 square miles of Cambria and Somerset Counties. The population of the Stonycreek watershed is about 87,000 people. The stream has headwaters on both the Allegheny Ridge (at elevations reaching 2,993 feet) and on Laurel Ridge (at elevations to 2,908 feet). The elevation at the mouth of the stream in Johnstown is 1,135 feet, for a total elevational change from headwaters to mouth of 1,858 feet. The Little Conemaugh flows generally southwestward from the Cresson wetlands on the Allegheny Ridge at an elevation of 2,862 feet, and experiences a total elevational change of 1,727 feet. The river is 29.2 miles long and has a drainage area of 190 square miles, all in Cambria County. Population of the watershed is about 57,300. This watershed is the most polluted in the Kiski-Conemaugh Basin as a result of abandoned mine drainage.

The Conemaugh River flows northwestward for 52.4 miles between Johnstown and Saltsburg, where it joins with Loyalhanna Creek to form the Kiskiminetas River. The overall drainage area of the Conemaugh River, including the Stonycreek, Little Conemaugh, and Blacklick Creek watersheds, is 1,375 square miles. The area of direct drainage to the Conemaugh, excluding these watersheds, is 297 square miles. This area has a population of approximately 57,000 in both Cambria and Westmoreland Counties, but the majority of these people live in the Johnstown area of Cambria County. Conemaugh River Lake, a major flood control reservoir of the USACOE, is located on the river near Tunnelton.

Blacklick Creek is a major tributary of the Conemaugh River, flowing generally westward from Laurel Ridge to enter the river at Conemaugh Lake near Blairsville. The watershed has a total area of 419 square miles, consisting of the drainage areas of the North Branch Blacklick Creek, South Branch Blacklick Creek, Yellow Creek and Two Lick Creek. Total population within the watershed is about 55,000 people in Cambria and Indiana Counties. The watershed is severely impacted by abandoned mine drainage.

Loyalhanna Creek drains 298 square miles of Westmoreland County and joins with the Conemaugh River at Saltsburg to form the Kiskiminetas River. The stream flows generally northwestward for 40.7 miles from its headwaters on Laurel Ridge. The watershed has a population

of about 46,000 people. The USACOE's Loyalhanna Lake, a major flood control reservoir, is located on Loyalhanna Creek near Saltsburg.

The Kiskiminetas River flows northwestward for 27 miles between Saltsburg and the Allegheny River near Freeport. The overall drainage area of the river is 1,887 square miles, including the watersheds of the Stonycreek River, Little Conemaugh River, Conemaugh River, Blacklick Creek, and Loyalhanna Creek. Excluding these watersheds, the area of direct drainage to the Kiski is 214 square miles. The population within this area is approximately 59,000 including parts of Armstrong, Indiana and Westmoreland Counties.

Most of the surface waters within the basin are identified by the DEP Water Quality Standards (PA Title 25, Chapter 93) as cold water fisheries. A number of streams, including many of the streams in the lower portions of the basin, are listed as warm water fishery waters. These include the lower main stem of the Stonycreek River, the main stems of the Little Conemaugh and Conemaugh Rivers, the lower basin of Loyalhanna Creek, and the Kiskiminetas River and many of its direct tributaries. Many streams or portions of streams have other classifications reflecting higher quality or recreational values, and include Exceptional Value, High Quality and Trout Stocked water use classifications. These streams are identified in Table B-1 in Appendix B.

B. WETLANDS

Data concerning the extent of wetlands and hydric soils within basin counties are summarized in Table 11 [Pennsylvania Department of Environmental Resources (DER) 1993].

Table 11

COUNTY WETLAND STATISTICS

County	Wetland Acres	Wetlands As Percent of County	County Wetlands as Percent of State Wetlands	Hydric Soils Acres	Hydric Soils As Percent of County	County Hydric Soils As Percent of State Hydric Soils
Armstrong	1,121	0.3%	0.3%	9,520	22.7%	0.5%
Cambria	2,129	0.5%	0.5%	39,609	8.90%	2.0%
Indiana	3,249	0.6%	0.8%	23,777	4.47%	1.2%
Somerset	6,211	0.9%	1.5%	52,444	7.55%	2.6%
Westmoreland	3,330	0.5%	0.8%	13,220	2.02%	0.7%

Source: Pennsylvania Department of Environmental Resources 1993.

Wetlands within the basin are identified on the U.S. Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI) maps, which are available from the U.S. Department of the Interior.

C. FLOODPLAINS

The basin has a long and well-known history of flooding problems. Significant flooding events have included the 1889 Johnstown flood, the 1936 flood, and the July 1977 flood. Flooding continues to be a serious problem in the basin. The 1889 Johnstown flood ranks as the third greatest loss of life (2,220 persons) resulting from a natural disaster in U.S. history. Although floods occur in all seasons, observations suggest a tendency for flooding on principal streams to occur in winter and on small streams in the summer (DER 1982).

In response to past flood events, a number of flood control projects have been constructed in the basin. These include Conemaugh Lake, Loyalhanna Lake, the Johnstown Local Flood Protection Project, and numerous smaller efforts. These are listed in Table 12

Seventy communities within the basin have been identified as prone to flooding. These communities are listed in Table 13. The 1994 *Conemaugh River Basin Reconnaissance Plan* (USACOE 1994) examined 62 of these communities within the Conemaugh River basin. This study concluded that plans were already in place to afford future protection to an acceptable level for many of these flood prone areas. No further actions were recommended.

D. LAKES AND PONDS

No substantial natural lakes or ponds occur within the basin. Numerous man-made lakes and reservoirs have been created throughout the basin. Major lakes and reservoirs are listed in Table 14, along with their watershed location and primary use. Tables B-5 through B-8 in Appendix B provide a more complete listing of dams and reservoirs in the Conemaugh River portion of the basin.

Large numbers of man-made farm ponds as well as beaver ponds occur in the basin. These are in most cases mapped as palustrine open water wetlands on the USFWS National Wetland Inventory maps, and are included with wetland information in Section IV.B.

E. WATER QUALITY

Watershed Condition Scores compiled by the EPA (1997) indicate that most streams in the basin (between 20 to 49 percent meeting all uses) do not satisfy designated use criteria. Significant to partial source water impairment is identified as a problem for attainment of the water supply designated use. Ambient water quality data for exceedences of copper, chromium, nickel and zinc do not indicate substantial problems for these parameters. Within the Conemaugh River watershed, EPA has identified high watershed vulnerability for toxic loads over permit limits and agricultural runoff.

A 1990 assessment of water quality by the DER indicated that the single largest cause of water quality degradation in the Lower Allegheny River Subbasin, in which the Kiski-Conemaugh watershed is located, was drainage from abandoned mines. Of the 854.8 miles of streams assessed,

Table 12

FLOOD PROTECTION PROJECTS

Project Name*	Developer	Location
Sam's Run CIP	DEP	City of Johnstown and Lorain Borough, Cambria County
Sam's Run FPP	DEP	City of Johnstown, Cambria County
Elk Run Debris Basin	DEP	City of Johnstown, Stackhouse Park, Lower Yoder Township., Cambria County
Cheney Run SIP	DEP	Southmont Borough, Cambria County
Solomon Run FPP	DEP	City of Johnstown, Dale Borough and Stonycreek Township., Cambria County
Windber FPP, Unit No. 1	DEP	Paint Creek and Seese Run, Boroughs of Windber and Paint, Somerset County
Windber FPP, Unit No. 2	DEP	Paint Creek, Borough of Windber, Somerset County
Windber FPP, Unit No. 2A	DEP	Paint Creek, Borough of Windber, Somerset County
Windber FPP, Unit No. 3	DEP	Paint Creek, Borough of Windber, Somerset County
South Branch Blacklick Creek FPP	DEP	Vintondale Borough, Cambria County and Buffington Township., Indiana County
Conemaugh River Lake	USACOE	Indiana and Westmoreland Counties
Johnstown LFPP	USACOE	City of Johnstown, Cambria County
Wilmore LFPP	USACOE	Wilmore Borough, Cambria County
Portage LFPP	USACOE	Portage Borough, Cambria County

Notes:

*CIP = Channel Improvement Project
FPP = Flood Protection Project
SIP = Stream Improvement Project
LFPP = Local Flood Protection Project

Source: United States Army Corps of Engineers 1994.

Table 13

COMMUNITIES* PRONE TO FLOODING (GROUPED BY STREAM IN UPSTREAM ORDER)

KISKIMINETAS RIVER		
Avonmore	East Vandergrift	Apollo
Oklahoma	Hyde Park	
Vandergrift	West Leechburg	
LOYALHANNA CREEK		
Latrobe		
New Alexandria		
CONEMAUGH RIVER		
Bolivar	**North Branch Blacklick Creek**	**Yellow Creek**
Robinson	Red Mill	Homer City
New Florence	**South Branch Blacklick Creek**	**Dixon Run**
Seward	Nanty Glo	Clymer
Hooverville**	**Two Lick Creek**	Dixonville
Morrellville**	Homer City	**Saint Clair Run**
Coopersdale**	Upper Two Lick	Morrelleville (Johnstown)
Johnstown Point**	Clymer	
Blacklick Creek	**Whites Run and Marsh Run**	
Josephine	Indiana	
Dilltown		
Heshbon		
LITTLE CONEMAUGH RIVER		
Johnstown**	Summerhill	**South Fork Little Conemaugh River**
East Conemaugh	Wilmore**	South Fork
Woodvale	Portage**	Soukesburg
Mineral Point	Cassandra	Saint Michael
South Fork	Oil City	Creslo
		Sidman
STONYCREEK RIVER		
Johnstown**	**Solomon Run**	**Seese Run**
Kernville (Johnstown)**	Hornerstown (Johnstown)	Windber
Hornerstown (Johnstown)**	**Sams Run**	Rummel
Roxbury (Johnstown)**	Moxham (Johnstown)	**Shade Creek**
Moxham (Johnstown)**	**Cheney Run**	Seanor
Ferndale	Roxbury (Johnstown)	Camp Hamilton
Riverside	**Paint Creek**	Hillsboro
Bens Creek	Scalp Level	**Roaring Fork**
Krings	Paint	Ashtola
Hollsopple	Windber	
Benson	Elton	
Hooversville		

Notes:

* = Not included are communities that could be impacted by small tributaries or overland flows.
** = USACOE Local Protection Project.

Source: United States Army Corps of Engineers 1994 and 1998.

Table 14

MAJOR LAKES AND RESERVOIRS

Name	Watershed	Primary Use
Beaver Run Reservoir	Kiskiminetas River	Water Supply
Donegal Lake	Loyalhanna Creek	Recreation
Latrobe Reservoir	Loyalhanna Creek	Water Supply
Loyalhanna Creek Lake	Loyalhanna Creek	Flood Control
Keystone Lake	Loyalhanna Creek	Recreation
Twin Lakes	Loyalhanna Creek	Recreation
Hinckston Run Reservoir	Conemaugh River	Water Supply
Conemaugh River Lake	Conemaugh River	Flood Control
Yellow Creek Lake	Blacklick Creek	Recreation
Two Lick Reservoir	Blacklick Creek	Water Supply
Williams Run Reservoir	Blacklick Creek	Water Supply
Duman Lake	Blacklick Creek	Recreation
Wilmore Dam	Stonycreek/ Little Conemaugh Rivers	Water Supply
Saltlick Reservoir	Stonycreek/ Little Conemaugh Rivers	Water Supply
Beaverdam Run Reservoir	Stonycreek/ Little Conemaugh Rivers	Water Supply
Lloydell Reservoir	Stonycreek/ Little Conemaugh Rivers	Water Supply
Quemahoning Reservoir	Stonycreek/ Little Conemaugh Rivers	Water Supply
North Fork Reservoir	Stonycreek/ Little Conemaugh Rivers	Water Supply
Stoughton Lake	Stonycreek/ Little Conemaugh Rivers	Recreation
Indian Lake	Stonycreek/ Little Conemaugh Rivers	Recreation
Lake Stonycreek	Stonycreek/ Little Conemaugh Rivers	Recreation

Source: GAI Consultants, Inc. 1998.

402.4 were found to be degraded. Drainage from abandoned mines accounted for 80.7 percent of this degradation. Low pH, elevated levels of heavy metals and aluminum, and increases in turbidity and suspended solids were primarily responsible for the degradation.

There are no fish consumption bans or advisories in effect in the basin (DEP 1996).

Map 4 identifies the current extent of degradation of streams as a result of AMD discharges within the Kiski-Conemaugh Basin based upon data compiled by the K-C Alliance.

1. Point Sources

Major water quality problems attributable to point discharges in the Kiski-Conemaugh Basin are associated with sewage and industrial discharges, in addition to some AMD discharges that are discussed in III.E.2. There are 29 public wastewater treatment facilities in the basin, discharging approximately 22 million gallons per day of treated sewage. These facilities serve the larger population centers within the basin. Combined sewer overflows are a problem in many areas. The DEP's Combined Sewer Overflow (CSO) Strategy, implemented in April 1995, requires a phased approach to CSO permitting and implementation over a long-term period (10-30 years). The strategy requires each municipal discharger to identify CSO locations and implement a set of nine minimum, technology based best management practices and controls.

Over 300 facilities, including industrial, commercial and municipal discharges have been issued National Pollutant Discharge Elimination System (NPDES) permits within the basin as of June1997. These facilities are listed in Table B-9 in Appendix B.

2. Nonpoint Discharges

Abandoned mine drainage is the single most important factor in the degradation of water quality in the Kiski-Conemaugh Basin. Other important non-point sources include sewage from on-lot systems, nutrient introduction from inappropriate agricultural practices, and sedimentation. The DEP has identified the entire basin as including either high or medium priority watersheds in its *Non-Point Source Priority Degraded Watershed List* (DEP 1996). Table B-10 in Appendix B provides a listing of water quality limited stream segments as identified in the DEP 1998 Section 303(d) List.

The Kiskiminetas River is, and has historically been, the greatest contributor of abandoned mine drainage to the Allegheny River. The introduction of AMD pollutants from the Kiski River has historically resulted in substantial fish kills in the lower Allegheny River during periods of heavy rainfall within the Kiski basin. In response to this problem, the USACOE holds much of the water in the Allegheny Reservoir for timed releases to dilute flows entering the Allegheny River from the Kiski-Conemaugh Basin. In 1968, the Operation Scarlift study documented 810 mine drainage sources in the Kiski-Conemaugh Basin, accounting for a net discharge of approximately 127 million gallons per day, and producing a net acid load of approximately 720,000 pounds per day. Blacklick Creek and the Little Conemaugh River received about 60 percent of the total loading. Tables 9 and 10 identify some of the major AMD discharges in the basin.

Studies conducted for the 1994 *Conemaugh River Basin Reconnaissance Study* concluded that water quality degradation as a result of mining activity is the most serious deterrent to the full productivity and use of basin-wide water resources. During this investigation, water quality sampling was conducted at 140 locations within the Conemaugh River watershed. Table 15 presents a summary of some upstream and downstream sampling locations for major streams within the Conemaugh watershed that illustrate the extent of AMD impacts. Data from benthic macroinvertebrate analyses indicate that about 58 percent of the streams in the Conemaugh River watershed are significantly degraded, with either depressed or severely depressed invertebrate community densities. About 48 percent have either moderately diverse or highly diverse communities.

Table 15

1994 WATER QUALITY DATA – CONEMAUGH RIVER BASIN

Location	Total Acidity (mg/l as CaCO3)	Total Alkalinity (mg/l as CaCO3)	Iron (µg/l)	Aluminum (µg/l)	Manganese (µg/l)	pH
Conemaugh River at Conemaugh Dam	14	2	1,478	1,856	43	8.2
Conemaugh River at Coopersdale	40	0	5,865	3,130	2,351	3.7
Blacklick Creek at Josephine	32	0	4,390	3,018	1,315	3.9
Blacklick Creek at Blairsville	26	0	451	2,150	964	4.2
Little Conemaugh River in Johnstown	55	0	10,850	5,576	3,125	4.3
Little Conemaugh River at Lilly	12	86	621	116	584	7.2
Stonycreek River in Johnstown	64	4	730	2,623	2,060	4.7
Stonycreek River above Shanksville	10	110	433	258	439	6.8
DEP Water Quality Criteria (Chapter 93)	NA	Minimum 20	1,500 (daily average as total)	NA	1,000	From 6.0 to 9.0

Source: United States Army Corps of Engineers 1994.

Close examination of problems within individual subwatersheds within the basin has been inconsistent. The 1972 *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA 1972) identified AMD problems throughout the basin, but this information is dated.

Two separate recent studies specifically examining the effects of AMD were conducted for the Stonycreek River [U.S. Geological Survey (USGS) 1996] and the Little Conemaugh River (Barbin 1995). There are over 470 separate sources of AMD on these streams, ranging from as little as 1 gpm to as much as 4,500 gpm. Twelve locations had discharges of 1,000 gpm or more. Analyses in the Stonycreek River watershed found that 193 discharges exceeded EPA effluent standards for pH, 122 exceeded standards for total iron, and 144 exceeded standards for total manganese. Ninety-four discharges exceeded standards for all three of these parameters, while only 40 discharges met standards for all three. On the mainstem of the Stonycreek River, pH was found to decrease from 6.8 to 4.2, alkalinity was completely depleted by inflow acidities, and total iron discharge increased from 30 to 684 pounds per day. Attachment A in Appendix C provides a ranking of the severity of discharges in this watershed. In the Little Conemaugh River watershed, seven discharges were found to account for 89 percent of the total load of acid, iron, aluminum and manganese. Attachment B in Appendix C provides a ranking of the pollutant loadings contributed by discharges in the watershed.

The *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA 1972) indicated that 335 discharges were creating 309,718 lbs/day of acid loading in the Conemaugh River watershed. The 1994 *Conemaugh River Basin Reconnaissance Plan* (USACOE 1994) identified the severity of AMD impacts at 140 locations in the Conemaugh basin. Attachment C in Appendix C identifies the results of this investigation. Eighteen major discharges contributed 46 percent of the acid loading in Blacklick Creek, and 12 discharges contributed 80 percent of the loading in Two Lick Creek according to the *Cooperative Mine Drainage Survey* (EPA 1972). The largest discharges in the headwaters of the Blacklick Creek watershed are from coal refuse piles, including piles at Revloc, Nanty Glo and Vintondale on the South Branch Blacklick Creek. The Webster Mine Discharge is also a major contributor to acid loading on the South Branch. Other major problem areas in the Blacklick Creek Watershed include the North Branch Blacklick Creek, lower Yellow Creek and upper Two Lick Creek.

The *Loyalhanna Lake Water Quality Report* (USACOE 1982) indicated that 52 discharges contribute 65,407 lb/day of acid loading to Loyalhanna Creek upstream of Loyalhanna Lake, and 75 percent of this load was contributed by three discharges. These include the Crabtree Mine (19,572 lb/day), Saxman Mine (12,389 lb/day) and Monk Mine (17,860 lb/day).

The *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA 1972) identified 89 discharges contributing an acid load of 57,880 lb/day to the main stem of the river. Seventeen discharges contributed 81 percent of this load. Among these is the Truxall (Trucks) Discharge, which flows in excess of 1,000 gpm.

The watershed groups as well as a number of other organizations and agencies have been very active in working to remediate AMD problems. SCRIP coordinated the implementation of one of the first passive treatment systems in the region with the construction of the Rock Tunnel site along Bens Creek in Somerset County. Numerous other projects have been planned or implemented since. The Blacklick Creek Watershed Association has made great strides in identifying and

implementing projects in that watershed, particularly in the major problem areas in the upper Blacklick Creek drainage, Yellow Creek, and Two Lick Creek. AMD&Art is also working to implement innovative approaches to remediation in the Blacklick Creek watershed. The Loyalhanna Watershed Association, along with the Loyalhanna Creek Mine Drainage Coalition, has participated in planning and implementation efforts on major discharges in that watershed. The Roaring Run Watershed Association has sponsored Rural Abandoned Mine Program (RAMP) projects in the Roaring Run drainage. The Cambria County Conservation and Recreation Authority, county conservation districts, DEP Bureau of Abandoned Mine Reclamation, USACOE, US Geological Survey and the Natural Resources Conservation Service have been active in addressing AMD problems in the basin. This listing is not inclusive: a number of other organizations and agencies have worked to address this critical problem.

As noted previously, the more densely populated portions of the basin are typically served by municipal waste water treatment facilities. However, the rural portions of the basin rely on-lot septic systems. In many cases, these on-lot systems are not properly designed or maintained, leading to contamination of surface and groundwaters.

Agricultural runoff contributes to water quality degradation through inappropriate application of fertilizers and pesticides, through runoff contaminated by animal wastes, through direct disturbance of stream banks and substrates by livestock, and sedimentation resulting from poor soil conservation practices. The *Assessment of Nonpoint Source Pollution in the Stonycreek and Little Conemaugh Watersheds* (Cambria County Conservation District 1994) concluded that two of the largest problems in these subwatersheds from agricultural nonpoint pollution are sediment from erosion and introduction of excess nutrients. It is estimated that 100 to 150 landowners are in need of conservation plans with another 100 to 150 farms requiring revisions to outdated plans in these subwatersheds. This study provided priority rankings for remediation efforts within this watershed. High priority watersheds included Laurel Run, Settlemeyer Run, Noels Creek, Roaring Run, North Branch Quemahoning Creek, Quemahoning Creek, Beaverdam Creek, and the upper Stonycreek River.

Sedimentation is an important problem in some areas, largely due to the influences of inappropriate agricultural or timbering practices. Sedimentation problems due to timbering practices have been noted by the PFBC on Brush Creek in the Blacklick Creek watershed. Public comments for this plan also expressed concern for agricultural pollution in the Blacklick Creek Watershed.

3. Monitoring

Ongoing monitoring programs have not historically been extensive, although several have recently been implemented in various portions of the basin. These include two stations of the DEP's Surface Water Quality Monitoring Network (on the Conemaugh River at Conemaugh Dam and on the South Branch of Two Lick Creek), the USACOE monitoring station on the Stonycreek River at Ferndale, as well as monitoring conducted by SCRIP's River Keepers Program and the Environmental Alliance for Senior Involvement in the Blacklick Creek Watershed. The Alliance for Aquatic Resource Monitoring (ALLARM) has begun a monitoring program in the Kiskiminetas, Conemaugh, and Stonycreek/Little Conemaugh River watersheds. The Kiski-Conemaugh Stream Team has collected water samples from over 80 sites in the basin for use in the Geographic

Information System Watershed Characterization Modeling System for the Kiski-Conemaugh River Basin being developed by the K-C Alliance and West Virginia University.

Additional monitoring data have been collected for limited time periods in various locations within the basin. The most extensive of these have included 140 stations for the USACOE's 1994 *Conemaugh River Basin Reconnaissance Plan*, and approximately 470 locations for mine drainage studies on the Little Conemaugh River and Stonycreek River.

These monitoring efforts have indicated that improvements in water quality have occurred in some areas in recent years as a result of more stringent controls on discharges and the reclamation of abandoned mine lands and discharges. An aquatic life survey of the Kiskiminetas in 1980 found no fish species. In 1990, 21 species were collected, including a number of sport fish species. Similar improvements have been noted in Conemaugh River Lake and Loyalhanna Lake.

F. WATER SUPPLY

1. Public/Private

Approximately 88 percent of basin residents (292,230 people) receive drinking water from a community or public water supply. Approximately 88 million gallons per day are withdrawn from surface and groundwater sources for public supply. Sources for these municipal or other major public water systems include 34 surface intakes, 65 wells, and 2 springs. Table B-11 in Appendix B provides a listing of water systems, sources, and populations served by municipal and major public surface water intakes in the basin.

The remainder of basin residents (approximately 37,084 persons) obtain drinking water from private sources. Wells are the primary source of water supply in most areas. Approximately 5 million gallons of groundwater are withdrawn per day for private domestic use.

2. Wellhead Protection Areas

Section 1428 of the Federal Safe Drinking Water Act requires states to establish wellhead protection programs to protect public ground water supplies from contamination, ensure public health, and prevent the need for treatment of wells to comply with drinking water standards. The wellhead protection program administered by the DEP is a proactive effort designed to apply proper management techniques and preventative measures to protect groundwater supplies. As of June 1998, over 150 public water systems were developing or implementing local wellhead protection programs in the Commonwealth of Pennsylvania. Eleven of these are located in the basin, as identified in Table 16.

Table 16

WELLHEAD PROTECTION PROGRAMS

Public Water System	County	Watershed
Indiana County Municipal Service Authority - Jacksonville	Indiana	Blacklick Creek
Indiana County Municipal Service Authority - Pine Township	Indiana	Blacklick Creek
Vintondale Borough Water Company*	Cambria	Blacklick Creek
Windber Area Authority	Somerset	Stonycreek and Little Conemaugh Rivers
Stoystown Borough Water Authority	Somerset	Stonycreek and Little Conemaugh Rivers
Jennerstown Municipal Authority	Somerset	Stonycreek and Little Conemaugh Rivers
Boswell Borough Municipal Authority	Somerset	Stonycreek and Little Conemaugh Rivers
Cairnbrook Improvement Association	Somerset	Stonycreek and Little Conemaugh Rivers
Central City Water Authority	Somerset	Stonycreek and Little Conemaugh Rivers
Conemaugh Township Municipal Authority	Somerset	Stonycreek and Little Conemaugh Rivers
Gray Area Water Authority of Jenner Township	Somerset	Stonycreek and Little Conemaugh Rivers

*Will be phased out by the Blacklick Valley Municipal Authority water project.

Source: Pennsylvania Department of Environmental Protection 1998.

SECTION IV

IV. BIOLOGICAL RESOURCES

A. WILDLIFE

1. Terrestrial

Approximately 273 species of terrestrial vertebrates potentially occur within the basin. These include 28 amphibians, 25 reptiles, 166 birds (breeding species), and 54 mammals (McCoy 1982, Merritt 1987, Leberman 1988).

Aquatic species typically associated with riverine habitats include Bull Frog (*Rana catesbiana*), Northern Water Snake (*Nerodia sipedon*), Green-backed Heron (*Butorides striatus*), and Muskrat (*Ondatra zibethicus*). Beaver (*Castor canadensis*) exert a strong influence on stream ecosystems in many areas. Representative terrestrial species in riparian habitats include Acadian Flycatcher (*Empidonax viridescens*), Warbling Vireo (*Vireo gilvus*) and Mink (*Mustela frenata*).

Important game species include Ruffed Grouse (*Bonasa umbellus*), Wild Turkey (*Meleagris gallopavo*), White-tailed Deer (*Odocioleus virginiana*), Gray Squirrel (*Sciurus carolinensis*), Eastern Cottontail (*Sylvilagus floridana*), and Black Bear (*Ursus americana*).

2. Aquatic

The aquatic biota of the basin have been severely affected by acid mine drainage, as well as industrial and municipal wastes and agricultural runoff. The original fish community assemblage within the Allegheny River drainage included 102 species (Cuff *et al.* 1989). Many of these species would have occurred in the Kiski-Conemaugh Basin. However, fish populations were eliminated from many streams within the basin as a result of pollution. Improvements in water quality in recent years have led to the re-establishment of fish populations in some formerly depopulated streams, including portions of the Kiski and Conemaugh main stems.

Typical fish species in appropriate habitats now include Smallmouth Bass *(Micropterus dolomieu*), Largemouth Bass (*Micropterus salmoides*), Brown Bullhead (*Ameiurus nebulosus*), Channel Catfish (*Ictalurus punctatus*), suckers (Catostomidae), Carp (*Cyprinus carpio*), and a number of sunfish (Centrarchidae) and minnow (Cyprinidae) species. Both natural and stocked trout populations occur at various locations. Table 17 identifies some of the more important recreational fishery resources in the basin.

Several impoundments within the basin support valuable recreational fishery resources, including species such as Largemouth Bass, Northern Pike (*Esox lucius*) and Muskellunge (*Esox masquinongy*). These include Donegal Lake, Yellow Creek Lake, Keystone Lake, Duman Lake, and Loyalhanna Reservoir, among others as identified in Table 17.

Surveys of benthic macroinvertebrates conducted in the Conemaugh River drainage in 1993 indicated that populations of these organisms have been severely affected by pollutants. The total number of taxa identified at the 120 sample stations ranged from 0 (at 10 stations) to 34 (Laurel Run near Creslo), and averaged 8 taxa per station. Families typically represented included

Table 17

IMPORTANT RECREATIONAL FISHERIES

Water Body	Watershed	Primary Game Species
Blacklegs Creek	Kiskiminetas River	Trout, panfish
Northmoreland Park Lake	Kiskiminetas River	
Kiskiminetas River	Kiskiminetas River	Bass, panfish
Loyalhanna Creek	Loyalhanna Creek	Trout
Loyalhanna Lake	Loyalhanna Creek	Bass, musky, walleye, panfish
Keystone Lake	Loyalhanna Creek	Trout, panfish, bass, musky, walleye
Donegal Lake	Loyalhanna Creek	Trout, bass, panfish, musky, walleye
Twin Lakes	Loyalhanna Creek	Trout, panfish
North Branch Blacklick Creek (above Elk Creek)	Blacklick Creek	Trout
Yellow Creek	Blacklick Creek	Trout
Yellow Creek Lake	Blacklick Creek	Bass, musky, northern pike, walleye
Two Lick Creek (below dam)	Blacklick Creek	Trout
Duman Lake	Blacklick Creek	Bass, panfish, trout
Beaverdam Run	Stonycreek/Little Conemaugh Rivers	Trout
Stonycreek River (above Kantner)	Stonycreek/Little Conemaugh Rivers	Trout, smallmouth bass
Little Paint Creek	Stonycreek/Little Conemaugh Rivers	Trout
Elton Sportsman's Dam	Stonycreek/Little Conemaugh Rivers	Trout, panfish, bass
Clear Shade Creek	Stonycreek/Little Conemaugh Rivers	Trout
Cub Run	Stonycreek/Little Conemaugh Rivers	Trout
Piney Run	Stonycreek/Little Conemaugh Rivers	Trout
Laurel Run (Tanneryville)	Stonycreek/Little Conemaugh Rivers	Trout
Hinckston Run	Stonycreek/Little Conemaugh Rivers	Trout
North Branch Little Conemaugh River	Stonycreek/Little Conemaugh Rivers	Trout
South Fork Little Conemaugh River	Stonycreek/Little Conemaugh Rivers	Trout (headwaters are Wilderness Trout Stream)
Lake Rowena	Stonycreek/Little Conemaugh Rivers	Trout, panfish, bass
Howell's Run	Stonycreek/Little Conemaugh Rivers	Trout
Laurel Run (Sidman)	Stonycreek/Little Conemaugh Rivers	Trout
Noel's Creek	Stonycreek/Little Conemaugh Rivers	Trout
Ben's Creek	Stonycreek/Little Conemaugh Rivers	Trout
Quemahoning Creek	Stonycreek/Little Conemaugh Rivers	Trout
Beaverdam Creek	Stonycreek/Little Conemaugh Rivers	Trout

Source: Kiski-Conemaugh River Basin Alliance 1998; SCRIP (no date).

Hydropsychidae, Chironomidae, Gerridae and Elmidae. Complete sampling data can be found in the *Conemaugh River Basin Reconnaissance Study* (USACOE 1994).

B. VEGETATION

The basin lies entirely within the Eastern Deciduous Forest Biome, and prior to European settlement was almost entirely forested. Human disturbance, including the clearing of the forest vegetation for agricultural and urban uses and the effects of logging, have dramatically altered vegetation patterns. A variety of vegetational communities now occur within the basin, reflecting differing degrees of disturbance and local variations in climatic and physiographic conditions. As indicated in Section I.E., forest is still the dominant land use in the basin.

The Appalachian Oak Forest is the dominant natural vegetative community through most of the basin (Cuff *et al.* 1989). White Oak (*Quercus alba*) and Northern Red Oak (*Quercus rubra*) are dominant species in this community. Other typical species include Sugar Maple (*Acer saccharum*), Bitternut Hickory (*Carya cordiformis*), Beech (*Fagus grandifolia*), Tulip Poplar (*Liriodendron tulipifera*), White Pine (*Pinus strobus*), Chestnut Oak (*Quercus prinus*) and Black Oak (*Quercus velutina*).

Northern Hardwood Forest communities dominate on ridges and higher elevations. Dominant species in this community include Sugar Maple, Yellow Birch (*Betula alleghaniensis*), Beech, and Eastern Hemlock (*Tsuga canadensis*). Associated tree and shrub species include White Ash (*Fraxinus americana*), White Pine, American Basswood (*Tilia americana*), and Mountain Laurel (*Kalmia latifolia*).

Agricultural landscapes are a major component of the basin, and include both row crops and hay. Rangeland areas occur extensively on reclaimed strip mines. Vegetation is typically dominated by grasses and forbs such as Orchard Grass (*Dactylis glomerata*), Redtop (*Agrostis alba*), and goldenrods (*Soligago* spp).

Japanese Knotweed (*Polygonum cuspidatum*) and the closely related Giant Knotweed (*P. sachalinense*) are invasive, non-native plants that occur abundantly in riparian areas in the basin. These plants pose a significant threat to riparian areas because they form dense thickets that exclude native vegetation. This results in lower native plant species diversity and decreased habitat quality.

C. PENNSYLVANIA NATURAL DIVERSITY INVENTORY SPECIES

The Pennsylvania Natural Diversity Inventory (PNDI) is a site specific information system that describes the significant natural resources of Pennsylvania. Data include species of concern, exemplary natural communities and unique geologic features. A total of 116 species and features tracked by the PNDI are reported from the basin (Pennsylvania Bureau of Forestry 1998). These include 69 species of concern, as well as caves and other geologic features, bat hibernacula, streams, and a nonglacial bog. The majority of species reported are terrestrial plants. However, several aquatic and wetland species are also reported. A summary of PNDI data identifying features by watershed is contained Table B-12 in Appendix B.

D. IMPORTANT HABITATS

Yellow Creek State Park has been identified as an Important Bird Area (IBA) by the National Audubon Society. An IBA is a site of special significance to breeding or non-breeding birds and which, on some basis, can be distinguished from surrounding areas. The park is noted as qualifying as an Important Bird Area as a site where birds concentrate in significant numbers when breeding, in winter, or during migration. Specifically, the park regularly supports at least 2,000 waterfowl (at one time) during some part of the year, it regularly supports at least 100 shorebirds (at one time) during some part of the year, and it is recognized within Pennsylvania as having an exceptional concentration and/or diversity of birdlife.

The PNDI has identified several important habitats within the basin, including limestone solutional caves, a sandstone fracture cave, bat hibernacula, high gradient clearwater creeks, and a nonglacial bog. These features are identified by watershed in Table B-12 in Appendix B.

The Westmoreland County Natural Heritage Inventory (Westmoreland County Department of Planning and Development 1998) identifies a number of significant natural features in the basin. Recommendations for protection of these sites include recommended Biological Diversity Areas, Dedicated Areas, and Landscape Conservation Areas.

The Carnegie Museum of Natural History maintains three natural areas in the Loyalhanna watershed. These include Powdermill Nature Reserve, Buffalo Nut Sanctuary, and Furnace Woods Sanctuary. The Dr. Charles F. Lewis State Forest Natural Area is located in Gallitzin State Forest in the Conemaugh Gorge. This area is also designated as a reptile and amphibian sanctuary under PFBC regulations. The Clear Shade Wild Area is also located in Gallitzin State Forest in Somerset County.

Indiana County Parks maintains two natural areas in the basin. The Blacklick Valley Natural Area is adjacent to the Ghost Town Trail near Dilltown. The 675-acre property contains a variety of habitats. The Buttermilk Falls Natural Area includes 48 acres containing a 45-foot waterfall and mature woodland.

Riparian forests provide important habitat for many resident and transient species. These areas provide uncommon streamside and floodplain microenvironmental conditions utilized by large numbers of species, and often provide movement corridors between discontinuous tracts of forest or other natural cover types. The use of forest buffers along streams has long been recognized as an important tool for improving water quality and protecting or restoring stream ecosystems.

Large forested areas that provide forest interior habitat for neotropical migratory birds occur throughout the basin. The general distribution of forest areas is shown on Map 8. Long-term planning for forest birds, with an emphasis on the Scarlet Tanager, Wood Thrush and Cerulean Warbler has been identified as a conservation priority in Pennsylvania (Rosenberg and Wells 1995). This study has also identified Pennsylvania as a critical core population for Henslow's Sparrow and as having important populations of other early-successional habitat neotropical migrants such as Golden-winged Warbler, Blue-winged Warbler, and Field Sparrow. The basin contains numerous reclaimed strip mines and other early-successional areas that potentially provide habitat for these species.

The Spruce Flats Bog in Forbes State Forest is a significant wetland resource in the Loyalhanna Creek Watershed. Wetlands in the Roaring Run vicinity in Jenner Township (Somerset County) were noted as high value areas during public comment for this plan. The USFWS *Regional Wetlands Concept Plan* (USFWS 1990) has identified several wetlands within the basin that warrant protection because of their value, scarcity, and vulnerability. These include 130 acres of palustrine wetlands along the Little Conemaugh River in Cresson (Cambria County), 55 acres of palustrine forested wetland on Buck Run near Shanksville (Somerset County), and 10 acres of palustrine scrub-shrub wetland at the Buckstown Swamp in Somerset County. The Emergency Wetlands Resources Act of 1986 directed the Department of the Interior to develop a National Wetlands Priority Conservation Plan to identify the location and types of wetlands that should receive priority attention for acquisition using Land and Water Conservation Fund Appropriations. The Regional Wetlands Concept Plan complements the National Plan by providing more specific information. This listing is not all-inclusive.

SECTION V

V. CULTURAL RESOURCES

Increasingly in the basin, recreational resources are being tied to historical areas and resources to provide a multiplicity of opportunities for outdoor recreation, while enjoying the region's historical heritage.

A. RECREATION

Recreation opportunities in the basin are primarily located in the central and western portions of the basin along the rivers and along Chestnut Ridge, Laurel Hill ridge and the Allegheny Ridge. Map 14 identifies these facilities as well as some of the unique scenic features of the basin. The types of recreation opportunities vary and include a system of state parks operated by the DCNR, State Game Lands owned by the Pennsylvania Game Commission (PGC), two units of the National Park System, several flood control dams and lakes operated by the USACOE, several lakes operated by the PFBC, state forests lands managed by the DCNR, natural areas, various county parks, and a growing system of hiking and biking trails. The hiking and biking trails are increasingly being tied to historical resources providing an expanded opportunity for physical activity, sense of history, and recreational pleasure. In addition, greenway corridors using the basin's rivers and mountain ridges, and tying a multiplicity of outdoor opportunities together, are in the planning stages, with sections complete or under construction.

There are six state parks in the basin including Keystone, Yellow Creek, three separate sections of Laurel Ridge State Park, Laurel Mountain, Linn Run and Laurel Summit. State park properties are managed to provide outdoor recreation facilities in a natural setting, to preserve park areas, and to provide environmental education opportunities. According to the Pennsylvania State Comprehensive Outdoor Recreation Plan (SCORP), they have the following characteristics:

- *Keystone.* This 1,187-acre park in Westmoreland County includes a 78-acre lake. Swimming, fishing, boating, camping, picnicking, hiking, hunting, snowmobiling, ice skating, ice fishing and sledding opportunities are afforded. It had 445,569 visitor days in 1991. (A visitor day is a measure of park usage. One visitor day is recorded each time that a person enters the park.)

- *Laurel Ridge.* This 14,962-acre park, with the 70-mile long Laurel Highlands Hiking Trail, spans Cambria, Fayette, Somerset and Westmoreland Counties and stretches from Johnstown to Ohiopyle State Park. It offers hiking, backpacking, hunting, snowmobiling, and cross-country skiing. It had 148,367 visitor days in 1991.

- *Laurel Mountain.* This 493-acre park is in Westmoreland County and offers skiing and hiking.

- *Laurel Summit.* This six-acre park in Westmoreland County is primarily used for picnicking. It had 91,107 visitor days in 1991.

- *Linn Run.* This 613-acre park abutting Forbes State Forest is in Westmoreland County. It offers family cabins, fishing, hunting, and picking. It had 274,037 visitor days in 1991.

- *Yellow Creek.* This 2,927-acre park in Indiana County includes the 720-acre Yellow Creek Lake. The park offers fishing, boating, swimming, picnicking, hiking, hunting, ice fishing, sledding, and snowmobiling, ice skating, ice boating, cross-country skiing, birding, and snowshoeing. It had 231,183 visitor days in 1991.

There are 12 State Game Lands with a total of 44,512 acres in the basin. The game lands and the state forest lands (identified following) provide excellent turkey, deer, bear, and small game hunting. The state game lands also offer extensive hiking, biking, cross-county skiing and snowmobile trail opportunities.

Two lakes open to public fishing are managed by the PFBC in the basin. These include Donegal Lake and the Ebensburg Reservoir. The PFBC also owns Duman Lake, which is managed as a Cambria County park.

State forests are managed by the Pennsylvania Bureau of Forestry for multiple use purposes, including timber production, water supply, natural diversity protection, low density recreational pursuits, and oil and gas development. Special areas designated as natural or wild areas have been established for the protection of special features and characteristics in a number of forests. Two state forestlands are in the basin, with the following characteristics:

- *Forbes State Forest.* This 51,701-acre State Forest is located in Westmoreland, Somerset and Fayette Counties. Recreation opportunities include 76 miles of State Forest roads, one wild area (4,675 acres), two natural areas (3,671 acres), 69 miles of designated hiking trails. 40 miles of cross-county ski trails, two State Forest Picnic Areas and 192 miles of snowmobile trails.

- *Gallitzin State Forest.* This 15,337 State Forest is in Indiana, Cambria, Bedford and Somerset Counties. Facilities include 10 miles of State Forest roads, one wild area (2,791 acres), one natural area (384 acres), 51 miles of designated hiking trails, seven miles of cross-country ski trails, one State Forest Picnic Area and 22 miles of snowmobile trails.

Altogether there are 11 county parks (not including county operated trails) located in the Kiski-Conemaugh Basin as shown on Map 18. Most offer picnicking, swimming, fishing, trails, nature walks and field sport facilities. These include the following:

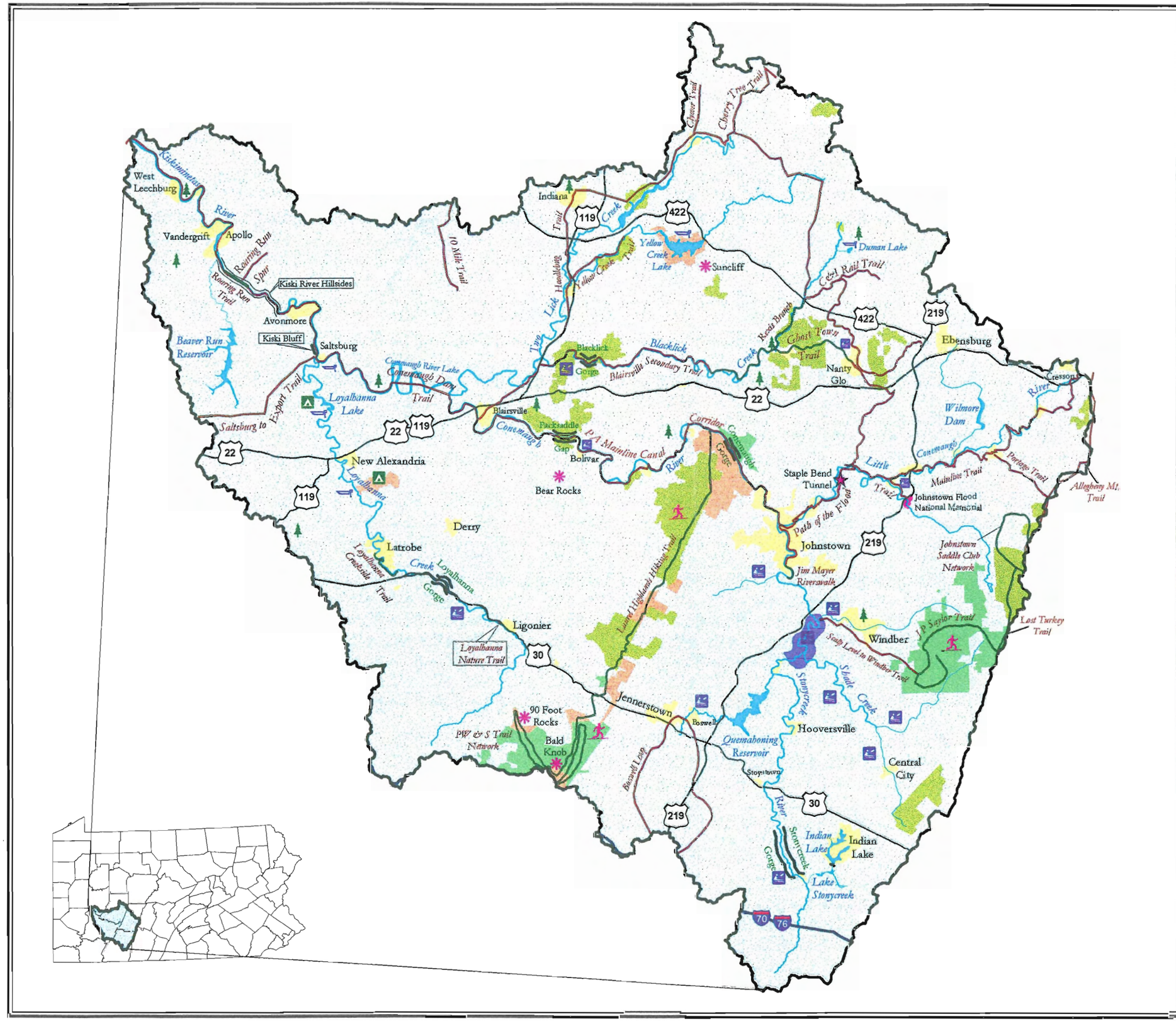
Armstrong County
- Leechburg Area Park

Cambria County
- Duman Lake Park

Westmoreland County
- Twin Lakes Park
- Northmoreland Park

Indiana County
- Eliza Furnace Historic Site
- Memorial Park
- Pine Ridge Park
- Tunnelview Historic Site
- Buttermilk Falls Natural Area
- Blacklick Valley Natural Area

Somerset County
- Windber Recreation Park



Major Recreation Areas

Kiski-Conemaugh River Basin

- Campsite
- Boat Access
- Cross Country Ski Area
- Whitewater Opportunity
- Unique Features
- Proposed Trail Routes
- Existing Trail Routes
- Major Streams
- Municipalities
- National Parks
- State Gamelands
- State Parks
- State Forests
- Stonycreek Canyon Whitewater Park
- County Parks
- Kiski-Conemaugh Basin Boundary

N

2 0 2 4 6 8 10 Miles

Map Number 14

Kiski-Conemaugh River Basin Alliance ~ Environmental Information Services - Windber, PA

In addition, Cambria and Somerset counties have recently agreed to purchase five reservoirs from Bethlehem Steel Corporation for use as public recreation areas. These reservoirs include Quemahoning Reservoir, Hickston Run Reservoir, Wilmore Dam, Border Dam, and South Fork Reservoir. Public meetings are being held to determine the extent of recreational use of these areas. Full utilization and public access is anticipated by January 31, 2000.

Somerset County is currently preparing a management plan for a proposed whitewater park on the Stonycreek River in Conemaugh Township. The park is located in the Stonycreek Canyon, extending from the Faustwell vicinity to Carpenter's Park. Plans include a put-in at Faustwell (a USFS grant has been obtained for a trailhead), a building to be used for environmental training and boating safety instruction, and a take-out at Carpenter's Park. A walking trail may also be located within the canyon.

The National Park Service manages two components of the National Park System in the basin. These are:

- *Allegheny Portage Railroad National Historic Site.* Portions of this 1,500-acre site are located within the basin, including the Staple Bend Tunnel unit. It offers a visitor center at the main unit, educational programs and exhibits, a picnic area, and hiking trails. Visitation at the site was 131,735 in 1990.

- *Johnstown Flood National Memorial.* This park contains about 165 acres that preserves the remains of the South Fork Dam and portions of the Lake Conemaugh bed. Facilities include a visitor center, educational programs and exhibits, a picnic area, and hiking trails. Visitation at the park was 116,534 in 1990.

The USACOE operates both Loyalhanna Dam and Lake and Conemaugh Dam and Lake as flood control facilities. Both properties offer boating, fishing and hunting opportunities, with these other characteristics:

- *Conemaugh River Lake.* Located in Westmoreland County, the total project area includes 8,954 acres, with a lake summer pool of 500 acres. The site had 298,000 visitations during 1989.

- *Loyalhanna Lake.* This lake is also in Westmoreland County. It includes 3,722 acres, has a summer pool of 400 acres, and allows unlimited power boating. The site had 507,500 visitations during 1989.

Trails, greenways and scenic corridors development have been given a high priority in the basin and many public and private efforts are underway to develop these facilities. Some of the most prominent include:

- *Laurel Highland Trail.* This is an existing 70-mile long trail, used by 80,000 people in 1992, and extending from Ohiopyle State Park along the Youghiogheny River to Seward along the Conemaugh River (National Park Service 1995).

- *The P.W. & S. Railroad Bike Trail.* This existing 34-mile bike trail has end points at Laurel Mountain and Linn Run State Parks.

- *Ghost Town Trail System.* This existing trail system on abandoned railroad rights-of-way covers 16 miles in the Blacklick Creek valley, extending from Dilltown to Nanty Glo. It is anticipated that the trail and linkages will be extended to connect Indiana and Ebensburg in the next 2-3 years. Components of the system include the Ghost Town Trail and Rexis Branch, Cambria and Indiana Trail, Hoodlebug Trail, Blairsville Secondary Trail, as well as other linkages.

- *Conemaugh Greenway.* The Conemaugh River Greenway Concept Plan was developed by the USACOE, the National Park Service, and in cooperation with local sponsors. The plan covers a proposal for a greenway corridor along the Conemaugh River between Johnstown and Saltsburg. A companion report, the Conemaugh River Scenic Corridor Master Plan, identifies 18 greenway components/resource facilities for development.

- *Kiski-Conemaugh River Greenway.* A Feasibility Study for the extension of the Conemaugh River Greenway in the Little Conemaugh River, Conemaugh River, and Kiskiminetas River corridors is currently in preparation. Specifically, this study will extend the Conemaugh River Greenway corridor to include the Little Conemaugh subbasin from Cresson to Johnstown and the Kiskiminetas subbasin from Saltsburg to Schenley. Trails within the corridor would be a component of the Pittsburgh to Harrisburg Pennsylvania Mainline Trail.

- *Mainline Trail/Path of the Flood Trail.* This proposed trail is to follow the Little Conemaugh River from St. Michael in Cambria County to the Johnstown Flood Museum in Johnstown.

- *Johnstown Heritage Development Plan.* This plan would include trails and pathways between heritage themes in the Johnstown area.

- *Johnstown Area Trails.* These plans developed by the Cambria County Transit Authority include the 1.2-mile long Jim Mayer Riverswalk and the 1.4-mile long James Wolfe Sculpture Trail along the Stonycreek in Johnstown. The Riverswalk will be transferred to the Cambria County Conservation and Recreation Authority.

- *Johnstown Saddle Club Network.* This existing and proposed system of trails for horseback riding is being developed east of Johnstown.

- *Roaring Run Trail.* This 2-mile long meandering trail along the Kiskiminetas River near the confluence of Roaring Run is located close to Apollo.

- *Lost Turkey Trail.* This trail extends about 16 miles from Blue Knob State Park to Gallitzin State Forest. Portions of the trail are located in the basin.

A detailed listing of trails over most of the Kiski-Conemaugh Basin is found in the report *Heritage Trails, a Strengthening of a Regional Community* (National Park Service 1995). The basin's trails offer opportunities for hiking and biking in scenic, often pristine areas, at other times in proximity to historic sites and areas of industrial, flooding and transportational heritage. Excellent opportunities for wildlife and wildflower viewing are often provided. At other locations, a quiet opportunity to observe the history of the area is afforded. Found in Appendix C, Table C-1is a synopsis of trail and greenway initiatives affecting the basin as listed in the *Heritage Trails* document (National Park Service 1995).

Whitewater opportunities abound in the basin. The Stonycreek River Canyon is among the most prominent of these areas. As noted previously, this area is being developed as a whitewater park by Somerset County. This area has been used in the past for Olympic kayak slalom trials. Other popular areas include:

- Stonycreek/Little Conemaugh Watershed – Ben's Creek, Paint Creek, Roaring Fork Creek, Shade Creek, Clear Shade Creek, Dark Shade Creek, Quemahoning Creek, Stonycreek River Gorge, South Fork Little Conemaugh, North Fork Little Conemaugh.
- Conemaugh River Watershed – Conemaugh River.
- Blacklick Creek Watershed – Blacklick Creek, North Branch Blacklick Creek, South Branch Blacklick Creek, Two Lick Creek.
- Loyalhanna Creek Watershed – Loyalhanna Creek.
- Kiskiminetas River Watershed – Kiskiminetas River.

B. ARCHAEOLOGICAL RESOURCES

Known prehistoric and historic archaeological sites in the basin are recorded at the Pennsylvania Bureau for Historic Preservation. These include sites determined following guidelines in History Code 37 PA.C.S. This code permits studies of "cultural history at an archaeological site by professionally accepted means of surveying, sampling, excavation or removal of archaeological specimens" following the guidelines. By and large, these sites are poorly documented in the basin.

Prehistoric sites (which occurred prior to European settlement) are found in all five basin counties. Since there has never been a comprehensive survey prepared for the basin, it is clear that only a small fraction of the basin's potential prehistoric sites are known.

Native Americans first entered the region about 11,000 years ago during recession years of the last ice age. The rivers were natural travel corridors through the imposing Allegheny Mountain ridges and quickly become travel routes for the Delaware and Shawnee tribes that used the Alleghenies as their hunting grounds. Arctic caribou, buffalo and other large species were the prevalent game. However, the Delaware were principally farmers and located on rich farmlands along the Stonycreek River and the downstream areas of the Kiski-Conemaugh Basin. Most of the mountain valleys lacked farming soils and the settlements here were temporary.

Historical archaeological sites are possible in conjunction with the older European settlements in the 18th and early 19th centuries. One of the earliest European visits to the basin was along the Little Conemaugh River in 1731 by James LeTort, a French trapper and Indian trader. He traded with the Delaware Indians at their village at what is now Johnstown. Later, the 1787 Treaty of Fort Stanwix opened the Allegheny wilderness to white settlement and Europeans filtered into the basin. Many were lumbermen, who made their living floating rafts of timber down-river to Pittsburgh. However, settlement of the region remained sparse until the exploitation of minerals, principally coal, began in about 1825.

Moving coal and other goods became easier in 1834 with the completion of the Pennsylvania Mainline Canal and Allegheny Portage Railroad. A total of 35 locks and four slackwater dams served the canal. The region quickly grew from frontier to an area of bustling towns and cities. Completion of the Pennsylvania Railroad in 1854 brought great prosperity to many of the communities along its length. Industrialization of the basin quickly followed, with iron and steel production the driving force.

C. HISTORIC RESOURCES

"To understand the Allegheny Region of Southwestern Pennsylvania, one must first get through it. Ridge after ridge, these mountains formed a formidable barrier to all who attempted their crossing ... whether ancient buffalo, American Indian, early explorer and settler, canal builder, railroad builder, highway builder ... on these pathways, people can look into the face of history."

Heritage Trails, Strengthening a Regional Community

"With its steeply-sloped, heavily forested hillsides, its rural farmsteads and small communities nestled in scenic valleys, and its urban industrial centers, the Allegheny Highlands is a diverse and fascinating (historic) region awaiting discovery."

America's Industrial Heritage Project

The legacy of the Kiski-Conemaugh Basin as a through-way to the west from the East Coast seaboard communities, its industrial heritage, and its historic events offer considerable historic resources for preservation and development. Many are already protected. A number of historic structure surveys have been prepared for portions of the basin. Many of these historic resources are in proximity or in some way related to the basin's rivers. As identified in Table B-13 in Appendix B, there are over 110 properties either on or eligible for listing on the National Register of Historic Places in the basin (PHMC 1993). These historic resources range from log cabins, covered bridges, railroad tunnels, locks of the old Pennsylvania Canal, and facilities for the Portage Railroad, to historic districts in many communities, the Johnstown Flood National Memorial, and steel and mining-related facilities.

Considerable private and governmental efforts have been expended (many overlapping), with the most prominent including:

- *Action Plan, America's Industrial Heritage Project.* This plan identifies resources, goals and strategies for preserving and protecting significant historic sites and resources in a

nine-county region covering almost all of the Kiski-Conemaugh Basin. Found in Appendix C, Table C-2, is a synopsis of the most important findings that affect the basin.

- *Pennsylvania Main Line Canal.* This Special Study by the National Park Service identifies historic canal, lock and towpath resources and provides a comprehensive study of their meaning and function. The Western Division begins at the Allegheny Front and extends westward for 74 miles down the Little Conemaugh, Conemaugh and Kiskiminetas Rivers to the Allegheny River.

- *Johnstown Heritage Development Plan.* The plan, prepared by the Johnstown Area Heritage Association, provides a blueprint for using the heritage and cultural resources of Johnstown as a basis for community-wide revitalization, on a historic theme.

- *Allegheny Ridge State Heritage Park.* Prepared by the Allegheny Ridge Corporation, these Special Purposes Studies incorporate historic resources and themes to preserve, interpret, develop, and use the historical and cultural resources of the Allegheny Ridge region in a comprehensive planning and development strategy. This heritage park extends from Johnstown to north of Altoona. Detailed plans for many facilities are included.

- *List of Structures and Sites Worthy of Notice and Interpretation for the Conemaugh Valley Greenway.* A listing of noteworthy and often potentially historic resources in the proposed greenway corridor from Johnstown to Saltsburg is reported in a research paper prepared by Mr. Bill Dzombak, Mr. Dale E. Rummel, and Mr. Tom Metzgar, interested and knowledgeable local citizens. (The listing is found in Appendix C, Table C-3).

- *The Ghost Town Trail.* Funded by the SPHPC, this study provides a detailed analysis of the 16-mile long Ghost Town Trail that can serve as a guide for future development. It includes protecting and preserving the historical significance of railroad, mining, iron making, and lumbering heritage of the Blacklick Creek Valley. Appendix C, Table C-4 contains a synopsis of historic resources identified in the plan.

- *Saltsburg Canal Site Concept Plan.* Prepared by the National Park Service (1989), the plan would use vegetation and other means to depict the Pennsylvania Canal and towpaths in the Saltsburg area. Plans include a heritage interpretation center.

Other basin planning efforts including the *Conemaugh River Scenic Corridor Special Report and Master Plan, Local Flood Protection Project, for the Johnstown Urban Greenway* (USACOE 1995), the *Conemaugh River Greenway Concept Plan* (NPS 1994), the *Heritage Trails* report, and the *Mainline Trail/Path of the Flood Trail Feasibility Study* (CCCRA no date) have a combined recreational and historic preservation goal.

SECTION VI

VI. ISSUES, CONCERNS AND CONSTRAINTS

The Kiski-Conemaugh Basin Alliance is a coalition of autonomous and equal organizations with the common goal of working together for conservation, preservation and selective development of basin river-related resources. While the Alliance serves as a coordinating body for common and basin-wide projects, for addressing localized issues and public concerns, the basin has been divided into five watersheds, each with a recommended management organization for advocating and implementing projects of local interest. The five organizations, ordered from the headwaters downstream, and their areas of concern include:

Watershed Interest Group	Area of Concern
SCRIP	Stonycreek/Little Conemaugh Rivers
Conemaugh Valley Conservancy	Conemaugh River Mainstem
Blacklick Creek Watershed Association	Blacklick Creek Watershed
Loyalhanna Watershed Association	Loyalhanna Creek Watershed
Roaring Run Watershed Association	Kiski River Mainstem

It is a recommendation of this plan that an organization be formed to focus on the Kiskiminetas River mainstem watershed. The Roaring Run Watershed Association has been identified as the recommended management organization for this area until this occurs.

A. INFORMATIONAL PUBLIC MEETINGS

To identify issues and concerns appropriate to the River Conservation Planning Process, the K-C Alliance and the watershed groups hosted two sets of seven meetings, one set during the summer of 1997 and one set during the summer of 1998. The minutes of the meetings are found in Appendix D. Following are issues that were raised during public input sessions or later by written comment, according to host watershed groups, and the responses in the plan.

1. SCRIP (Stonycreek and Little Conemaugh Rivers)

a. *AMD* - Mine drainage clean up is the number one priority (see Section VII, pg. VII-6; Appendix A, Table A-2, Water Resources & Biological Resources).

b. *Streambanks* - Streambank stabilization and revegetation is needed (see Section VII, pg. VII-2; Appendix A, Table A-2, Land Resources).

c. *Flooding* - Creek flooding is destroying a ball field that was funded by the state.

d. *Habitat* - Wildlife habitat creation is needed (see Section VII, pg. VII-12; Appendix A, Table A-2, Biological Resources).

e. *Schools* - School participation programs should be organized (see Section VII, pg. VII-17; Appendix A, Table A-2, Education).

f. *Wild and Scenic* - What is the possibility of designating the Stonycreek Gorge a Wild and Scenic River (see Section VII, pg. VII-13; Appendix A, Table A-2, Recreation Resources).

g. *Education* - An education center with associated wetlands should be considered at Flint Run or other area (see Section VII, pg. VII-18; Appendix A, Table A-2, Education).

h. *Landfill* - Concern was expressed about a deep mine located underneath a landfill that was recently permitted and may be harmful to residents who use springs as drinking water (see Section VII, pg. VII-4; Appendix A, Table A-2, Land Resources).

i. *Horse Trails* - Request made for preserving horseback riding trails as well as developing and maintaining new trails for horseback (see Section VII, pg. VII-13; Appendix A, Table A-2, Recreation Resources).

j. *Recreation* - Need to identify the existing recreation facilities, the needs, and benefits of recreation development (see Section VII, pgs. VII-13 and VII-19; Appendix A, Table A-2, Education; Recreation Resources).

k. *Access* - Put ins/take outs for streams will be needed as the streams become fishable and better for recreation activities (see Section VII, pg. VII-4; Appendix A, Table A-2, Land Resources).

2. Conemaugh Valley Conservancy (Conemaugh River Mainstem)

a. *AMD* - Clean up mine drainage in the watershed, particularly the Old Brenheiser Mine and Aultman Run in Jackson Township (see Section VII, pg. VII-7; Appendix A, Table A-3, Water Resources).

b. *Garbage Dumping* - A Rivers Keepers Program should be considered (see Section VII, pg. VII-3; Appendix A, Table A-3, Land Resources).

c. *Sewage* - Sewage entering the river should be addressed (see Section VII, pg. VII-9; Appendix A, Table A-3, Water Resources).

d. *Boating* - Boating access to Conemaugh Lake needs to be explored with the USACOE (see Section VII, pg. VII-4; Appendix A, Table A-3, Land Resources).

e. *Canals* - Preserve the remains of Canal Locks 27 and 28 (see Section VII, pg. VII-15; Appendix A, Table A-3, Historical/Archaeologic).

f. *Water Level* - The fluctuating level of Conemaugh Lake should be minimized (see Section VII, pg. VII-10; Appendix A, Table A-3, Water Resources).

g. *Timbering* - Create a list of reputable and environmentally aware timber operators for those wanting to harvest timber (see Section VII, pg. VII-5; Appendix A, Table A-3, Land Resources).

h. *Report* - How are issues in the report prioritized? Put implementation suggestions in the report (see Section VII, pg. VII-1, Timetable and Priorities).

3. Blacklick Creek Watershed Association

a. *AMD* - Address mine drainage in Blacklick Creek, Yellow Creek, and Two-Lick Creek. The area along Wehrum Road that connects US 22 with Vintondale was noted as a problem (see Section VII, pg. VII-7; Appendix A, Table A-4, Water Resources).

b. *Sediment* - Sediments are building up in Brush Creek (see Section VII, pg. VII-10; Appendix A, Table A-4, Water Resources).

c. *Flooding* - Flood prevention and recreational improvements are needed along Yellow and Two-Lick Creeks. Marsh Creek is a problem: maybe a county funded hydrologist is needed to help developers and prevent flooding (see Section VII, pg. VII-10; Appendix A, Table A-4, Water Resources).

d. *Sewage* - Sewage treatment improvements are needed for Vintondale (see Section VII, pg. VII-9; Appendix A, Table A-4, Water Resources).

e. *Greenways* - The Greenway corridor should be extended to include the Ghost Town Trail (see Section VII, pg. VII-15; Appendix A, Table A-4, Recreation Resources).

f. *Bike Trails* - Urban bike trails are needed (see Section VII, pg. VII-13; Appendix A, Table A-4, Recreation Resources).

g. *Canoeing* - Explore possible regulations to prevent canoe accidents during high water.

h. *Streambanks* - Need streambanks/erosion control projects (see Section VII, pg. VII-2; Appendix A, Table A-4, Land Resources).

i. *Economics* - Make known the importance of rivers to economic development (see Section VII, pg. VII-19; Appendix A, Table A-1, Education).

j. *Historical* - Yellow Creek has 1950s Coke Ovens, a woolen mill (circa 1930) and logging dams outside Bolivar. Protect historic sites (see Section VII, pg. VII-17; Appendix A, Table A-4, Historical/Archaeological).

k. *Aquifers* - Protect aquifers.

l. *Non-source* - Concerns were expressed for agricultural pollution (see Section VII, pg. VII-8; Appendix A, Table A-4, Water Resources).

m. *Homer City Trail* - Clean up the Homer City Trail and address flooding problems along the Trail.

4. Loyalhanna Watershed Association

a. *Stream Buffers* - Establish riparian buffer zones to control soil erosion (see Section VII, pg. VII-2; Appendix A, Table A-5, Land Resources).

b. *Streambanks* - Streambank stabilization is needed (see Section VII, pg. VII-2; Appendix A, Table A-4, Land Resources).

c. *Retention* - Stormwater retention is needed, including wetlands for retention (see Section VII, pg. VII-9; Appendix A, Table A-5, Water Resources).

d. *AMD* - Mine drainage problems need to be addressed (see Section VII, pg. VII-8; Appendix A, Table A-5, Water Resources).

e. *Water Quality* - Categorize water quality in basin (see Section VII, Water Resources, pg. VII-5).

f. *Land Acquisition/Preservation* - Protect areas critical to water quality and recreation (through zoning practices) (see Section VII, pg. VII-3; Appendix A, Table A-5, Land Resources).

g. *Watershed Education* - Need a water demonstration area near Ligonier High School.

h. *Forests* - Forest Management in headwaters is crucial to Loyalhanna Water Quality: explore assisting the PA Bureau of Forestry in developing their long-range plan (see Section VII, pg. VII-19; Appendix A, Table A-5, Education).

i. *Ground Water* - Monitor a local, crucial area to serve as a benchmark.

j. *Sewage/Nutrients* - Separate them in the plan, they are perceived and handled as separate issues (see Section VII, pg. VII-9; Appendix A, Table A-5, Water Resources).

k. *Non-point Sources* - Concerned about herbicides and pesticides from lawns, parks and golf courses (see Section VII, pg. VII-8; Appendix A, Table A-5, Water Resources).

l. *Sampling* - Establish water sampling guidelines; need to create a universal water study report (see Section VII, pg. VII-2; Appendix A, Table A-5, Land Resources).

5. Roaring Run Watershed Association (Kiskiminetas River Watershed)

a. *AMD* - Address mine drainage problems in basin (see Section VII, pg. VII-5; Appendix A, Table A-6, Water Resources).

b. *River Keeper* - Interest was expressed in a river keeper program and working with the ALLARM (Alliance for Aquatic Resources Monitoring) (see Section VII, pg. VII-3; Appendix A, Table A-6, Land Resources).

c. *Water Level* - Water levels are of great concern both for flood and low water conditions (see Section VII, pg. VII-10; Appendix A, Table A-6, Water Resources).

d. *Dumping* - A program to combat illegal dumping is needed (see Section VII, pg. VII-3; Appendix A, Table A-6, Land Resources).

e. *Access* - More river access is needed for boating (see Section VII, pg. VII-4; Appendix A, Table A-6, Land Resources).

f. *Trails* – A trail is desired to connect Apollo to Vandergrift to Leechburg (see Section VII, pg. VII-13; Appendix A, Table A-6, Recreation Resources).

g. *Trash* - Need trash cleanup along the rivers (see Section VII, pg. VII-3; Appendix A, Table A-6, Land Resources).

h. *Access* - There is a possible put-in location in Avonmore near the sewage treatment plant (see Section VII, pg. VII-4; Appendix A, Table A-6, Land Resources).

B. DRAFT PLAN REVIEW MEETINGS

Following completion of the Draft River Conservation Plan (February 1999), the K-C Alliance and the watershed groups hosted a set of six public meetings in the spring of 1999. These meetings were held to provide an overview of the Draft plan and to obtain comment on the document. The minutes of these meetings are contained in Appendix D. Following are substantive issues that were raised during these meetings and identification of how these were addressed in the Final River Conservation Plan.

1. SCRIP (Stonycreek and Little Conemaugh Rivers)

a. *AMD*

Comment: Cogeneration plants and bony piles should be identified.
Response: It was noted in the Final plan that an inventory of cogeneration plants and waste piles should be considered for inclusion in a future plan update (see Section VII, pg. VII-6).

b. *Hazardous Waste*

Comment: Fly ash should be identified for its beneficial use, but regulations prohibit use.
Response: Discussion of this issue was added (see Section VII, pg.VII-4).

c. *Biological Resources*

Comment: The issue of invasive species such as knotweed needs to be addressed.
Response: Information concerning non-native knotweed was provided by the National Park Service and was incorporated (see Section IV, pg. IV-3; Section VII, pg. VII-13; and Appendix C, Attachment G).

d. *Recreational Resources*

Comment: The current status of the sale of area dams to Somerset and Cambria Counties may need reported.
Response: Updated information was added (see Section V, pg. V-5).

e. *Historic Resources*

Comment: Cairnbrook is on the National Register but is not included.
Response: Cairnbrook was added (see Appendix B, Table B-13).

Comment: Southern Cambria Trolley line remnants exist in Brookdale.
Response: Information was noted.

f. *Miscellaneous*

Comment: Wording concerning SCRIP AMD projects needs to be revised.
Response: Wording was revised (see Section VII, pg. VII-6).

Comment: Environmental Information Services (EIS) may not be a proper management agent because of for-profit status.
Response: EIS was removed as a management agent (see Appendix A).

2. Conemaugh Valley Conservancy (Conemaugh River Mainstem)

a. *Viewsheds*

Comment: There is a viewshed of Packsaddle Gap at Alum Bank.
Response: Information was added (see Section I, pg. I-25).

b. *Hazardous Waste*

Comment: There was radioactive contamination between Torrance and Blairsville.
Response: Information was added (see Section II, pg. II-7).

3. Blacklick Creek Watershed Association

a. *AMD*

Comment: Are cogeneration projects included?
Response: Discussion of projects at Revloc and Nanty Glo are included (see Section II, pg. II-7). It was noted in the Final plan that an inventory of cogeneration plants and waste piles should be considered for inclusion in a future plan update (see Section VII, pg. VII-6).

Comment: Specific areas and implementation projects are left out.
Response: It was noted in the Final plan that a comprehensive compilation of AMD remediation projects should be compiled in a future plan update (see Section VII, pg. VII-6).

b. *Non-Point Source Pollution*

Comment: In the Action Plan, delete reference to the Non-Point Source Pollution in the Stonycreek and Little Conemaugh Watersheds study and change priority level to 2.
Response: The Action Plan was clarified to show that the study is noted for reference purposes. Priority was changed to 2 (see Appendix A, Table A-4, Non-Point Source Pollution).

c. *Trails*

Comment: The Indiana – Homer City Trail should be referred to as the Hoodlebug Trail, remove reference to flooding problems, and revise timetable.
Response: Name of the trail was revised where appropriate. The trail was removed as a specific entry in the action plan because there is no need to address flooding problems. The trail is still

included in the plan as a component of the Ghost Town Trail System.

d. *Education*

Comment: Public education on chemical dumping needs to be addressed.
Response: Information on education concerning household hazardous waste was added to the Final plan (see Section VII, pg. VII-18; Appendix A, Table A-1, Education).

Comment: A more comprehensive, professional website is needed for the basin.
Response: The plan recommends the expansion of the K-C Alliance website to provide tourism and education information (see Section VII, pg. VII-18; Appendix A, Table A-1, Tourism/Marketing).

Comment: The Blacklick Creek Watershed Association's section of the Action Plan for Education should include newsletters but not press releases.
Response: Press releases were removed from the Action Plan (see Appendix A, Table A-4, Education).

e. *Miscellaneous*

Comment: The perception of the Blacklick Creek Watershed Association seems negative through various wording and needs changed.
Response: Wording was changed at various locations in the Final plan.

Comment: EIS is not a proper management agent because of for-profit status.
Response: EIS was removed as a management agent (see Appendix A).

4. Loyalhanna Watershed Association

a. *Sewage*

Comment: It was noted that the Darrlington area's sewage problem is not the only major one that needs to be addressed. Individual sewage plans are not coordinated with local groups. Major problem areas need to be identified for the watersheds and a comprehensive plan needs to be developed for the basin.
Response: A recommendation was added to the Final plan that a detailed survey of problem areas be prepared for inclusion in a future plan update (see Section VII, pg. VII-9, Appendix A, Table A-1, Basin-Wide Sewage Evaluation).

b. *Action Plan*

Comment: The DEP needs to be identified as a management agent for non-point source pollution. RAMP needs to be taken out, Public Law 566 needs to be identified as a management agent for AMD, and PA Cleanways and PA Greenways should be added where appropriate.

Response: RAMP may be funded in the future and therefore was not removed. Public Law 566 grants authority for assistance and funding. The NRCS, which administers PL 566 funds, has been included as a funding agent. The NRCS may also provide technical assistance to management agents. Other changes were made as suggested (see Appendix A).

Comment: Replace ISTEA with TEA-21.

Response: Replaced where appropriate (see Appendix A).

5. Roaring Run Watershed Association (Kiskiminetas River Watershed)

a. *Natural Resources*

Comment: There is a Buttermilk Falls along Gravel Bar Creek that could fit in the Greenway Study.

Response: Noted in the Public Meeting minutes for use by the Greenway Study.

b. *Historic Resources*

Comment: Scalp Level area of Somerset County could be promoted as an historic site.

Response: Information added to the Final plan (see Appendix A, Table A-2, Basin-Wide Historic Sites).

Comment: Biddle Iron Furnace is worthy of protection.

Response: Noted.

c. *Hazardous Waste*

Comment: Could the PA Cleanways program be considered a management agent for tire dumps?

Response: PA Cleanways was added as a management agent (see Appendix A, Table A-1, Basin-Wide Hazardous Waste Program).

d. *Trails*

Comment: The West Penn Trolley trace should be investigated as a possible trail.

Response: Added to the Final plan (see Appendix A, Table A-6, Trail Development).

SECTION VII

VII. ACTION PLAN

A. MISSION STATEMENT

Section VII is a recommended plan of action based on available resources, their problems and potential, and the interest shown by local groups in the basin. The intent is to restore, maintain and enhance basin resources. Particular emphasis has been placed on programs for which a local group can reasonably be expected to act as the local sponsor. The member organizations of the K-C Alliance will ultimately determine the appropriate management entity, priority, and timeframe for recommended actions.

B. ORGANIZATION

The Action Plan is comprised of several separate parts, including:

- Section VII includes a summary statement, by resource category, of the actions and management options identified as either basin-wide actions, or according to a particular watershed that is a sub component of the Kiski-Conemaugh Basin;
- A summary table for each watershed (and management group) is included in Appendix A, with recommended action, priority, potential management options and responsibilities, timetable, and funding options identified; and
- Synopses of related studies, usually with recommended actions, are found in Appendix C and are incorporated into this plan, by reference. Appendix F contains further information on potential funding sources.

The Southern Alleghenies Conservancy (SAC) acts as the 501-C-3 entity and facilitator for SCRIP. Therefore, references in the action plan to SCRIP or "watershed groups" includes SAC by reference.

C. TIMETABLE AND PRIORITIES

This is a ten year plan, with actions generally identified for the following time periods:

- Actions from the conception of the plan in July 1999, through the year 2000;
- Actions expected to take place from 2001 through 2003; and
- Actions expected to take place from 2004 through 2009.

The basin's most critical water-related problem, identified by general consensus at public meetings, is mine drainage. The resolution of large mine drainage discharges is crucial to providing a healthy riparian environment in the basin.

Other problems and resource development opportunities reported as high priorities include the following.

- Sewage inflow into basin streams from combination sewers, untreated sewage, and poorly functioning on-lot and municipal systems;
- Steep slope protection to prevent stormwater and erosion problems;
- Stream buffer protection, to reduce nutrient, sediment and temperature pollution;
- Development and protection of historical resources, in combination with connecting streamside bikeway and pathway linkages;
- Protection of critical resources and critical areas including the Conemaugh Gorge, Packsaddle Gap, Loyalhanna Gorge, Blacklick Creek Gorge, Stonycreek River Gorge and Canyon, and Kiskiminetas River hillsides; and
- Garbage and trash thrown on streambanks, and the development of a River Keepers' Program to maintain streambanks and water quality.

These and many other water-related problems and opportunities are addressed in this plan. Priorities have generally been set, based on pubic input and the need to provide clean water in the basin. The suggested priorities have been established recognizing there are limited financial and man-power resources available to execute the plan, and that some type of ordering is required. Legal and financial requirements and opportunities, as well as participants available to implement the plan, can be expected to change over time. These changes could modify priorities.

D. ACTION PLAN AND MANAGEMENT OPTIONS

1. Land Resources

Basin-Wide Vegetative Stream Buffering. Buffering with vegetative filter strips is critical for protecting the basin's streams from sediments, nutrients, and temperature pollution: it is a first line of defense to protect watercourses. All streams in the basin shown on USGS Quadrangle maps should be candidates for protection with a stream buffering program as defined in the *Chesapeake Bay Riparian Handbook* (USDA 1997). This includes four land-use control units including forested, agricultural, suburban/developing, and urban landscapes; using the 95-feet deep, three-zone concept (see a summary of this concept in Appendix C, Table C-5).

The appropriate members of the K-C Alliance should coordinate this program through regional (Southwestern Pennsylvania Commission and Southern Alleghenies Planning and Development Commission) and county planning agencies in order to adapt regional plans to this concept. Appropriate controls should be placed in county and local subdivision regulations. Memorandums of Agreement should be entered into with county conservation districts who will carry out a voluntary program affecting agricultural and forested lands, using farm conservation plans and public education as their instruments. Efforts during the first two years include preparing

the program using excerpts from the Chesapeake Bay program, with implementation the following eight years of the program.

Greenway protection can provide valuable vegetative stream buffering. For example, one of the goals of the Kiski-Conemaugh Greenway is to protect corridor vegetation. Stream buffer protection and greenway planning should be coordinated as appropriate.

Basin-Wide River Keepers Program. Concern has been expressed across the basin for maintaining streams and streambanks free of trash and otherwise beautifying basin watercourses, as well as monitoring water quality. To accomplish this, develop a River Keepers Program, similar to the state "Adopt a Highway Program," using volunteers, perhaps drawing upon hunting and fishing clubs, biking and other recreation groups, boy scout and girl scout troops, and Elks, Moose, and other civic organizations. Since September 1993, the SCRIP area has had a River Keepers program. Volunteers monitor water quality, provide a survey and written report four times a year on conditions of selected stream segments. This is reported to the local county conservation district, which can follow up with examinations and water samples. A program is also in operation in the CVC area. Several other water quality monitoring programs have recently been initiated in the basin. The Alliance for Aquatic Resource Monitoring (ALLARM) has begun a monitoring program in the Kiskiminetas, Conemaugh and Stonycreek/Little Conemaugh River watersheds. The Kiski-Conemaugh Stream Team is sampling water quality at over 80 sites in the basin. The Environmental Alliance for Senior Involvement (EASI) is conducting sampling in the Blacklick Creek Watershed.

These programs should be used as models for the basin where programs are not in existence. Overall coordination for the program should be provided by the appropriate member organizations of the K-C Alliance. Each watershed association should review streambank conditions and water quality issues and problems within their management area, determine needs, and develop a program to address these needs. The goal of this process should be the most effective and strategic use of available resources. Plans should be reviewed and updated periodically to respond to changing needs and conditions. Expert advice should be sought as necessary from the DEP or other authorities. The program should have plaques and other recognition symbols that can be placed at streamside public areas, identifying the efforts of the Rivers Keepers for that section of watercourse. The program should be organized in the first year of the plan, with implementation to follow immediately. Information collected through this program should be placed on the K-C Alliance website.

Basin-Wide Land Use Planning. The basin is desperately in need of land-use planning for critical areas including steep slopes, floodplains and wetlands for erosion, stormwater and flood control. This is one of the Nation's worst flood locations. The basin is essentially rural, and land-use plans are typical for such an area; less than 40 percent of the basin's municipalities have zoning and subdivision controls, and less have comprehensive planning. While urbanized municipalities usually have land-use plans and full-time staffs, rural municipal governments are often part-time and poorly funded.

The appropriate member organizations of the K-C Alliance should operate through the five county planning commissions and the municipalities having land-use plans to implement the program. A request by the K-C Alliance members should be made to the Cambria County Planning Commission (representing the county in which flooding is most critical) to formulate the wording

for uniform instruments for inclusion in both county subdivision ordinances, and in municipal zoning and subdivision ordinances. Development on slopes 25 percent or greater should be either curtailed or limited to 10-acre plots. GIS-generated maps should be provided for county and local municipal use showing critical areas. Map 12 indicates areas of the basin that are 25 percent slope or greater. Otherwise, the appropriate member organizations of the K-C Alliance, operating through the county planning commissions, should encourage rural communities that are experiencing growth to enact land-use plans containing critical-area protection.

An inventory of brownfield sites for consideration in future land use planning as well as hazardous waste management is needed. This is recommended for inclusion in a future River Conservation Plan Update.

Basin-Wide Roads/River Access. For this River Conservation Plan, the K-C Alliance has developed a GIS-generated road network map of the basin. The appropriate entity within the K-C Alliance within the next two years should determine the conditions of roads in close proximity to basin waterways and the availability of public access to waterways from roads, using the resources of the watershed groups. Each watershed group, using Trout Unlimited and hiking/biking groups, should plan for, and then begin a program of providing public access to usable streams and streamside corridors, based on the established need. In addition, areas where roads may have an adverse effect upon streams through inadequate stormwater controls, encroachment upon streams and riparian corridors, and introduction of sediments and contaminants should be assessed. These areas should then be brought to the attention of the DEP and the responsible transportation agency. Additional detail is provided in the plans for each watershed in Appendix A. Funding may be available, among other sources, from the Appalachian Regional Commission (ARC) or the Transportation Equity Act for the 21st Century (TEA-21).

Basin-Wide Hazardous Waste Program. Through the expansion of the River Keepers Program, the members of the K-C Alliance can monitor runoff from landfills and NPDES discharges to verify that water quality is maintained within permit limits and that adverse effects are not occurring to receiving streams. Any problems should be brought to the immediate attention of the DEP. The members of the K-C Alliance should also monitor proposals for new or expanded storage and disposal facilities and provide information to the DEP and county and local governments to assist in the siting of facilities in environmentally and socially acceptable locations.

Fly ash produced from coal combustion processes has a number of potential beneficial uses. However, current regulations often limit or prohibit uses. Public comment on this plan suggested that further investigation of this issue is needed. Initiatives such as the Cambria County Conservation District's Project Grass might be able to utilize fly ash if regulations were revised to permit its use.

Basin-Wide Viewshed Protection Program. Many scenic viewsheds are associated with streams in the basin. Foremost among these are the Conemaugh Gorge, Loyalhanna Gorge, Packsaddle Gap, Blacklick Creek Gorge, Stonycreek River Gorge and Canyon, and Kiski River hillsides (particularly between Salina and Apollo). Actions are warranted to ensure that the scenic qualities of these and other viewsheds are maintained. These efforts should include an inventory of significant scenic viewsheds and identification of potential threats to the qualities presented by these areas. This information should then be made available to county and local planners so that they are

given adequate consideration in planning efforts, such as the development of land use plans and review of permit applications.

The Conemaugh Gorge and Packsaddle Gap are included in the Kiski-Conemaugh Greenway Study as priority areas for protection, not only as significant viewsheds, but also as significant natural habitats that need to be protected.

Basin-Wide Sustainable Forestry Initiative. Improper timbering practices have been identified as a substantial source of sedimentation in portions of the basin. The Sustainable Forestry Initiative of Pennsylvania has instituted a certification program for forestry professionals to promote the use of environmentally responsible logging practices on private lands (Training Level 2). The Westmoreland County Conservation District has sponsored training workshops to qualify local timber operators for certification in this program. The other county conservation districts in the basin should be encouraged to partner with Westmoreland County or sponsor training programs in their own areas. A landowner information program is needed to encourage the use of certified timber operators and to educate landowners about sustainable forestry and forest stewardship.

Basin-Wide Green Golf Courses Initiative. Golf courses are potentially substantial contributors to nutrient and chemical runoff loads. Audubon International has developed the Audubon Cooperative Sanctuary Program for Golf Courses Certification Program to promote environmentally friendly management of golf course facilities. Basin golf courses should be encouraged to participate in this certification program and to practice responsible land management. It is recommended that participating facilities adhere to the guidelines of the program, and that regular reviews be conducted to verify compliance.

2. Water Resources

Basin-Wide Watershed Characterization Model. Overall, mine drainage is the single most damaging problem to basin watercourses. This problem must be addressed as the highest priority in most, if not all, watersheds of the basin. As a part of this effort, and in cooperation with West Virginia University, Spatial Analytics and Environmental Information Services, the K-C Alliance has developed a GIS watershed characterization model that incorporates a mine drainage abatement cost component for the basin. This comprehensive model provides identification of mine drainage problems, prioritization of problem areas, and the remediation cost for each sub-watershed in the basin. The socioeconomic and environmental effects of remediation efforts are also considered. This will allow a comprehensive perspective for state and federal agencies that may supply monies for remediation of the mining problems as to the overall effect of their expenditures.

The K-C Alliance basin model identifies the cost of mine drainage remediation by stream reach, by watershed, and by overall basin. Three passive treatment options are anticipated for effective, low-cost, low-maintenance remediation of mine drainage problems. Their use depends on flow, pH, iron types and concentrations, other mineral concentrations, and available land.

Attachments D and E in Appendix C contain further information on several types of AMD remediation or control methods. These include passive treatment methods and deep mine sealing.

Basin-Wide Mine Drainage Re-evaluation. The *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA 1972) identified mine drainage problems in the basin in the year 1972. Considerable mine drainage abatement has occurred since that time. Recently, the Stonycreek/Little Conemaugh Rivers area has been analyzed in comprehensive mine studies, updating and expanding on the 1972 EPA study. Most of the remaining portions of the basin require a similar study to define and prioritize remaining mine drainage problems. The GIS watershed characterization model prepared by the K-C Alliance identifies and prioritizes those areas of the basin with AMD problems. These areas can be researched in detail, if necessary. This effort can be conducted in phases, if necessary, to facilitate rapid progress. Initial phases should focus upon the highest priority areas and areas where the greatest benefits can be achieved. The development of cogeneration projects should be encouraged where appropriate to alleviate problems. This should be undertaken in the first two years of this plan, using USGS, federal EPA or state DEP monies. Management of the study should be handled by the appropriate entities within the K-C Alliance.

A comprehensive compilation of AMD remediation projects that have been completed by federal and state agencies, industry, and private and non-profit organizations would be a useful tool for basin planning. Discussion of existing and potential cogeneration projects and fuel sources would also be valuable. It is recommended that this information be compiled for a future Rivers Conservation Plan update.

The DEP Bureau of Abandoned Mine Reclamation requires a rehabilitation plan as part of the decision-making process for awarding of funds from the Surface Mining Conservation and Reclamation Fund. To be considered for funding, a site must be located in a watershed or geographic area with an approved rehabilitation plan, and for AMD projects funded under the Ten Percent Set Aside Program, an approved Hydrologic Unit Plan. Required elements of a rehabilitation plan are discussed further in Attachment F in Appendix C. The information developed in the basin-wide mine drainage re-evaluation will be vital in preparing rehabilitation plans to fund projects, and should be prepared to comply with DEP requirements.

Mine Drainage – Stonycreek/Little Conemaugh Rivers. The Stonycreek River area has been analyzed in a comprehensive study called *Effects of Coal-Mine Discharges on the Quality of the Stonycreek River and its Tributaries, Somerset and Cambria Counties, Pennsylvania*. Prepared by the USGS in 1996, the study lists 270 discharges ranging from 0.1 gallons-per-minute (gal/min), to 3,750 gal/min. A total of 12 locations have a discharge of over 1,000 gal/min. These include six in the vicinity of Central City, three near Stoystown, one near Windber and two near Hooverville. While size of flow is not the only criteria for improving water quality, these discharges seem to present the greatest impact to streams and need to be addressed. A similar investigation was conducted for the Little Conemaugh River Watershed (Barbin 1995) which also identified remediation projects.

The SCRIP group has already begun planning or implementation on three individual projects on the Little Conemaugh River and a complex of projects on Stonycreek River. The Little Conemaugh projects include the Hughes Borehole, Topper Run, and Sulphur Run. The Stonycreek River projects include six sites on Over Run and a site on Quemahoning Creek. Efforts are also underway on restoration in the Shade Creek Area. These projects should be given the highest priority, with other major discharges to follow. Requests for remediation funding from the

USACOE, the DEP, and other funding sources should be made, with efforts continuing the remaining years of the plan.

Mine Drainage - Conemaugh River Watershed. The *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA 1972) indicated that 36 discharges and 1,700 acres of surface mined area had caused the entire 51-mile length of the Conemaugh River to be severely polluted. Discharges ranged from one to 1,710 gallons per minute, with six principle discharges constituting 87 percent of the watershed's total net acid loading. A number of discharges and most surface-mined areas have been addressed in the years since that study. A comprehensive re-evaluation of mine drainage discharges throughout the Conemaugh River mainstem should be undertaken (as part of a basin-wide study) in the first two years of this plan, prioritizing remaining mine-discharge problems in the watershed. Planning and programming for abatement of the highest priority problems should be carried out in the next three years, with construction in the final five years of the plan. If funding opportunities present themselves in the interim, the six priority discharges should be addressed immediately.

Mine Drainage - Blacklick Creek Watershed. The *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA 1972) indicated that 335 discharges and over 1,675 acres of surface mined area were affecting the Blacklick Watershed, with about 309,718 lb/day of acid loading. Eighteen major discharges constituted 46 percent of the net acid loading in Blacklick Creek, while 12 sites contributed 80 percent of the Two Lick Creek acid loading. A number of discharges and most surface-mined areas have been addressed in the years since that study. Priority areas for AMD remediation include the upper Blacklick Creek drainage, lower Yellow Creek area, and upper Two Lick Creek area. The Blacklick Creek Watershed Association (BCWA) has made great strides in the remediation of AMD in the watershed. The watershed association is continuing to develop the ongoing Yellow Creek restoration project. A comprehensive stream restoration plan is being prepared for the South Branch Blacklick Creek. This effort is spearheaded by the BCWA, with the assistance of the DEP, Cambria County Conservation and Recreation Authority (CCCRA), the Cambria County Conservation District (CCCD), and other interested parties. The Upper Two Lick Creek area has also been identified as an appropriate high priority starting point for AMD remediation. The BCWA has received funding for remediation of a discharge on Two Lick Creek near Clymer. A comprehensive re-evaluation of mine drainage discharges throughout the remainder of the Blacklick Watershed should be undertaken (as part of a basin-wide study) in the first two years of this plan, prioritizing remaining mine-discharge problems in the watershed. Programming and planning for abatement of the highest priority problems should be carried out in the next three years, with construction in the final five years of the plan.

Planning efforts are underway through the USACOE to neutralize mine drainage from the Webster Mine Discharge: funding is expected from both federal and local sources. This is the highest priority project in the watershed, along with the effort to have the owners remove the Loraine and Bethlehem Mines 31 dumps adjacent to the Webster Discharge. Planning and implementation efforts are also underway for the AMD&Art Project, which will remediate mine drainage at Vintondale. AMD&Art will begin construction of its Vintondale Remediation Park along the Ghost Town Trail in the summer of 1999. This park will include remediation of a 200 gallon-per-minute discharge, community recreation, and habitat restoration. These issues are addressed in the Comprehensive Mine Drainage Abatement Plan prepared for the South Branch Blacklick Creek Watershed by the BCWA and DEP.

Mine Drainage - Loyalhanna Creek Watershed. The *Loyalhanna Lake Water Quality Report* (USACOE 1982) indicated that 52 discharges contributing an acid load of 65,407 lbs/day affected the creek, mostly below the community of Latrobe. Approximately 75 percent of the acid load was contributed by three underground mine effluents: the Crabtree Mine (19,572 lbs/day), Saxman Mine (12,389 lbs/day) and Monk Mine (17,860 lbs/day). The latter discharges into Monastery Run where a remediation project is underway by the DCNR, in cooperation with the Loyalhanna Creek Mine Drainage Coalition (LCMDC). Planning has been completed and agreements have been signed. The project will restore aquatic habitat in 0.8 miles of Monastery Run, in 1.1 miles of Fourmile Run, and in 19.3 miles of Loyalhanna Creek. This is the highest priority project in the watershed. The LCMDC has also set the goal of resolving the Crabtree, Saxman, Keystone, Unity, Freidline Mine and Adelphoi Village Site discharges, which should be given a second priority listing.

A comprehensive re-evaluation of mine drainage discharges throughout Loyalhanna Creek should be undertaken (as part of a basin-wide study) in the first two years of this plan, prioritizing remaining mine-discharge problems in the watershed and their abatement affects. Programming and planning for abatement of the highest priority problems remaining should be carried out in the next three years, with construction in the final five years of the plan. If funding opportunities present themselves in the interim, the Crabtree and Saxman Mine discharges should be addressed as soon as possible.

Mine Drainage - Kiskiminetas River Watershed. The *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA 1972) indicated that 89 discharges contributing an acid load of 57,880 lbs/day affected the main stem of the river. Seventeen principal discharges are located here, constituting 81 percent of the acid load. A number of discharges and most surface-mined areas have been abated in the years since that study. Of the remaining, the Trucks Discharge near Apollo is reported to be one of the worst and should be given high priority for remediation. A comprehensive re-evaluation of mine drainage discharges throughout the Kiskiminetas Watershed should be undertaken (as part of a basin-wide study) in the first two years of this plan, prioritizing remaining mine-discharge problems in the watershed. Programming and planning for abatement of the highest priority problems should be carried out in the next three years, with construction in the final five years of the plan.

Basin Non-Point Source Pollution Control. Non-point source pollution, primarily agricultural pollution, has been found to be a problem in the Little Conemaugh/Stonycreek Watershed, as identified in the report, *Assessment of Non-Point Source Pollution in the Stonycreek and Little Conemaugh Watersheds* (CCCD 1994). No doubt this is true throughout the basin. Develop a demonstration project in the SCRIP area, according to the recommendations in the above report. Employ a full-time technician in the first two years of the program to be housed in one of the local conservation district offices. This position is to coordinate the technical assistance available through the USDA Natural Resources Conservation Service (NRCS), the Bureau of Land and Water Conservation, and the Conservation District staffs of Cambria and Somerset Counties to develop the best approach to solving the identified agricultural pollution problems on several local farms.

In the following three years of the program, extend the program throughout the SCRIP area and study the feasibility of extending the program throughout the basin. In the final five years of the program, extend the program basin-wide, or at least into basin high water-quality watersheds. An educational effort is needed to identify to farmers the benefits of Best Management Practices (BMPs).

Basin-Wide Stormwater Control. A comprehensive stormwater management plan is needed for the basin within the next five years, generated through the USACOE and the DEP. Owing to the topographic characteristic of the area, flood convergence has proven, at times, to be catastrophic. New growth must not be allowed to increase flood potential. While the basin is not currently exhibiting strong growth for which controls would be required, this is likely to change in the 21st Century. The basin should prepare for this change.

Sewage - Basin-Wide by Individual Watersheds. Both malfunctioning on-lot septic systems and inadequate municipal sewage treatment systems are affecting the water quality of basin streams. A comprehensive evaluation of basin sewage effluent problems is needed to identify communities where municipal systems are lacking, where municipal system treatment is inadequate, and concentrated areas where surfacing septic tanks are substantially affecting adjacent streams. (While not as critical as mine drainage, sewage pollution is a matter of considerable local concern in many areas.)

It is the responsibility of the DEP to enforce the edicts of Act 537, the Comprehensive Sewage Facilities Act. Currently available published DEP information is now 20 years old and outdated. A more detailed survey of problem areas and service areas by PennVest or DEP is recommended for inclusion in a future Rivers Conservation Plan update, if necessary. The watershed groups should contact the DEP within the next several years as a follow-up to determine if the DEP has compiled any current data on sewage problems and projects throughout the basin. Subsequently, the watershed groups should document problem areas with photographs and mapping, and turn this information over to the DEP for appropriate action. This action could include enforcement against individual on-lot system violators, or causing municipalities to upgrade or institute new sewage facilities. For the latter two situations, the watershed groups should act to expedite funding for system improvements by providing letters of support to funding agencies and by contacting local politicians who could aid the funding effort.

The following sewage problems were reported during the public awareness program for this plan:

- *Stonycreek/Little Conemaugh Rivers Watershed.* "The Jennerstown system is malfunctioning"; and "Sewage problems in Stonycreek need to be addressed" (locations undetermined).

- *Conemaugh River Mainstem.* "Sewage is entering the river, locations need to be identified". The Brownheiser area was noted as a potential problem.

- *Blacklick Creek Watershed.* The North Branch of Two Lick Creek was noted as a potential problem area. The Nanty Glo sewage treatment plant has experienced problems in meeting discharge criteria. The Blacklick Valley Sewerage Project will address

problems in Vintondale and Blacklick Township. Designs have been prepared for a new treatment plant but have not yet been implemented. Malfunctioning on-lot systems continue to be a problem.

- *Loyalhanna Creek Watershed.* "Combined sewers in Darrlington are causing water pollution."

- *Kiskiminetas River Mainstem.* None reported.

Flood Problem Identification (Impoundments, Flood Prevention, and Flood Control Facilities). A number of watershed concerns fall under this category including the operation of flood control facilities in the basin, sediment removal for flood control, and requests for structural flood control facilities at specific locations. These generally require actions by either the USACOE or the DEP (using P.L. 566 Small Watershed Funding). A comprehensive evaluation of basin problems is needed to prioritize and document problems. This action should be carried out by each watershed group and reported to the appropriate agency.

The following problems were reported during the public awareness program for this plan:

- *Stonycreek/Little Conemaugh Rivers Watershed.* Islands in Stonycreek River cause flooding in Riverside and Ferndale. This issue should be investigated.

- *Conemaugh River Mainstem.* The Conemaugh Dam level should be better stabilized for added recreational uses in the lake and downstream on the Conemaugh and Kiski Rivers.

- *Blacklick Creek Watershed.* Flood prevention needs to be addressed along Yellow Creek (upstream of SR 422) and Two-Lick Creek (in Clymer Borough); sediment removal is needed in Brush Creek; flood control channelization and levee/retaining wall construction on South Branch Blacklick Creek and Davis Run is expected to occur in 1999 in Nanty Glo.

- *Loyalhanna Creek Watershed.* Appropriate actions need to be taken to alleviate flooding problems. Reported problem areas include Mill Creek and Loyalhanna Creek near the end of Avenue A in Latrobe, the First Ward in Latrobe to Kingston, and in Unity Township.

- *Kiskiminetas River Mainstem.* The water level in the Kiskiminetas needs to be better stabilized, using upstream flood control facilities.

The appropriate organization within the K-C Alliance should develop information and documentation sufficient to clearly identify the flooding and sediment problems that either the USACOE or the DEP can address. It is recommended that these problems be evaluated on a watershed basis, rather than by individual municipalities. This will permit a comprehensive solution to problems and allow for prioritization of projects. This will require working with local municipalities to identify problems and solutions. The environmental impacts of flood control facilities should be thoroughly considered. Alternative solutions such as implementation of suitable land use planning and wetland conservation should be pursued where appropriate. Formal requests

by local sponsors (the individual municipalities) will need to be presented, with support letters from the appropriate watershed association.

3. Biological Resources

Basin-Wide Alkalinity Program. In some areas with appropriate conditions, basin streams could show appreciable improvement if limestone was introduced for neutralization of acid flows originating from acid rain or mine drainage. This is particularly true for headwaters trout streams affected by acid rain. The process includes annual dosages of limestone sand added into receiving streams. This is done by placing the limestone in locations that will allow high waters to distribute the material downstream throughout the streambed, where it will be dissolved. The amount for limestone placed in the source location is determined by the amount of neutralization (pH and volume of water) required annually. The purpose is to buffer the stream's water and increase its alkalinity. Annual dosages may need to be administered over several months. This program might be carried out in high value watersheds, where appropriate. Periodic water quality monitoring should follow.

The county conservation districts and the appropriate watershed groups should, based on the ability to achieve funding, carry out a planning program identifying streams and receiving watercourses that could benefit from a limestone alkalinity program. This should be done in the first five years of the plan, with implementation to follow in the last five years.

Basin-Wide Limestone Construction. Many of the basin's streams are acidic owing to the impact of acid mine drainage, the lack of natural buffering, and acid rain. The natural environment, including natural trout reproduction, has been negatively affected, and often decimated. A basin-wide program to use limestone in all water-related applications should be undertaken, where appropriate. This would include flow management devices, gabion construction, rip-rap, and flood control construction. The counties and municipalities, as well as the appropriate watershed groups should begin a public awareness program aimed at municipal officials, developers, and the public. Efforts should be made to revise county and municipal subdivision ordinances to include wording to include a maximum of limestone construction in water-flow areas, where appropriate.

Basin-Wide Water Quality/Biologic Monitoring. A comprehensive water sampling program should be organized and carried out using basin high school students, River Keepers, AmeriCorps, EASI, scout groups, teachers, and other interested persons and groups. The locations and standards for the sampling program should be determined by an educational committee including the K-C Alliance Stream Team, members of local watershed groups, representatives of Project B.U.G.S. (Biological Understanding Generates Sustainability) and basin teachers. The standardized program in each watershed should be presented to basin high schools by the appropriate watershed group, who will also monitor and otherwise aid the program. The results of monitoring programs should be made available on the K-C Alliance's website.

Basin-Wide Fishery Management Program. Implementation of water quality improvement projects will restore substantial areas of stream and lake habitats which do not presently support fishery resources. As stream improvements occur, coordination will be necessary between the PFBC, the watershed groups, local sportsmens groups, and Trout Unlimited chapters to ensure that appropriate fishery restoration efforts occur. These efforts may include the development of fishery

management plans for individual streams or watersheds, stocking programs implemented by PFBC or cooperative nurseries, implementation of habitat improvement projects, and providing official and environmentally sound access points. The member organizations of the K-C Alliance can work with the PFBC to serve as a central coordinating body to make other organizations aware of opportunities as they arise.

A number of important fishery resources presently exist within the basin. The watershed groups should work with the PFBC and sportsmen's associations to make county and local governments aware of these resources to ensure that they are considered in planning efforts. An educational program can also be developed for landowners to advise them of sound stewardship practices and encourage increased public access. Cooperative nursery programs and habitat improvement projects should be encouraged. The efforts of the Pennsylvania Council of Trout Unlimited to address impacts of dirt roads on trout streams should be encouraged.

Public access to existing stream and lake fisheries must be increased. The watershed groups should work with sportsmen associations and PFBC in contacting landowners to seek public access. Suitable access facilities such as parking areas and canoe or boat launches need to be developed. The watershed groups should develop and make available guides such as *Fisheries of the Stonycreek and Upper Conemaugh Basin* (SCRIP no date) to encourage the use and stewardship of basin fishery resources.

Basin-Wide Important Habitats Program. The protection of significant natural features identified in the Westmoreland County Natural Heritage Inventory should be encouraged. The members of the K-C Alliance should encourage the development of Natural Heritage Inventories for Armstrong, Indiana, Cambria, and Somerset Counties. The K-C Alliance members should make available GIS and other data resources to the agency preparing the plan(s). Public agencies that own or manage property should review these plans to ensure that appropriate stewardship methods are applied on public lands. Educational efforts should be developed to inform private landowners of resources located on their property and encourage responsible stewardship. Local governments should also be made aware of these resources so that they may be adequately considered in planning efforts.

The DCNR should manage Yellow Creek State Park in a manner consistent with its designation as an Important Bird Area. This designation offers a unique educational opportunity within the basin. Programs and materials should be developed to interpret conservation issues associated with migratory bird populations.

The Westmoreland County Natural Heritage Inventory identifies Laurel and Chestnut Ridges and other areas as high priorities for biological diversity. Protection efforts for these areas should be promoted. The watershed groups, in cooperation with county conservation districts, should establish programs to educate landowners and the general public on the value of large forest tracts and appropriate stewardship of these areas. The members of the K-C Alliance should also encourage public landowning agencies to consider forest interior habitat in their land management planning. Opportunities also exist to develop programs to encourage protection of populations of early-successional neotropical migrant bird species.

The watershed groups should, in cooperation with the USFWS and DEP, review the status of concept wetlands within their areas of concern. Opportunities to protect these areas or enhance their educational or recreational values should be pursued, in cooperation with other conservation organizations.

Further information on and subsequent control of invasive knotweed species in riparian areas is needed. An assessment is needed to determine the extent, severity and threat of knotweed in the basin. Additional information is needed on the effects of knotweeds on sedimentation rates and on eradication methods in riparian areas. Control efforts should then be implemented to eradicate knotweed in critical areas. Additional actions should be taken to control the spread of the plant through increasing public awareness, monitoring for new infestations and eradicating colonizing plants, reducing soil disturbance, and quickly re-establishing native vegetation if soil is disturbed. Opportunities exist for a variety of organizations to cooperate in this effort, including the watershed groups, River Keepers and other monitoring program volunteers, local colleges and universities, and the National Park Service. Detailed information on the knotweed problem provided by the National Park Service is included in Attachment G in Appendix C.

Basin-Wide Species of Concern Program. The watershed groups should work with regulatory agencies, other conservation organizations, and landowners to develop and implement programs to determine if riparian species of concern exist in the basin. These efforts could possibly be implemented through the River Keepers Program. More detailed locational information than that contained in this plan is available from the PNDI. Appropriate plans can then be developed and implemented to ensure the survival of these populations. Survey and management plans must be developed in cooperation with landowners as well as state and federal regulatory agencies.

4. Recreation Resources

Scenic Rivers - Stonycreek/Little Conemaugh Rivers. The Stonycreek River Gorge and Canyon are unique natural resources. Application should be made in the first two years of the plan to have these areas listed as Wild and Scenic Rivers on the state listing. Application and the limits of the "gorge and canyon areas" should be made by the SCRIP watershed group, with assistance from the members of the K-C Alliance. Letters of support should be provided by the other members of the Alliance and affected municipalities. While water quality problems presently exist in the canyon section, future AMD remediation efforts should resolve these problems.

Trail Development. Hiking, biking, water and horse trails offer a unique opportunity to link historical, recreational, and scenic areas in the basin. This plan has adopted the proposals for basin trail development, as identified in the report *Heritage Trails, Strengthening a Regional Community,* (NPS 1995) for execution in this plan. A synopsis of existing and potential trails is listed in Table C-1, in Appendix C, which lists 15 existing trails and 24 potential trails. A number of the existing trails are identified for possible extension, or connection to other trails. Tables A-1 through A-6 in Appendix A list potential trail development, by watershed area. High priority is given to those trails adjacent to basin watercourses, with those that offer an opportunity to also act as a spine-line to connect other trails given the highest priority.

Conemaugh River Greenway. The *Conemaugh River Greenway Concept Plan* was developed by the National Park Service (1994) as part of the USACOE's *Conemaugh River Basin*

Reconnaissance Study. It offers the opportunity for a 50-mile long trail along the Conemaugh River from Johnstown to Saltsburg to be the anchor for a regional trail system. The trail should connect the 70-mile Laurel Highlands Trail, the 140-mile Baker Trail, and be a part of the Pittsburgh to Harrisburg Mainline Trail.

This Concept Plan has been adopted for this River Conservation Plan. It includes a series of alternatives, and recommends a conceptual approach for the Conemaugh Greenway. Community support for the greenway is required, and the appropriate organizations within the K-C Alliance should take the next steps that include detailed planning and the establishment of a public/private greenway partnership (see Kiski-Conemaugh River Greenway Feasibility Study).

Kiski-Conemaugh River Greenway Feasibility Study. A Feasibility Study for the extension of the Conemaugh River Greenway in the Little Conemaugh River, Conemaugh River, and Kiskiminetas River Corridors is currently in preparation. Specifically, this study will extend the Conemaugh River Greenway corridor to include the Little Conemaugh subbasin from Cresson to Johnstown and the Kiskiminetas subbasin from Saltsburg to Freeport. Trails within the corridor would be a component of the Pittsburgh to Harrisburg Pennsylvania Mainline Trail. Funding has been received from the DCNR to complete a greenway plan to connect existing and proposed greenway segments along an 89-mile corridor between Freeport and Cresson. The study will be conducted by the Cambria County Conservation and Recreation Authority, Conemaugh Valley Conservancy, Allegheny Ridge Heritage State Park, and the Allegheny Heritage Development Corporation.

A copy of the draft *Greenway Plan Task Work List* is provided in Attachment H in Appendix C. Upon completion of the Feasibility Study, the appropriate organizations will work with the DCNR and other interested parties to implement its recommendations.

Johnstown Urban Greenway. In conjunction with development of a portion of the Conemaugh River Greenway, a 15.1 mile section in the City of Johnstown has been planned, as identified in a special project and master plan for the Johnstown Urban Greenway, prepared by the USACOE. Detailed plans and cost estimates for execution have been generated. Trailheads and parklets would be situated at strategic locations along the entire length of the greenway, which would connect many historic, recreation and scenic sites. Every effort should be made by the members of the K-C Alliance to expedite implementation of this portion of the plan.

Mainline Trail/Path of the Flood Trail. These proposed trails are located within a corridor that extends 25.9 miles from Cresson Borough to Johnstown in Cambria County, along the Little Conemaugh River. The Mainline Trail extends from the Allegheny Portage Railroad National Historic Site in Cresson to South Fork. The Path of the Flood Trail extends from the Johnstown Flood National Memorial in St. Michael to the Johnstown Flood Museum in Johnstown. A report titled *Mainline Trail/Path of the Flood Trail Feasibility Study* was prepared for the Southwestern Pennsylvania Heritage Preservation Commission and the DCNR (CCCRA no date). The plan and its ten identified strategies for the trail have been adopted for this river conservation plan. These strategies identify the sections of the trail most easily built, portions of the trail that are currently accessible, and an implementation agency. A Conservation Authority and a full time executive director are prescribed for implementing the plan; the authority should seek TEA-21 funding, along with funds from the DCNR's Keystone Program. The process of implementing the plan is currently

in progress. Funding has been secured to complete the Path of the Flood Trail from Ehrenfeld to Johnstown. Funding has also been secured to construct the Conemaugh Dam Trail section of the Mainline Trail. Both of these projects are funded by TEA-21 funding.

Ghost Town Trail System. The Ghost Town Trail currently extends 12 miles between Dilltown and Nanty Glo with a four-mile spur (Rexis Branch). With extensions and connections to other planned trails, the Ghost Town Trail can serve as the spine of a trail loop throughout the northern portion of the basin between Indiana and Ebensburg. Planned trail extensions from Dilltown to Blacklick, Colver to Revloc, Revloc to Ebensburg and other linkages should be implemented. Funding has been received for the Cambria and Indiana Trail, which will extend the Ghost Town Trail to Ebensburg.

Conemaugh Gorge, Packsaddle Gap, Loyalhanna Gorge, Blacklick Creek Gorge, Stonycreek River Gorge and Canyon, and Kiski River Hillsides. These unique features are some of the most scenic in America. Efforts are needed to insure their protection. Committees should be formed, from interested members of the local watershed associations (or their designees), to cause to be generated land protection plans. These areas should be designated for recreation uses by the municipalities that control their land use.

Duman Lake Park. As Cambria County's only county park, Duman Lake Park has the potential to provide many recreational and educational opportunities in the northeastern portion of the basin. The Cambria County Conservation District should continue implementing improvements to encourage usage of the facility, particularly weekday uses, environmental education programs, and overnight use. The construction of a sewage treatment facility is key to implementing these plans.

Stonycreek River Canyon Whitewater Park. Somerset County is currently preparing a management plan for a proposed whitewater park on the Stonycreek River in Conemaugh Township. This would include river and land trails. The county should continue implementing these efforts.

5. Historic/Archaeologic Resources

Pennsylvania Main Line Canal. The Pennsylvania Main Line Canal, in combination with the Allegheny Portage Railroad, was important in the development of America's transportation industry. It provided a vital link between Pittsburgh and Philadelphia across the Allegheny Mountains, a formidable barrier to commerce. Built between 1826 and 1834, the Western Division included 103 miles of canal between Pittsburgh and Johnstown, 16 covered aqueducts, 10 river dams, 64 culverts, 39 waste-weirs, two tunnels, and 152 road and farm bridges. Many remnants of this system remain today, and their identification provides insights into one of the Nation's most ambitious and historic early engineering feats. Most are located along the 74.4 miles of the canal located in the K-C basin.

A special study, *Juniata and Western Division, Pennsylvania Main Line Canal* (NPS 1992), provides documentation and an opportunity to begin efforts to protect this linear historic resource. According to the study, the best preserved remnant can be found in the section above Blairsville. Consequently, any potential preservation/restoration effort should first focus here. An excellent

canal channel containing water with a nicely preserved towpath is located in this area, and one of the best preserved locks - Lock 5 - with its cut stone walls is intact in this segment.

The opportunity to preserve as much of the canal system in the basin as possible should be pursued. In combination with development of the Conemaugh Greenway trail, the opportunity for a hiking/biking trail, with adjacent historic canal resources at frequent intervals, and passing through the scenic Conemaugh Gorge and Packsaddle Gap, could make this trail one of the most pleasurable outdoor experiences in Pennsylvania (or in the Nation). The Conemaugh Valley Conservancy should organize a preservation committee to begin efforts to safeguard this resource.

Saltsburg-Conemaugh River Mainstem. The National Park Service (NPS) has expressed an interest in Saltsburg as a potential place to tell the story of the Main Line Canal along its Western Division. The NPS has provided studies and technical assistance to Saltsburg Borough to help them identify the story of the canal. (It would function in a similar capacity as the Allegheny Portage Railroad National Historic Site in Cresson which identifies components and the history of the Portage Railroad.)

Saltsburg was once the site of the canal, a lock, and a canal turning basin. The actual canal no longer exists. The canal channel has been filled with dirt and is maintained by Saltsburg Borough as an open, grassy park for Saltsburg residents. While many of the lock remnants have also been removed, Saltsburg retains the aura and integrity of a mid-19th century canal town. (After the demise of the canal, Saltsburg's growth stopped.) Today, a total of 33 canal-era buildings remain as a walking tour in the town, and may be more historically significant than the canal remains in the area.

Efforts should be made to continue the preservation of the canal and the historic theme of Saltsburg, both in its own right and as an important component as the western terminus of the Conemaugh Greenway and trail. The component watershed groups of the K-C Alliance should aid this effort where possible.

Heritage Areas. A study, *Action Plan, America's Industrial Heritage Project* (American Heritage Commission/NPS 1989), identifies a general guide for preservation of the industrial heritage locations in the nine-county southwestern Pennsylvania area; many are in the basin. A synopsis of the findings of that study is found in Table C-2 in Appendix C. It is the intent of this plan to promote, assist and publicize the efforts of the Heritage Preservation Commission, who is responsible for carrying out the edicts of the Heritage Project.

With this plan, the member watershed units of the K-C Alliance endorse all of the preservation actions in the basin, those that are water-related or "fit into" other parts of this river conservation plan are given a high priority.

Allegheny Ridge Heritage Park. In 1992, the Allegheny Ridge State Heritage Park was created by the Commonwealth of Pennsylvania to preserve, interpret, and develop the historic and cultural resources of the Allegheny Ridge region. The Allegheny Ridge Corporation was created to manage the Park in a cooperative program involving all levels of government and the private sector. The park's name is a misnomer; much of the park is in the river valleys of the K-C Basin. Included in the resources of the park that are located in the basin are the Johnstown Flood Museum,

the Johnstown Flood National Memorial, the Johnstown Inclined Plane, the Coal Heritage Center in Windber, and portions of the Allegheny Portage Railroad. The work to further establish the Park is guided by the *Plan for the Allegheny Ridge* (1994), prepared for the Allegheny Ridge Corporation.

The Plan for the Allegheny Ridge State Heritage Park organizes the resources and stories of the Allegheny region into five Constellations which are geographically contiguous and intended to represent different themes related to the development of the region. Four of these are wholly or partially located within the basin. While all four of the Constellations are important to the basin's history, three including "On the Main Line" (Little Conemaugh River area), "Steel City" (Johnstown area), and "The Kingdom of Coal" (Windber area) are of particular significance due to their geographic association with the basin's rivers. This plan endorses all of the Allegheny Ridge preservation actions in the basin, and have given high priority to those efforts that are allied to other basin preservation and recreation development efforts. These include the three Constellations just identified.

It is the intent of this plan to promote and assist the preservation of the Allegheny Ridge State Heritage Park and the efforts of the Allegheny Ridge Corporation, who is responsible for carrying out the edicts of the Special Purpose Studies for the Park. In addition, a committee is needed to coordinate this River Conservation Plan for proposed projects that are in the same geographic area of the Allegheny Ridge State Heritage Park in order to reduce redundant efforts.

Basin-Wide Historical Sites. It is the intent of this plan to promote and assist the preservation of river-related historic resources throughout the K-C Basin. A listing of potential resources in the Conemaugh River Greenway has been prepared by interested citizens and is found in Table C-3, Appendix C. Evaluation of this listing is needed by professional cultural resource investigators, and a listing appropriate for protection in conjunction with the Greenway and Conemaugh River Trail development needs to be established.

Further, a listing of properties on or eligible for the National Register of Historic Places is included in Table B-13 in Appendix B. Efforts to further identify, preserve, and connect these resources with hiking, biking and road access linking with riverine locations should be promoted. Tables A-2 through A-6 in Appendix A identify some specific actions for historic resources within the watersheds.

6. Education/Promotion

Basin-Wide Education. Currently, both the K-C Alliance and many of the component watershed groups have generated considerable educational material to promote activities in their areas of responsibility. The member organizations of the K-C Alliance should consider a regular newsletter, with sections provided by each of the five cooperating watershed groups, to educate the public on current programs in the basin. The newsletter can be used to obtain volunteers and aid in carrying out programs. News releases can be generated, as appropriate, for local papers on timely issues. Among others, these may including improvements in water treatment systems (AMD, sewage, etc.) and activities that may contribute to water quality deterioration. The member organizations of the K-C Alliance should provide mailing lists for the newsletter, which could include program volunteers, schools and teachers, community leaders, businesses, and other local

and regional organizations. The members of the K-C Alliance should generate an annual report highlighting the projects completed within the basin the previous year.

Using the capabilities of regional and county planning agencies, educational programs for municipal officials, township supervisors, local planning departments and developers should be carried out for protecting critical areas in the basin, and developing land without generating water quality and water quantity issues. These efforts are detailed under other specific action items and can be expanded to include other areas as desired.

Local school districts should be encouraged to incorporate discussion of AMD and other water quality issues in their curriculum. Successful efforts such as Project B.U.G.S. (Biological Understanding Generates Sustainability) and the Capstone Project can be implemented or adapted as appropriate.

Public education concerning the hazards of household chemical waste use and disposal should be encouraged and expanded. State agencies such as the DEP, DCNR and Department of Education are appropriate management agents. These issues can also be presented at educational forums, such as the multidisciplinary environmental education symposium for high school educators sponsored by the K-C Alliance and AMD&Art in May 1999.

Additional educational opportunities can be created through the organization of an annual symposium on river-related issues, and through an annual series of outdoor events focusing on particular locations or events. These activities will serve to increase public awareness of the river ecosystem, and the progress that the members of the K-C Alliance and other groups are making in maintaining and enhancing quality of life in the basin.

The K-C Alliance webpage should also be utilized as an educational tool, providing information on basin resources, problems, and solutions, as well as publicizing projects and volunteer opportunities.

A comprehensive inventory of existing environmental education efforts would be valuable for inclusion in a later plan update.

Stonycreek/Little Conemaugh Rivers Watershed - Education. Interest has been expressed in developing additional environmental education facilities such as Disaster's Edge, which is operated by the Cambria County Conservation District. These facilities might include an outdoor education center at Flint Run with an adjacent wetland area used as an outdoor classroom, the Hughes borehole or another suitable location. A steering committee needs to be formed (first phase) to investigate educational center funding, and the necessary steps needed to develop plans for such an educational facility. Enlist the aid of the local school system, and offer the use of the facility for school participation. The second phase includes obtaining funding for and preparing a development plan. The third phase includes obtaining construction funds and land, developing design plans, and entering into a construction agreement.

Blacklick Creek and Kiskiminetas River Watersheds - Education. Interest has been expressed to make known the importance of rivers and their water quality to economic development. This information should be developed by the members of the K-C Alliance for general use

throughout the basin. The Blacklick Creek Watershed Association, Roaring Run Watershed Association, and other watershed groups should use their newsletters and other public contacts to identify the importance of rivers to the economy.

Conemaugh River Watershed – Education. Interest has been expressed in locating one or more River Restoration Environmental Centers within the basin. The Conemaugh River Dam presents a clear opportunity to interpret impacts to the basin as a result of recovery efforts. The CVC and the USACOE should establish an appropriate interpretive program at Conemaugh River Lake, and investigate the feasibility of locating a River Restoration Environmental Center at Conemaugh Dam.

Loyalhanna Creek Watershed - Education. The management of forests, particularly in headwater streams, is considered crucial to the water quality of Loyalhanna Creek. The Loyalhanna Watershed Association should contact the Bureau of Forestry to hold public meetings in the watershed and carry out public information meetings on forest management. The contact with the Bureau of Forestry should also be used to form either a formal or informal agreement to allow the Watershed Association to help the Bureau develop their Forbes State Forest long range plan for the watershed.

Tourism/Marketing. Trails, scenic highways and corridors, and other tourist attractions can have a substantial financial effect on local economies. A detailed statistical basis needs to be generated and applied to basin efforts for pollution abatement and resource development. Several studies are currently underway or in the planning stages to collect this type of information. Clean streams, scenic and historic resources, and hiking and biking trails will attract day and overnight users. These have a quantifiable value that should be made known to local residents, participants in the program, and financial contributors to Action Plan implementation. Several studies are available on the subject that provide some concept of economic return.

Trails can be an important part of an economic development strategy that targets tourism, but the benefits are difficult to measure. Trail users are generally local (less than 100 miles from home and no overnight stays) and will take advantage of services offered by the private sector, provided the services are available, accessible, and advertised. A study by Pennsylvania State University determined that each trail visitor accounted for expenditures of $31.79 per day, with $10.52 in direct sales and $21.27 in secondary sales. Expenditures could be much higher if concerted efforts were made to motivate trail users to take advantage of restaurants, stores, and bed and breakfast inns (NPS 1995).

A tourist has been defined as a traveler on a recreational trip more than 100 miles from his home that includes an overnight stay away from either his home or a destination (U.S.Travel Data Center 1987). Tourist revenues can create new job opportunities at gasoline stations, motels, restaurants, and other facilities serving tourists. The following unit costs have been used for car touring as reported in *The 1988-89 Economic Review of Travel in America.*

- $0.15 per vehicle mile on a trip for scenic and historic viewing or recreation use. Fuel costs are estimated at 5 cents per vehicle mile (assuming $1.00 per gallon and 20 miles per gallon). Food and other incidentals are estimated assuming that drivers on a long trip stop every four hours and spend $16 per vehicle when they stop.

- $5.00 per vehicle-hour parked at scenic, recreational or historic sites. This figure assumes expenditures of $4.00 per vehicle hour for food and other incidentals plus an additional $1.00 per hour for admission fees and souvenirs at tourist attractions.

The Allegheny Heritage Development Corporation/Southwestern Pennsylvania Heritage Preservation Commission, along with other regional and county planning agencies should evaluate the overall value of the use of hiking/biking trails, historic sites, recreational sites, and tourism on the overall economy of the basin. As noted earlier, several studies are currently underway or in the planning stages. This information should be used for promotional purposes and to establish the worth of pollution abatement programs.

A small business resource center should be developed to assist in water and recreation-related business plan development. The center would contain data compiled from various sources on the economic potential of tourism, current water quality issues and conditions, and business needs and opportunities in the basin. The intent of this center is to help maximize the economic benefits to the basin as a result of projects to improve water quality and recreational opportunities. Resource availability and quality of life are important factors in business decisions on where to locate.

The K-C Alliance website should be expanded to incorporate a comprehensive guide to the basin's river-related recreational and educational opportunities. This site should be publicized in regional and state tourism publications, as well as at local businesses and attractions.

7. Management

Kiskiminetas River Watershed Group. In this plan, it has been recommended that the Roaring Run Watershed Association function as the management organization for the Kiskiminetas River Main Stem Watershed. This is a short-term option. A new watershed organization should either be started or spun off from the Roaring Run Watershed Association. This new organization would have as its focus the entire main stem of the Kiskiminetas River.

Plan Update. This plan should be updated every five years through the efforts of the member organizations of the K-C Alliance.

In addition to an overall review of issues, actions and priorities, several specific items have been recommended for inclusion in future plan updates. These include:

- An inventory of brownfield sites in the basin;
- A comprehensive compilation of AMD remediation projects that have been completed in the basin;
- A compilation of existing and potential cogeneration projects, including possible fuel sources;

- A detailed survey of sewage service and problem areas; and
- An inventory of existing environmental education programs and facilities.

Further information on these recommendations is included in the preceding portions of the Action Plan.

It has also been recommended that a future plan update include mapping of each watershed illustrating the location and priority of projects and items identified in the Action Plan.

APPENDICES

APPENDIX A

SUMMARY OF ACTION PLANS BY BASIN AND MAJOR WATERSHEDS

LIST OF TABLES

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Table A-1

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
Land Resources					
- Basin-Wide Vegetative Stream Buffering Program	Institute a program to buffer basin streams with vegetative filter strips, operating through the county conservation districts, local and regional planning commissions and municipalities. Particular focus should be placed on riparian forest buffers. Identify areas in K-C Alliance GIS and develop program to maintain these areas.	Watershed Groups, regional and county planning agencies, CCDs	PA Environmental Education Act, CCDs, Citizen Education Fund, League of Women Voters, SWPC, SAPDC	1	Planning: 1999-2000 Implementation: 2001-2009
- Basin-Wide River Keepers Program	Institute a River Keepers Program similar to PennDOT's Adopt a Highway Program and use local groups to carry it out.	Watershed Groups	Civic and Sports Groups: Elks, Lions, Moose, Hiking/ biking, fishing and hunting clubs	1	Planning: 1999-2000 Implementation: 2001-2009
- Basin Wide Land Use Planning	Promote a land-use planning program for critical areas: steep slopes, wetlands and floodplains. Provide GIS mapping of critical areas.	County Planning Commissions, municipalities	State Planning Assistance Grants, PA Environmental Education Act, USFS	1	Planning 1999-2000; Implementation 2001-2009
- Basin-Wide Roads/ River Access	Prepare a road network/river access map using GIS; determine conditions of roads near streams, and adequacy of access; assess need and suitability for dry hydrant locations; begin program of obtaining public access; identify problem areas and bring to attention of appropriate agencies.	Watershed Groups, Trout Unlimited	ARC, TEA-21, PFBC, Trout Unlimited, USFS, Civic and Sports Groups: Elks, Lions, Moose, Hiking/ biking, fishing and hunting clubs, PAC-RC&D, SARC&D, etc.	2	Planning 1999-2003; Implementation Varies: 2001-2009, portions in progress
- Basin-Wide Hazardous Waste Program	Monitor runoff from waste sites and discharges through River Keepers Program; monitor proposals for new or expanded facilities	Watershed Groups, PA Cleanways	Civic and Sports Groups	3	Planning 2000-2001; Implementation 2002-2009

*Note: See end of table for definition of acronyms and abbreviations.

Table A-1 (Continued)

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
- Basin-Wide Viewshed Protection	Develop program to identify significant viewsheds within the basin, compile inventory, and work with county and local planners to preserve scenic qualities	Watershed Groups	Keystone Program, PA Land Trust Grant, foundations, local municipalities, USFS, PAC-RC&D, SARC&D	2	Planning 2000-2003; Implementation 2004-2009
- Basin-Wide Sustainable Forestry Initiative	Develop a timber operator certification program to be implemented in all basin counties that do not have existing programs, implement through county conservation districts. Develop landowner information program on sustainable use, stewardship, and timber operator certification.	CCDs	DCNR, USDA, NRCS, CCDs, USFS	2	Planning 2001-2003; Implementation 2004-2009
- Basin-Wide Green Golf Courses Initiative	Promote participation in Audubon International's Certification Program "Audubon Cooperative Sanctuary Program for Golf Courses"	Watershed Groups, DEP	Audubon International, businesses and industry associations, DEP	3	Planning 2002-2003; Implementation 2004-2009
Water Resources					
- Basin-Wide Watershed Characterization Model	Prepare a watershed characterization model for the basin, by watershed	K-C Alliance	Rivers Conservation Grant, PAC-RC&D, SARC&D	1	Completed
- Basin-Wide Mine Drainage Re-Evaluation Program	Have the *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA, 1972) updated to reflect current conditions in the basin, covering areas other than the SCRIP area or other smaller areas that have recently been studied.	ARC, EPA, DEP	ARC, EPA, DEP, RAMP, NRCS, grants and foundations	1	Funding Request: 1999-2000; Plan Preparation 2001-2003; Implementation: 2004-2005
- Basin-Wide Non-Point Source Pollution Control	Develop a Demonstration Project in the SCRIP area, using the edicts in the SCRIP's 1994 non-source pollution study; expand these applications throughout the basin; employ a full-time technician to carry out the program.	DEP, DCNR, Cambria and Somerset County Conservation Districts, farmers	DEP, DCNR, USDA NRCS, Clean Water Act, county, private funds , PAC-RC&D, SARC&D	2	Plan SCRIP Area Demonstration Project: 1999-2000; extend in SCRIP Watershed: 2001-2003; implement in basin 2004-2009

Table A-1 (Continued)

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
- Basin-Wide Stormwater Control	Have a Stormwater Control Plan prepared for the basin.	USACOE, DEP, municipalities	USACOE special appropriation, PA Act 167, DEP, FEMA, USACOE	3	K-C Alliance members obtain Corps' or DEP's Acceptance of program: 1999-2000; Corps obtains funding 2001-2003; planning: 2004-2005
- Basin-Wide Flood Problem Identification	Identify flood problem areas and possible solutions in each watershed.	Watershed Groups, USACOE, DEP, NRCS, municipalities	USACOE, DEP, NRCS, P.L.566 Small Watershed Funds, municipalities, FEMA	2	Planning: 1999-2003; Implementation: 2004-2009
- Basin-Wide Sewage Evaluation	Identify current data concerning problems and projects. Prepare detailed survey. Identify problems to the DEP for ACT 537 enforcement and act to support problem resolution.	Watershed Groups, DEP, PennVest	Act 537 Funding	2	Prepare evaluation: 1999-2001; DEP enforcement: Immediately
Biological Resources					
- Basin-Wide Alkalinity Program	Devise a limestone sand additive program for alkalinity addition at selected appropriate locations in the basin, in high value watersheds currently affected by acid rain or AMD.	CCDs, Watershed Groups	ARC, RAMP, Clean Water Act, foundations, PAC-RC&D, SARC&D	2	Conservation Districts and Watershed Groups prepare program: 1999-2000; Implementation: 2001-2009
- Basin-Wide Use of Limestone in Construction Program	Have county and subdivision ordinances revised to maximize the use of limestone in devices in contact with water, where appropriate.	Watershed Groups, Counties, Municipalities	PPAG, PA Environmental Education Fund, ARC, USDA-RAMP, Clean Water Act, foundations	2	Watershed Groups develop program: 1999-2000; Implementation: 2001-2009

Table A-1 (Continued)

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
- Basin-Wide Biological Monitoring	Organize and implement a comprehensive sampling program.	Watershed Groups, Stream Team, River Keepers, Basin High Schools, Project B.U.G.S.	PA Environmental Education Fund, regular school education fund appropriations, Americorps, EASI, Scout Groups, CCDs	2	Committee sets standards and obtains cooperation: 1999-2000; Implementation: 2001-2009
- Basin-Wide Fishery Management	Identify recovering streams and coordinate efforts to restore fishery resources.	Watershed Groups, PFBC	PFBC, DCNR, Civic and Sports Groups	3	Assist as opportunities arise, 2004-2009
	Organize and implement programs to preserve and enhance existing fishery resources. Promote public access and develop fishing guides.	Watershed Groups, PFBC	Same as above	2	Planning 1999-2000; Implementation 2001-2009
- Basin-Wide Important Habitats Management	Encourage development of Natural Heritage Inventories (NHI) and provide data as needed; encourage protection of features identified in Westmoreland County NHI; encourage appropriate management of Yellow Creek State Park IBA.	Watershed Groups, County Planning Agencies, DCNR, SAC	DCNR, Wild Resources Conservation Fund, County Governments, Western Pennsylvania Conservancy	2	Coordination 1999-2000; provide data as needed
	Organize large forest tract educational program; address concept wetlands issues.	Watershed Groups	Wild Resources Conservation Fund, PGC, USFWS, DCNR, DEP	3	Planning 2001-2003; Implementation 2004-2009

Table A-1 (Continued)

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
- Basin-Wide Important Habitats Management (cont.)	Address knotweed control issues.	Watershed Groups, monitor-ing groups, colleges, NPS	DCNR, Wild Resources Conservation Fund, Colleges and Universities, Conservation Organizations	2	Planning: 2001-2003; Implementation: 2004-2009
- Basin-Wide Species of Concern Program	Develop and implement surveys to determine existence of aquatic and riparian species; participate in development of management plans.	Watershed Groups, conservation groups, regulatory agencies	Wild Resources Conservation Fund, PGC, PFBC, DCNR, Conservation Organizations, Colleges and Universities	3	Planning 2001-2003; Implementation 2004-2009
Recreation Resources					
- Trail Development	Adopt the proposals for further basin trail development and linkage, as identified in the report *Heritage Trails, Strengthening a Regional Community* for execution in this plan. Priority is given to riverside trails, as follows: • Portage Trail, links with Main Line Trail • Ghost Town Trail System including: - Cambria and Indiana Trail, Ebensburg to White Mill - Ghost Town Trail Extensions, Dilltown to Black Lick, Colver to Revloc, Revloc to Ebensburg - Rexis Branch Extension, US 422 to Manver Station - Hoodlebug and Blairsville Secondary Trails • Cambria Heights to Hinkston Dam • Clymer Trail, Dixonville to Clymer • Vision Trail, Manver Station to Indiana and Heilwood	SPHPC, AHDC, Regional Trail Commission, PA Rails to Trails Conservancy, Watershed Groups, Local Sponsors	NPS, PA Rails to Trails, TEA-21, ARC, SPHPC, AHDC, Keystone grants, PA Heritage Park grants, PAC-RC&D, SARC&D, foundations (See *Heritage Trails*, Appendix E)	Varies, stream side: 1 Others: 2	Assume time tables of local sponsors

Table A-1 (Continued)

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
- Trail Development (cont.)	• Creekside Extension, Creekside to Indiana • Route 119 Greenway, Homer City to Blairsville • Yellow Creek Trail, Homer City to Yellow Creek • 10 Mile Trail, Jacksonville to Jackson Mine • Jenner-Lincoln Trail, Enoch to Ferrellton • Qemahoning Trail, Boswell to US 219 • Davidonville Streetcar Trail, Jerome to Kelso • Loyalhanna Trail Extension, Saltsburg to Latrobe • Saltsburg to Trafford Rail Trail Additional important trails include: • Roaring Run Trail • Conemaugh Dam Trail • Loyalhanna Nature Trail Identify areas suitable for designation as water trails. Investigate suitability of trails for horseback use.				
- Conemaugh River Greenway/Kiski-Conemaugh Greenway	Extending from Cresson to Freeport, this 89-mile long corridor is a spineline for connecting area trails in the basin and should be promoted in every possible way. Complete the Kiski-Conemaugh Greenway Feasibility Study and work with DCNR and other interested parties to implement greenway studies recommendations.	Watershed Groups, CCCRA, Allegheny Ridge State Heritage Park, SPHPC, AHDC, USACOE	USACOE (using federal appropriation), federal RTCA, PA Rails to Trails, PA Recreational Trails Program, PA Greenways Partnership, TEA-21, Keystone Program, foundations, county and local governments, PAC-RC&D, SARC&D	1	Planning: 1999-2000 Implementation: 2001-2009

Table A-1 (Continued)

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
- Johnstown Urban Greenway	Implement construction of the 15.1-mile section of the Conemaugh River Greenway that has been planned.	Watershed Groups should aid the local sponsors wherever possible	Same as above	1	Implementation: 1999-2003
- Mainline Trail/Path of the Flood Trail	Follow the 10 strategies in the *Mainline Trail/Path of Flood Trail Feasibility Study* to develop these trails.	Generate a Conservation Authority, with a staff/CCCRA	NPS, PA Rails to Trails, TEA-21, ARC, Keystone grants, PA Heritage Park grants, SARC&D, foundations (see Heritage Trails, Appendix E)	1	Form Authority and hire staff and prepare detailed plans: 1999-2000 (in progress); Implement Plan: 2001-2003
- Conemaugh River Gorge, Packsaddle Gap, Loyalhanna Gorge, Blacklick Creek Gorge, Stonycreek Gorge and Canyon, Kiski River Hillsides	Form a Committee to study and protect these unique resources; develop a protection plan and implement plan.	Form a steering committee of volunteers, Watershed Groups	Keystone Program, PA Rails to Trails, TEA-21, PA Land Trust Grants, foundations, local municipalities	1	Form Committee and do preliminary planning: 1999-2000; Develop protection plan: 2001-2003: Implement plan: 2004-2009
Historic/Archaeologic Resources					
- Pennsylvania Main Line Canal	Develop a program to acquire and protect important elements of the canal in the 89-miles of the Conemaugh River Greenway/ Kiski-Conemaugh Greenway, particularly around Blairsville (Lock 5).	Corps of Engineers, NPS, PHPP, SPHPC, Watershed Groups, AHDC	Corps of Engineers, NPS, SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources, PAC-RC&D, SARC&D	1	Form committee and do preliminary planning: 1999-2000; Do detailed plans: 2001-2003; Acquisition: 2004-2009

Table A-1 (Continued)

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
- Heritage Areas	Assist, promote and publicize the efforts of the Heritage Commission to carry out the *Action Plan, America's Industrial Heritage Project* in the basin.	SPHPC, AHDC, Watershed Groups, municipalities and counties	SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	2	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
- Allegheny Ridge Heritage Park	Assist, promote and publicize the efforts to preserve the heritage areas identified in the *Plan for the Allegheny Ridge.*	Allegheny Ridge Corp, Allegheny Mountains Convention Bureau, Cambria County Convention Bureau, municipalities and counties	SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, SARC&D, grants and local sources	2	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
- Basin-Wide Historic Sites	Promote and assist historic preservation throughout the basin, according to the listing of National Register potentially eligible structures and other structures of potential historic interest listed in Appendix B	SPHPC, AHDC, Watershed Groups, municipalities and counties	USACOE, NPS, SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	3	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
Education					
- Newsletter and News Articles	Generate a periodic newsletter, with sections dedicated to each Watershed Group, covering timely events in the basin; provide news releases to area newspapers on newsworthy events in the basin	Watershed Groups	PA Environmental Education Act, Watershed Group Funds	2	Plan and implement program: 1999-2000

Table A-1 (Continued)

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
- Classroom Education	Encourage school districts to incorporate discussion of AMD and other water quality issues in their curriculum.	Watershed Groups, local school districts	Local school districts	2	In Progress
- Website Development	Expand K-C Alliance website to incorporate a comprehensive guide to the basin's river-related recreational and educational features. Publicize at local businesses and attractions as well as regional and state tourism publications. Develop use of the website for educational purposes.	Watershed Groups	Local chambers of commerce	3	Varies by task, general timetable: Planning 2001-2003; Implementation 2004-2009
- Household Hazardous Waste Education	Expand public education on household hazardous waste use and disposal.	DEP, DCNR, PA Department of Education, Watershed Groups	DEP, DCNR, PA Department of Education	3	Planning: 2001-2003; Implementation: 2004-2009
- Tourism/Marketing	Evaluate the use of hiking/biking trails, historic sites, recreational sites, and tourism on the economy of the basin. Use information for promotional purposes and to establish the worth of pollution abatement programs.	Regional and county planning agencies, AHDC, SPHPC, Watershed Groups	Local chambers of commerce, regional and county planning agencies	2	Plan and Implement: 1999-2000
	Develop small-business resource center to assist in water and recreation-related business plan development. This effort can utilize the GIS database created for the plan.	County and regional planning agencies	Regional planning agencies, chambers of commerce	3	Planning 2001-2003; Implementation 2004-2009
	Organize annual symposium on river-related issues such as ecotourism, AMD treatment technologies, recent scientific research on ecosystem recovery in the basin, etc.	Watershed Groups, local colleges and universities	PA Environmental Education Act	3	Planning 2001-2003; Implementation 2004-2009
	Organize an annual series of boating/biking/ hiking events to focus on particular locations or issues.	Watershed Groups, Sierra Club Chapters	Watershed Group Funds	2	Planning 2001-2003; Implementation 2004-2009

Table A-1 (Continued)

ACTION PLAN SUMMARY: BASIN-WIDE PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent *	Funding Options*	Priority Level	Phasing and Timetable
Management					
- Plan Update	Update Rivers Conservation Plan in five-year intervals. Incorporate specific additional items as recommended.	K-C Alliance	Rivers Conservation Grant	1	Implement: 2004, 2009

Acronyms/Abbreviations:

AHDC – Allegheny Heritage Development Corporation
AMD&Art – Abandoned Mine Drainage and Art
ARC – Appalachian Regional Commission
BCWA – Blacklick Creek Watershed Association
CCDs – County Conservation Districts
CCCRA – Cambria County Conservation and Recreation Authority
CVC – Conemaugh Valley Conservancy
DCNR – Pennsylvania Department of Conservation and Natural Resources
DEP – Pennsylvania Department of Environmental Protection
EASI – Environmental Alliance for Senior Involvement
EPA – United States Environmental Protection Agency
FEMA – Federal Emergency Management Agency
K-C Alliance – Kiski Conemaugh River Basin Alliance
LCMDC – Loyalhanna Creek Mine Drainage Coalition
LWA – Loyalhanna Watershed Association
NCCDC – Northern Cambria Community Development Corporation
NPS – National Park Service
NRCS – Natural Resources Conservation Service
PAC-RC&D – Penn's Corner Conservancy Resource Conservation and Development Area
PennDOT – Pennsylvania Department of Transportation
PFBC – Pennsylvania Fish and Boat Commission
PGC – Pennsylvania Game Commission
PHPC – Pennsylvania Heritage Park Commission
PHPP – Pennsylvania Historic Preservation Program
PPAG – Pennsylvania Planning Assistance Grants
RAMP – Rural Abandoned Mine Program
RRWA – Roaring Run Watershed Association
RTCA – Federal Rivers, Trails and Conservation Assistance
SAC – Southern Alleghenies Conservancy
SAPDC – South Alleghenies Planning and Development Commission
SARC&D – Southern Alleghenies Resource Conservation and Development Area
SCRIP – Stonycreek-Conemaugh River Improvement Project (SAC acts as 501-C-3 entity and facilitator)
SPHPC – Southwestern Pennsylvania Heritage Preservation Commission
SWPC – Southwestern Pennsylvania Commission
TEA-21 – Transportation Equity Act for the 21st Century
USACOE – United States Army Corps of Engineers
USDA– United States Department of Agriculture
USFS – United States Forest Service
USFWS – United States Fish and Wildlife Service

NOTE: The K-C Alliance (as a member organization) is also eligible for consideration as a potential management agent based upon the role that each individual member organization can fulfill.

Table A-2

ACTION PLAN SUMMARY: STONYCREEK AND LITTLE CONEMAUGH RIVERS WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
Land Resources					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located in the watershed including: • Vegetative Stream Buffering • River Keepers Program • Land Use Planning • River Access • Hazardous Waste • Viewshed Protection • Sustainable Forestry Initiative • Green Golf Course Initiative	SCRIP, SAC, CCDs (and others in Basin Plan)	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
Water Resources					
- Basin-Wide Programs	Participate in the Basin-Wide Action Plan programs including: • Watershed Characterization Model • Stormwater Control • Sewage Problem Evaluation, particularly Jennerstown area. • Flood Problem Identification	SCRIP, SAC, municipalities (and others in Basin Plan)	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
- Mine Drainage	Complete planning and implement abatement programs for the 10 projects on the Little Conemaugh and Stonycreek River for which planning or implementation has begun.	SCRIP, SAC, DEP, EPA, AMD&Art, CCDs, CCCRA	ARC, EPA, DEP, RAMP, NRCS, grants and foundations	1	Complete planning: 1999-2002; Implementation: 2003-2009

*Note: See end of table for definition of acronyms and abbreviations.

Table A-2 (Continued)

ACTION PLAN SUMMARY: STONYCREEK AND LITTLE CONEMAUGH RIVERS WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Mine Drainge (Cont.)	Prioritize and address other projects as defined in the *Effects of Coal-Mine Discharges on the Quality of the Stonycreek River and its Tributaries, Somerset and Cambria Counties, Pennsylvania* as time and money become available.	SCRIP, SAC DEP, EPA, ARC	Same as above	2	Planning: 2001-2003; Implementation 2004-2009
- Non-Point Source Pollution	Develop a demonstration Project according to the edicts in the report *Assessment of Non-Point Source Pollution in the Stonycreek and Little Conemaugh Watersheds*; hire a technician to carry out the program in the eight high priority watersheds, then throughout the watershed.	DEP, DCNR, Cambria and Somerset CCDs, farmers	DEP, DCNR, USDA NRCS, Clean Water Act, county, private funds, SARC&D	1	Hire technician and Demonstration Project: 1999-2000; extend in Watershed: 2001-2009
- Flood Prevention	Develop a flood prevention program for Riverside and Ferndale.	Local municipalities, DEP, DCNR, Cambria Conservation District	NRCS, P.L 566 Small Watershed Funds, DEP discretionary funds, FEMA	2	Planning and funding: 1999-2000; Implementation 2001-2003
Biological					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located in the watershed including: • Alkalinity addition program (use limestone sand additive to streams in high value watersheds, where appropriate) • Limestone construction standard (add a standard in subdivision controls to use limestone in devices in contact with water, where appropriate)	SCRIP, SAC, counties, municipalities, PFBC (and others in Basin Plan)	As identified in the Basin-Wide Action Plan	Varies	As defined in basin Action Plan

Table A-2 (Continued)

ACTION PLAN SUMMARY: STONYCREEK AND LITTLE CONEMAUGH RIVERS WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Basin-Wide Programs (Cont.)	• Water Quality/Biological Monitoring • Fishery Management Program, particularly address public access and resources at lakes including: - Beaver Run Dam - Wilmore Dam - North Fork Dam - Dalton Run Reservoir - Quemahoning Reservoir - Hinkston Run Dam - Saltlick Dam • Important Habitats Program (assist development and implementation of Natural Heritage Inventories and educational programs) • Species of Concern Program (assist survey and management, possibly through River Keepers Program)				
- Franklin Riverwall	Investigate feasibility of replacing Franklin riverwall with limestone-based retaining structures.	SCRIP, SAC	DEP, USACOE	2	Planning 2001-2003; Implementation 2004-2009
Recreation Resources					
- Scenic Rivers	Submit the Stonycreek Gorge and Canyon areas for inclusion in the Wild and Scenic Rivers Program. Develop plans to protect scenic features of these areas.	SCRIP, SAC	SCRIP and SAC funds, private contributions	1	Prepare application: 1999-2000

Table A-2 (Continued)

ACTION PLAN SUMMARY: STONYCREEK AND LITTLE CONEMAUGH RIVERS WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Trail Development	Aid the further development of potential trails as identified in *Heritage Trails, Strengthening a Regional Community,* particularly the following in the watershed: • Portage Trail, Links with Main Line Trail • Jenner-Lincoln Trail, Enoch to Ferrellton • Quemahoning Trail, Boswell to US 219 Identify areas suitable for designation as Water Trails. Investigate suitability of trails for horseback use.	SCRIP, SAC, Regional Trail Commission, PA Rails to Trials Conservancy, SPHPC, AHDC, county and local municipalities	NPS, PA Rails to Trails, TEA-21, ARC, SPHPC, AHDC, Keystone grants, PA Heritage Park grants, SARC&D, foundations (See Heritage Trails, Appendix E)	2	Assume time of local sponsors
- Conemaugh River Greenway/Kiski-Conemaugh Greenway	Participate in preparation of the Feasibility Study for the Kiski-Conemaugh Greenway. Work with interested parties to implement its recommendations.	SCRIP, Allegheny Ridge Heritage State Park, SPHPC, AHDC, USACOE	USACOE (using federal appropriations) federal RTCA, PA Rails to Trails, PA Recreational Trails Program, PA Greenways Partnership,TEA-21, Keystone Program, foundations, PAC-RC&D, SARC&D, county and local governments	1	Planning: 1999-2000; Implementation: 2001-2009
- Johnstown Urban Greenway	Implement construction of the 15.1-mile section of the Conemaugh River Greenway that has been planned.	SCRIP, SAC should aid the local sponsors wherever possible	USACOE (using federal appropriations) federal RTCA, PA Rails to Trails, PA Recreational Trails Program, PA Greenways Partnership, TEA-21, Keystone Program, foundations, county and local governments	1	Implementation: 1999-2003

Table A-2 (Continued)

ACTION PLAN SUMMARY: STONYCREEK AND LITTLE CONEMAUGH RIVERS WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Mainline Trail/Path of the Flood Trail and Linkages	Aid the development of the trails, following the 10 strategies in the feasibility study for these trails.	Generate an Authority with a staff/CCCRA	NPS, PA Rails to Trails, TEA-21, ARC, Keystone grants, PA Heritage Park grants, foundations, SARC&D (See Heritage Trails, Appendix E)	1	Planning: 1999-2000; Implementation: 2001-2003
- Stonycreek River Canyon Whitewater Park	Develop the Stonycreek River Canyon Whitewater Park, including river and land trails and facilities	Somerset County	Somerset County, USFS	1	In Progress
Historic/Archaeologic					
- Pennsylvania Main Line Canal	Assist in developing a program to acquire and protect important elements of the canal in the 89 miles of the Conemaugh River Greenway/Kiski-Conemaugh Greenway.	USACOE, NPS, PHPP, SCRIP, SAC	USACOE, NPS, SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, PAC-RC&D, SARC&D, grants and local sources	2	Form Committee and preliminary planning 1999-2000; Detailed planning 2001-2003; Acquisition: 2004-2009
- Heritage Areas	Assist, promote and publicize the efforts to carry out the *Action Plan, America's Industrial Heritage Project* in the watershed.	SPHPC, AHDC, SCRIP, SAC, municipalities and counties	SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	2	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
- Allegheny Ridge Heritage Park	Assist, promote and publicize the efforts to preserve the areas identified in *the Plan for the Allegheny Ridge* in the watershed.	Allegheny Ridge Corporation, SCRIP, SAC, municipalities and counties (and others in Basin Plan)	SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, SARC&D, grants and local sources	2	Assist as targets of opportunity in riverine locations present themselves: 1999-2009

Table A-2 (Continued)

ACTION PLAN SUMMARY: STONYCREEK AND LITTLE CONEMAUGH RIVERS WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Basin-Wide Historic Sites	Promote and assist historic preservation in the watershed, according to the listing of National Register potentially eligible structures and other structures of potential historic interest listed in Appendix B. Investigate promotion of Scalp Level area as historic site and for opportunity to focus on history and environmental education.	SPHPC, AHDC, SCRIP, SAC, municipalities and counties	USACOE, NPS, SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	3	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
Education					
- Basin-Wide Programs	Participate in Basin-Wide Action Plan Programs including: • Newsletter and News Articles • Classroom Education • K-C Website • Household Hazardous Waste • Recreation Use • Small Business Resource Center • Annual Symposium • Annual Events	SCRIP, SAC, and others in Basin Plan	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
- Outdoor Education Center	Investigate establishment of an educational center at Flint Run, Hughes Borehole, or another site.	SCRIP, CCDs, school districts	DCNR, PA Environmental Education Act	2	Investigate Feasibility: 2001-2003; Planning: 2004-2005; Implementation: 2006-2009

Table A-2 (Continued)

ACTION PLAN SUMMARY: STONYCREEK AND LITTLE CONEMAUGH RIVERS WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable

Acronyms/Abbreviations:

AHDC – Allegheny Heritage Development Corporation
AMD&Art – Abandoned Mine Drainage and Art
ARC – Appalachian Regional Commission
BCWA – Blacklick Creek Watershed Association
CCDs – County Conservation Districts
CCCRA – Cambria County Conservation and Recreation Authority
CVC – Conemaugh Valley Conservancy
DCNR – Pennsylvania Department of Conservation and Natural Resources
DEP – Pennsylvania Department of Environmental Protection
EASI – Environmental Alliance for Senior Involvement
EPA – United States Environmental Protection Agency
FEMA – Federal Emergency Management Agency
K-C Alliance – Kiski Conemaugh River Basin Alliance
LCMDC – Loyalhanna Creek Mine Drainage Coalition
LWA – Loyalhanna Watershed Association
NCCDC – Northern Cambria Community Development Corporation
NPS – National Park Service
NRCS – Natural Resources Conservation Service
PAC-RC&D – Penn's Corner Conservancy Resource Conservation and Development Area
PennDOT – Pennsylvania Department of Transportation
PFBC – Pennsylvania Fish and Boat Commission
PGC – Pennsylvania Game Commission
PHPC – Pennsylvania Heritage Park Commission
PHPP – Pennsylvania Historic Preservation Program
PPAG – Pennsylvania Planning Assistance Grants
RAMP – Rural Abandoned Mine Program
RRWA – Roaring Run Watershed Association
RTCA – Federal Rivers, Trails and Conservation Assistance
SAC – Southern Alleghenies Conservancy
SAPDC – South Alleghenies Planning and Development Commission
SARC&D – Southern Alleghenies Resource Conservation and Development Area
SCRIP – Stonycreek-Conemaugh River Improvement Project (SAC acts as 501-C-3 entity and facilitator)
SPHPC – Southwestern Pennsylvania Heritage Preservation Commission
SWPC – Southwestern Pennsylvania Commission
TEA-21 – Transportation Equity Act for the 21st Century
USACOE – United States Army Corps of Engineers
USDA– United States Department of Agriculture
USFS – United States Forest Service
USFWS – United States Fish and Wildlife Service

NOTE: The K-C Alliance (as a member organization) is also eligible for consideration as a potential management agent based upon the role that each individual member organization can fulfill.

Table A-3

ACTION PLAN SUMMARY: CONEMAUGH RIVER MAINSTEM PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
Land Resources					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located along the Conemaugh Mainstem including: • Vegetative stream buffering • Rivers Keeper Program • Land Use Controls • River Access • Hazardous Waste • Viewshed Protection • Sustainable Forestry Initiative • Green Golf Course Initiative	SAC, CVC, CCDs and (others in Basin Plan)	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
Water Resources					
- Basin-Wide Programs	Participate in the Basin-Wide Action Plan programs along the Conemaugh Mainstem including: • Watershed Characterization Model • Stormwater Control • Sewage Problem Evaluation, throughout the Mainstem watershed, and particularly Brenheiser area • Flood Problem Identification	SAC, CVC, municipalities (and others in Basin Plan)	As Defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan

*Note: See end of table for definition of acronyms and abbreviations.

Table A-3 (Continued)

ACTION PLAN SUMMARY: CONEMAUGH RIVER MAINSTEM PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Mine Drainage Re-Evaluation Program	Have the *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA, 1972) updated to reflect current conditions in the basin, and covering the Conemaugh Mainstem; If funding is present, address the six priority discharges in the EPA study.	ARC, EPA, DEP, CVC	ARC, EPA, DEP, RAMP, NRCS, grants and foundations	1	Funding Request: 1999-2000; Plan Preparation 2001-2003; Implementation 2004-2009
- Non-Point Source Pollution	Promote development of a demonstration Project according to the edicts in the report *Assessment of Non-Point Source Pollution in the Stonycreek and Little Conemaugh Watersheds*; prepare a similar program for the Conemaugh Mainstem watershed.	CVC, CCDs, DEP	DEP, DCNR, USDA NRCS, Clean Water Act, county, private funds, PAC-RC&D, SARC&D	3	Begin planning 2001-2003; Implementation 2004-2009
	Conduct an assessment of effects of inappropriate timbering on Blacklegs Creek. Work with landowners to promote responsible timbering and forestry practices.	CVC	DCNR, USDA, NRCS	1	Planning and Implementation: 1999-2000
	Conduct an assessment of siltation problems at Buttermilk Falls Natural Area and identify solutions.	CVC, county conservation district, Indiana County Parks	DCNR, USDA, NRCS	2	Planning: 2001-2003 Implementation: 2004-2005
- Flood Control Facilities	A cooperative program with the USACOE is needed to better regulate the water level in the Conemaugh Dam and the Conemaugh and Kiski Rivers: Prepare a petition to that effect.	CVC, Counties, Local Municipalities, USACOE	Unfunded	3	Devise program and prepare petition:1999-2000

Table A-3 (Continued)

ACTION PLAN SUMMARY: CONEMAUGH RIVER MAINSTEM PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
Biological					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located in the Conemaugh Mainstem Watershed including: • Alkalinity addition program (use limestone sand additive to streams in high value watersheds, where appropriate) • Limestone construction standard (add a standard in subdivision controls to use limestone in devices in contact with water, where appropriate) • Water Quality/Biological Monitoring • Fishery Management Program • Important Habitat Program (assist development and implementation of Natural Heritage Inventories and educational programs). • Species of Concern Program (assist survey and management, possibly through River Keepers Program)	CVC, counties, municipalities, SAC, PFBC (and others in Basin Plan)	As identified in the Basin-Wide Action Plan	Varies	As defined in basin Action Plan
Recreation Resources					
- Trail Development	Aid the further development of potential trails identified in the report *Heritage Trails, Strengthening a Regional Community* in the Conemaugh Mainstem watershed. Identify areas suitable for designation as water trails. Investigate suitability of trails for horseback use.	CVC, SPHPC, Regional Trail Commission, AHDC, PA Rails to Trials Conservancy, county and local municipalities	NPS, PA Rails to Trails, TEA-21, ARC, SPHPC, AHDC, Keystone grants, PA Heritage Park grants, PAC-RC&D, SARC&D, foundations (See Heritage Trails, Appendix E)	2	Assume time of local sponsors

Table A-3 (Continued)

ACTION PLAN SUMMARY: CONEMAUGH RIVER MAINSTEM PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Conemaugh River Greenway/Kiski-Conemaugh Greenway	Participate in preparation of the Feasibility Study for the Kiski-Conemaugh Greenway. Work with interested parties to implement its recommendations.	CVC,CCCRA, Allegheny Ridge Heritage State Park, SPHPC, AHDC, USACOE,	USACOE (using federal appropriation), federal RTCA, PA Rails to Trails, PA Recreational Trails Program, PA Greenways Partnership, TEA-21, Keystone Program, foundations, county and local governments, PAC-RC&D, SARC&D	1	Planning: 1999-2000 Implementation: 2001-2009
- Conemaugh Dam Trail	Aid the development of the 3.28-mile trail from Blairsville to Bow Ridge	USACOE, CVC	USACOE (using federal appropriation), federal RTCA, PA Rails to Trails, PA Recreational Trails Program, TEA-21, Keystone Program, foundations, county and local governments	1	Planning: 1999-2000 Implementation: 2001-2004
- Cambria Iron Works Trail	Aid the development of proposed trail at the Cambria Iron Works site in Johnstown: Environmental Assessment is needed.	USACOE, CVC, SPHPC, AHDC	USACOE (using federal appropriation), federal RTCA, PA Rails to Trails, PA Recreational Trails Program, TEA-21, Keystone Program, foundations, county and local governments	1	Planning: 1999-2000 Implementation: 2001-2004

Table A-3 (Continued)

ACTION PLAN SUMMARY: CONEMAUGH RIVER MAINSTEM PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Johnstown Urban Greenway	Aid Implementation of construction of the 15.1-mile section of the Conemaugh River Greenway that has been planned.	CVC should aid the local sponsors wherever possible	USACOE (using federal appropriation), federal RTCA, PA Rails to Trails, PA Recreational Trails Program, PA Greenways Partnership, TEA-21, Keystone Program, foundations, county and local governments	1	Implementation: 1999-2003
- Conemaugh River Gorge, Packsaddle Gap	Form a Committee to study and protect these unique resources; develop a protection plan and implement plan.	CVC form a steering committee of volunteers, DCNR, PGC, others	Keystone Program, PA Rails to Trails, TEA-21, PA Land Trust Grants, foundation, local municipalities	1	Form Committee and do preliminary planning: 1999-2000; Develop protection plan: 2001-2003; Implement plan: 2004-2009
- Allegheny Ridge Heritage Park	Assist, promote and publicize the efforts to preserve the heritage areas identified in the *Plan for the Allegheny ridge.*	Allegheny Ridge Corp, Allegheny Mountains Convention Bureau, Cambria County Convention Bureau, municipalities and counties	SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	2	Assist as targets of opportunity in riverine locations present themselves: 1999-2009

Table A-3 (Continued)

ACTION PLAN SUMMARY: CONEMAUGH RIVER MAINSTEM PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
Historic/Archaeologic					
- Pennsylvania Main Mine Canal	Assist in developing a program to acquire and protect important elements of the canal in the 89-miles of the Conemaugh River Greenway/Kiski-Conemaugh Greenway, particularly around Blairsville (Lock 5); develop Satsburg's historic theme as the location to tell the story of the Main Line Canal.	USACOE, NPS, PHPP, CVC, SPHPC, AHDC	USACOE, NPS, SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, PAC-RC&D, SARC&D, grants and local sources	1	Form committee and do preliminary planning: 1999-2000; Do detailed plans: 2001-2003; Acquisition: 2004-2009
- Heritage Areas	Assist, promote and publicize the efforts of the Heritage Commission to carry out the *Action Plan, America's Industrial Heritage Project* in the watershed	SPHPC, AHDC, CVC, municipalities and counties	SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	2	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
- Basin-Wide Historic Sites	Promote and assist historic preservation in the Conemaugh Mainstem Watershed, according to the listing of National Register potentially eligible structures and other structures of potential historic interest listed in Appendix B.	SPHPC, AHDC, CVC, municipalities and counties	USACOE, NPS, SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	3	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
Education					
- Basin-Wide Programs	Participate in Basin-Wide Action Plan Programs including: • Newsletter and News Articles • Classroom Education • K-C Website • Household Hazardous Waste • Recreation Use • Small Business Resource Center • Annual Symposium • Annual Events	CVC and others in Basin Plan	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan

Table A-3 (Continued)

ACTION PLAN SUMMARY: CONEMAUGH RIVER MAINSTEM PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- River Recovery Educational Program	Establish an interpretive program at Conemaugh River Lake to focus on river recovery. Investigate feasibility of locating a River Restoration Educational Center at Conemaugh Dam, and develop facility if appropriate.	CVC, USACOE	USACOE, PA Environmental Education Act	2	Planning 2001-2003, Implementation 2004-2009

Acronyms/Abbreviations:

AHDC – Allegheny Heritage Development Corporation
AMD&Art – Abandoned Mine Drainage and Art
ARC – Appalachian Regional Commission
BCWA – Blacklick Creek Watershed Association
CCDs – County Conservation Districts
CCCRA – Cambria County Conservation and Recreation Authority
CVC – Conemaugh Valley Conservancy
DCNR – Pennsylvania Department of Conservation and Natural Resources
DEP – Pennsylvania Department of Environmental Protection
EASI – Environmental Alliance for Senior Involvement
EPA – United States Environmental Protection Agency
FEMA – Federal Emergency Management Agency
K-C Alliance – Kiski Conemaugh River Basin Alliance
LCMDC – Loyalhanna Creek Mine Drainage Coalition
LWA – Loyalhanna Watershed Association
NCCDC – Northern Cambria Community Development Corporation
NPS – National Park Service
NRCS – Natural Resources Conservation Service
PAC-RC&D – Penn's Corner Conservancy Resource Conservation and Development Area
PennDOT – Pennsylvania Department of Transportation
PFBC – Pennsylvania Fish and Boat Commission
PGC – Pennsylvania Game Commission
PHPC – Pennsylvania Heritage Park Commission
PHPP – Pennsylvania Historic Preservation Program
PPAG – Pennsylvania Planning Assistance Grants
RAMP – Rural Abandoned Mine Program
RRWA – Roaring Run Watershed Association
RTCA – Federal Rivers, Trails and Conservation Assistance
SAC – Southern Alleghenies Conservancy
SAPDC – South Alleghenies Planning and Development Commission
SARC&D – Southern Alleghenies Resource Conservation and Development Area
SCRIP – Stonycreek-Conemaugh River Improvement Project (SAC acts as 501-C-3 entity and facilitator)
SPHPC – Southwestern Pennsylvania Heritage Preservation Commission
SWPC – Southwestern Pennsylvania Commission
TEA-21 – Transportation Equity Act for the 21st Century
USACOE – United States Army Corps of Engineers
USDA– United States Department of Agriculture
USFS – United States Forest Service
USFWS – United States Fish and Wildlife Service

NOTE: The K-C Alliance (as a member organization) is also eligible for consideration as a potential management agent based upon the role that each individual member organization can fulfill.

Table A-4

ACTION PLAN SUMMARY: BLACKLICK CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
Land Resources					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located in the Blacklick Creek Watershed including: • Vegetative Stream Buffering • Rivers Keeper Program • Land Use Planning • River Access • Hazardous Waste • Viewshed Protection • Sustainable Forestry Initiative • Green Golf Course Initiative	SAC, BCWA, CCDs (and others in Basin Plan)	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
Water Resources					
- Basin-Wide Programs	Participate in the Basin-Wide Action Plan programs including: • Watershed Characterization Model • Stormwater Control • Sewage Problem Evaluation, particularly North Branch of Two Lick Creek, Nanty Glo and Blacklick Valley Sewage Project • Flood Problem Identification	SAC, BCWA, municipalities (and others in the Basin Plan)	As Defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
- Basin-Wide Mine Drainage Re-Evaluation Program	Have the *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA, 1972) updated to reflect current conditions in the basin, and covering the Blacklick Creek Watershed, as needed.	ARC, EPA, DEP	ARC, EPA, DEP, RAMP, NRCS, grants and foundations	1	Funding Request: 1999-2000; Plan Preparation 2001-2003; Implementation 2004-2009

*Note: See end of table for definition of acronyms and abbreviations.

Table A-4 (Continued)

ACTION PLAN SUMMARY: BLACKLICK CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Yellow Creek Restoration Plan	Continue to develop and implement Yellow Creek Restoration Plan.	BCWA	DEP, RAMP, EPA, ARC	1	Preparation: 1999-2003; Implementation: 1999-2009
- Upper Two Lick Creek	Continue to develop and implement remediation projects on Upper Two Lick Creek.	BCWA	DEP, RAMP, EPA, ARC	1	Preparation: 1999-2003; Implementation: 1999-2009
- Webster Mine Discharge	Plan and construct the Webster Mine Discharge passive treatment plant; have Revloc, Loraine, and Bethlehem Mine's 31 dumps removed.	USACOE, DEP, Cambria County, Nanty Glo Borough	USACOE appropriation, DEP, RAMP, ARC, EPA	1	Complete Webster planning and begin construction: 1999; remove dumps: as soon as possible
- AMD&Art Remediation Park	Construct the AMD&Art Vintondale Remediation Park treatment system, recreation grounds, interpretive structures and habitat improvement.	AMD&Art, EPA, Borough of Vintondale, CCCRA	EPA, PennDOT, DEP, Western PA Watershed Protection Program, DCNR, USFS	1	Phase I (treatment): 1999; Phase II (recreation and interpretation): 2000-2003
- Non-Point Source Pollution	Promote development of a demonstration project and prepare a program for the Blacklick Creek Watershed (see *Assessment of Non-Point Source Pollution in the Stonycreek and Little Conemaugh Watersheds*).	BCWA, CCDs, DEP	DEP, DCNR, USDA NRCS, Clean Water Act, county, private funds, PAC-RC&D, SARC&D	2	Begin Planning 2001-2003; Implementation 2004-2009
- Flood Prevention	Address flooding problems in Yellow Creek (upstream of SR 422) and Two-Lick Creek (in Clymer Borough) and locations in Brush Creek for flood control.	DEP, Local municipalities, Indiana Conservation District	NRCS, P.L 566 Small Watershed Funds, DEP discretionary funds, FEMA	2	Planning and Funding: 1999-2003; Implementation 2004-2009

Table A-4 (Continued)

ACTION PLAN SUMMARY: BLACKLICK CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
Biological					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located in the watershed including: • Alkalinity addition program (use limestone sand additive to streams in high value watersheds, where appropriate) • Limestone construction standard (add a standard in subdivision controls to use limestone in devices in contact with water, where appropriate) • Water Quality/Biological Monitoring • Fishery Management Program, particularly focusing on recovering streams such as South Branch Blacklick Creek • Important Habitats program (assist development and implementation of Natural Heritage Inventories, educational programs, and IBA). • Species of Concern Program (assist survey and management, possibly through River Keepers Program).	BCWA, counties, municipalities, SAC, PFBC (and others in Basin Plan)	As identified in the Basin-Wide Action Plan	Varies	As defined in basin Action Plan
Recreation Resources					
- Trail Development	Aid the further development of potential trails identified in *Heritage Trails, Strengthening a Regional Community,* particularly the following: • Vision Trail, Manver Station to Indiana and Heilwood	BCWA , Regional Trail Commission, PA Rails to Trials Conservancy,	NPS,PA Rails to Trails, TEA-21, ARC, AHDC, Keystone grants, PA Heritage Park grants, PAC-RC&D, SARC&D, foundations (See Heritage Trails, Appendix E)	2	Assume time of local sponsors

Table A-4 (Continued)

ACTION PLAN SUMMARY: BLACKLICK CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Trail Development (cont.)	• Ghost Town Trail System including: - Rexis Branch Extension, US 422 to Manver Station - Cambria and Indiana Trail, Ebensburg to White Mill (funding received) - Hoodlebug Trail - Blairsville Secondary Trail, US119 to Dilltown vicinity • Cambria Heights to Hinkston Dam • Clymer Trail, Dixonville to Clymer • Creekside Extension, Creekside to Indiana • Route 119 Greenway, Homer City to Blairsville • Yellow Creek Trail, Homer City to Yellow Creek Identify areas suitable for designation as water trails. Investigate suitability of trails for horseback use.	county and local municipalities, SPHPC, AHDC			
- Ghost Town Trail System	Implement construction of trail extensions from Dilltown to Blacklick and other areas, Rexis Branch Extension, the Cambria and Indiana Trail, and other linkages as noted previously.	Cambria & Indiana Trail Council, Indiana County Parks NCCD	NPS, PA Rails to Trails, TEA-21, ARC, Keystone grants, PA Heritage Park grants, foundations	1	Assume time table of local sponsors
- Blacklick Creek Gorge	Form a committee to study and protect this area, develop a protection plan and implement plan.	BCWA, PGC, others	Keystone Program, PA Rails to Trails, TEA-21, PA Land Trust Grants, foundations, municipalities	1	Form a committee and do preliminary planning: 1999-2000; Develop protection plan: 2001-2003; Implementation plan: 2004-2009

Table A-4 (Continued)

ACTION PLAN SUMMARY: BLACKLICK CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Duman Lake Park	Construct sewage treatment system, encourage weekday use, construct RV pads and tent camping area, construct facilities and implement education program, complete handicapped access trail.	CCCD	DCNR, Community Economic Development Funds, USFS	1	Planning: 1999-2000 Implementation: 2000-2003
Historic/Archaeologic					
- Heritage Areas	Assist, promote and publicize the efforts of the Heritage Commission to carry out the *Action Plan, America's Industrial Heritage Project* in the watershed	SPHPC, AHDC, BCWA, municipalities and counties	SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	2	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
- Basin-Wide Historic Sites	Promote and assist historic preservation in the watershed, according to the listing of National Register potentially eligible structures and other structures of potential historic interest listed in Appendix B	SPHPC, AHDC, BCWA, municipalities and counties	USACOE, NPS, SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	3	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
- Eliza Furnace	Develop and implement preservation and interpretive programs in accordance with the Master Plan for the Eliza Furnace Historic Site	Indiana County Parks, Cambria County Historical Society	NPS, SPHPC, AHDC, PHPC, TEA-21, grants and local sources	1	Planning: 1999-2000 Implementation: 2001-2003
Education					
- Basin-Wide Programs	Participate in Basin-Wide Action Plan Programs including: • Newsletter • Classroom Education • K-C Website • Household Hazardous Waste • Recreation Use • Small Business Resource Center • Annual Symposium • Annual Events	BCWA and others in Basin Plan	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan

Table A-4 (Continued)

ACTION PLAN SUMMARY: BLACKLICK CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable

Acronyms/Abbreviations:

AHDC – Allegheny Heritage Development Corporation
AMD&Art – Abandoned Mine Drainage and Art
ARC – Appalachian Regional Commission
BCWA – Blacklick Creek Watershed Association
CCDs – County Conservation Districts
CCCRA – Cambria County Conservation and Recreation Authority
CVC – Conemaugh Valley Conservancy
DCNR – Pennsylvania Department of Conservation and Natural Resources
DEP – Pennsylvania Department of Environmental Protection
EASI – Environmental Alliance for Senior Involvement
EPA – United States Environmental Protection Agency
FEMA – Federal Emergency Management Agency
K-C Alliance – Kiski Conemaugh River Basin Alliance
LCMDC – Loyalhanna Creek Mine Drainage Coalition
LWA – Loyalhanna Watershed Association
NCCDC – Northern Cambria Community Development Corporation
NPS – National Park Service
NRCS – Natural Resources Conservation Service
PAC-RC&D – Penn's Corner Conservancy Resource Conservation and Development Area
PennDOT – Pennsylvania Department of Transportation
PFBC – Pennsylvania Fish and Boat Commission
PGC – Pennsylvania Game Commission
PHPC – Pennsylvania Heritage Park Commission
PHPP – Pennsylvania Historic Preservation Program
PPAG – Pennsylvania Planning Assistance Grants
RAMP – Rural Abandoned Mine Program
RRWA – Roaring Run Watershed Association
RTCA – Federal Rivers, Trails and Conservation Assistance
SAC – Southern Alleghenies Conservancy
SAPDC – South Alleghenies Planning and Development Commission
SARC&D – Southern Alleghenies Resource Conservation and Development Area
SCRIP – Stonycreek-Conemaugh River Improvement Project (SAC acts as 501-C-3 entity and facilitator)
SPHPC – Southwestern Pennsylvania Heritage Preservation Commission
SWPC – Southwestern Pennsylvania Commission
TEA-21 – Transportation Equity Act for the 21st Century
USACOE – United States Army Corps of Engineers
USDA– United States Department of Agriculture
USFS – United States Forest Service
USFWS – United States Fish and Wildlife Service

NOTE: The K-C Alliance (as a member organization) is also eligible for consideration as a potential management agent based upon the role that each individual member organization can fulfill.

Table A-5

ACTION PLAN SUMMARY: LOYALHANNA CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
Land Resources					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located in the Loyalhanna Creek Watershed including: • Vegetative Stream Buffering • Rivers Keepers Program • Land Use Planning • River Access • Hazardous Waste • Viewshed Protection • Sustainable Forestry Initiative • Green Golf Course Initiative	LWA, CCDs (and others in Basin Plan)	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
Water Resources					
- Basin-Wide Programs	Participate in the Basin-Wide Action Plan programs including: • Watershed Characterization Model • Stormwater Control • Sewage Problem Evaluation, particularly Darrlington area • Flood Problem Identification	LWA, municipalities (and others in the Basin Plan)	As Defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
- Basin-Wide Mine Drainage Re-Evaluation Program	Have the *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA, 1972) updated to reflect current conditions in the basin, and covering the Loyalhanna Creek Watershed.	ARC, EPA, DEP	ARC, EPA, DEP, RAMP , NRCS, grants and foundations	1	Funding Request: 1999-2000; Plan Preparation 2001-2003; Implementation 2004-2009

*Note: See end of table for definition of acronyms and abbreviations.

Table A-5 (Continued)

ACTION PLAN SUMMARY: LOYALHANNA CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Monastery Run and LCMDC Projects	Complete the Monastery Run mine drainage remediation project, under the direction of the Loyalhanna Creek Mine Drainage Coalition (LCMDC), then plan and address the following discharges: Crabtree, Saxman, Keystone, Unity, Freidline Mine and Adelphoi Village.	LCMDC, LWA, USACOE, DEP, EPA	RAMP, ARC, EPA, DEP, USACOE	1	Complete Monastery Run construction: 1999-2000; Plan other projects: 2001-2003; Implementation: 2004-2009
- Non-Point Source Pollution	Promote development of a demonstration Project according to the edicts in the report *Assessment of Non-Point Source Pollution in the Stonycreek and Little Conemaugh Watersheds*; prepare a similar program for the Loyalhanna Creek Watershed	LWA, CCDs, DEP	DEP, DCNR, USDA NRCS, Clean Water Act, county, private funds, PAC-RC&D, SARC&D	3	Begin planning 2001-2004; implementation 2004-2009
- Flood Prevention	Develop a flood control program along Mill Creek near the end of Avenue A in Latrobe, from the first Ward in Latrobe to Kingston, and in Unity Township.	DEP, Local municipalities, Westmoreland CCD	NRCS, P.L 566 Small Watershed Funds, DEP discretionary funds, FEMA	2	Planning:1999-2000; Implementation: 2001-2009
Biological					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located in the watershed including: • Alkalinity addition program (use limestone sand additive to streams in high value watersheds, where appropriate)	LWA, counties, municipalities, PFBC (and others in Basin Plan)	As defined in the Basin-Wide Action Plan	Varies	As defined in basin Action Plan

Table A-5 (Continued)

ACTION PLAN SUMMARY: LOYALHANNA CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Basin-Wide Programs (cont.)	• Limestone construction standard (add a standard in subdivision controls to use limestone in devices in contact with water, where appropriate) • Water Quality/Biological Monitoring • Fishery Management Program, particularly recovering streams • Important Habitats Program (encourage implementation of Westmoreland County Natural Heritage Inventory) • Species of Concern Program (assist survey and management, possibly through River Keepers Program)				
Recreation Resources					
- Trail Development	Aid the further development of potential trails identified in *Heritage Trails, Strengthening a Regional Community*, particularly the following: • Loyahanna Trail Extension, Saltsburg to Latrobe • Saltsburg to Trafford Rail Trail • Loyalhanna Nature Trail Identify areas suitable for designation as water trails. Investigate suitability of trails for horseback use.	LWA, SPHPC, AHDC, Regional Trail Commission, PA Rails to Trials Conservancy, county and local municipalities	NPS, PA Rails to Trails, TEA-21, ARC, SPHPC, AHDC, Keystone grants, PAC-RC&D, SRC&D, PA Heritage Park grants, foundations (See Heritage Trails, Appendix E)	2	Assume time of local sponsors

Table A-5 (Continued)

ACTION PLAN SUMMARY: LOYALHANNA CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Loyalhanna Gorge Protection	Develop a program to protect land in the Loyalhanna Gorge	LWA, Western PA Conservancy	Keystone Program, PA Rails to Trails, TEA-21, PA Land Trust Grants, foundation, local municipalities	3	Form Committee and do preliminary planning: 1999-2000; Develop protection plan: 2001-2003: Implement plan: 2004-2009
Historic/Archaeologic					
- Heritage Areas	Assist, promote and publicize the efforts of the Heritage Commission to carry out the *Action Plan, America's Industrial Heritage Project* in the watershed	SPHPC, AHDC, LWA, municipalities and counties	SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	2	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
- Basin-Wide Historic Sites	Promote and assist historic preservation in the watershed, according to the listing of National Register potentially eligible structures and other structures of potential historic interest listed in Appendix B	SPHPC, AHDC, LWA, municipalities and counties	USACOE, NPS, SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	3	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
Education					
- Basin-Wide Programs	Participate in Basin-Wide Action Plan Programs including: • Newsletter and News Articles • Classroom Education • K-C Website • Household Hazardous Waste • Recreation Use • Small Business Resource Center • Annual Symposium • Annual Events	LWA and others in Basin Plan	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan

Table A-5 (Continued)

ACTION PLAN SUMMARY: LOYALHANNA CREEK WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Forest Management in Headwater Areas	Develop and carry out a forest management program, particularly for headwater stream protection	LWA, PA Bureau of Forestry	PA Bureau of Forestry, Forbes State Forest	2	Planning: 1999-2000; Implementation: 2001-2009

Acronyms/Abbreviations:

AHDC – Allegheny Heritage Development Corporation
AMD&Art – Abandoned Mine Drainage and Art
ARC – Appalachian Regional Commission
BCWA – Blacklick Creek Watershed Association
CCDs – County Conservation Districts
CCCRA – Cambria County Conservation and Recreation Authority
CVC – Conemaugh Valley Conservancy
DCNR – Pennsylvania Department of Conservation and Natural Resources
DEP – Pennsylvania Department of Environmental Protection
EASI – Environmental Alliance for Senior Involvement
EPA – United States Environmental Protection Agency
FEMA – Federal Emergency Management Agency
K-C Alliance – Kiski Conemaugh River Basin Alliance
LCMDC – Loyalhanna Creek Mine Drainage Coalition
LWA – Loyalhanna Watershed Association
NCCDC – Northern Cambria Community Development Corporation
NPS – National Park Service
NRCS – Natural Resources Conservation Service
PAC-RC&D – Penn's Corner Conservancy Resource Conservation and Development Area
PennDOT – Pennsylvania Department of Transportation
PFBC – Pennsylvania Fish and Boat Commission
PGC – Pennsylvania Game Commission
PHPC – Pennsylvania Heritage Park Commission
PHPP – Pennsylvania Historic Preservation Program
PPAG – Pennsylvania Planning Assistance Grants
RAMP – Rural Abandoned Mine Program
RRWA – Roaring Run Watershed Association
RTCA – Federal Rivers, Trails and Conservation Assistance
SAC – Southern Alleghenies Conservancy
SAPDC – South Alleghenies Planning and Development Commission
SARC&D – Southern Alleghenies Resource Conservation and Development Area
SCRIP – Stonycreek-Conemaugh River Improvement Project (SAC acts as 501-C-3 entity and facilitator)
SPHPC – Southwestern Pennsylvania Heritage Preservation Commission
SWPC – Southwestern Pennsylvania Commission
TEA-21 – Transportation Equity Act for the 21st Century
USACOE – United States Army Corps of Engineers
USDA– United States Department of Agriculture
USFS – United States Forest Service
USFWS – United States Fish and Wildlife Service

NOTE: The K-C Alliance (as a member organization) is also eligible for consideration as a potential management agent based upon the role that each individual member organization can fulfill.

Table A-6

ACTION PLAN SUMMARY: KISKIMINETAS RIVER MAINSTEM WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
Land Resources					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located in the watershed including: • Vegetative Stream Buffering • River Keepers Program • Land Use Planning • River Access • Hazardous Waste • Viewshed Protection • Sustainable Forestry Initiative • Green Golf Course Initiative	RRWA, CCDs (and others in Basin Plan)	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
Water Resources					
- Basin-Wide Programs	Participate in the Basin-Wide Action Plan programs including: • Watershed Characterization Model • Stormwater Control • Sewage Problem Evaluation • Flood Problem Identification	RRWA, municipalities (and others in the Basin Plan)	As Defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
- Basin-Wide Mine Drainage Re-Evaluation Program	Have the *Cooperative Mine Drainage Survey, Kiskiminetas River Basin* (EPA, 1972) updated to reflect current conditions in the basin, and covering the Kiski Mainstem Watershed	ARC, EPA, DEP	ARC, EPA, DEP, RAMP, NRCS, grants and foundations	1	Funding Request: 1999-2000; Plan Preparation 2001-2003; Implementation 2004-2009

*Note: See end of table for definition of acronyms and abbreviations.

Table A-6 (Continued)

ACTION PLAN SUMMARY: KISKIMINETAS RIVER MAINSTEM WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Trucks Discharge	Plan abatement of the Trucks Mine Discharge near Apollo.	RRWA, USACOE, DEP, EPA	RAMP, ARC, EPA, DEP, USACOE	1	Complete planning: 1999; Develop program: 2000-2003; Implementation:2004-2009
- Non-Point Source Pollution	Promote development of a demonstration Project according to the edicts in the report *Assessment of Non-Point source Pollution in the Stonycreek and Little Conemaugh Watersheds*; prepare a similar program for the Kiski Mainstem Watershed.	RRWA, CCDs, DEP	DEP, DCNR, USDA NRCS, Clean Water Act, county, private funds, PAC-RC&D, SARC&D	3	Begin planning 2001-2003; implementation 2004-2009
- Tire Dump	Evaluate river pollution problem at a tire dump near Avonmore. Refer complaint to DEP and PFBC for action if appropriate.	RRWA	RRWA funds	1	Planning and Implementation: 1999-2000
- Kiski River Water Level	Coordinate with the USACOE to stabilize the water level in the Kiski River, using upstream flood control facilities.	DCNR, Local Municipalities	USACOE	3	Planning: 1999-2003
Biological					
- Basin-Wide Programs	Aid or carry out elements of the Basin-Wide Action Plan (as defined in the plan) that are located in the watershed including: • Alkalinity addition program (use limestone sand additive to streams in high value watersheds, where appropriate) • Limestone construction standard (add a standard in subdivision controls to use limestone in devices in contact with water, where appropriate)	RRWA, counties, municipalities, PFBC (and others in Basin Plan)	As identified in the Basin-Wide Action Plan	Varies	As defined in basin Action Plan

Table A-6 (Continued)

ACTION PLAN SUMMARY: KISKIMINETAS RIVER MAINSTEM WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Basin-Wide Programs (cont.)	• Water Quality/Biological Monitoring • Fishery Management Program, including increased public access to Kiski River • Important Habitats Program (assist development and implementation of Natural Heritage Inventories and educational programs) • Species of Concern Program (assist survey and management, possibly through River Keepers Program)				
Recreation Resources					
- Trail Development	Aid the further development of potential trails identified in *Heritage Trails, Strengthening a Regional Community*, particularly the following in the watershed: • Saltsburg to Trafford Rail Trail Investigate possible trails along the West Penn trolley trace and Apollo to Leechburg. Further development of the Roaring Run Trail. Identify areas suitable for designation as water trails. Investigate suitability of trails for horseback use.	RRWA, SPHPC, AHDC, Regional Trail Commission, PA Rails to Trials Conservancy, county and local municipalities	NPS, PA Rails to Trails, TEA-21, ARC, SPHPC, AHDC, Keystone grants, PA Heritage Park grants, PAC-RC&D, SARC&D, foundations (See Heritage Trails, Appendix E)	2	Assume time of local sponsors

Table A-6 (Continued)

ACTION PLAN SUMMARY: KISKIMINETAS RIVER MAINSTEM WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Conemaugh River Greenway/Kiski-Conemaugh Greenway	Participate in preparation of the Feasibility Study for the Kiski-Conemaugh Greenway. Work with interested parties to implement its recommendations.	RRWA, CCCRA, Allegheny Ridge Heritage State Park, AHDC, USACOE	USACOE (using federal appropriations), Federal RTCA, PA Rails to Trails, PA Recreational Trails Program, PA Greenways Partnership, TEA-21, Keystone Program, PAC-RC&D, SARC&D, foundations, county and local governments	1	Planning: 1999-2000 Implementation: 2001-2009
- Kiskiminetas River Hillsides	Form a committee to study and protect area; develop a protection plan and implement for river hillside viewsheds, particularly in the areas between Edmon and Cherry Lane and Salina to mouth of Beaver Run.	RRWA, others	Keystone Program, PA Rails to Trails, TEA-21, PA Land Trust Grants, foundations, local municipalities	1	Form a committee and do preliminary planning: 1999-2000; Develop protection plan: 2001-2003; Implement plan: 2004-2009
Historic/Archaeologic					
- Pennsylvania Main Line Canal	Develop a program to acquire and protect important elements of the canal in the watershed; develop Saltsburg's historic theme as the location to tell the story of the Main Line Canal	USACOE, NPS, PHPP, RRWA	USACOE, NPS, SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, PAC-RC&D, SARC&D, grants and local sources	1	Preliminary planning: 1999-2000; Detailed plans: 2001-2003; Acquisition: 2004-2009
- Heritage Areas	Assist, promote and publicize the efforts of the Heritage Commission to carry out the *Action Plan, America's Industrial Heritage Project* in the watershed	SPHPC, AHDC, RRWA, municipalities and counties	SPHPC, AHDC, PHPC, TEA-21, State Capital Budget, grants and local sources	2	Assist as targets of opportunity in riverine locations present themselves: 1999-2009

Table A-6 (Continued)

ACTION PLAN SUMMARY: KISKIMINETAS RIVER MAINSTEM WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable
- Basin-Wide Historic Sites	Promote and assist historic preservation in the watershed, according to the listing of National Register potentially eligible structures and other structures of potential historic interest listed in Appendix B.	SPHPC, AHDC, RRWA, municipalities and counties	USACOE, NPS, SPHPC, AHDC,PHPC, TEA-21, State Capital Budget, grants and local sources	3	Assist as targets of opportunity in riverine locations present themselves: 1999-2009
Education					
- Basin-Wide Programs	Participate in Basin-Wide Action Plan Programs including: • Newsletter and News Articles • Classroom Education • K-C Website • Household Hazardous Waste • Recreation Use • Small Business Resource Center • Annual Symposium • Annual Events	RRWA and others in Basin Plan	As defined in the Basin-Wide Action Plan	Varies	Defined in Basin-Wide Action Plan
- Kiski Fishing Tournament	Continue to operate an annual Kiski River Fishing Tournament. Publicize in local and regional venues	RRWA	PFBC, civic and sports groups, industry sponsorship	1	Implementation: 1999-2009
Management					
- Kiskiminetas River Watershed Organization	Establish organization with the entire main stem of the Kiskiminetas River as its focus.	RRWA	RRWA	1	Plan and implement: 1999-2001

Table A-6 (Continued)

ACTION PLAN SUMMARY: KISKIMINETAS RIVER MAINSTEM WATERSHED PROGRAMS

Action Item	Measures and Approach*	Potential Management Agent*	Funding Options*	Priority Level	Phasing and Timetable

Acronyms/Abbreviations:

AHDC – Allegheny Heritage Development Corporation
AMD&Art – Abandoned Mine Drainage and Art
ARC – Appalachian Regional Commission
BCWA – Blacklick Creek Watershed Association
CCDs – County Conservation Districts
CCCRA – Cambria County Conservation and Recreation Authority
CVC – Conemaugh Valley Conservancy
DCNR – Pennsylvania Department of Conservation and Natural Resources
DEP – Pennsylvania Department of Environmental Protection
EASI – Environmental Alliance for Senior Involvement
EPA – United States Environmental Protection Agency
FEMA – Federal Emergency Management Agency
K-C Alliance – Kiski Conemaugh River Basin Alliance
LCMDC – Loyalhanna Creek Mine Drainage Coalition
LWA – Loyalhanna Watershed Association
NCCDC – Northern Cambria Community Development Corporation
NPS – National Park Service
NRCS – Natural Resources Conservation Service
PAC-RC&D – Penn's Corner Conservancy Resource Conservation and Development Area
PennDOT – Pennsylvania Department of Transportation
PFBC – Pennsylvania Fish and Boat Commission
PGC – Pennsylvania Game Commission
PHPC – Pennsylvania Heritage Park Commission
PHPP – Pennsylvania Historic Preservation Program
PPAG – Pennsylvania Planning Assistance Grants
RAMP – Rural Abandoned Mine Program
RRWA – Roaring Run Watershed Association
RTCA – Federal Rivers, Trails and Conservation Assistance
SAC – Southern Alleghenies Conservancy
SAPDC – South Alleghenies Planning and Development Commission
SARC&D – Southern Alleghenies Resource Conservation and Development Area
SCRIP – Stonycreek-Conemaugh River Improvement Project (SAC acts as 501-C-3 entity and facilitator)
SPHPC – Southwestern Pennsylvania Heritage Preservation Commission
SWPC – Southwestern Pennsylvania Commission
TEA-21 – Transportation Equity Act for the 21st Century
USACOE – United States Army Corps of Engineers
USDA– United States Department of Agriculture
USFS – United States Forest Service
USFWS – United States Fish and Wildlife Service

NOTE: The K-C Alliance (as a member organization) is also eligible for consideration as a potential management agent based upon the role that each individual member organization can fulfill.

APPENDIX B

DATA TABLES

LIST OF TABLES

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Table B-1

EXCEPTIONAL VALUE, HIGH QUALITY, AND TROUT STOCKED FISHERY WATERS

Stream	Classification	Zone	Watershed
Middle Fork Mill Creek	EV	Basin, source to confluence with North and South Forks	Loyalhanna Creek
North Fork Mill Creek	HQ-CWF	Basin, source to confluence with Middle and South Forks	Loyalhanna Creek
South Fork Mill Creek	EV	Basin, source to confluence with Middle and North Forks	Loyalhanna Creek
Coalpit Run	HQ-CWF	Basin	Loyalhanna Creek
Fourmile Run	TSF	Basin	Loyalhanna Creek
Loyalhanna Creek	TSF	Main stem, Fourmile Run to Conemaugh River	Loyalhanna Creek
Indian Camp Run	HQ-CWF	Basin	Loyalhanna Creek
Keystone Lake Tributary (McCune Run)	TSF	Basin, source to Keystone Lake Dam	Loyalhanna Creek
Serviceberry Run	HQ-WWF	Basin	Loyalhanna Creek
Beaver Run	HQ-CWF	Basin, source to Beaver Run Reservor Dam	Loyalhanna Creek
Beaver Run	TSF	Basin, Beaver Run Reservoir Dam to mouth	Loyalhanna Creek
Loyalhanna Creek	HQ-CWF	Basin, source to Laughlintown Run	Loyalhanna Creek
Laughlintown Run	HQ-CWF	Basin, except Furnace Run	Loyalhanna Creek
Furnace Run	EV	Basin	Loyalhanna Creek
Laurel Run	HQ-CWF	Basin	Conemaugh River
Clark Run	HQ-CWF	Basin	Conemaugh River
Findley Run	HQ-CWF	Basin	Conemaugh River
Baldwin Creek	EV	Basin, source to New Florence Dam	Conemaugh River
Baldwin Creek	HQ-CWF	Main stem, New Florence Dam to mouth	Conemaugh River
Unnamed tributaries to Baldwin Creek	HQ-CWF	Basins, New Florence Dam to mouth	Conemaugh River

Table B-1 (Continued)

EXCEPTIONAL VALUE, HIGH QUALITY, AND TROUT STOCKED FISHERY WATERS

Stream	Classification	Zone	Watershed
Powdermill Run	EV	Basin	Conemaugh River
Poplar Run	HQ-CWF	Basin	Conemaugh River
Shannon Run	HQ-CWF	Basin	Conemaugh River
Tubmill Creek	EV	Basin, source to Tubmill Reservoir Dam	Conemaugh River
Tubmill Creek	TSF	Basin, Tubmill Reservoir Dam to mouth	Conemaugh River
McGee Run	TSF	Main stem, farthest upstream crossing of Derry Borough border to mouth	Conemaugh River
Shirey Run	HQ-CWF	Basin	Conemaugh River
Aultmans Run	TSF	Basin	Conemaugh River
Spruce Run	HQ-CWF	Basin	Conemaugh River
Stewart Run	HQ-CWF	Basin	Blacklick Creek
Blacklick Creek	TSF	Main stem, confluence of North and South Branches to mouth	Blacklick Creek
South Branch Two Lick Creek	HQ-CWF	Basin, source to confluence with North Branch	Blacklick Creek
Two Lick Creek	TSF	Main stem, confluence of North and South Branches to mouth	Blacklick Creek
Little Yellow Creek	HQ-CWF	Basin	Blacklick Creek
Yellow Creek	TSF	Main stem, Yellow Creek State Park Dam to mouth	Blacklick Creek
Stonycreek River	TSF	Main stem, Beaverdam Creek to Quemahoning Creek	Stonycreek/Little Conemaugh Rivers
Beaverdam Creek	HQ-CWF	Basin	Stonycreek/Little Conemaugh Rivers
Spruce Run	HQ-CWF	Basin	Stonycreek/Little Conemaugh Rivers
Beaverdam Creek	HQ-CWF	Basin	Stonycreek/Little Conemaugh Rivers
Roaring Run	HQ-CWF	Basin, source to Boswell Municipal Authority Dam	Stonycreek/Little Conemaugh Rivers

Table B-1 (Continued)

EXCEPTIONAL VALUE, HIGH QUALITY, AND TROUT STOCKED FISHERY WATERS

Stream	Classification	Zone	Watershed
Clear Shade Creek	EV	Basin, source to site of Windber Reservoir	Stonycreek/Little Conemaugh Rivers
Clear Shade Creek	HQ-CWF	Main stem, site of Windber Reservoir to mouth	Stonycreek/Little Conemaugh Rivers
Unnamed Tributaries to Clear Shade Creek	HQ-CWF	Basins, site of Windber Reservoir to mouth	Stonycreek/Little Conemaugh Rivers
Piney Run	EV	Basin, source to T816	Stonycreek/Little Conemaugh Rivers
Piney Run	HQ-CWF	Basin, T816 to mouth	Stonycreek/Little Conemaugh Rivers
Paint Creek	TSF	Main stem, Little Paint Creek to mouth	Stonycreek/Little Conemaugh Rivers
South Fork Bens Creek	EV	Basin, source to Conemaugh Township Water Authority Reservoir	
South Fork Bens Creek	HQ-CWF	Basin, Conemaugh Township Water Authority Reservoir to confluence with North Fork	Stonycreek/Little Conemaugh Rivers
North Fork Bens Creek	EV	Basin, source to Johnstown Reservoir	Stonycreek/Little Conemaugh Rivers
North Fork Bens Creek	HQ-CWF	Main stem, Johnstown Reservoir	Stonycreek/Little Conemaugh Rivers
Unnamed Tributaries to North Fork Bens Creek	EV	Basins, Johnstown Reservoir	Stonycreek/Little Conemaugh Rivers
Allwine Creek	EV	Basin	Stonycreek/Little Conemaugh Rivers
Riffle Run	EV	Basin	Stonycreek/Little Conemaugh Rivers
North Fork Bens Creek	HQ-CWF	Basin, Johnstown Reservoir Dam to confluence with South Fork	Stonycreek/Little Conemaugh Rivers
Mill Creek	HQ-CWF	Basin	Stonycreek/Little Conemaugh Rivers
Bens Creek (tributary to Little Conemaugh River)	HQ-CWF	Basin	Stonycreek/Little Conemaugh Rivers
Noels Creek	HQ-CWF	Basin	Stonycreek/Little Conemaugh Rivers
South Fork Little Conemaugh River	HQ-CWF	Basin, source to Beaverdam Run	Stonycreek/Little Conemaugh Rivers

Table B-1 (Continued)

EXCEPTIONAL VALUE, HIGH QUALITY, AND TROUT STOCKED FISHERY WATERS

Stream	Classification	Zone	Watershed
Beaverdam Run	HQ-CWF	Basin	Stonycreek/Little Conemaugh Rivers
Saltlick Run	HQ-CWF	Basin	Stonycreek/Little Conemaugh Rivers

Source: Pennsylvania Department of Environmental Protection 1998.

TABLE B-2

COMMUNITY POPULATION CHARACTERISTICS

Community	Classification	Population 1990	Population 1980	Per Capita Income 1990
Armstrong County				
Apollo	Borough			
Bethel	Township	1,261	1,349	10,174
Gilpin	Township	2,804	2,967	13,130
Kiskiminetas	Township	5,456	5,875	10,738
Leechburg	Borough	2,504	2,682	12,065
North Apollo	Borough	1,391	1,487	10,655
Parks	Township	2,739	3,123	9,683
South Bend	Township	1,304	1,237	9,467
Cambria County				
Adams	Township	6,869	7,532	9,643
Allegheny	Township	2,075	1,607	8,502
Barr	Township	2,260	2,318	8,102
Blacklick	Township	2,206	2,364	8,529
Brownstown	Borough	937	1,077	9,505
Cambria	Township	6,357	7,254	9,834
Cassandra	Borough	192	238	8,714
Conemaugh	Township	2,399		
Cresson	Township	1,784	2,184	11,390
Cresson	Borough	1,784	2,184	11,390
Croyle	Township	2,451	2,550	9,771
Daisytown	Borough	367	421	10,440
Dale	Borough	1,642	1,906	8,433
East Carroll	Township	1,951	2,089	9,606
East Conemaugh	Borough	1,470	2,128	8,648
East Taylor	Township	3,073	3,276	9,771
Ebensburg	Borough	3,872	4,096	13,676
Ehrenfeld	Borough	307	360	6,779
Ferndale	Borough	2,020	2,204	11,486

TABLE B-2 (Continued)

COMMUNITY POPULATION CHARACTERISTICS

Community	Classification	Population 1990	Population 1980	Per Capita Income 1990
Franklin	Borough	565	559	9,669
Geistown	Borough	2,749	3,304	12,628
Jackson	Township	5,213	5,477	10,696
Johnstown	City	28,134	35,496	8,500
Lilly	Borough	1,162	1,462	9,313
Lorain	Borough	824	989	9,480
Lower Yoder	Township	3,342	4,026	10,854
Middle Taylor	Township	802	1,019	10,135
Munster	Township	688	675	8,690
Nanty Glo	Borough	3,190	3,936	9,400
Portage	Township	4,089	4,507	9,340
Portage	Borough	3,105	3,510	9,446
Richland	Township	12,777	12,899	12,687
Sankertown	Borough	770	804	9,012
Scalp Level	Borough	1,158	1,186	8,697
South Fork	Borough	1,197	1,401	8,163
Southmont	Borough	2,415	2,683	17,010
Stonycreek	Township	3,654	4,430	11,621
Summerhill	Township	614	725	10,562
Summerhill	Borough	614	725	10,562
Upper Yoder	Township	5,435	6,138	14,798
Vintondale	Borough	582	697	10,957
Washington	Township	929	901	9,533
West Carroll	Township	1,524	1,834	8,475
West Taylor	Township	995	1,150	8,903
Westmont	Borough	5,789	6,113	21,203
Wilmore	Borough	277	299	8,932
Indiana County				
Armagh	Borough	104	133	13,408
Armstrong	Township	3,048	2,786	10,507

TABLE B-2 (Continued)

COMMUNITY POPULATION CHARACTERISTICS

Community	Classification	Population 1990	Population 1980	Per Capita Income 1990
Blacklick	Township	1,225	1,164	
Blairsville	Borough	3,595	4,166	11,265
Brush Valley	Township	1,811	1,815	10,739
Buffington	Township	1,217	1,261	8,508
Burrell	Township	3,669	4,152	11,332
Center	Township	5,257	5,475	10,788
Cherryhill	Township	2,764	2,540	9,791
Clymer	Borough	1,499	1,761	7,986
Conemaugh	Township	2,448	2,559	10,860
East Mahoning	Township	1,140	977	9,436
East Wheatfield	Township	2,735	2,844	9,680
Grant	Township	729	770	7,260
Green	Township	4,095	4,338	8,380
Homer City	Borough	1,809	2,248	11,593
Indiana	Borough	15,174	16,051	8,627
Pine	Township	2,172	2,152	8,716
Rayne	Township	3,339	3,207	9,959
Saltsburg	Borough	990	964	9,827
West Wheatfield	Township	2,370	2,699	8,277
White	Township	13,788	13,177	14,418
Young	Township	1,805	2,043	10,352
Somerset County				
Benson	Borough	277	308	9,276
Berlin	Borough	2,064	1,999	11,329
Boswell	Borough	1,485	1,480	8,203
Brothers Valley	Township	2,395	2,373	10,103
Central City	Borough	1,246	1,496	8,797
Conemaugh	Township	7,737		
Hooversville	Borough	731	863	8,811
Indian Lake	Borough	388	306	21,213

TABLE B-2 (Continued)

COMMUNITY POPULATION CHARACTERISTICS

Community	Classification	Population 1990	Population 1980	Per Capita Income 1990
Jenner	Township	4,147	4,383	10,673
Jennerstown	Borough	635	656	13,250
Laurel Mountain	Borough			
Lincoln	Township	1,655	1,718	10,281
Ogle	Township	597	509	8,506
Paint	Township	3,491	3,634	10,385
Paint	Borough	1,091	1,177	8,683
Quemahoning	Township	2,301	2,334	8,616
Shade	Township	3,177	3,530	8,201
Shanksville	Borough	235	273	9,680
Somerset	Township	6,454	6,474	13,122
Stonycreek	Township	2,083		
Stoystown	Borough	389	432	10,812
Windber	Borough	4,756	5,585	9,427
Westmoreland County				
Allegheny	Township	7,895	7,452	12,487
Avonmore	Borough	1,089	1,234	11,566
Bell	Township	2,353	2,158	12,074
Bolivar	Borough	544	706	8,989
Cook	Township	2,033	2,174	15,556
Delmont	Borough	2,041	2,159	13,043
Derry	Township	2,950	3,072	10,368
Derry	Borough	15,446	16,193	10,440
Donegal	Township	212	212	10,439
Donegal	Borough	212	212	10,439
East Vandergrift	Borough	787	955	10,190
Fairfield	Township	2,276	2,260	9,012
Hempfield	Township	42,609	43,396	13,359
Hyde Park	Borough	542	633	10,944
Latrobe	Borough	9,265	10,799	12,702

TABLE B-2 (Continued)

COMMUNITY POPULATION CHARACTERISTICS

Community	Classification	Population 1990	Population 1980	Per Capita Income 1990
Ligonier	Township	6,979	7,338	15,351
Ligonier	Borough	1,638	1,917	14,455
Loyalhanna	Township	2,171	2,359	10,276
Mount Pleasant	Township	11,341	11,851	11,186
New Alexandria	Borough	571	697	12,120
New Florence	Borough	854	855	8,841
Oklahoma	Borough	977	1,078	11,997
Salem	Township	7,282	7,656	11,166
Seward	Borough	522	675	9,564
St. Clair	Township	1,603	1,668	9,812
Unity	Township	20,109	19,976	14,340
Upper Burrell	Township	2,258	2,179	12,282
Vandergrift	Borough	5,904	6,823	10,609
Washington	Township	7,804		
West Leechburg	Borough	1,359	1,395	13,008
Youngstown	Borough	370	470	10,686

Note: Data is included for the entire municipality, which may extend beyond the basin limits.

Source: United States Department of Commerce 1991.

Table B-3

SOIL CHARACTERISTICS

Association	Description	Limitations
Cookport-Hazelton-Laidig	Deep soils on level to steep uplands in Cambria County	Stoniness, slope, erosion, high water table
Gilpin-Ernest-Wharton	Deep, well-drained soils on upland slopes in Cambria County	Depth to bedrock, seasonal high water table, slow permeability, slope
Brinkerton-Wharton-Cavode	Deep, variable soils on uplands in Cambria County	Seasonal high water table, slow permeability, erosion
Atkins-Philo	Deep soils on floodplains in Cambria County	Seasonal high water table, flooding
Rayne-Gilpin-Wharton-Cavode	Deep soils on hills and ridges in Somerset County	Depth to bedrock, slope, seasonal high water table
Hazelton-Cookport	Variable soils on hills and mountains in Somerset County	Stoniness, slope, seasonal high water table
Berks-Weikert	Variable soils on well-drained hills and ridges in Somerset County	Slope, depth to bedrock
Leck Kill-Albrights	Deep soils on hills and ridges in Somerset County	Slope, seasonal high water table
Ernest-Rayne-Gilpin	Deep soils on ridges in Somerset County	Seasonal high water table, depth to bedrock
Weikert-Gilpin	Well-drained, shallow upland soils in Armstrong County	Slope
Wharton-Rayne-Cavode	Deep soils on ridges, benches and hillsides in Armstrong County	Slope, seasonal high water table
Westmoreland-Guernsey-Clarksburg	Deeper, variable soils on hills and benches in Westmoreland County	Seasonal high water table, depth to bedrock, permeability.
Gilpin-Wharton-Cavode	Deeper, variable soils on hills and benches in Westmoreland and Indiana Counties	Depth to bedrock, slope, seasonal high water table, permeability
Gilpin-Dekalb-Cavode	Deep soils on ridges in Westmoreland County	Stoniness, droughtiness, seasonal high water table

Table B-3 (Continued)

SOIL CHARACTERISTICS

Association	Description	Limitations
Calvin	Deep, well-drained soils on ridges in Westmoreland County	Moderate depth, slope
Weikert	Shallow, well-drained soils on escarpments in Armstrong County	Slope, depth to bedrock, rockiness
Philo-Monongahela- Atkins	Deep soils on terraces and floodplains in Westmoreland County	Flooding, seasonal high water table
Upshur-Gilpin-Clarksburg	Deep soils on hills in Westmoreland County	Instability, permeability, depth, seasonal high water table
Gilpin-Weikert-Ernest	Deeper soils on valley slopes and ridgetops in Indiana County	Slope, drainage
Gilpin-Clymer-Wharton	Variable soils on gentle uplands in Indiana County	Shallowness, seasonal high water table
Gilpin-Wharton-Upshur	Deeper soils on uplands and hilltops in Indiana County	Erosion, high water table
Gilpin-Westmoreland-Guernsey	Deeper soils on slopes, benches and hills in Indiana County	Seasonal high water table
Dekalb-Clymer-Cookport	Deeper soils on slopes and ridges in Indiana County	Shallowness, seasonal high water table
Dekalb-Clymer Ernest	Variable soils on slopes and ridges in Indiana County	Stoniness, shallowness, high water table
Monongahela-Allegheny-Pope-Philo	Deep, level soils on terraces and floodplains in Indiana County	Flooding, high water table
Rainsboro-Melvin-Steff	Deep soils on level to gently sloping terraces and floodplains in Armstrong County	Flooding, high water table

Source: United States Department of Agriculture 1968a, 1968b, 1977, 1983, 1985.

Table B-4

CERCLIS* SITES

I.D. Number	Name	Municipality
ARMSTRONG COUNTY, PA		
PAD004335162	Allegheny Ludlum Steel Corp.	Leechburg
PAD981036999	Armstrong Pattern Company, Inc.	North Apollo Borough
PAD074986795	Babcock & Wilcox Company	Apollo
PAD980538631	Babcock & Wilcox Disposal Site	Leechburg
PAD980602875	Biesecker Property	Apollo
PAD981735863	Edward Copney Landfill	Apollo
PAD980693261	Roaring Run	Kiskiminetas Township
CAMBRIA COUNTY, PA		
PAD000734228	ARCO Vinco Terminal	Vinco
PAD982366429	Banks Wright LF #2	Jackson Township
PAD980551642	Bethlehem Steel - Ryder Site	Headricks
PAD004344222	Bethlehem Steel Corp., Johnstown Plant	Johnstown
PAD987269974	Davidson's Chevrolet	Ebensburg
PAD981042286	Dumans Lake Park Fill	Ebensburg
PAD982367435	Mainline Sanitary Landfill	Portage
PAD981042336	McDonald Fill	Belsano
PAD981041973	Nanty Glo Boro Fill	Nanty Glo
PAD008936395	Quaker Sales Corp.	Johnstown
PAD981736143	Safety Kleen	Johnstown
PAD082245879	Schneck Bros. Incline Sunoco	Johnstown
PAD980829154	Texas Eastern Pipeline – Lilly Station	Lilly
INDIANA COUNTY, PA		
PAD980832646	Banks Wright Landfill	Armagh
PAD981042310	Burrell Township Landfill	Burrell Township
PAD004322186	Federal Labs	Saltsburg
PAD004321527	Fisher Scientific Company	Indiana
PAD981037229	FMC Corp. – Syntron Division	Center Township
PAD060689130	FMC Corp.	Homer City
PAD987279379	Kovalchik Salvage Yard	Indiana

Table B-4 (Continued)

CERCLIS* SITES

I.D. Number	Name	Municipality
PAD098209703	Penelec – Homer City Generating	Homer City
PAD980692800	Penn. Railroad Landfill	Burrell Township
PAD980552970	Republic Steel Corp. Joseph Furnace and Coke	Burrell Township
PAD981042146	Scholfield Brothers Fill	Indiana
PAD980832398	Scholfield Landfill	Young Township
PAD008964868	Season-All Industries Incinerator	Indiana
PAD000345413	Sun Pipeline Oil Spill	Clyde
PAD981937576	Texas Eastern Pipeline – Armagh Station	West Wheatfield
PAD981037161	The Interstate Amiesite Corp.	Indiana
PAD005000625	Westinghouse Electric Corp. Special Metals	Blairsville
PAD981041965	West Wheatfield Township Landfill	New Florence
SOMERSET COUNTY, PA		
PAD987286226	Charles Ludy	Friedens
PAD980832588	Delta Demolition Site #7	Scalp Level
PAD987266368	Jenner Township Landfill	Listie
PAD000863522	Shade - Central City Landfill	Central City
PAD082961319	Southern Allegheny Disposal Service Landfill	Conemaugh Township
WESTMORELAND COUNTY, PA		
PAD981036783	American Cyanamid	Latrobe
PAD980508360	Beaver Run Reservoir on Route 380	Bell Township
PAD980832422	Bell Township (Route 286)	Saltsburg
PAD121938351	Clifford Felton Landfill	Loyalhanna
PAD980692503	Clyde Jones Property	Salem Township
PAD000607069	Colvan Landfill	Delmont
PAD987328879	Derry Residential Drum Site	Derry
PAD000433466	Freedom Forge Corp. Standard Steel Division	Latrobe
PAD990825408	GTE Products Corp. Gibson Electric Division	Delmont
PAD005000609	Industrial Ceramics, Inc.	Derry
PAD004316923	Kennametal Inc.	Delmont
PAD004397667	Kennametal Inc. (Kingston)	Latrobe
PAD981036775	Latrobe Forge and Spring Inc.	Latrobe

Table B-4 (Continued)

CERCLIS* SITES

I.D. Number	Name	Municipality
PAD004316154	Latrobe Foundry and Machine	Latrobe
PAD981037351	Latrobe Plant of Vasco	Derry Township
PAD981037054	Marcos Industrial Waste Site	Derry
PAD981045024	Mayers Landfil	Hempfield
PAD004393013	Newcomer Products, Inc.	Latrobe
PAD042507178	Pelikan Inc. – Derry Operations	Derry
PAD982366221	Red Dog Excavation Dump Site	Hempfield
PAD981036908	Robertshaw - Fulton Controls Company	Hempfield
PAD057629479	Teledyne Vasco	Latrobe
PAD000800243	Texas Eastern Pipeline – Delmont Station	Salem Township
PAD004378501	USX Corp. Vandergrift	Vandergrift

Notes:

*CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Act Information System.

Source: Right To Know Network 1998.

Table B-5

EXISTING DAMS AND RESERVOIRS
CONEMAUGH RIVER WATERSHED

PA I.D.	Name Dam/Reservoir	DA Square Miles	Storage (mg)	Dam Height (ft)	Owner
1	Tubmill	10.7	200	40	High Ridge Water Supply Co.
3	Sugar Run	0.3	124	60	High Ridge Water Supply Co.
4	Big Spring	1.2	42	43	High Ridge Water Supply Co.
9	Hinkston Dam	10.8	1,124	84	Manufacturers Water Co.
11	Upper Ridge Dam	1.2	3	25	Derry Borough Municipal Authority
12	Lower Ridge Dam	1.3	2	20	Derry Borough Municipal Authority
13	Ethel Springs Dam	0.3	156	40	Westmoreland Municipal Water Association
26	District Dam	1.6	5	15	High Ridge Water Supply Co.
29	New Florence	4.4	1	10	Borough of New Florence
30	Muirs Hollow Dam	0.9	1	25	Mace Springs Water Co.
34	Laurel Run Dam 2	7.9	101	42	Johnstown Water Co.
69	Unnamed	0.8	*	12	Ridge View Park Association
78	Unnamed	2.3	32	41	Borough of Blairsville
129	Conemaugh River Lake	1,351.0	91,333	137	Corps of Engineers

Notes:

*Storage volume less than 0.5 MG or surface area less than 0.5 acre.

Source: United States Army Corps of Engineers 1994.

Table B-6

EXISTING DAMS AND RESERVOIRS
BLACKLICK CREEK WATERSHED

PA I.D.	Name Dam/Reservoir	DA Square Miles	Storage (MG)	Dam Height (FT)	Owner
2	Two Lick Dam	78.0	4	5	Clymer Water Co. Of Indiana
6	Lucerne Dam	56.0	10	15	Roch. & Pitt. Coal Co.
7	Buffington Dam	4.5	12	16	Buffington Water Co.
11	Graceton Dam	0.2	15	30	Coal Mining Co. of Graceton
14	Sample Run Dam	0.3	8	25	Clearfield Bituminous Co.
15	Unnamed	6.4	*	4	Findley Run Water Supply
24	Unnamed	1.5	*	4	Caldwell Smokeless coal
25	Graceton Dam	0.7	4	26	Lower Indiana County Municipal Authority
31	Upper Dam	0.7	1	9	Harry Loman
32	Lower Dam	0.8	1	9	Harry Loman
36	Edwards Dam	0.4	3	30	Blair-Hirsh & Coke Co.
40	Cherry Run Dam	12.0	80	22	Roch. & Pitt. Coal Co.
43	Findley Run Dam	4.4	8	31	Nineveh Water Co.
44	V.F.W. Bennett Dam	5.0	*	10	M. Bennett & Sons
47	Unnamed	1.3	*	6	Penelec Water Co.
51	Ramsey Dam	4.8	1	3	Clymer Water Service Co.
52	Unnamed	1.6	*	7	Laurel Run Outing Club
56	Lake Margus	0.8	32	23	Eastern Orthodox Foundation
69	Pine Run Camp Lake	1.4	*	10	Pine Run Camp Inc.
71	Unnamed	62.8	6	13	Central Indiana County Water Authority
74	Yellow Creek State Park	52.6	3,250	62	PA Department of Environmental Protection
75	Two Lick Dam	74.0	6,000	115	Pennsylvania Electric Co.

Notes:

*Storage volume less than 0.5 MG or surface area less than 0.5 acre.

Source: United States Army Corps of Engineers 1994.

Table B-7

EXISTING DAMS AND RESERVOIRS
LITTLE CONEMAUGH RIVER WATERSHED

PA I.D.	Name Dam/Reservoir	DA Square Miles	Storage (MG)	Dam Height (FT)	Owner
2	Bear Rock No. 1 Dam	1.6	9	28	Highland Water Authority
3	Bear Rock No. 2 Dam	1.3	30	42	Highland Water Authority
4	Wilmore Dam	25.0	1,025	40	Manufacturers Water Co.
5	Lloydell Dam	8.0	207	70	Highland Water Authority
8	Saltlick Dam	11.9	857	110	Greater Johnstown Water Co.
15	Mill Creek No. 2 Dam	5.0	97	45	Johnstown Water Authority
17	Martindale Dam	1.2	17	28	Portage Municipal Authority
20	Vetera Dam	5.3	30	14	Colver Water Co.
23	Unnamed	0.6	1	5	Ebensburg Water Co.
24	Lake Rowena	4.5	7	18	Borough of Ebensburg
25	Unnamed	5.6	15	28	South Fork Water Co.
42	Unnamed	0.8	*	23	Borough of Nanty Glo
45	Unnamed	1.0	*	8	Jackson Water Supply
61	Ebensburg Storage	1.9	30	16	Borough of Ebensburg
71	Shirfs Dam	2.1	20	21	N. Cambria Water Co.
81	Unnamed	3.1	4	20	Borough of Ebensburg
91	Unnamed	3.4	*	9	South Fork Water Co.
97	Williams Run Dam	4.8	157	43	Nanty Glo Water Authority
100	Unnamed	1.9	2	19	Adams Twp. Water Authority
103	Howells Run Dam	1.4	430	63	Borough of Ebensburg
105	Beaverdam Run Dam	5.7	2,510	55	Highland Sewer Water

Notes:

*Storage volume less than 0.5 MG or surface area less than 0.5 acre.

Source: United States Army Corps of Engineers 1994.

Table B-8

EXISTING DAMS AND RESERVOIRS
STONYCREEK RIVER WATERSHED

PA I.D.	Name Dam/Reservoir	DA Square Miles	Storage (MG)	Dam Height (FT)	Owner
1	Dalton Run Dam	4.3	130	61	Johnstown Water Company
4	Quemahoning Dam	92.0	12,000	100	Manufacturers Water Company/ Bethlehem Steel
5	Clear Shade Creek Dam	19.4	6	8	Richland Twp. Water Company
9	Unnamed	1.6	*	14	Central City Water Company
11	Unnamed	2.1	1	13	Hooversville Water Company
12	Unnamed	5.4	*	5	Cainbrook Water Company
28	Border Intake Dam	NA**	*	15	Manufacturers Water Company
42	Unnamed	0.2	4	14	Jenner Water Company
53	North Fork	10.0	1,100	105	Johnstown Water Company
54	Intake Dam	6.0	*	9	Central City Water Supply
78	Stoughton Lake	9.1	76	22	Lucill/Robert Stoughton
81	Piney Run Dam	8.6	*	8	Richland Twp. Water Company
82	Unnamed	9.0	1	12	Borough of Jennertown
88	Unnamed	2.2	1	18	Jenner Twp. Municipal Water
91	Gallo Dam	3.6	86	23	Cono Gallo
94	Bigan Dam	1.8	26	21	Miriam K. Bigan
95	Unnamed	1.8	4	22	Municipal Authority of Boswell
97	Lake Stonycreek	26.0	430	30	Stonycreek Valley Dev. Corp.
98	Unnamed	1.8	8	35	Conemaugh Twp. Municipal
103	Indian Lake	14.9	3,420	71	Borough of Indian Lake

Notes:

*Storage volume less than 0.5 MG or surface area less than 0.5 acre.
**Not available; storage is negligible.

Source: United States Army Corps of Engineers 1994.

Table B-9

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0000469	Alcoa Technical Center (4 Outfalls)	Unnamed Tributary Pine Run	IW	Kiskiminetas River
PA0006327	Allegheny Ludlum/ W. Leechburg (4 Outfalls)	Pine Run	IW	Kiskiminetas River
PA0006327	Allegheny Ludlum/W. Leechburg (17 Outfalls)	Kiskiminetas River	IW	Kiskiminetas River
PA0092517	Allegheny Plaza Assoc. STP	Pine Run	SN	Kiskiminetas River
PA0093271	Allegheny-Kiski Div. STP	Unnamed Tributary Beaver Run	SN	Kiskiminetas River
PA0093351	Apollo Ridge High School	Unnamed Tributary Roaring Run	SN	Kiskiminetas River
PA0024252	Atlantic Delmont Marketing (2 Outfalls)	Thorn Run	IW	Kiskiminetas River
PA0024082	Avonmore Boro STP	Kiskiminetas River	SP	Kiskiminetas River
PA0092797	Avonmore Rail Loading Inc.	Kiskiminetas River	IW	Kiskiminetas River
PA0002071	B & W / Nuclear Matter Div. (3 Outfalls)	Kiskiminetas River	IW	Kiskiminetas River
PA0002089	B & W Numac Div. (2 Outfalls)	Kiskiminetas River	IW	Kiskiminetas River
PA0000361	Beaver Run WTP	Beaver Run	IW	Kiskiminetas River
	Bell Elementary School	Wolford Run	SN	Kiskiminetas River
	Berringer, Albert Res. STP	Tributary Pine Run	SN	Kiskiminetas River
PA0097683	Bruno SR STP	Unnamed Tributary Pine Run	SN	Kiskiminetas River
PA0216879	Calandrella's Restaurant STP	Unnamed Tributary Wolford Run	SN	Kiskiminetas River
PA0097403	Callahan SR STP	Unnamed Tributary Pine Run	SN	Kiskiminetas River
PA0096334	Clelian Heights School	Unnamed Tributary Beaver Run	SN	Kiskiminetas River
PA0003549	CNG-Oakford Compressor Station (2 Outfalls)	Beaver Run	SN/IW	Kiskiminetas River
PA0204811	Custom Window Extrusion STP	Tributary Beaver Run	SN	Kiskiminetas River
	Daniska, John Res. STP	Tributary Beaver Run	SN	Kiskiminetas River
PA0216607	Delmont Compressor Station	Beaver Run	IW	Kiskiminetas River

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0098540	Destefano, James & Bonnie STP	Pine Run	SN	Kiskiminetas River
	East Vandergrift Boro Sew	Kiskiminetas River	SP	Kiskiminetas River
PA0091898	Edgewood Estates MHP STP	Unnamed Tributary Rattling	SN	Kiskiminetas River
PA0092126	Elders Ridge Elementary School	Harpers Run	SN	Kiskiminetas River
PA0030457	Forbes Trail MHP & Thorn Run	Tributary Thorn Run	SN	Kiskiminetas River
	GTE/Gibson Electric Inc.	Tributary Beaver Run	IW	Kiskiminetas River
PA0095842	High View Acres MHP STP	Unnamed Tributary Beaver Run	SN	Kiskiminetas River
PA0096962	Highlands Car Wash	Whiskey Run	IW	Kiskiminetas River
PA0092533	Iselin STP	Harpers Run	SP	Kiskiminetas River
PA0090395	Iselin Water System	Harpers Run	IW	Kiskiminetas River
	Jackson Residence	Tributary Rattling Run	SN	Kiskiminetas River
PA0041114	Kiski Springs School	Kiskiminetas River	SN	Kiskiminetas River
PA0027626	Kiski Valley STP	Kiskiminetas River	SP	Kiskiminetas River
PA0007196	Lucerne #8 Mine	Unnamed Tributary Blacklegs	SN	Kiskiminetas River
PA0037109	Lucerne #9 Mine	Marshall Run	SN	Kiskiminetas River
	Marco Landfill	Kiskiminetas River	IW	Kiskiminetas River
PA0098175	McCutcheon, Elva Z. SR STP	Unnamed Tributary Elders Run	SN	Kiskiminetas River
PA0032671	Meadows MHP	Pine Run	SN	Kiskiminetas River
PA0097829	Mohan, Michael & Donna	Unnamed Tributary Kiski River	SN	Kiskiminetas River
PA0031844	North Washington Elementary School	Unnamed Tributary Pine Run	SN	Kiskiminetas River
PA0095044	Northgate Townhouses STP (3 Outfalls)	Unnamed Tributary Pine Run	SN/IW	Kiskiminetas River
	Oklahoma Boro Sew Multiple Discharges	Kiskiminetas River	SP	Kiskiminetas River
PA0097659	Robert & Constance Cauvel	Tributary Thorn Run	SN	Kiskiminetas River
PA0098906	Rowe SR STP	Unnamed Tributary Beaver Run	SN	Kiskiminetas River
PA0093874	Saltsburg School District	Unnamed Tributary Kiskiminetas	SP	Kiskiminetas River

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0035670	Satellite Maintenance Building STP	Rattling Run	SN	Kiskiminetas River
PA0090417	Spring Church Car Wash	Tributary Roaring Run	IW	Kiskiminetas River
PA0205311	St. Paul's Lutheran Church	Carnahan Run	SN	Kiskiminetas River
PA0093009	Tafi's Family Restaurant STP	Beaver Run	SN	Kiskiminetas River
PA0204048	Tunnelton STP	Kiskiminetas River	SP	Kiskiminetas River
PA0040274	Vandergrift Works (3 Outfalls)	Kiskiminetas River	IW	Kiskiminetas River
PA0025801	West Leechburg Sew.	Kiskiminetas River	SP	Kiskiminetas River
PA0098302	Waddell, Randy L., SR STP	Tributary Pine Run	SN	Kiskiminetas River
PA0094111	Wellington Estates MHP STP	Tributary Thorn Run	SN	Kiskiminetas River
PA0096547	West Haven Nursing	Unnamed Tributary Beaver Run	SN	Kiskiminetas River
	Gerardi, Res. STP	Tributary Beaver Run	SN	Kiskiminetas River
PA0094404	Antiochian Village STP	Unnamed Tributary Loves Holl	SN	Loyalhanna Creek
	Avalon Boro	McGee Run	IW	Loyalhanna Creek
	Black, Dean Wayne Res. Sew.	McGee Run	SN	Loyalhanna Creek
PA0204323	Brass Duck Restaurant	Unnamed Tributary Loyalhanna	SN	Loyalhanna Creek
PA0030694	Camp Henry Kaufmann	Snyders Run	SN	Loyalhanna Creek
PA0097152	Cartwright SR STP	Mill Creek	SN	Loyalhanna Creek
PA0217450	Creighton Plan STP	Unnamed Tributary Whitethorn	SN	Loyalhanna Creek
PA0020788	Derry Boro STP	McGee Run	SP	Loyalhanna Creek
	Derry Township Sewage System	Loyalhanna Creek	SP	Loyalhanna Creek
PA0000418	Derry Water Treatment Plant	Unnamed Tributary McGee Run	IW	Loyalhanna Creek
PA0094455	Dogwood Acres MHP STP	McGee Run	SN	Loyalhanna Creek
PA0044431	Fairfield Manor	Unnamed Tributary Loves Holl	SN	Loyalhanna Creek
PA0217042	Fairfield Township Elem. School STP	Tributary Hendricks	SN	Loyalhanna Creek
PA0094994	Idlewild Park STP	Loyalhanna Creek	SN	Loyalhanna Creek

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0004839	Kennamental/Kingston (3 Outfalls)	Loyalhanna Creek	IW	Loyalhanna Creek
PA0004821	Kennametal/Chestnut Ridge	Millers Run	SN/IW	Loyalhanna Creek
PA0032271	Keystone State Park	Unnamed Tributary Loyalhanna	IW	Loyalhanna Creek
PA0032271	Keystone State Park	Unnamed Tributary Loyalhanna	SN	Loyalhanna Creek
PA0205095	Kowalik SR STP	Unnamed Tributary Loyalhanna Creek	SN	Loyalhanna Creek
PA0001953	Latrobe Brewing Company	Loyalhanna Creek	IW	Loyalhanna Creek
PA0203653	Latrobe Construction Company	Loyalhanna Creek	IW	Loyalhanna Creek
PA0003255	Latrobe Steel Company	Unnamed Tributary Loyalhanna	IW	Loyalhanna Creek
PA0026069	Latrobe WWTP	Loyalhanna Creek	SP	Loyalhanna Creek
PA0000370	Latrobe/Water Plant	Unnamed Tributary Loyalhanna	IW	Loyalhanna Creek
PA0091669	Laurel Bilt STP	Tributary Four Mile Run	SN	Loyalhanna Creek
PA0098299	Laurel Highlands Motor Lodge	Four Mile Run	SN	Loyalhanna Creek
PA0031054	Laurel Valley School Complex	Tubmill Creek	SN	Loyalhanna Creek
PA0096873	Lenhart MHP STP	Keffer Run	SN	Loyalhanna Creek
	Lentz Car Wash	Tributary Saxman Run	IW	Loyalhanna Creek
PA0024864	Ligonier STP	Mill Creek	SP	Loyalhanna Creek
PA0205389	Ligonier Valley Treatment Center	Unnamed Tributary Four Mile Run	SN	Loyalhanna Creek
PA0094382	Metzgar Elementary School STP	Unnamed Tributary Loyalhanna	SN	Loyalhanna Creek
PA0090662	Miller, Res. STP	Four Mile Run	SN	Loyalhanna Creek
PA0204340	Newhouse MHp STP	Loyalhanna Creek	SN	Loyalhanna Creek
PA0095443	Oil & Gas Wastewater TP (4 Outfalls)	McGee Run	IW/SN	Loyalhanna Creek
PA0204609	Rosa SR STP	Four Mile Run	SN	Loyalhanna Creek
PA0204595	Rubridge SR STP	Linn Run	SN	Loyalhanna Creek
PA0001996	Standard Steel-Latrobe Plant	Loyalhanna Creek	IW	Loyalhanna Creek
PA0005240	Teledyne Vasco-Latrobe (5 Outfalls)	Saxman Run	IW	Loyalhanna Creek

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0204161	Valley School Of Ligonier	Linn Run	SN	Loyalhanna Creek
PA0092380	Warek Manufacturing Company	Ninemile Run	IW	Loyalhanna Creek
PA0205796	Wilpen Fire Company STP	Unnamed Tributary Hannas Run	SN	Loyalhanna Creek
PA0091651	Wimmerton WPCP	Tributary Four Mile Run	SP	Loyalhanna Creek
PA0092037	Woodlawn Mobile Home Park	L. Crabtree Creek	SN	Loyalhanna Creek
	Youngstown Boro Sewage	Loyalhanna Creek	SP	Loyalhanna Creek
PA0217077	Almac Machine Co. - Johnstown Plant	Conemaugh River	IW	Conemaugh River
PA0091936	Aultman STP	Unnamed Tributary Aultmans Run	SP	Conemaugh River
PA0217107	Bar Technologies-Johnstown	Conemaugh River	IW	Conemaugh River
PA0002992	Bethlehem Steel-Johnstown (16 Outfalls)	Conemaugh River	IW	Conemaugh River
PA0002992	Bethlehem Steel-Johnstown (18 Outfalls)	Hinkston Run	IW	Conemaugh River
PA0002992	Bethlehem Steel-Johnstown (3 Outfalls)	Conemaugh River	IW	Conemaugh River
PA0004499	Blairsville Machine	Conemaugh River	IW	Conemaugh River
PA0021610	Blairsville Municipal Authority WWTP	Conemaugh River	SP	Conemaugh River
PA0097535	Breeze Industrial Products STP	Unnamed Tributary Elders Run	SN	Conemaugh River
PA0096539	Burrell Food Systems	Unnamed Tributary Conemaugh	SN	Conemaugh River
PA0090956	Chestnut Ridge Plaza STP	Unnamed Tributary Conemaugh	SP	Conemaugh River
PA0005011	Conemaugh Power Station (10 Outfalls)	Conemaugh River	IW	Conemaugh River
	Conemaugh Station #1 STP	Conemaugh River	SN	Conemaugh River
	Conemaugh Station #2 STP	Tributary Conemaugh	SN	Conemaugh River
PA0097608	D Seam Shaft & Bath House STP	Unnamed Tributary Conemaugh	SN	Conemaugh River
PA0004618	E Seam Shaft & Bath House STP	Unnamed Tributary Conemaugh	SN	Conemaugh River
PA0205672	Freight Car Division	Laurel Run	IW	Conemaugh River
PA0027936	Gulf Oil Corp/Cumberland Farm	Unnamed Tributary Hinkston Run	IW	Conemaugh River
PA0027936	Gulf Oil Corp/Cumberland Farm	Unnamed Tributary Hinckston Run	IW	Conemaugh River

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0217085	J-Pitt Steel-Johnstown Plant (19 Outfalls)	Conemaugh River	IW	Conemaugh River
PA0217115	Jacksonville STP	Reeds Run	SP	Conemaugh River
PA0090379	Jacksonville Water Plant	Unnamed Tributary Aultmans Run	IW	Conemaugh River
PA0026034	Johnstown STP (Dornick PT - 3 Outfalls)	Conemaugh River	SP	Conemaugh River
PA0026034	Johnstown STP (Dornick PT)	Laurel Run	SP	Conemaugh River
PA0026034	Johnstown STP (Dornick PT)	St. Clair Run	SP	Conemaugh River
PA0217093	Johnstown Wire Technologies (7 Outfalls)	Conemaugh River	IW	Conemaugh River
PA0204919	Laurel Hill Sawdust Pile	Unnamed Tributary Laurel Run	IW	Conemaugh River
PA0031704	Leisure Village MHP STP	Unnamed Tributary Hinckston Run	SN	Conemaugh River
PA0203921	Lucerne No. 6 Extension Mine	Aultmans Run	SN	Conemaugh River
PA0216321	Marion Mine #2 Shaft Bathhouse	Unnamed Tributary Boatyard Run	SN	Conemaugh River
PA0110256	Miller, Robert P.	St. Clair Run	SN	Conemaugh River
PA0094927	New Florence Elder & Fam. STP	Unnamed Tributary Conemaugh	SP	Conemaugh River
	Rhea, D. Curtis Res. STP	Tributary Aultmans Run	SN	Conemaugh River
PA0092509	Roadway Plaza	Big Spring Run	SN	Conemaugh River
PA0090719	Robindale Heights STP	Unnamed Tributary Conemaugh	SP	Conemaugh River
PA0037818	Saltsburg Boro STP	Conemaugh River	SP	Conemaugh River
PA0002054	Seward Power Station	Conemaugh River	IW/SN	Conemaugh River
PA0000892	Specialty Metals Plant	Conemaugh River	IW	Conemaugh River
PA0094889	St. Clair Manor STP	Big Spring Run	SP	Conemaugh River
PA0204684	St. John Vianney Rectory STP	Unnamed Tributary Hinckston Run	SN	Conemaugh River
PA0216097	Standard Forged Products, Inc.	Conemaugh River	IW	Conemaugh River
PA0204331	Strangford STP	Conemaugh River	SP	Conemaugh River
PA0030929	Torrance State Hospital STP	Unnamed Tributary Tannery Hl	SN	Conemaugh River
PA0095524	Tri-Community Water & Sewer	Conemaugh River	SP	Conemaugh River

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0111031	Vinco Shopping Plaza	Unnamed Tributary Hinckston Run	SN	Conemaugh River
PA0114537	Walter, Jacqueline J.	Tributary Roaring Creek 27	SN	Conemaugh River
	Bethlehem Mines #33 Prep. Plant	South Branch Blacklick	SN	Blacklick Creek
PA0090433	Big Oak Village MHP STP	Two Lick Creek	SN	Blacklick Creek
PA0093939	Blairsville Sr. High School	Tributary Blacklick Creek	SN	Blacklick Creek
PA0093050	Burrell Municipal Waste Treatment Plant	Blacklick Creek	SP	Blacklick Creek
PA0090964	C. Q., Inc.	Unnamed Tributary Cherry Run	IW	Blacklick Creek
	Castanea Township Authority	South Branch Blacklick	SP	Blacklick Creek
	Castle Gas STP	Blacklick Creek	SN	Blacklick Creek
PA0092011	CKE, Inc.	Two Lick Creek	IW	Blacklick Creek
PA0092011	CKE, Inc.	Unnamed Tributary Two Lick	IW	Blacklick Creek
PA0090140	Clymer Boro STP	Two Lick Creek	SP	Blacklick Creek
PA0204269	Colver Power Plant (2 Outfalls)	Elk Creek	IW	Blacklick Creek
PA0096784	Commodore STP	North Branch Two Lick	SP	Blacklick Creek
PA0091260	Country Meadows MHP	Unnamed Triburaty Carney Run	SN	Blacklick Creek
PA0097985	Dolan Enterprizes STP	Unnamed Tributary South Branch Blacklick	SN	Blacklick Creek
PA0095729	Eastern Orthodox Foundation	Unnamed Tributary Yellow Creek	SN	Blacklick Creek
PA0204935	Ebensburg Batch Plant	Unnamed Tributary South Branch Blacklick	IW	Blacklick Creek
PA0098612	Ebensburg Cogeneration Plant (3 Outfalls)	South Branch Blacklick	IW	Blacklick Creek
PA0217336	Emerald Estates STP	Unnamed Tributary South Branch Blacklick	SN	Blacklick Creek
PA0098311	Fairfax Estates	McCarthy Run	SP	Blacklick Creek
PA0093947	Fisher Scientific Company (2 Outfalls)	Stony Run	IW	Blacklick Creek
PA0001716	FMC-Packaging & Material Handling Div. (5 Outfalls)	Two Lick Creek	IW/SN	Blacklick Creek
PA0095273	Gas Well Connate Water TP	Blacklick Creek	IW	Blacklick Creek

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0095184	Grnwch Cllrs Div. - 580 Bathhouse	Unnamed Tributary South Branch Two Lick	SN	Blacklick Creek
PA0095184	Grnwch Cllrs Div. - 580 Bathhouse (2 Outfalls)	Two Lick Creek	SN	Blacklick Creek
PA0095184	Grnwch Cllrs Div. - 580 Bathhouse (2 Outfalls)	South Branch Two Lick	SN	Blacklick Creek
	Halliburton Services STP	Two Lick Creek	SN	Blacklick Creek
PA0097951	Heshbon Mine STP	Unnamed Tributary Blacklick Creek	SN	Blacklick Creek
PA0205630	Homer City Lab.	Unnamed Tributary Muddy Run	SN	Blacklick Creek
PA0005037	Homer City Power Station	Unnamed Tributary Blacklick Creek	IW	Blacklick Creek
PA0005037	Homer City Power Station	Tributary Two Lick Creek	IW	Blacklick Creek
PA0005037	Homer City Power Station (3 Outfalls)	Tributary Two Lick Creek	IW/SN	Blacklick Creek
PA0005037	Homer City Power Station (7 Outfalls)	Two Lick Creek	IW/SN	Blacklick Creek
PA0204994	Homer City STP	Two Lick Creek	SP	Blacklick Creek
	Homer City/Sewage System	Yellow Creek	SP	Blacklick Creek
	Homer City/Sewage System (3 Outfalls)	Two Lick Creek	SP	Blacklick Creek
PA0026751	Indiana Municipal STP	Stony Run	SP	Blacklick Creek
PA0026751	Indiana Municipal STP	Stony Run	SP	Blacklick Creek
PA0096296	Kovach SR STP	Unnamed Tributary South Branch Blacklick	SN	Blacklick Creek
PA0001775	Lucerne #6 Mine	Tributary Muddy Creek	SN	Blacklick Creek
PA0041378	Mcquaide Inc. - Star MFGT STP	Two Lick Creek	SN	Blacklick Creek
	Muller, Res. STP	Tributary Marsh Run	SN	Blacklick Creek
PA0028657	Nanty Glo STP	South Branch Blacklick	SP	Blacklick Creek
PA0203807	Nanty Glo WTP	Williams Run	IW	Blacklick Creek
PA0204714	New Horizons Foundation STP	Unnamed Tributary Penn Run	SN	Blacklick Creek
PA0110311	Orgis, Ronald & Edith	Williams Run	SN	Blacklick Creek

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0098388	Patusan Trading Company Building	Greys Run	SN	Blacklick Creek
PA0043648	Penelec-Homer City Coal Cleaning (2 Outfalls)	Unnamed Tributary Cherry Run	SN/IW	Blacklick Creek
PA0031470	Penns Manor Area School District	Rose Run	SN	Blacklick Creek
PA0091162	R. D. McNaughton Industrial Park	Unnamed Tributary Two Lick Creek	SP	Blacklick Creek
PA0097594	Ron Davidson Chevrolet, Inc. (2 Outfalls)	Unnamed Tributary Stewart Run	SN	Blacklick Creek
PA0216909	S-All Groundwater Remed.	Stony Run	IW	Blacklick Creek
PA0097365	Sandra R. Hollabaugh	Cherry Run	SN	Blacklick Creek
PA0004057	Specialty Tires of America (5 Outfalls)	Stony Run	IW	Blacklick Creek
PA0094293	United Elementary Jr.-Sr. School	Mardis Run	SN	Blacklick Creek
PA0028061	Vintondale Boro	South Branch Blacklick	SP	Blacklick Creek
	WPW/Indiana District (2 Outfalls)	Two Lick Creek	IW	Blacklick Creek
PA0090638	White Township/Kittyhawk STP	Unnamed Tributary Two Lick Creek	SP	Blacklick Creek
PA0032263	Yellow Creek State Park STP	Yellow Creek	SN	Blacklick Creek
PA0096946	Alexandra, Richard & Belinda	Trout Run	SN	Stonycreek/Little Conemaugh Rivers
PA0217107	Bar Technologies – Johnstown (2 Outfalls)	Little Conemaugh	IW	Stonycreek/Little Conemaugh Rivers
PA0038806	Beautyline Park STP	Otto Run	SP	Stonycreek/Little Conemaugh Rivers
PA0097756	Beaverdam Water Treatment	Beaverdam Run	IW	Stonycreek/Little Conemaugh Rivers
PA0205541	Bestform Foundations STP	South Fork Little Conemaugh	SN	Stonycreek/Little Conemaugh Rivers
PA0098451	Bethco Pines Recreation STP	Quemahoning Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0002992	Bethlehem Steel-Johnstown	Little Conemaugh	IW	Stonycreek/Little Conemaugh Rivers
PA0094391	Blair MHP STP	Unnamed Tributary Little Conemaugh	SN	Stonycreek/Little Conemaugh Rivers
PA0042749	Boswell STP	Quemahoning Creek	SP	Stonycreek/Little Conemaugh Rivers
PA0110922	Camp Allegheny STP	Calendars STP	SN	Stonycreek/Little Conemaugh Rivers
PA0040843	Camp Sequanota	Unnamed Tributary Pickins Run	SN	Stonycreek/Little Conemaugh Rivers

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0046060	Carmella Estates	Little Conemaugh	SN	Stonycreek/Little Conemaugh Rivers
	Central City Water Authority	Unnamed Tributary Dark Shade	IW	Stonycreek/Little Conemaugh Rivers
PA0204072	Charlton SR STP	Unnamed Tributary Stony Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0024171	Colver STP	Howells Run	SP	Stonycreek/Little Conemaugh Rivers
PA0204188	Conemaugh Township Area High School	Unnamed Tributary Stony Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0098973	Conemaugh Township Area Sewer STP	Stony Creek	SP	Stonycreek/Little Conemaugh Rivers
PA0216399	Conemaugh Township Municipal Authority WTP (2 Outfalls)	South Fork Bens Creek	IW	Stonycreek/Little Conemaugh Rivers
	Conemaugh Township Sewage Authority	Stony Creek	SP	Stonycreek/Little Conemaugh Rivers
PA0094943	Conemaugh Valley Elementary	Peggys Run	SN	Stonycreek/Little Conemaugh Rivers
PA0110001	Crescent Acres STP	Unnamed Tributary Moonshine	SP	Stonycreek/Little Conemaugh Rivers
PA0022292	Ebensburg Boro Municipal Authority (2 Outfalls)	Howells Run	SP/IW	Stonycreek/Little Conemaugh Rivers
	Ehrenfeld Boro	Little Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
PA0204625	Feather Nest MHP STP	Unnamed Tributary Shade Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0094471	Forest Hills Sr. High School	Unnamed Tributary South Fork Little Conemaugh	SN	Stonycreek/Little Conemaugh Rivers
PA0096377	Forest Hills/Crab Apple Hill	South Fork Little Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
PA0205672	Freight Car Division (11 Outfalls)	Little Conemaugh	IW	Stonycreek/Little Conemaugh Rivers
	Highland Sewage & Water Authority	Solomon Run	SP	Stonycreek/Little Conemaugh Rivers
PA0098477	Highland Tank & Manufacturing	Oven Run	SN	Stonycreek/Little Conemaugh Rivers
PA0203904	Hoffman SR STP	Unnamed Tributary Quemahoning	SN	Stonycreek/Little Conemaugh Rivers
	Hoffman SR STP (Brian)	Unnamed Tributary North Branch Quemahoning	SN	Stonycreek/Little Conemaugh Rivers
	Hooversville Boro Municipal Authority	Unnamed Tributary Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
	Horowitz, Michael, Jr.	Unnamed Tributary Stony Creek	SN	Stonycreek/Little Conemaugh Rivers
	Horvath, John	Unnamed Tributary Moonshine	SN	Stonycreek/Little Conemaugh Rivers

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0110531	Hutchinson Property Development	Beaverdam Run	SN	Stonycreek/Little Conemaugh Rivers
	Jackson Elementary School	Unnamed Tributary Saltlick	SN	Stonycreek/Little Conemaugh Rivers
PA0110981	Jioio's Restaurant	Bens Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0205109	Johnstown Corp. (7 Outfalls)	Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
PA0205958	Johnstown Division - J. H. France (2 Outfalls)	Little Conemaugh	IW	Stonycreek/Little Conemaugh Rivers
PA0110302	Johnstown Economic Development Corp.	Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
PA0110302	Johnstown Economic Development Corp.	Quemahoning Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0026034	Johnstown STP (3 Outfalls)	Stony Creek	SP	Stonycreek/Little Conemaugh Rivers
PA0026034	Johnstown STP (Dornick PT)	Little Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
PA0217441	Kalina Subdivision STP	Unnamed Tributary Roaring Run	SN	Stonycreek/Little Conemaugh Rivers
PA0204773	Katrancha SR STP	Unnamed Tributary Sulphur Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0094064	Keystone Restaurant -Truck Stop	Noels Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0095958	Lasky Landfill	Unnamed Tributary Paint Creek	IW	Stonycreek/Little Conemaugh Rivers
PA0204749	Laurel View Retirement Village	Unnamed Tributary Soap Hollow	SP	Stonycreek/Little Conemaugh Rivers
	Lehman, Neil E.	Tributary Stony Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0110248	Liberty Park MHP	Sandy Run	SP	Stonycreek/Little Conemaugh Rivers
	Lilly Boro Water Company	Little Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
	Lilly Boro Water Company (3 Outfalls)	Little Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
PA0097012	Lincoln Manor MHP	Tributary Higgins Run	SN	Stonycreek/Little Conemaugh Rivers
	Lung SR STP	Unnamed Tributary Stony Creek	SN	Stonycreek/Little Conemaugh Rivers
PA0111520	Miller Picking STP	Unnamed Tributary Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
PA0111520	Miller Picking STP	Unnamed Tributary Moonshine	SN	Stonycreek/Little Conemaugh Rivers
PA0217069	Mosholder Small Flow STP	Unnamed Tributary Quemahoning	SN	Stonycreek/Little Conemaugh Rivers
PA0087144	O'Connor SR STP	Unnamed Tributary Moonshine	SN	Stonycreek/Little Conemaugh Rivers

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
	Oaks Poultry	Unnamed Tributary Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
PA0096717	Penn Cambria Primary STP	Bear Rock Run	SN	Stonycreek/Little Conemaugh Rivers
PA0033341	Pinecrest Estates STP	Moonshine	SN	Stonycreek/Little Conemaugh Rivers
PA0094790	Pleasantview MHP STP	Tributary Sandy Run	SP	Stonycreek/Little Conemaugh Rivers
PA0032611	Portage Area STP	Little Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
PA0216224	Prostejovsky SR STP	Unnamed Tributary North Branch Little Conemaugh	SN	Stonycreek/Little Conemaugh Rivers
PA0024163	Revloc STP	Howells Run	SP	Stonycreek/Little Conemaugh Rivers
PA0110477	Riverside Brethren Church	Unnamed Tributary Moonshine	SN	Stonycreek/Little Conemaugh Rivers
PA0095010	Riverside WTP	Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
PA0110591	SCM Metal Products, Inc. (3 Outfalls)	Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
	Sender, Wilfried E.	Unnamed Tributary Mill Creek	SN	Stonycreek/Little Conemaugh Rivers
	Service Processing/Pennzoil	Unnamed Tributary Saltlick	IW	Stonycreek/Little Conemaugh Rivers
PA0025810	Shade Central City STP (4 Outfalls)	Dk Shade Creek	SP	Stonycreek/Little Conemaugh Rivers
PA0006769	Sheesley Supply Company	Solomon Run	IW	Stonycreek/Little Conemaugh Rivers
PA0032191	Sister Servants/Sacred Heart	Unnamed Tributary North Branch Little Conemaugh	SN	Stonycreek/Little Conemaugh Rivers
	Slonac, Paul	Tributary Little Conemaugh	SN	Stonycreek/Little Conemaugh Rivers
	South Fork Boro	South Fork / Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
PA0216968	South Fork Housing STP	Little Conemaugh	SN	Stonycreek/Little Conemaugh Rivers
PA0216941	South Fork Regional WWTP	Little Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
PA0093866	Southern Alleghenies Landfill	Unnamed Tributary Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
	Summerhill Boro Council	Little Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
PA0205265	Summerhill Boro Fire Company STP	Laurel Run	SN	Stonycreek/Little Conemaugh Rivers
PA0038822	Summerhill Township Municipal Auth.	South Fork Creek	SP	Stonycreek/Little Conemaugh Rivers

Table B-9 (Continued)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS

NPDES No.	Facility Name*	Receiving Stream	Program**	Watershed
PA0110752	Timko, John	Unnamed Tributary Moonshine	SN	Stonycreek/Little Conemaugh Rivers
PA0098248	Tuck SR STP	Soap Hollow	SN	Stonycreek/Little Conemaugh Rivers
PA0042561	Upper Stonycreek JMA (2 Outfalls)	Stonycreek River	SP/IW	Stonycreek/Little Conemaugh Rivers
	US Steel Corp./Johnstown Corp. (6 Outfalls)	Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
PA0097632	Valley Tire Company, Inc.	Roaring Fork	SN	Stonycreek/Little Conemaugh Rivers
PA0205605	Vanyo Warehouse & Recloser	Unnamed Tributary Stony Creek	IW	Stonycreek/Little Conemaugh Rivers
PA0041441	Wells Creek STP	Wells Creek	SP	Stonycreek/Little Conemaugh Rivers
PA0111597	Westmont Hilltop Rec. CM	Unnamed Tributary Allwine Creek	SN	Stonycreek/Little Conemaugh Rivers
	Wilmore Boro	Little Conemaugh	SP	Stonycreek/Little Conemaugh Rivers
PA0026778	Windber Area Authority	Spring Run	SP	Stonycreek/Little Conemaugh Rivers
PA0026778	Windber Area Authority (2 Outfalls)	Paint Creek	SP	Stonycreek/Little Conemaugh Rivers
PA0026778	Windber Area Authority (2 Outfalls)	Little Paint Creek	IW	Stonycreek/Little Conemaugh Rivers
PA0205982	Wise's Mobile Terrace STP	Tributary Howells Run	SN	Stonycreek/Little Conemaugh Rivers

Notes:

*Outfalls are discharge points associated with the NPDES permit.

**Programs: SN = Sewage Non-Municipal
SP = Sewage Publicly Owned
IW = Industrial Waste

Source: Pennsylvania Department of Environmental Protection 1998.

Table B-10

303(d) LISTING OF WATER QUALITY IMPAIRED STREAM SEGMENTS

Stream or Watershed	Watershed	Segment ID	Miles	Source of Impairment	Cause of Impairment	Priority
Beaver Run Watershed	Kiskiminetas River	4997	4.79	AMD	Metals, Suspended Solids	High
		4998	1.04	AMD	Metals	High
		4999	0.61	AMD	Metals	High
Kiskiminetas River Watershed	Kiskiminetas River	4992	27.27	AMD	Metals, Suspended solids	High
Getty Run Watershed	Kiskiminetas River	5006	2.73	AMD	Metals	High
Loyalhanna Creek Watershed	Loyalhanna Creek	5003	27.65	AMD	Suspended Solids, Metals	High
		5011	1.97	AMD	Metals	High
Union Run Watershed	Loyalhanna Creek	5012	3.67	AMD	Metals	High
Clarke Run Watershed		5083	3.97	Agriculture	Nutrients, Suspended Solids	High
McCune Run	Loyalhanna Creek	NA	1.4	AMD	Metals	High
Saxman Run	Loyalhanna Creek	NA	4.7	AMD	Metals	High
Monastary Run	Loyalhanna Creek	NA	0.8	AMD	Metals	High
Indian Camp Run	Loyalhanna Creek	NA	0.6	AMD	Suspended Solids	High
Fourmile Run	Loyalhanna Creek	NA	1.0	AMD	Other Inorganics, Metals	High
Conemaugh River Watershed	Conemaugh River	5055	1.91	AMD	Metals	High
		5056	7.57	AMD	Metals	High
		5057	2.96	AMD	Metals	High
		5094	0.65	Agriculture	Suspended Solids, Nutrients	High
				Urban Runoff/Storm Sewer	Solids, Nutrients	High
Reeds Run Watershed	Conemaugh River	5061	3.42	AMD	Metals	High
Harbridge Run	Conemaugh River	NA	0.3	AMD	Suspended Solids	High
Roaring Run Watershed	Conemaugh River	5060	2.50	AMD	Metals	High

Table B-10 (Continued)

303(d) LISTING OF WATER QUALITY IMPAIRED STREAM SEGMENTS

Stream or Watershed	Watershed	Segment ID	Miles	Source of Impairment	Cause of Impairment	Priority
Elk Creek Watershed	Blacklick Creek	5084	8.37	AMD	Metals, Other Organics	High
Marsh Run Watershed	Blacklick Creek	6323	2.64	Urban Runoff/Storm Sewer	Thermal Modifications	High
McCarthy Run Watershed	Blacklick Creek	6322	8.72	Urban Runoff/Storm Sewer	Suspended Solids, Thermal Modifications	High
Penn Run Watershed	Blacklick Creek	5077	3.93	AMD	Metals, Other Organics	High
Ferrier Run	Blacklick Creek	NA	1.4	AMD	Metals	High
South Branch Blacklick Creek Watershed	Blacklick Creek	5086	1.54	AMD	Metals	High
Tearing Run Watershed	Blacklick Creek	5067	2.19	AMD	Metals	High
Two Lick Creek Watershed	Blacklick Creek	5066	5.32	AMD	Metals	High
Yellow Creek Watershed	Blacklick Creek	5068	2.97	AMD	Metals	High
Freeman Run Watershed	Stonycreek/Little Conemaugh Rivers	5097	0.86	AMD	Metals	High
Boone Run Watershed	Stonycreek/Little Conemaugh Rivers	5182	1.45	AMD	Other Inorganics, Metals	
Buck Run Watershed	Stonycreek/Little Conemaugh Rivers	5179	2.38	Agriculture	Nutrients	
Clear Run Watershed	Stonycreek/Little Conemaugh Rivers	5185	1.36	AMD	Metals	High
Dark Shade Creek Watershed	Stonycreek/Little Conemaugh Rivers	5153	4.14	AMD	Metals	High
		5155	0.54	AMD	Metals	High
Fallen Timber Run Watershed	Stonycreek/Little Conemaugh Rivers	5165	0.86	AMD	Metals	High

Table B-10 (Continued)

303(d) LISTING OF WATER QUALITY IMPAIRED STREAM SEGMENTS

Stream or Watershed	Watershed	Segment ID	Miles	Source of Impairment	Cause of Impairment	Priority
Richards Run	Stonycreek/Little Conemaugh Rivers	NA	0.5	AMD	Metals	High
Glades Creek Watershed	Stonycreek/Little Conemaugh Rivers	5187	3.88	Agriculture	Suspended Solids	High
Lamberts Run Watershed	Stonycreek/Little Conemaugh Rivers	5177	3.08	AMD	Metals	High
Little Conemaugh River Watershed	Stonycreek/Little Conemaugh Rivers	5188	1.32	AMD	Metals	High
Oven Run Watershed	Stonycreek/Little Conemaugh Rivers	5168	1.86	AMD	Metals	High
Paint Creek Watershed	Stonycreek/Little Conemaugh Rivers	5133	1.11	AMD	Metals	High
		5234	0.46	AMD	Metals	
Quemahoning Creek Watershed	Stonycreek/Little Conemaugh Rivers	5158	1.86	AMD	Metals	High
		5162	0.67	Agriculture	Nutrients	High
Rhoads Creek Watershed	Stonycreek/Little Conemaugh Rivers	5183	0.27	AMD	Metals	High
Shade Creek Watershed	Stonycreek/Little Conemaugh Rivers	5137	7.97	AMD	Metals	High
		5138	4.31	AMD	Metals	High
Spring Run Watershed	Stonycreek/Little Conemaugh Rivers	5203	2.84	AMD	Metals	High
Stony Creek Watershed	Stonycreek/Little Conemaugh Rivers	5113	4.45	AMD	pH, Metals	High
		5164	2.97	AMD	Metals	High
		5166	1.8	AMD	Metals	High
Sulphur Creek Watershed	Stonycreek/Little Conemaugh Rivers	5194	2.06	AMD	Metals	High
Wells Creek Watershed	Stonycreek/Little Conemaugh Rivers	5174	1.38	Agriculture	Nutrients	High

Table B-10 (Continued)

303(d) LISTING OF WATER QUALITY IMPAIRED STREAM SEGMENTS

Stream or Watershed	Watershed	Segment ID	Miles	Source of Impairment	Cause of Impairment	Priority
Thorn Run	Stonycreek/Little Conemaugh Rivers	NA	0.7	AMD	Metals	High
Unnamed Tributary to Thorn Run	Stonycreek/Little Conemaugh Rivers	NA	0.9	AMD	Metals	High
Bens Creek	Stonycreek/Little Conemaugh Rivers	NA	1.3	AMD	Metals	High
South Fork Bens Creek	Stonycreek/Little Conemaugh Rivers	NA	4.7	AMD	Metals	High
Babcock Creek (basin)	Stonycreek/Little Conemaugh Rivers	NA	3.5	AMD	Metals	High
Unnamed Trib to Stoney Creek	Stonycreek/Little Conemaugh Rivers	NA	2.1	AMD	Metals	High
Otto Run	Stonycreek/Little Conemaugh Rivers	NA	1.5	AMD	Metals	High
Beaverdam Run	Stonycreek/Little Conemaugh Rivers	NA	2.0	AMD	Metals	High
Bens Creek	Stonycreek/Little Conemaugh Rivers	NA	1.0	AMD	Metals	High

Source: Pennsylvania Department of Environmental Protection 1996.

Table B-11

MUNICIPALCIPAL/ MAJOR PUBLIC SURFACE WATER INTAKES

System Name	Source	Population Served	Watershed
Indiana Municipal Service Authority-Wlebanon	Wertz Ponds	150	Kiskiminetas River
Westmoreland Municipal Authority-Sweeney Plant	Beaver Run Reservoir	139,335	Kiskiminetas River
Latrobe Municipal Authority	Trout Run Reservoir	30,000	Loyalhanna Creek
Latrobe Municipal Authority	Loyalhanna Creek	30,000	Loyalhanna Creek
Ligonier Borough Municipal Authority	Furnace Run	3,100	Loyalhanna Creek
Ligonier Twp Municipal Authority	South Br Mill Creek	3,300	Loyalhanna Creek
Blairsville Municipal Authority	Trout Run Reservoir	4,495	Conemaugh River
Derry Borough Municipal Authority	Mcgee Run	6,000	Conemaugh River
Derry Boro Municipal Authority	Ethel Spring Lake	6,000	Conemaugh River
Highridge Water Authority	Big Springs Reservoir	8,919	Conemaugh River
Highridge Water Authority	Little Sugar Run	8,919	Conemaugh River
Highridge Water Authority	Big Sugar Run	8,919	Conemaugh River
Highridge Water Authority	Sugar Run Reservoir	8,919	Conemaugh River
Highridge Water Authority	Tub Mill Reservoir	8,919	Conemaugh River
Highridge Water Authority	Little Sugar Run Reservoir	8,919	Conemaugh River
New Florence Water Authority	Baldwin Run	1,170	Conemaugh River
Saltsburg Municipal Waterworks	Conemaugh River	1,450	Conemaugh River
Torrance State Hospital	Shirey Run	836	Conemaugh River
Westinghouse Electric Corp	Reservoir	280	Conemaugh River
Cambria Township Water Authority	Vetera Dam	998	Blacklick Creek
GPU Homer City Station	Two Lick Creek	335	Blacklick Creek

Table B-11 (Continued)

MUNICIPALCIPAL/ MAJOR PUBLIC SURFACE WATER INTAKES

System Name	Source	Population Served	Watershed
Green Township Municipal Authority Barr Slope	Price Run Reservior	250	Blacklick Creek
Green Township Municipal Authority-Commodore	Hinty Run Reservoir	375	Blacklick Creek
Highridge Water Authority	Poplar Run Intake	8,919	Blacklick Creek
Nanty Glo Water Authority	Williams Run Reservoir	4,060	Blacklick Creek
Pa American Water Co-Indiana D	Two Lick Creek	24,000	Blacklick Creek
Spangler Municipal Authority	Schirf's Run Reservoir	2,420	Blacklick Creek
Twin Rocks Water Authority	Spring Run Reservoir	720	Blacklick Creek
Vintondale Borough Water System	Bracken Run	675	Blacklick Creek
Central City Water Authority	Beaver Run Creek	2,304	Stonycreek/Little Conemaugh River
Conemaugh Township Municipal Authority	Secondary Reservoir	7,470	Stonycreek/Little Conemaugh River
Conemaugh Township Municipal Authority	Primary Reservoir	7,470	Stonycreek/Little Conemaugh River
Ebensburg Borough Municipal Authority	New Reservoir #2	4,412	Stonycreek/Little Conemaugh River
Ebensburg Borough Municipal Authority	Old Reservoir #1	4,412	Stonycreek/Little Conemaugh River
Gahagen Water Association	Laurel Run	49	Stonycreek/Little Conemaugh River
Gray Area Water Authority Of Jen. Township	Spruce Run Reservoir	450	Stonycreek/Little Conemaugh River
Greater Johnstown Water Authority	Saltlick Reservoir	62,000	Stonycreek/Little Conemaugh River
Greater Johnstown Water Authority	Quemahoning Reservoir	62,000	Stonycreek/Little Conemaugh River
Greater Johnstown Water Authority	North Fork Reservoir	62,000	Stonycreek/Little Conemaugh River
Greater Johnstown Water Authority	Dalton Run Reservoir	62,000	Stonycreek/Little Conemaugh River
Highland Sewer & Water Authority	Lloydell Reservoir	27,100	Stonycreek/Little Conemaugh River
Highland Sewer & Water Authority	Beaverdam Reservoir	27,100	Stonycreek/Little Conemaugh River

Table B-11 (Continued)

MUNICIPALCIPAL/ MAJOR PUBLIC SURFACE WATER INTAKES

System Name	Source	Population Served	Watershed
Hooversville Municipal Authority	Stony Creek River	879	Stonycreek/Little Conemaugh River
Lincoln Township Municipal Authority	Smaller North Side	1,300	Stonycreek/Little Conemaugh River
Lincoln Township Municipal Authority	Larger North Side	1,300	Stonycreek/Little Conemaugh River
Lincoln Township Municipal Authority	Horner Run	1,300	Stonycreek/Little Conemaugh River
Onnalinda Association Water Co-Op	Onnalinda Reservoir	55	Stonycreek/Little Conemaugh River
Portage Borough Municipal Authority	Benscreek Reservoir	7,378	Stonycreek/Little Conemaugh River
Portage Borough Municipal Authority	Martindale Reservoir	7,378	Stonycreek/Little Conemaugh River

Source: K-C Alliance 1999.

Table B-12

PENNSYLVANIA NATURAL DIVERSITY INVENTORY RESOURCES

Common Name	Scientific Name	Status	Watershed
Canadian Milkvetch	Astragalus canadensis	N	Kiskiminetas River
Paddlefish	Polyodon spathula	--	Kiskiminetas River
grape	Vitis novae-angliae	PE	Kiskiminetas River
Golden-fruited sedge	Carex aurea	PE	Kiskiminetas River
Button-bush Dodder	Cusceta cephalanthi	TU	Loyalhanna Creek
Buffalo-nut	Pyrularia pubera	PR	Loyalhanna Creek
Limestone solutional caves	NA	NA	Loyalhanna Creek
Mountain Bugbane	Cimicifuga americana	PT	Loyalhanna Creek
Allegheny Woodrat	Neotoma magister	PT	Loyalhanna Creek
Golden Club	Orontium aquaticum	PR	Loyalhanna Creek
Passion Flower	Passiflora lutea	PE	Loyalhanna Creek
Purple-fringeless Orchid	Platanthera peramoena	TU	Loyalhanna Creek
Clubshell	Pleurobema clava	PE, FE	Loyalhanna Creek
Thoreys Grayback Dragonfly	Tachopteryx thoreyi	--	Loyalhanna Creek
waterfalls and rapids	NA	--	Loyalhanna Creek
sandstone fracture caves	NA	--	Loyalhanna Creek
Northern Myotis	Myotis septentrionalis	--	Loyalhanna Creek
Upland Sandpiper	Bartramia longicauda	PT	Loyalhanna Creek
grape	Vitis novae-angliae	PE	Loyalhanna Creek
Stiff Cowbane	Oxypolis rigidior	TU	Loyalhanna Creek
Mill Creek	NA	--	Loyalhanna Creek
South Fork Mill Creek	NA	--	Loyalhanna Creek
Appalachian Jewelwing	Calopteryx angustipennis	--	Loyalhanna Creek
Swamp Currant	Ribes lacustre	TU	Loyalhanna Creek
Furnace Run	NA	--	Loyalhanna Creek
Yellow-fringed Orchid	Platanthera ciliaris	TU	Loyalhanna Creek
Rough-leaved Aster	Aster radula	N	Loyalhanna Creek
Bushy St. John's-wort	Hypericum densiflorum	PT	Loyalhanna Creek
nonglacial bog	NA	--	Loyalhanna Creek
Lettuce saxifrage	Saxifraga micranthidifolia	TU	Loyalhanna Creek
Least Shrew	Cryptotis parva	PE	Loyalhanna Creek
Pygmy Shrew	Sorex hoyi thompsoni	--	Loyalhanna Creek
Long-legged Green Darner	Anax longipes	--	Loyalhanna Creek
Queen-of-the-prairie	Filipendula rubra	TU	Loyalhanna Creek
Clubshell	Pleurobema clava	PE, FE	Conemaugh River

Table B-12 (Continued)

PENNSYLVANIA NATURAL DIVERSITY INVENTORY RESOURCES

Common Name	Scientific Name	Status	Watershed
Limestone solutional caves	NA	--	Conemaugh River
drainage patterns	NA	--	Conemaugh River
Queen-of-the-prairie	Filipendula rubra	TU	Conemaugh River
Heartleaf meehania	Meehania cordata	TU	Conemaugh River
Allegheny Woodrat	Neotoma magister	PT	Conemaugh River
Golden Club	Orontium aquaticum	PR	Conemaugh River
Purple-fringeless Orchid	Platanthera permoena	TU	Conemaugh River
Snow Trillium	Trillium nivale	PR	Conemaugh River
Mountain Bugbane	Cimicifuga americana	PT	Blacklick Creek
Queen-of-the-prairie	Filipendula rubra	TU	Blacklick Creek
Bushy Naiad	Najas gracillima	PT	Blacklick Creek
Least Bittern	Ixobrychus exilis	PT	Blacklick Creek
Crepis Rattlesnake-root	Prenanthes crepidinea	PE	Blacklick Creek
Virginia Rail	Rallus limicola	--	Blacklick Creek
Meadow Willow	Salix petiolaris	TU	Blacklick Creek
Declined Trillium	Trillium flexipes	TU	Blacklick Creek
Least Shrew	Cryptotis parva	PE	Blacklick Creek
Torrey's Mountain Mint	Pycanthemum torrei	PE	Blacklick Creek
Snow Trillium	Trillium nivale	PR	Blacklick Creek
Allegheny Woodrat	Neotoma magister	PT	Conemaugh River
Thick-leaved Meadow-rue	Thalictrum coriaceum	PT	Conemaugh River
bat hibernacula	NA	--	Conemaugh River
Northern Myotis	Myotis septentrionalis	--	Conemaugh River
Indiana Bat	Myotis sodalis	PE, FE	Conemaugh River
Allegheny Cave Amphipod	Stygobromus allegheniensis	--	Conemaugh River
Western Hairy Rock Cress	Arabis hirsuta	YU	Conemaugh River
Small Yellow Lady's Slipper	Cypripedium parviflorum	PE	Conemaugh River
Eastern Small-footed Bat	Myotis leibii	PT	Conemaugh River
sinkhole	NA	--	Conemaugh River
Lupine	Lupinus perennis	PR	Conemaugh River
Button-bush Dodder	Cuscuta cephalanthi	TU	Conemaugh River
Balsam Poplar	Populus balsamifera	PE	Conemaugh River
Ohio Spiderwort	Tradescantia ohiesis	TU	Conemaugh River
Tubmill Creek	NA	--	Conemaugh River
Kirtland's Snake	Clonophis kirtlandii	PE	Conemaugh River

Table B-12 (Continued)

PENNSYLVANIA NATURAL DIVERSITY INVENTORY RESOURCES

Common Name	Scientific Name	Status	Watershed
Baldwin Creek	NA	--	Conemaugh River
Powdermill Run	NA	--	Conemaugh River
Rough-leaved Aster	Aster radula	N	Conemaugh River
American Fever-few	Parthenium integrifolium	TU	Conemaugh River
Drooping Bluegrass	Poa languida	TU	Stonycreek/Little Conemaugh Rivers
Stiff Cowbane	Oxypolis rigidior	TU	Stonycreek/Little Conemaugh Rivers
Canadian Milkvetch	Astragalus canadensis	N	Stonycreek/Little Conemaugh Rivers
Scarlet Indian Paintbrush	Castilleja coccinea	TU	Stonycreek/Little Conemaugh Rivers
Small Seaside Spurge	Chamaesyce polygonifolia	PT	Stonycreek/Little Conemaugh Rivers
Fraser's Sedge	Cymophyllus fraseri	PE	Stonycreek/Little Conemaugh Rivers
Kidney-leaved Twayblade	Listera smallii	PE	Stonycreek/Little Conemaugh Rivers
Heartleaf Meehania	Meehania cordata	TU	Stonycreek/Little Conemaugh Rivers
Allegheny Woodrat	Neotoma magister	PT	Stonycreek/Little Conemaugh Rivers
Golden Club	Orontium aquaticum	PR	Stonycreek/Little Conemaugh Rivers
Whitlow Wort	Paronychia fastigiata var. nuttallii	TU	Stonycreek/Little Conemaugh Rivers
Chaffy Whitlow Wort	Paronychia fastigiata var. pale	TU	Stonycreek/Little Conemaugh Rivers
Purple Fringeless Orchid	Platanthera peramoena	TU	Stonycreek/Little Conemaugh Rivers
Crepis Rattlesnake-root	Prenanthes crepidinea	PE	Stonycreek/Little Conemaugh Rivers
Purshs Goldenrod	Solidago purshii	TU	Stonycreek/Little Conemaugh Rivers
Upland Sandpiper	Bartramia longicauda	PT	Stonycreek/Little Conemaugh Rivers
South Fork Bens Creek	NA	--	Stonycreek/Little Conemaugh Rivers
Queen-of-the-prairie	Filipendula rubra	TU	Stonycreek/Little Conemaugh Rivers
North Fork Bens Creek	NA	--	Stonycreek/Little Conemaugh Rivers
Highbush Cranberry	Viburnum trilobum	TU	Stonycreek/Little Conemaugh Rivers
Strawberry Goosefoot	Chenopodium capitatum	TU	Stonycreek/Little Conemaugh Rivers
Clear Shade Creek	NA	--	Stonycreek/Little Conemaugh Rivers
Meadow Willow	Salix petiolaris	TU	Stonycreek/Little Conemaugh Rivers
Blunt Manna-grass	Glyceria obtusa	PE	Stonycreek/Little Conemaugh Rivers
Piney Run	NA	--	Stonycreek/Little Conemaugh Rivers
Fall Dropseed Muhly	Mulhlenbergia uniflora	PE	Stonycreek/Little Conemaugh Rivers
Eastern Small-footed Myotis	Myotis leibii	PT	Stonycreek/Little Conemaugh Rivers
Mountain Bugbane	Cimicifga americana	PT	Stonycreek/Little Conemaugh Rivers
Ski-tailed Emerald	Somatochlora elongata	--	Stonycreek/Little Conemaugh Rivers
Small-headed Rush	Juncus brachycephalus	PT	Stonycreek/Little Conemaugh Rivers

Table B-12 (Continued)

PENNSYLVANIA NATURAL DIVERSITY INVENTORY RESOURCES

Common Name	Scientific Name	Status	Watershed
False Hop Sedge	Carex lupuliformis	TU	Stonycreek/Little Conemaugh Rivers
Bushy Naiad	Najas gracillima	PT	Stonycreek/Little Conemaugh Rivers
Rough-leaved Aster	Aster radula	N	Stonycreek/Little Conemaugh Rivers
White Pine-Hemlock Forest	NA	--	Stonycreek/Little Conemaugh Rivers
Jacob's Ladder	Plemonium vanbruntidae	PE	Stonycreek/Little Conemaugh Rivers
Pursh's Goldenrod	Solidago purshii	TU	Stonycreek/Little Conemaugh Rivers
Mountain Bellwort	Uvularia puberula	TU	Stonycreek/Little Conemaugh Rivers
Appalachian Blue Violet	Viola appalachiensis	PT	Stonycreek/Little Conemaugh Rivers
Tennessee Goldenrod	Solidago roanensis	PR	Stonycreek/Little Conemaugh Rivers
Swamp Currant	Ribes lacustre	TU	Stonycreek/Little Conemaugh Rivers
Yellow-fringed Orchid	Platanthera ciliaris	TU	Stonycreek/Little Conemaugh Rivers
Blue Monkshood	Aconitum uncinatum	PT	Stonycreek/Little Conemaugh Rivers

Status Codes:

PE = Pennsylvania Endangered
PT = Pennsylvania Threatened PR = Pennsylvania Rare
TU = Tentatively Undetermined
N = No Current Pennsylvania Status, But Under Review
FE = Federal Endangered

Source: Pennsylvania Bureau of Forestry, Department of Conservation and Natural Resources 1998.

Table B-13

PROPERTIES ON OR ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES

County	Historic Name	Municipality
Armstrong	Women's Christian Temperance Union	Apollo
Armstrong	Pennsylvania Mainline Canal	Various
Armstrong	Drake Log Cabin	Apollo
Cambria	South Fork Hunting and Fishing Club Historic District	Adams Township
Cambria	Eliza Furnace	Blacklick Township/ Buffington
Cambria	Bridge over Bens Creek in Cassandra Borough	Cassandra Borough
Cambria	Colver Historic District	Colver Borough
Cambria	Johnstown Flood National Memorial	Croyle/Adams Township
Cambria	Paul Headrick House	East Taylor Township/ East Conemaugh
Cambria	Cambria County Courthouse	Ebensburg
Cambria	Cambria County Jail	Ebensburg
Cambria	Philip Noon House	Ebensburg
Cambria	Roberts Homestead	Ebensburg
Cambria	A. W. Buck House	Ebensburg
Cambria	Exchange Hotel	Ebensburg
Cambria	Davis-Murray House	Ebensburg
Cambria	William Cherry Tavern	Ebensburg
Cambria	Franklin Borough Fire Hall	Franklin Borough
Cambria	Bridge in Johnstown City (over Stonycreek River)	Johnstown
Cambria	Cambria City Historic District	Johnstown
Cambria	Cambria Public Library Building	Johnstown
Cambria	Downtown Johnstown Historic District	Johnstown
Cambria	Grand Army of the Republic Hall	Johnstown
Cambria	Horner Street Bridge	Johnstown
Cambria	Johnstown Inclined Railway	Johnstown
Cambria	Johnstown Passenger Railway	Johnstown
Cambria	Nathan's Department Store	Johnstown

Table B-13 (Continued)

PROPERTIES ON OR ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES

County	Historic Name	Municipality
Cambria	Penn Furniture Company	Johnstown
Cambria	Pennsylvania Railroad Station	Johnstown
Cambria	St. John the Baptist Ukrainian Church	Johnstown
Cambria	Swank Building	Johnstown
Cambria	W. E. Pierce Realtors	Johnstown
Cambria	American House	Johnstown
Cambria	Minersville Historic District	Johnstown/West Taylor Township
Cambria	Trinity Lutheran Church	Johnstown
Cambria	Old Conemaugh Borough Historic District	Johnstown
Cambria	Benshoff Building	Johnstown
Cambria	Cambria Iron Company	Johnstown
Cambria	Benjamin F. Jones Cottage	Cresson Township
Cambria	Portage Historic District	Portage Township
Cambria	Revloc Historic District	Cambria Township/Revloc
Cambria	Staple Bend Tunnel	Conemaugh Township
Cambria	Alma Hall	Johnstown City
Cambria	William Horace Rose Residence	Johnstown City
Cambria	840 Franklin Street	Kernville
Cambria	Daniel A. Judy House	Kernville
Cambria	James P. Thomas House	Kernville
Cambria	Lilly Bridge (over Burgoon Run)	Lilly
Cambria	Berwind-White Mine 40 Historic District	Richland Township
Cambria	Grandview Cemetery	Southmont Borough
Cambria	Stutzman Log House	Westmont Borough
Cambria	Westmont Historic District	Westmont Borough
Indiana	James Mitchell House	Indiana
Indiana	Old Indiana County Courthouse	Indiana
Indiana	Old Indiana County Jail and Sheriff's Office	Indiana
Indiana	John Sutton Hall (Indiana University of PA Campus)	Indiana

Table B-13 (Continued)

PROPERTIES ON OR ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES

County	Historic Name	Municipality
Indiana	Old Indiana Brewery	Indiana
Indiana	YMCA Building	Indiana
Indiana	William Evans House	Cherry Hill Township
Indiana	BR&P Railway Company Line	Near Homer City
Indiana	Western Division of Pennsylvania Canal	Numerous
Indiana	Christian Keller Mill	Pine Township
Indiana	Saltsburg Historic District	Saltsburg Borough
Indiana	Stone House Museum	Saltsburg Borough
Indiana	Bridge in West Wheatfield (over Richards Run)	W. Wheatfield Township
Indiana	Meaner Tavern	W. Wheatfield Township
Indiana	McCanahan House	White Township
Indiana	Breezedale Indiana University of Pennsylvania Campus	Indiana
Indiana	Buffalo, Rochester and Pittsburgh Railway Indiana Passenger Station	Indiana
Indiana	Silas Clark House	Indiana
Indiana	Goerge Diehl Homestead	Indiana
Indiana	Downtown Indiana Historic District	Indiana
Indiana	Graff's Market	Indiana
Indiana	Indiana Armory	Indiana
Indiana	Indiana Borough 1912 Municipal Building	Indiana
Indiana	Blairsville Armory	Blairsville
Indiana	St. Peter's Episcopal Church and Rectory	Blairsville
Indiana	Indiana Commodore Historic District	Green Township/Commodore Township
Somerset	Shaffer's Bridge (over Bens Creek)	Conemaugh Township
Somerset	Roaring Run Stone Arch Bridge (over Roaring Run)	Jenner Township
Somerset	Ferrellton Bridge	Jenner Township
Somerset	Tri-State Oil and Gas	Jennerstown Borough
Somerset	Trostletown Covered Bridge	Quemahoning Township

Table B-13 (Continued)

PROPERTIES ON OR ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES

County	Historic Name	Municipality
Somerset	Quemahoning Service Station	Quemahoning Township
Somerset	Lincoln Highway Auto Body	Quemahoning Township
Somerset	Shade Township Marker	Shade Township
Somerset	Walter's Mill Bridge	Somerset Township
Somerset	D. B. Zimmerman House	Somerset Township
Somerset	Glessner Bridge (over Stonycreek River)	Stonycreek Township
Somerset	Hite House	Stoystown Borough
Somerset	Lincoln Highway Marker	Stoystown Borough
Somerset	Windber Historic District	Windber
Somerset	Boswell Historic District	Boswell
Somerset	Cairnbrook Historic District	Cairnbrook/Shade Township
Somerset	Matthew Hair Farm	Hollsopple
Westmoreland	1852 Railroad Tunnel	Derry Township
Westmoreland	Ross Furnace	Fairfield Township
Westmoreland	Squirrel Hill Site	New Florence
Westmoreland	Western Division of Pennsylvania Canal	Numerous
Westmoreland	Laurel Hill Furnace	St. Clair Township
Westmoreland	Laurel Hill Inclined Planes	St. Clair Township
Westmoreland	Latrobe Armory	Latrobe
Westmoreland	Pennsylvania Railroad Station	Latrobe
Westmoreland	St. Vincent Archabbey Grist Mill	Latrobe
Westmoreland	Ligonier Armory	Ligonier
Westmoreland	Logonier Historic District	Ligonier
Westmoreland	Linn Runn State Park Family Cabin District	Cook Township
Westmoreland	Samuel Patterson House	New Alexandria
Westmoreland	Salem Crossroads Historic District	Delmont
Westmoreland	Slickville Historic District	Slickville/Salem Township
Westmoreland	St. Gertrude Roman Catholic Church	Vandergrift
Westmoreland	Vandergrift Historic District	Vandergrift

Source: Bureau for Historic Preservation, Pennsylvania Historical and Museum Commission 1993; National Park Service 1999.

APPENDIX C

EXCERPTS FROM RELATED STUDIES

LIST OF TABLES

Number	Title	Page
C-1	Existing and Proposed Trails	C-1
C-2	Synopsis: Action Plan – America's Industrial Heritage Plan	C-4
C-3	Conemaugh Valley Greenway (Johnstown to Saltsburg) – List of Historic Structures/Sites Worthy of Notice/Interpretation	C-7
C-4	Excerpts From the Ghost Town Trail Master Plan	C-11
C-5	Summary of Findings; Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers	C-13

LIST OF ATTACHMENTS

Attachment	Title
A	Material from *Effects of Coal-Mine Discharges on the Quality of the Stonycreek River and Its Tributaries, Somerset and Cambria Counties, Pennsylvania* (USGS 1996).
B	Material from Report on the Water Quality and Acid Mine Drainage in the Little Conemaugh River Watershed, Cambria County, Pennsylvania (Barbin 1995).
C	Material from *Conemaugh River Basin Reconnaissance Study* (USACOE 1994).
D	Passive Mine Water Treatment
E	Deep Mine Sealing
F	A Rehabilitation Plan for Abandoned Mine Reclamation (BAMR 1997)
G	Japanese Knotweed Issues and Management Information
H	Draft Kiski-Conemaugh Greenway Plan Task Work List

Copies of the documents excerpted here are available for review at the K-C Alliance offices in Windber, Pennsylvania. The K-C Alliance has numerous additional studies and documentation of resources in the basin. Among these are:

Alliance for Aquatic Resource Monitoring. *Preliminary Analysis of Data Collected in the Stonycreek River Watershed Basin, Conemaugh River Mainstem Watershed Basin, and Kiskiminetas River Mainstem Watershed Basin, November 1997-August 1998.*

Barbin, W. G. 1995. *Report on the Water Quality and Acid Mine Drainage in the Little Conemaugh River Watershed, Cambria County, Pennsylvania* (SCRIP and Cambria County Conservation District).

Pennsylvania Fish Commission. *Conemaugh River Management Report September 1997-September 1998.*

Southern Alleghenies Conservacy. 1998. *Findings for the Inventory and Monitoring Phase for the Resource Recovery Program.*

United States Army Corps of Engineers. 1982. *Loyalhanna Lake Water Quality Report.*

United States Environmental Protection Agency. 1972. *Cooperative Mine Drainage Survey, Kiskiminetas River Basin.*

United States Geological Survey. 1996. *Effects of Coal-Mine Discharges on the Quality of the Stonycreek River and its Tributaries, Somerset and Cambria Counties, Pennsylvania.*

Table C-1

EXISTING AND PROPOSED TRAILS
KISKI-CONEMAUGH RIVER BASIN

Trail/Status	Location	Length (miles)
ARMSTRONG COUNTY		
Roaring Run Trail/Existing*	Apollo	2.0
Leechburg Park Trail/ Existing*	Leechburg	Unknown
CAMBRIA COUNTY		
Main Line Trail/Proposed	Allegheny Portage Railroad to Cresson to South Fork, future linkage with Lower Trail and east-west trail system	18.0
Route of the Flood Trail/Proposed	St. Michael to South Fork to Seven Arch Bridge in Johnstown, links with east-west trail system	11.0
Portage Trail/Proposed	Links with Mainline Trail	3.5
Cambria and Indiana Rail Trail/ Proposed	Ebensburg to Mine 33 to White Mill, links with Rexis Branch Trail	3.0
Southern Cambria County Link Trail/Existing	Mineral Point to Mylo Park and at the halfway point it splits off to Nanty Glo, links with ghost town trail and route of the flood trail	9.0
Ghost Town Trail/Existing	Nanty Glo to Dilltown in Indiana County, future extensions east and west	12.0
Conemaugh Greenway/Proposed	Johnstown to Seward and west to Saltsburg, linkages with route of the Flood Trail, Indiana County trail system	50.0
Bethlehem Steel/Proposed*	Johnstown	Unknown
Johnstown Saddle Club Trails Network/Existing	Johnstown	Unknown
Jim Mayer Riverswalk Trail/Existing	Johnstown along Stony Creek, linkage potential with Sculpture Trail and Conemaugh Greenway	1.2
James Wolfe Sculpture Trail/Existing	Along Stonycreek River at Inclined Plane, linkage potential with Conemaugh Greenway	1.0
Stackhouse Park Trails/Existing	Johnstown	Unknown

Table C-1 (Continued)

EXISTING AND PROPOSED TRAILS
KISKI-CONEMAUGH RIVER BASIN

Trail/Status	Location	Length (miles)
Cambria Heights to Hinkstown Dam/Proposed	Johnstown	Unknown
Kittanning Trail/Existing	Traverses Cambria County in east to west direction	Unknown
Lost Turkey Trail*	Round Top Area	Unknown
INDIANA COUNTY		
Ghost Town Trail/Proposed	Dilltown to Black Lick	18.0
Rexis Branch/Existing	Vintondale to Route 422	4.0
Rexis Branch Extension/Proposed	Route 422 to Manver Station	2.5
Vision Trail/Proposed	1) Manver Station to Clymer to Indiana 2) Manver Station to Heilwood	20.0
Conemaugh River Greenway Trail/Proposed*	Seward to Saltsburg	50.0
Clymer Trail/Proposed	Dixonville to Clymer	Unknown
Creekside Extension/Proposed	Creekside to Indiana	Unknown
Hoodlebug Trail Pedestrian/Bikeway/Proposed	Indiana-Homer City	5.0
Route 119 Greenway/Proposed	Homer City to Blairsville	13.0
Yellow Creek Trail/Proposed	Homer City to Yellow Creek State Park, link with Homer City-Indiana Ped/Bikeway and Rt.119 Greenway	8.0
10 Mile Trail/Proposed	Jacksonville to Jackson Mine	10.0
Shelocta to Clarksville Rail Trail/Proposed	Shelocta to Clarksville	15.0
SOMERSET COUNTY		
Laurel Highlands Hiking Trail/Existing	Ohiopyle State Park to Seward	70.0
Jenner-Lincoln Hiking Biking Trail/Proposed	Enoch to Ferrellton	11.0
Quemahoning Hiking/Biking Trail/Proposed	Boswell Borough to Rt. 219	2.5
Forbes State Forest Snowmobile Trails/Existing	Forbes State Forest	70.0

Table C-1 (Continued)

EXISTING AND PROPOSED TRAILS
KISKI-CONEMAUGH RIVER BASIN

Trail/Status	Location	Length (miles)
Davisdonville Streetcar/Trolley Trail/Proposed	Jerome to Kelso	Unknown
Lost Turkey Trail*	County Line to Babcock Picnic Area	Unknown
WESTMORELAND COUNTY		
Loyalhanna Creekside Trail/Existing	Latrobe to Route 982	Unknown
Loyalhanna Trail Extension/Proposed	Saltsburg to Latrobe	Unknown
Loyalhanna Nature Trail/Existing	U.S. Route 30 in Ligonier	1.0
Conemaugh River Greenway Trail/Proposed	Seward to Saltsburg	50.0
Saltsburg to Export to Trafford Rail Trail/Proposed	Saltsburg to Export to Trafford	Unknown

*Added in response to public comment process 1998 and 1999.

Source: National Park Service 1995

Table C-2

SYNOPSIS: ACTION PLAN
AMERICA'S INDUSTRIAL HERITAGE PLAN*

Action	Strategy
PRESERVATION OF CULTURAL RESOURCES	
1. Mapping cultural and historic resources in 9 county area, including the Kiski-Conemaugh River Basin needs to be done.	Using PHMC contractor, assist counties in inventorying and evaluating basin historic sites; rank sites; determine level of historic significance of each.
2. Master plan, which documents funding sources, needs to be done.	Annual inventory of funding programs should be conducted. Historic preservation activities will take advantage of the available funds and programs.
3. Human stories of industrial heritage themes needs to be promoted.	Cultural Resources Committee should identify appropriate human story themes. Research will be done by and funded by private state and federal groups.
4. Programs addressing visitor experience for managers of historic sites needs to be developed.	The Heritage Preservation Committee (HPC) should develop guidelines for visitor interpretation. The program should be done through a university or state or federal agency.
5. A computerized inventory of industrial heritage artifacts and historic records needs to be done.	HPC should contract university or other leadership to fund computerized inventory. Designated organization should develop and maintain a reference library.
6. A program to negotiate cooperative agreements with private owners of historic resources needs to be developed.	HPC should prepare a handbook for private owners of historic properties.
REGIONAL TOURISM PROMOTION AND MARKETING	
1. Process to determine current baseline tourism data for 9 county area, including the Kiski-Conemaugh River Basin needs to be established.	HPC should provide or contract for establishment and maintenance of an ADP Program.
2. An incentive program for managers of regional sites and attractions using the industrial heritage theme and logo needs to be developed.	The Tourism Promotion Committee should develop this program.
3. A marketable theme line for promoting industrial heritage theme with existing natural, scenic and recreational attractions need to be developed.	HPC and PA Bureau of Travel Development (BTD) should contract marketing firm to develop theme. Funding should be done by the BTD.

Table C-2 (Continued)

SYNOPSIS: ACTION PLAN
AMERICA'S INDUSTRIAL HERITAGE PLAN*

Action	Strategy
4. A program to provide quality visitor experience needs to be developed.	HPC and Tourism Promotion Committee should develop this program.
5. A public relations campaign which encourages sponsors of existing and new special events to use the theme needs to be developed.	Individuals or agencies providing tourism/marketing assistance should include special events as part of their program responsibilities.
6. Visitor information centers to promote industrial heritage resources need to be provided.	BTD should fund and establish information centers at strategic locations. HPC should provide the plan for operating the center.
7. America's Industrial Heritage Project needs to be marketed through a combination of funding mechanisms.	Regional tourism agencies should provide tourism promotion and marketing services. Funding should be from various government and private sources.
TRANSPORTATION AND ACCESS	
1. Technical assistance is needed for development of a national heritage highway program, which will focus on the William Penn Highway (US 22).	Federal and state legislation should be sought to designate US 22 as the William Penn National Heritage Highway.
2. Completion of US 219 and US 220 as four lane connectors to PA Turnpike (I-76) and US 40/48 on the south and linking to I-80 and on into NY state on the north is needed in order to provide visitor access to heritage attractions.	HPC should urge State Transportation Commission to assign these projects as high priorities.
3. Tour routes to link historic sites and area tourist attractions to the William Penn Highway (US 22) need to be developed.	Federal funding should be requested for proposed tour routes. PennDOT should be responsible for sign maintenance. The NPS should provide assistance in the design and construction of signing.
4. Existing laws pertaining to highway aesthetics need to be enforced; need to determine if existing laws are adequate.	HPC, PennDOT, the PA Travel Council and BTD should review existing laws. If these are not adequate, coordinating agencies should be encouraged to develop and recommend new strategies for scenic improvements.
5. PennDOT's district engineers need to be included in area wide transportation planning and development activities.	HPC should involve PennDOT district engineers.

Table C-2 (Continued)

SYNOPSIS: ACTION PLAN
AMERICA'S INDUSTRIAL HERITAGE PLAN*

Action	Strategy
6. Area air, rail and bus service providers need to be involved in the project related transportation planning so visitors can benefit from improved scheduling, services, facilities and equipment.	The Transportation Committee should seek bus, rail and air service to the region.
7. Technical assistance for operators of historic or theme-related excursions needs to be developed.	HPC and Transportation Committee should provide technical assistance to excursion operators.
REGIONAL ECONOMIC DEVELOPMENT	
1. Informational brochure describing potential economic benefits of the project needs to be developed.	Economic development agencies should develop brochure describing the potential economic benefits.
2. Incorporation of tourism in planning and economic development agencies needs to be encouraged.	HPC should request the economic development agencies to incorporate tourism promotion as a major component of overall economic development and planning.
3. Evaluation process for measuring the direct and indirect economic benefits of allocating monies for public historic preservation projects needs to be developed.	The Economic Development Committee should provide evaluation criteria.
4. Reinvestment of public acquisition monies to private businesses and property owners needs to be encouraged.	HPC and Economic Development Committee should adopt a policy to encourage public acquisition monies to be paid to private business and property owners.
5. Profitable adaptive reuse of historic structures needs to be encouraged through tax benefits, loan assistance programs, creative financing packages, etc.	Economic Development Committee should develop and implement a program to educate investors and business leaders.

Notes:

*The complete narration of necessary actions and the implementation strategies are found in the *America's Industrial Heritage Project Action Plan* dated August 1987.

Source: Heritage Preservation Commission 1987.

Table C-3

CONEMAUGH VALLEY GREENWAY (JOHNSTOWN TO SALTSBURG) LIST OF HISTORIC STRUCTURES/SITES WORTHY OF NOTICE/INTERPRETATION*

A. GENERAL STRUCTURES

Charles F. Lewis Natural Area: Charcoal Camp (exhibit)
Conemaugh Furnace Site (?)
Finlay Run: Rubble Stone Mill Dam
Seward Power Station: including Coal Supply and Fly Ash Disposal
Conemaugh Power Station: including Coal Supply and Fly Ash Disposal
Seward: Hillside Reservoirs Supplied Steam Locomotives, now Municipalities
New Florence: Iron Furnace Along Furnace Lane
New Florence: Baldwin Furnace on Baldwin Run
New Florence: Squirrel Hill (Indian Trail and Camp Site)
New Florence: Reservoir on Baldwin Run
Lockport: Stone Arch Railroad Bridge (Aqueduct Wing Walls)
Lockport: Canal Era Hotel (Log Cabin Construction)
Lockport: Sluice for Water-Powered Mill
Lockport: "Rock City" (Floatstone Blocks) on Hillside on way to Bolivar
Bolivar: Brickworks Kilns along Railroad Tracks East of Town
Bolivar: Old Pharmacy
Bolivar: Municipal Park (Access Trail Along Tubmill Creek?)
Bolivar: Access to "High Road" and "Low Road" Trails to Torrance
Robinson: Remains of Brickworks?
Robinson: Remains of "Bolivar City" Pits and Facilities, Roaring Run
Robinson: Small Pond (from Clay Quarry?) On Roaring Run
Robinson: Access to "High Road" and "Low Road" Trails to Strangford
Strangford: Booth and Flynn Quarries (and Caves)
Packsaddle Hollow: Booth and Flynn Quarries, Tramway, Bins
Torrance: Site of Quarry Workers' Village
Torrance: Subway, under Main Line Tracks (now filled with earth but could be reopened to provide hiker-biker safe crossing)
Cokeville: 1863 Railroad Bridge Piers, Abutments, and Embankment
Cokeville: Coke Ovens, Pond, Terraces
McGee Run: Isabella Mine Portals, Trestle Remains
Blairsville: Indian Village Site, Johnson Farm (Archaeological Site)
Blairsville: Water Spout Draining Brenizer Mine (South End Route 217 Bridge)
Blairsville: Coal Mine Entrance (Pittsburgh Coal Seam Visible)
Blairsville: 1822 Bridge Abutments
Blairsville: Rehabilitated West Penn Railroad Station
Bairdstown: Indian Camp Site
Newport: Archaeological Town Site

Table C-3 (Continued)

CONEMAUGH VALLEY GREENWAY
(JOHNSTOWN TO SALTSBURG)
LIST OF HISTORIC STRUCTURES/SITES
WORTHY OF NOTICE/INTERPRETATION*

A. GENERAL STRUCTURES (Continued)

Social Hall: Three Railroad Grades Converge (1854, 1883, 1903, 1950)
Conemaugh Dam: Tour, Visitor Center Exhibits, Fishing, Camping, Canoeing
Tunnelview Historic Site: Canal Boat Demonstration, Exhibits
Tunnelton Coal Mine: Shale Pile and Treatment Pond
Elder Run: Stone Arch Railroad Culvert
White: Conemaugh Salt Works Site(?)

B. CANAL STRUCTURES

Cramer (Finley Run): Towpath Bridge Abutments
India: Large Culvert
Lockport: Aqueduct Wing Wall, East End of Railroad Bridge
Aqueduct Abutment at Tubmill Creek
Towpath Bridge Abutments and Waste Weir Recesses (Rubble Stone)
Lock 9: Lock Pit, Lockhouse Foundation
Lock 8: Lock Pit, Lockhouse Foundation
Lock 7: Lock Pit, Some Stones at Sill
Cross-over Bridge Abutment(s)
Lock 6: Lock Pit
Lock and Dam No. 2: Dam Timbers, Lock Pit, Slope Wall, Lockhouse Foundation, Sluice
Canal Visible Between Guard Lock No. 2 and Lock 5
Packsaddle Hollow: Lock 5 (Stonework and Outlet Channel Visible)
Lock and Dam No. 1: Dam Timbers and Iron Loop Anchors, Lock Wall, Slope Wall, Lockhouse Foundation, Cross-Over Bridge Abutment(s)
Culvert Stonework (3-foot Chord) and Plank Foundation
Lock 4: Lock Pit and Sill
Culvert Stonework (3-foot Chord) and Plank Foundation
Lock 3: Lock Pit, where Towpath Changes Elevation Abruptly
Earthen Ramp (Abutment) for "Farm Bridge" over Towpath and Canal
Slope Wall on Towpath Bank where Canal Ends at Railroad Embankment
Towpath Bridge Abutments at McGee Run
Outlet Lock Stonework, Lock 17 at McGee Run
Dike in River, Defines Outlet-Lock Channel into Slackwater Pool
Tall Culvert under Towpath North of Route 217
Culvert, Downriver from Stony Run (Silted)
Lock 16: Lock Pit, where Towpath Changes Elevation (All Silted Badly)
Culvert under Towpath (near Westinghouse)
Bow Ridge: Tunnel (Accessible only through Metal Culvert under Roof)

Table C-3 (Continued)

CONEMAUGH VALLEY GREENWAY
(JOHNSTOWN TO SALTSBURG)
LIST OF HISTORIC STRUCTURES/SITES
WORTHY OF NOTICE/INTERPRETATION*

B. CANAL STRUCTURES (Continued)

Bow Ridge: Aqueduct Foundations Visible on Floor of River
Bow Ridge: Canal Restored at Tunnelview Historic Site
White: Can see Canal, Slope Wall Stone Pavement, Earthen Abutments for Bridge over Towpath and Canal (at Site of Conemaugh Salt Works?)
White: Stone Culvert Under Towpath
Saltsburg (Near Railroad Tunnel): Stonework Portal and Top of Culvert Exposed
Saltsburg (to Blacklegs Creek): Canal and Towpath Visible

C. NORTHWESTERN (WEST PENN) RAILROAD STRUCTURES

Blairsville: Rehabilitated Station
Blairsville: Historic Society Museum (Maps, Exhibits)
Flood Control Reservoir Area: Road Beds, Culverts, Bridges, Tunnels, Survey Monuments (see Map Provided)
Bow Ridge: Railroad Bridges and Tunnels (Tunnelview Historic Site)
Elder Run: Stone Culvert
Saltsburg: Rehabilitated Station
Salina: Abandoned Tunnel

D. WESTERN PENNSYLVANIA RAILROAD STRUCTURES (LOCATED BETWEEN THE CONEMAUGH DAM AND THE SOCIAL HALL)

Bridge (1863) Piers and Abutments
Tunnel (1863)
Bridge (1889) Piers and Abutments
Bridge (1903)
Tunnel (1903)
Bridge (1903)
Stone Culvert (1863)
Stone Culvert (1863)
Building Walls, Stone (Trackside)
Stone Culvert (1863)
Obelisk Stone (1863)
Stone Culvert (1863)
Stone Culvert (1863)
Reservoir Pond (RR)
Stone Culvert (1863)
Bridge (1863) Piers and Abutments
Bridge (1903)
Stone Culvert (1863)

Table C-3 (Continued)

CONEMAUGH VALLEY GREENWAY
(JOHNSTOWN TO SALTSBURG)
LIST OF HISTORIC STRUCTURES/SITES
WORTHY OF NOTICE/INTERPRETATION*

D. WESTERN PENNSYLVANIA RAILROAD STRUCTURES (LOCATED BETWEEN THE CONEMAUGH DAM AND THE SOCIAL HALL) (Continued)

RR Station Foundation
Bridge (1903)
Stone Culvert (1863)
Stone Foundation for Railroad Grade
Stone Culvert, Double (1863 and 1883)
Stone Culvert (1863)
Stone Culvert (1883)
Bridge (1903)
Trackside Spring, Stoned
Stone Culvert (1883)
Stone Culvert (1883)
Trough Stone (1883)
Obelisk Stone (1863)
Bridge (1872)
Obelisk Stone (1863)
Bridge (1863) Piers and Abutments
RR Grade (1853, 1863)

Notes

*This list was generated by Mr. Bill Dzombak, Mr. Dale Rummel, and Mr. Tom Metzgar, local citizens who have special interest and knowledge of the Conemaugh River Corridor.

Table C-4

EXCERPTS FROM THE GHOST TOWN TRAIL MASTER PLAN

INTERPRETATIVE THEMES

The Ghost Town Trail contains several major interpretive themes that could be presented to trail users with wayside trail exhibits, brochures, and history programs. The potential interpretive themes of the trail corridor are:

Ghost Towns:

Wehrum - Former Lackawanna Coal & Coke Company mining town containing 230 homes, a company store, bank, and other services typically found in a mining community. One house remains from the mining era of the community abandoned in the 1930's.

Bracken - A small mining community, operated by the Commercial Coal Company, located between Twin Rocks and Vintondale in the present day State Gamelands #79.

Lackawanna #3 - A short-lived "coal patch" town located between Rexis and Wehrum in an area known locally as Edwards Fats. No evidence of the town remains.

Armerford - Early mining community located next to Dilltown.

Scott Glen - Early mining community located west of Dilltown.

IRON INDUSTRIES OF THE BLACKLICK CREEK VALLEY

Eliza Furnace, National Register Site - Operated from 1846 to 1849 at its location in Vintondale. The furnace is regarded as one of the best preserved hot blast iron furnaces in the state. The iron pigs from the furnace were hauled by wagon to Ninevah and shipped from there by canal to Pittsburgh. Unfortunately, the expense of shipping the pig iron and the poor quality of the local hematite ore used in the iron making process doomed the financial success of the furnace. In addition, a depression in the iron industry in the late 1840's also contributed to the failure of the furnace.

After recording an output of 1,000 tons of iron in 1849, the Eliza Furnace ceased operation in 1850. The furnace and property were later acquired by the Vinton Colliery Company and eventually, in 1965, by the Cambria County Historical Society.

The story of the Eliza Furnace, its relation to the early American iron industry, and the interpretation of the furnace remains should be developed as a major attraction for the trail.

Wheatfield or Blacklick Furnace - No longer in existence this furnace was located in the area known locally as Wheatfield. The trail passes near the probable location of the furnace. Little is known about this furnace built by David Stewart and George King. In 1847 Peter Shoenberger, one of the founders of the Cambria Iron Company, acquired the timber rights to the area. Later, in 1899, the coal and timber rights were sold to the Lackawanna Iron and Steel Company.

Table C-4 (Continued)

EXCERPTS FROM THE GHOST TOWN TRAIL MASTER PLAN

IRON INDUSTRIES OF THE BLACKLICK CREEK VALLEY (Continued)
Buena Vista Furnace (not accessible to current trail but located along the active railroad near PA Route 56) - The Buena Vista Furnace is owned by the Indiana County Historical Society. The furnace, although not as well preserved as the Eliza Furnace, could be used as a historic site if the railroad west of Dilltown is converted for trail use.
LUMBER INDUSTRY
Rexis - This small Indiana County community served as a major lumber industry site in the late 1800's. An access area for the trail is proposed next to the present day Rexis.
Charcoal Making of the Iron Furnaces – The Eliza Furnace and other iron furnaces in the Blacklick Creek Valley were charcoal fired. The uniqueness of the charcoal industry and its affect on the valley could be interpreted along with the iron industry.
COAL TOWNS AND THE MINING INDUSTRY
Wehrum (Lackawanna #4) Vintondale Nanty Glo Bracken Lackawanna #3 Twin Rocks (Expedit)
OTHER COAL MINING THEMES
Coal Barons and Entrepreneurs - Warren Delano, Clarence Claghorn, A. V. Barker, Webster Griffith, Samuel Reed, James Mitchell, the McFaddens, J. Heil Weaver, and B. Dawson Coleman.
Life in a Mining Town - Cultural and social history of the mining towns of the Blacklick Creek Valley.
Union and Labor Activities - Particularly at Vintondale which remained non-union until the 1930's long after other mines in the area had been unionized. Nanty Glo was the home of John Brophy, President of UMWA District 2, who challenged John L. Lewis for Presidency of the United Mine Workers. Brophy was later instrumental in organizing the CIO, forerunner of the AFL-CIO.
Mine Disasters - Wehrum 1909, 21 miners killed. A memorial to the miners is located at the St. Charles Cemetery in Twin Rocks.
Wehrum Cemetery and St. Charles Cemetery – Containing graves of immigrant workers killed in the Wehrum mine disaster.
Coke Making - Vintondale (proposed for Wehrum but never initiated).
Source: Indiana County Parks Department and Northern Cambria Community Development Corporation 1992.

Table C-5

SUMMARY OF FINDINGS
CHESAPEAKE BAY RIPARIAN HANDBOOK:
A GUIDE FOR ESTABLISHING AND MAINTAINING
RIPARIAN FOREST BUFFERS

The Riparian Forest Buffer

Buffers or filter strips may utilize a variety of vegetation types. Forested riparian buffers (or streamside forests) are riparian buffers with a functional forest ecosystem. Forest buffers are recognized as the most beneficial of any type of buffer because of the multiple environmental benefits they provide. The use of forested zones near streams has long been recognized as an important strategy for improving water quality while also protecting or restoring the stream ecosystem. Forested riparian buffers should be clearly distinguished from vegetative or grassed filter strips commonly recommended as a best management practice (BMP) because of their ability to accomplish both water quality and ecological roles.

A **Riparian Forest Buffer** may be defined as:

> *"an area of trees, usually accompanied by shrubs and other vegetation, that is adjacent to a body of water and which is managed to maintain the integrity of stream channels and shorelines, to reduce the impact of upland sources of pollution by trapping, filtering and converting sediments, nutrients, and other chemicals, and to supply food, cover, and thermal protection to fish and other wildlife."*

Riparian forest buffers may vary in size, shape, mix of vegetation, and management objectives; however, it maintains trees over the long term as the dominant part of its plant community.

Describing Riparian Forest Buffers in Different Landscapes

To increase general understanding, it is sometimes useful to characterize riparian forest buffers by their use in each of the unique land use settings in which the practice is applied.

There are four land uses on which riparian forest buffers can be described:

- Forested Landscape
- Agricultural Landscape
- Suburban/Developing Landscape
- Urban Landscape

Forested Landscape

Streamside Management Zone (SMZ) *- an area of forest varying in width, where timber management practices that might affect water quality or aquatic resources are modified.*

This is the riparian portion of forested lands. This is the riparian portion of forested lands. Where the landscape is managed for wood products, the riparian forest buffer is referred to as a "streamside management zone (SMZ)" or "streamside management area." In a forest landscape, management objectives for the forested areas closest to the water are oriented away from timber production and toward water quality protection and habitat concerns. Forest composition in the SMZ commonly represents a more natural diversity, rather than favoring only commercial species. SMZ widths are usually fixed, but may vary from 25 feet to more than 300 feet, primarily controlled by slope or biological considerations.

Table C-5 (Continued)

SUMMARY OF FINDINGS
CHESAPEAKE BAY RIPARIAN HANDBOOK:
A GUIDE FOR ESTABLISHING AND MAINTAINING
RIPARIAN FOREST BUFFERS

Agricultural Landscape

Agricultural Riparian Forest Buffer (RFB) *- an area of trees and other vegetation separating cropland or pasture from a stream, another body of water, or a groundwater recharge area. RFBs are designed and managed to provide shade, restore stream habitat, and to trap and remove nutrients, sediments, pesticides, and other chemicals from surface runoff and subsurface/groundwater flows. These areas are retained, enhanced, or planted.*

Forests that have remained a part of agricultural areas may be managed as woodlots, recreational open space, or wildlife habitat. Many are limited to fragmented patches confined to wet soils or steep slopes and hilltops too difficult to cultivate. Riparian forests have usually been cleared on farms managed for livestock. These areas represent the classic definition of riparian forest buffer as a water quality and habitat enhancement BMP. Because of potentially high levels of sediments, nutrients, and other chemicals leaving the crop fields or pastures in surface or groundwater, RFBs are designed to serve as a zone to buffer water quality impacts of this land use from a stream, river, or bay. In addition, streams have often been highly altered in these areas, and the forest buffer supports the restoration of aquatic habitat. Remaining riparian forests are often very narrow bands (10 to 25 feet) of intermittent trees along the bank of a river or stream. Groundwater may be drained by tile systems.

Agricultural applications of forest buffers sometimes require the conversion of active cropland, but most often are a combination of pasture, grass filter strip, and/or cultivated field. Establishing riparian forest buffers may involve the task of conversion of grass or crop fields to forest where no forest has existed for 50 to 250 years. In other cases, the RFB may be just an expansion of a narrow existing forest strip.

Suburban/Developing Landscape

Suburban Riparian Forest Buffer *- corridors of forest bordered by parks, ballfields, roadways, lawns, and residential/commercial structures. They are also landscapes that are retained and managed to provide the natural functions and values of sediment filtering, enhanced infiltration, nutrient uptake and processing, temperature moderation, noise control, screening, aesthetics, and wildlife habitat.*

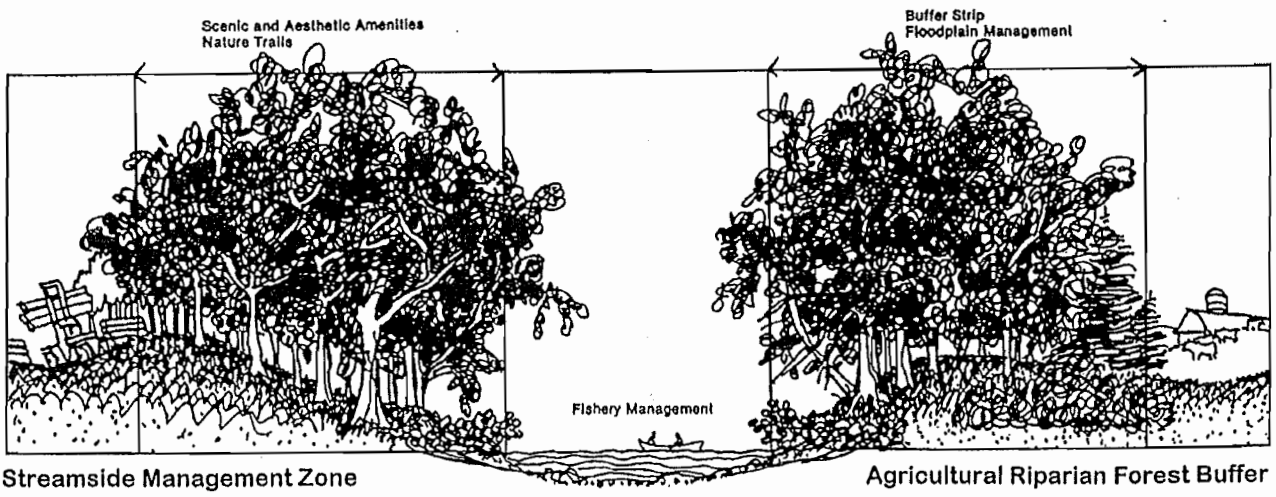


Table C-5 (Continued)

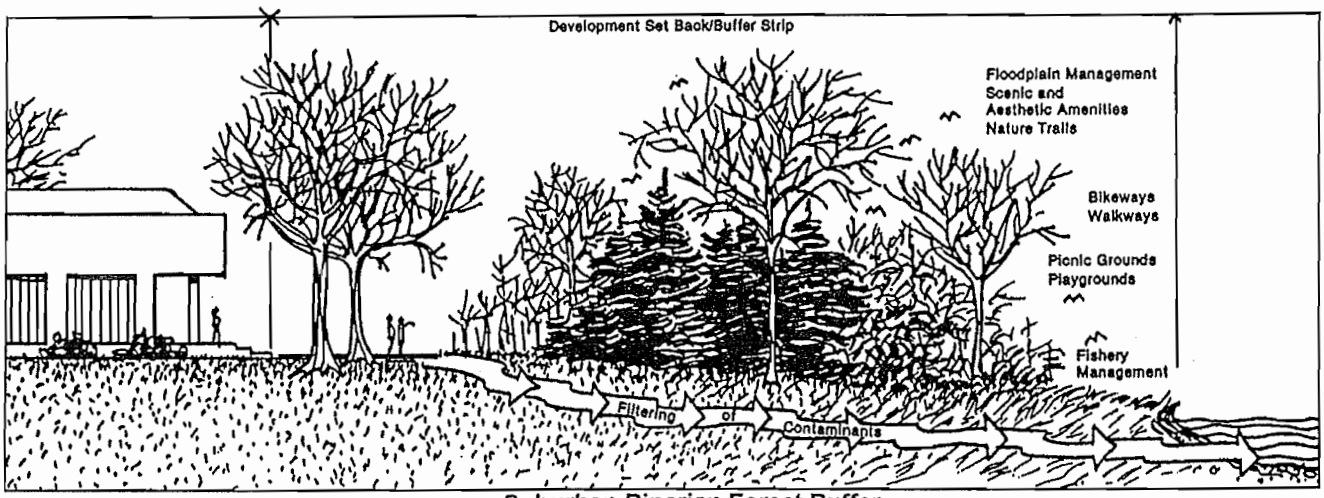
SUMMARY OF FINDINGS
CHESAPEAKE BAY RIPARIAN HANDBOOK: A GUIDE FOR ESTABLISHING AND MAINTAINING RIPARIAN FOREST BUFFERS

Suburban Riparian Forest Buffer (Continued)

When describing forests, whether riparian or in general, the suburban or developing landscape is one of change. The challenge is retaining existing riparian forests and planning for sustaining them over the long term. As forests are cleared for development and runoff, temperature, edge effect, exotic plants, and pests all increase. The focus is to retain functional riparian forest corridors. The potential benefits of retaining these riparian forests are equally high for future water quality and aquatic and human resources. Increased nutrients from road runoff and lawn fertilizers are effectively treated by the riparian forest buffer if stormwater designs allow adequate watershed infiltration. RFBs can be integrated with stormwater management strategies. Riparian forests in these areas also contribute to higher property values.

In developing areas, many communities already have subdivision or zoning rules that impose mandatory building setbacks from lot lines. Some communities require a specific setback from the streambank. Maintaining buffers that provide environmental benefits generally means preserving or establishing a zone of woody vegetation where disturbance and building is limited. To accomplish this, lot line setbacks may need to be reduced or a subdivision may need to alter lot sizes. Riparian buffers and stream corridors can be effectively established during zoning or in the planning of a subdivision. Riparian forests should be considered a high priority for retention and restoration in a community's open space plan. However, if too much recreation occurs without proper management, then both erosion reduction values and wildlife benefits may be lost.

One key principle of modern land use planning promotes concentrating intense development in areas where supporting infrastructure already exists. This principle focuses on "infill" development and redevelopment. In many communities, these intensely developed areas may include streambeds and shorelines or larger bodies of water. These shorelines may already have high land values and tax burdens, creating a desire to maximize the economic return on such properties. This can preclude giving such land over to environmental uses, such as a buffer, unless a financial incentive, like a tax reduction, is provided.



Suburban Riparian Forest Buffer

Table C-5 (Continued)

SUMMARY OF FINDINGS
CHESAPEAKE BAY RIPARIAN HANDBOOK:
A GUIDE FOR ESTABLISHING AND MAINTAINING
RIPARIAN FOREST BUFFERS

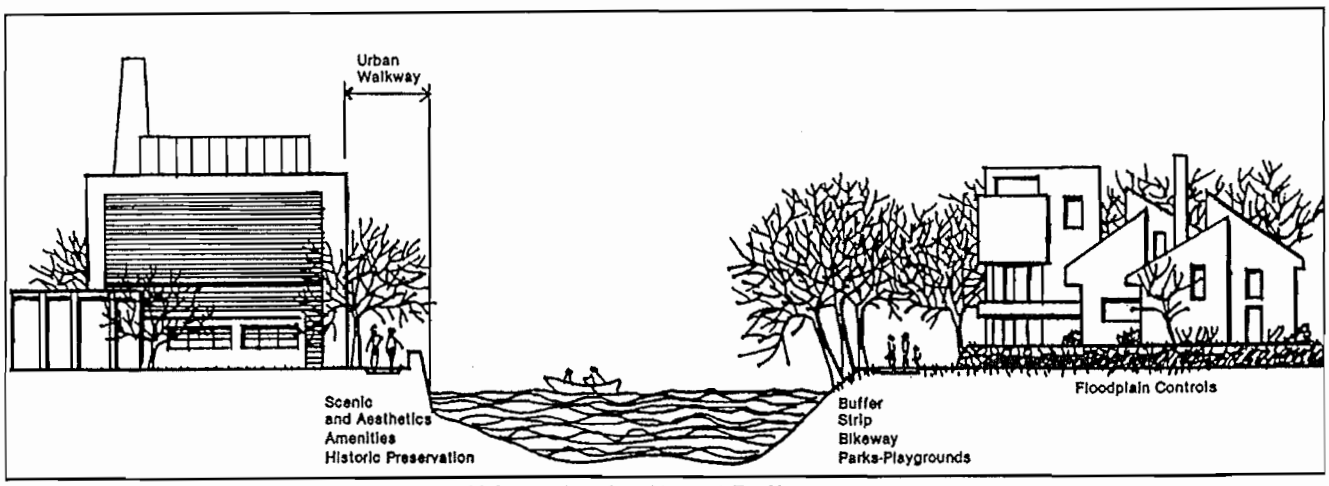
Urban Landscape

Urban Riparian Forest Buffer *- corridors or strips of forest, often narrow or highly irregular in extent of linear distance, which are protected, managed, and/or enhanced for aesthetic, habitat, recreational, climatic, or water quality benefits within a highly impervious setting.*

Riparian forest buffers have also found a place in stormwater management in conjunction with wet ponds, wetland detention, and stream erosion control. Combined with stormwater planning, forests provide a net reduction in stormwater and a significant cost savings in future stormwater facility repair and replacement.

Forests in the urbanized landscape are highly fragmented and often dysfunctional ecosystems. Of all the various types of urban forests, including trees in parks, along streets, and on private lots, forests bordering streams and rivers are probably the most valuable forests from a water quality and habitat perspective. The fragments of riparian forest that have been protected from development often represent the largest contiguous forests within urban areas. Refuges for songbirds, amphibians, and other wildlife, they can be unique areas for appreciating nature. From a human perspective, they provide much needed recreational areas for urban residents through the accommodation of streamside trails.

Interest and activity in reforestation and tree planting have greatly increased over the past decade. Most projects involve augmenting or connecting fragmented riparian forest buffers. The ability of riparian forest buffers in urban areas to significantly improve surface water quality is limited because of the volume and velocity of stormwater runoff. However, merging aesthetic and habitat improvement objectives with open space, vacant lot, and parkland management has yielded many excellent examples of riparian forest restoration and natural buffer creation.



Urban Riparian Forest Buffer

Table C-5 (Continued)

SUMMARY OF FINDINGS
CHESAPEAKE BAY RIPARIAN HANDBOOK:
A GUIDE FOR ESTABLISHING AND MAINTAINING
RIPARIAN FOREST BUFFERS

The Three-Zone Concept: A Tool to Guide Forest Buffer Planning

A three-zone system has been developed to help plan riparian forest buffers. This three-zone concept is intended to be flexible in order to achieve both water quality and landowner objectives.

Zone 1

This is the near stream portion of the buffer, stretching upland from the edge of the stream. Its primary purpose is to stabilize the streambank and provide habitat for aquatic organisms. The roots of trees in Zone 1 hold together the soil to resist the erosive force of flowing water. This also keeps sediment, and any nutrients bound to it, out of the stream.

Roots and fallen logs slow stream flow. This not only provides additional protection against erosion, but also creates pools that form unique "microinvertebrates." Pools support species of macroinvertebrates different from those in riffles only a few feet away. As a result, the presence of trees is directly related to greater biodiversity in the stream ecosystem.

Roots and submerged tree limbs also provide important habitats for macroinvertebrates, supporting even greater densities of the insects than can be found on the rocky stream bottom. This fallen debris also traps leaves, twigs, fruit seeds, and other material in the stream, allowing it to decay and be used by stream-dwelling organisms.

The leafy canopy of the trees provides shade that helps to control water temperature. Maximum summer temperatures in a deforested stream may be 10-20 degrees warmer than in a forested stream: That is significant as temperature changes of only 4-10 degrees usually alter the life-history characteristics of macroinvertebrates that form an important part of the food web.

In addition, shaded streams support algae communities dominated by diatoms -- a type of algae favored by many species -- throughout the year, while areas getting more direct sunlight are dominated by filamentous algae. This change, at the very bottom of the food web, is critically important. While crayfish and a few insect species will consume filamentous algae, most macroinvertebrate species cannot because they have evolved as specialist for scraping diatoms from the bottom.

While Zone 1 will improve habitat along all streams, its greatest impact will be along smaller streams where the canopy completely covers the water surface, providing maximum control over light and temperature conditions. Trees in Zone 1 will aid in filtering surface runoff and, in some landscapes, can help remove nutrients carried in the groundwater.

Zone 2

Located immediately upslope from Zone 1, the primary function of Zone 2 is to remove, transform, or store nutrients, sediments and other pollutants flowing over the surface and through the groundwater. Widths of Zone 2 can vary.

In areas where shallow groundwater flows through the root zones of trees, large amounts of nitrate can be removed before the water enters a stream. This results primarily from plant uptake and denitrification

Table C-5 (Continued)

SUMMARY OF FINDINGS
CHESAPEAKE BAY RIPARIAN HANDBOOK:
A GUIDE FOR ESTABLISHING AND MAINTAINING
RIPARIAN FOREST BUFFERS

in the soils. Nitrate removal in these areas can be high -- on the order of 90 percent. In areas where the groundwater flows deeper, much of this benefit will be lost as most of the water bypasses the root zone and enters the stream directly through the sediment.

Regardless of whether shallow groundwater flows through the root zones, all Zone 2 forest buffers will remove surface-borne pollutants. Debris from the trees slows and traps sediments in the runoff, giving the nutrients they carry time to infiltrate into the ground where they may be stored or removed through natural processes. Studies have found that Zone 2 can remove 50-80 percent of the sediment in runoff from upland fields.

Whether they are pulled from shallow groundwater or infiltrate into the soils from surface runoff, nutrients are removed in Zone 2 through a variety of mechanisms. The most obvious process is plant uptake, as all plants must absorb nutrients to grow. In addition, forests provide large amounts of decaying organic material necessary to fuel the microbial processes in zone 2 soils that remove nutrients. There are three main ways those processes work:

- Microbes in the soil can take up nutrients and store them until they die, at which time the nutrients are released in a mineralized form that is less biologically available to other organisms and more readily stored in the soil. If managed to foster accumulation of this material, Zone 2 may support significant long-term nutrient storage.
- Denitrification takes place under the proper conditions when certain denitrifying bacteria convert nitrate to nitrogen gases. Denitrification is carried out by anaerobic microbes, organisms which survive in water or soils -- usually wetlands -- without oxygen. The large amount of decaying organic material on the ground in forested buffers depletes oxygen in the soils, and there is usually enough moisture in riparian areas to support the microbes needed for denitrification. Even drier forest soils commonly have small pockets, which support these bacteria. Denitrification rates will vary depending on site conditions.
- Microbes use organic compounds as food and, through various reactions, change them so they are degraded to simpler compounds or synthesized into microbial biomass. Riparian forests appear to support a variety of microbial degradation mechanisms, though the management strategies that would promote them are not understood at this point.

Zone 3

Located immediately upslope of Zone 2, Zone 3 contains grass filter strips or other control measures which help slow runoff, filter sediment and its associated chemicals, and allow water to infiltrate into the ground. Grass filter strips help to protect the wooded areas and sets the stage so the forest buffer can perform at its maximum potential. Effective sediment trapping in Zone 2 requires that runoff entering that portion of the buffer be in the form of sheet flow. Zone 3, therefore, acts to spread out the flow and prevent runoff from adjacent land uses from eroding channels into the buffer.

Several studies show that grass filter strips are highly effective at reducing sediment runoff, with removal rates of 50 percent or more. Also, the filter strips are highly effective at removing sediment-bound nutrients such as phosphorus, but less effective at removing dissolved nutrients. Over time, the removal

Table C-5 (Continued)

SUMMARY OF FINDINGS
CHESAPEAKE BAY RIPARIAN HANDBOOK:
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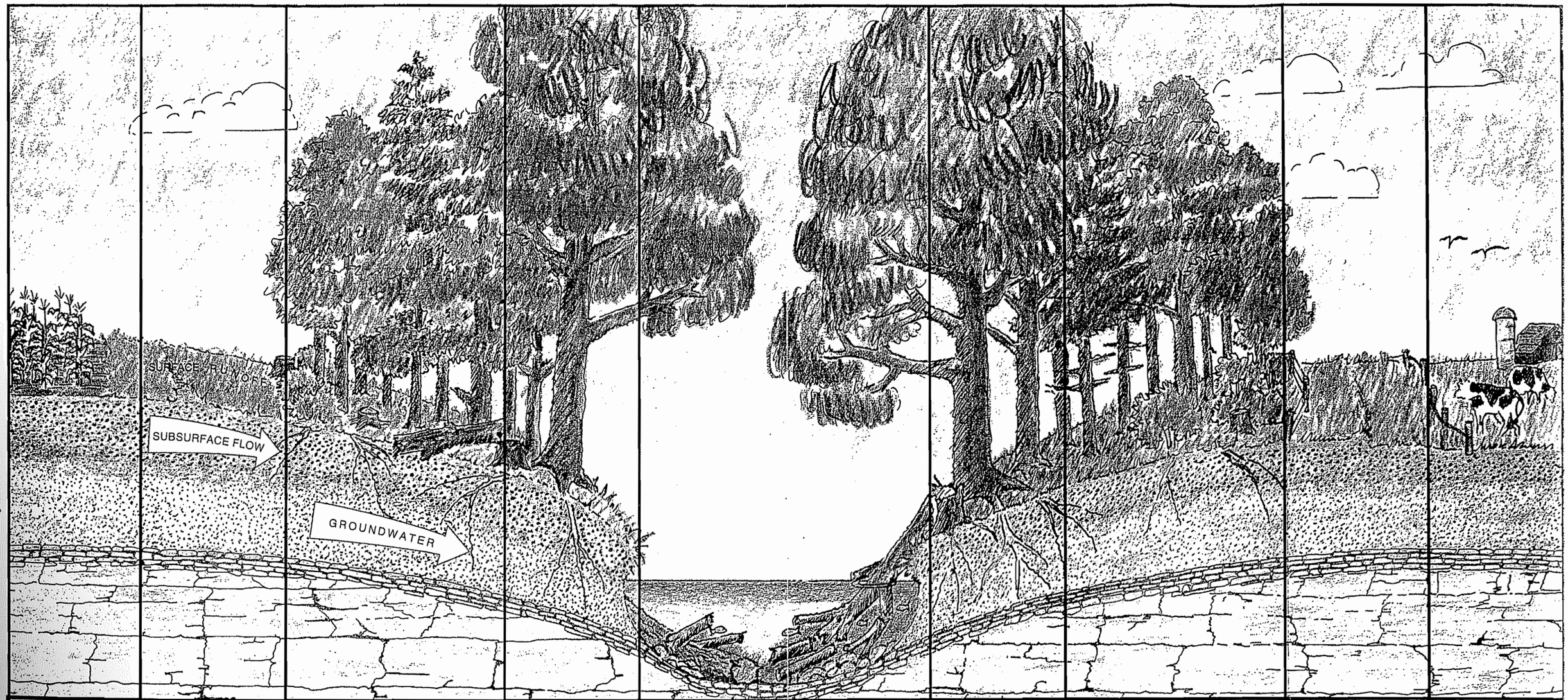
RIPARIAN FOREST BUFFERS

efficiency decreases as grass is smothered by deposited sediment. Generally, the narrower the filter strip, the shorter its effective life. As a result, grass filter strips require periodic maintenance, which includes the removal of sediment, reestablishment of vegetation, and removal of channels. In urban areas, infiltration trenches and stormwater control measures may be common in Zone 3.

Source: U.S. Department of Agriculture, Northeastern Area 1997.

THE STREAMSIDE FOREST BUFFER



CROPLAND	ZONE 3 RUNOFF CONTROL (20')	ZONE 2 MANAGED FOREST (60')	ZONE 1 UNDISTURBED FOREST (15')	STREAMBOTTOM	ZONE 1 UNDISTURBED FOREST (15')	ZONE 2 MANAGED FOREST (60')	ZONE 3 RUNOFF CONTROL (20')	PASTURE
Sediment, fertilizer and pesticides are carefully managed.	Concentrated flows are converted to dispersed flows by water bars or spreaders, facilitating ground contact and infiltration.	Filtration, deposition, plant uptake, anaerobic denitrification and other natural processes remove sediment and nutrients from runoff and subsurface flows.	Maturing trees provide detritus to the stream and help maintain lower water temperature vital to fish habitat.	Debris dams hold detritus for processing by aquatic fauna and provide cover and cooling shade for fish and other stream dwellers.	Tree removal is generally not permitted in this zone.	Periodic harvesting is necessary in Zone 2 to remove nutrients sequestered in tree stems and branches and to maintain nutrient uptake through vigorous tree growth.	Controlled grazing or haying can be permitted in Zone 3 under certain conditions.	Watering facilities and livestock are kept out of the Riparian Zone insofar as practicable.

ATTACHMENT A

MATERIAL FROM *EFFECTS OF COAL-MINE DISCHARGES ON THE QUALITY OF THE STONYCREEK RIVER AND ITS TRIBUTARIES SOMERSET AND CAMBRIA COUNTIES, PENNSYLVANIA*
(USGS 1996)

Appendix 4. Prioritization index (PI) for all mine discharges

[lb/d, pounds per day; gal/min, gallons per minute; <, less than]

Site number	pH (units)	Iron, total (lb/d as Fe)	Rank	Score	Acidity, total heated (lb/d as $CaCO_3$)	Rank	Score	Sulfate, total (lb/d as $CaCO_3$)	Rank	Score	Aluminum, dissolved (lb/d as Al)	Rank	Score	Manganese, total (lb/d as Mn)	Rank	Score	Discharge, instantaneous, (gal/min)	Final score	PI
16	3.3	1,700	1	10	6,750	1	10	29,700	1	10	486	2	10	232	1	10	2,250	50	1
19	5.1	876	3	10	1,580	6	10	10,300	4	10	25.6	20	10	85.4	4	10	1,780	50	2
81	4.8	116	13	10	739	11	10	12,100	3	10	31.9	17	10	47.0	10	10	1,400	50	3
95	4.6	41.2	24	10	353	23	10	8,120	6	10	34.1	15	10	23.5	19	10	981	50	4
4	2.8	125	11	10	1,130	8	10	4,010	17	10	83.5	7	10	21.7	20	10	348	50	5
125	2.4	351	6	10	3,180	3	10	8,640	5	10	232	4	10	178	2	10	225	50	6
22	3.0	80.6	16	10	538	15	10	2,016	24	10	25.5	21	10	20.2	22	10	224	50	7
3	2.8	140	10	10	1,170	7	10	2,976	19	10	100	5	10	42.8	11	10	155	50	8
110	4.5	162	9	10	539	14	10	4,200	16	10	18.9	26	10	12.4	30	9	449	49	9
208	6.2	16.6	39	9	3,050	4	10	5,830	10	10	539	1	10	58.3	9	10	374	49	10
104	3.0	16.3	41	9	466	18	10	3,840	18	10	31.2	18	10	33.6	12	10	200	49	11
141	2.7	121	12	10	751	10	10	864	49	9	42.6	10	10	63.4	7	10	48	49	12
242	2.3	726	4	10	3,230	2	10	5,280	12	10	259	3	10	7.39	42	9	22	49	13
14	3.6	8.44	62	8	844	9	10	7,000	8	10	93.0	6	10	64.2	6	10	799	48	14
103	3.2	7.85	67	8	481	17	10	5,760	11	10	34.0	16	10	25.6	16	10	436	48	15
63	3.4	13.6	45	9	465	19	10	864	48	9	63.2	8	10	25.9	14	10	277	48	16
97	3.2	66.2	19	10	440	21	10	2,360	21	10	35.5	14	10	3.31	67	8	197	48	17
160	3.1	12.1	49	9	246	27	10	1,970	25	10	14.6	31	9	26.7	13	10	171	48	18
15	3.6	69.1	18	10	256	26	10	1,130	42	9	18.4	28	9	19.6	23	10	96	48	19
38	3.0	61.8	21	10	414	22	10	796	51	9	38.4	13	10	6.08	47	9	78	48	20
188	2.6	19.0	37	9	502	16	10	1,470	32	9	61.2	9	10	25.7	15	10	51	48	21
121	6.0	13.8	44	9	138	41	9	7,250	7	10	5.98	52	9	17.0	26	10	1,510	47	22
149	5.7	1116	2	10	2010	5	10	5,950	9	10	2.16	76	8	11.2	34	9	310	47	23
6	4.4	36.4	28	9	125	45	9	2310	22	10	22.4	22	10	12.9	29	9	306	47	24
164	2.8	30.3	32	9	303	25	10	978	45	9	18.6	27	10	5.94	48	9	97	47	25
189	3.4	8.41	64	8	647	12	10	4460	15	10	40.1	11	10	4.53	61	8	539	46	26
176	5.9	436	5	10	642	13	10	1780	27	10	.40	126	6	24.2	18	10	330	46	27
17	3.3	11.6	51	9	198	33	9	1260	36	9	17.0	29	9	6.48	45	9	284	45	28
7	3.0	12.0	50	9	197	34	9	721	53	9	21.8	23	10	2.62	78	8	91	45	29
204	2.7	34.6	30	9	446	20	10	1010	44	9	38.9	12	10	2.23	85	7	60	45	30

Appendix 4. Prioritization index (PI) for all mine discharges—Continued

Site number	pH (units)	Iron, total (lb/d as Fe)	Rank	Score	Acidity, total heated (lb/d as $CaCO_3$)	Rank	Score	Sulfate, total (lb/d as $CaCO_3$)	Rank	Score	Aluminum, dissolved (lb/d as Al)	Rank	Score	Manganese, total (lb/d as Mn)	Rank	Score	Discharge, instantaneous, (gal/min)	Final score	PI
117	3.1	8.32	65	8	235	30	9	605	61	8	27.7	19	10	17.1	25	10	21	45	31
165	2.7	69.1	17	10	346	24	10	475	72	8	21.0	24	10	1.23	99	7	18	45	32
207	4.9	11.1	53	9	111	46	9	1460	33	9	10.6	35	9	2.52	81	8	221	44	33
184	2.8	64.8	20	10	242	29	9	1240	39	9	13.0	32	9	2.27	84	7	45	44	34
34	2.7	16.1	43	9	156	39	9	605	60	8	10.6	36	9	7.06	43	9	42	44	35
140	2.5	22.7	35	9	222	31	9	648	57	8	10.4	37	9	15.6	28	9	27	44	36
124	2.6	10.2	56	8	187	35	9	648	58	8	19.2	25	10	11.4	32	9	18	44	37
190	3.1	13.0	48	9	101	47	9	1150	40	9	2.45	72	8	2.95	69	8	60	43	38
219	2.4	34.6	29	9	203	32	9	518	70	8	2.59	71	8	6.70	44	9	18	43	39
109	5.9	84.2	15	10	134	42	9	1400	34	9	.37	131	6	4.54	60	8	180	42	40
31	3.2	3.72	85	7	182	36	9	670	56	8	16.9	30	9	10.6	37	9	155	42	41
101	3.2	2.39	92	7	132	43	9	1100	43	9	6.60	49	9	2.53	80	8	117	42	42
40	3.1	4.32	79	8	148	40	9	378	81	8	12.6	34	9	4.86	55	8	75	42	43
36	3.0	6.71	71	8	82.6	56	8	929	47	9	1.50	84	7	21.7	21	10	43	42	44
187	2.4	11.2	52	9	164	38	9	562	65	8	9.50	41	9	1.34	96	7	36	42	45
42	3.1	2.33	94	7	86.4	53	9	562	66	8	6.05	51	9	11.2	33	9	36	42	46
180	2.7	54.0	22	10	246	28	9	420	77	8	12.9	33	9	.60	129	6	25	42	47
28	3.1	1.21	117	6	101	48	9	433	74	8	9.98	39	9	5.85	49	9	84	41	48
172	2.8	2.38	93	7	93.6	51	9	342	84	7	8.64	43	9	5.04	54	9	30	41	49
212	3.3	.75	133	6	78.6	57	8	406	78	8	9.98	38	9	16.5	27	10	26	41	50
1	2.8	8.83	60	8	73.0	59	8	288	93	7	6.14	50	9	5.76	50	9	16	41	51
178	5.9	330	7	10	.01	206	3	12400	2	10	3.89	59	8	12.1	31	9	1620	40	52
130	3.9	.24	164	4	90.0	52	9	1920	26	10	7.50	46	9	4.80	56	8	250	40	53
10	3.5	1.10	119	6	35.1	77	8	571	64	8	2.78	70	8	133	3	10	122	40	54
248	6.2	41.0	25	10	17.8	99	7	1370	35	9	.89	99	7	1.92	88	7	114	40	55
249	4.8	17.7	38	9	41.3	72	8	541	68	8	.74	106	7	2.76	73	8	41	40	56
126	2.9	1.22	116	6	86.1	54	9	253	97	7	8.74	42	9	7.49	41	9	26	40	57
139	2.6	9.20	59	8	73.0	58	8	250	98	7	3.12	65	8	6.08	46	9	13	40	58
60	2.9	1.38	112	6	55.3	63	8	384	80	8	6.60	48	9	10.8	35	9	6.4	40	59
173	6.2	192	8	10	.01	218	2	4570	14	10	1.13	93	7	24.8	17	10	470	39	60

Appendix 4. Prioritization index (PI) for all mine discharges—Continued

Site number	pH (units)	Iron, total (lb/d as Fe)	Rank	Score	Acidity, total heated (lb/d as $CaCO_3$)	Rank	Score	Sulfate, total (lb/d as $CaCO_3$)	Rank	Score	Aluminum, dissolved (lb/d as Al)	Rank	Score	Manganese, total (lb/d as Mn)	Rank	Score	Discharge, instan-taneous, (gal/min)	Final score	PI
11	4.4	9.47	57	8	32.6	80	8	588	63	8	1.31	89	7	2.61	79	8	136	39	61
44	3.6	.22	170	4	99.0	49	9	1150	41	9	8.62	44	9	3.99	63	8	133	39	62
231	3.4	.92	125	6	62.2	62	8	478	71	8	3.28	62	8	5.76	51	9	48	39	63
5	4.5	.16	180	4	38.5	75	8	1560	31	9	3.27	64	8	10.6	36	9	341	38	64
221	3.2	2.09	96	7	47.5	68	8	612	59	8	3.31	61	8	1.73	92	7	60	38	65
55	5.7	38.9	27	10	50.8	66	8	340	85	7	.07	182	4	5.40	52	9	45	38	66
156	3.5	1.90	100	7	43.2	71	8	605	62	8	5.18	56	8	1.21	101	7	36	38	67
76	3.4	7.14	69	8	52.9	65	8	239	99	7	4.12	58	8	1.34	95	7	35	38	68
166	2.7	23.4	34	9	128	44	9	234	100	7	7.02	47	9	.30	164	4	13	38	69
20	2.4	40.0	26	10	165	37	9	227	103	7	1.34	87	7	.50	138	5	.7	38	70
144	6.0	28.9	33	9	.01	208	3	2220	23	10	.29	139	5	77.7	5	10	185	37	71
261	4.6	.10	195	3	32.3	81	8	956	46	9	3.57	60	8	8.18	39	9	96	37	72
70	4.0	.10	196	3	71.8	60	8	394	79	8	8.36	45	9	7.87	40	9	41	37	73
227	3.0	1.89	101	7	84.6	55	8	144	118	6	9.90	40	9	1.71	93	7	7.5	37	74
24	3.0	7.56	68	8	30.2	83	7	122	124	6	2.23	74	8	4.68	58	8	3	37	75
142	2.2	4.20	81	8	33.6	79	8	102	132	6	1.47	85	7	2.79	72	8	2.5	37	76
211	6.6	7.01	70	8	.01	243	2	2510	20	10	.76	102	7	9.35	38	9	487	36	77
225	6.3	86.4	14	10	54.7	64	8	39.6	171	4	.66	110	6	4.75	57	8	60	36	78
21	3.3	3.81	84	7	34.2	78	8	348	83	7	.66	109	6	3.92	64	8	46	36	79
155	3.2	.94	123	6	36.0	76	8	336	86	7	3.12	66	8	1.20	102	7	20	36	80
46	3.2	1.80	103	7	50.4	67	8	118	126	6	5.28	55	8	1.18	104	7	20	36	81
8	2.8	4.32	80	8	39.0	74	8	104	130	6	4.32	57	8	.57	134	6	5.8	36	82
59	2.9	2.72	90	7	24.6	88	7	100	133	6	2.05	78	8	2.90	71	8	3.1	36	83
79	2.2	31.2	31	9	94.6	50	9	149	116	6	2.38	73	8	.24	172	4	2	36	84
170	6.2	16.5	40	9	.01	220	2	1700	30	9	.34	136	5	59.6	8	10	142	35	85
12	6.4	13.4	46	9	.01	228	2	1750	29	9	.21	148	5	17.5	24	10	86	35	86
62	3.5	.23	169	4	39.9	73	8	162	113	6	5.62	54	9	3.06	68	8	52	35	87
58	5.9	19.7	36	9	19.3	97	7	332	88	7	.21	145	5	1.85	89	7	35	35	88
186	4.8	3.96	82	7	21.1	95	7	422	75	8	1.61	82	7	1.00	109	6	22	35	89
100	5.8	.21	173	4	5.07	137	5	1770	28	9	1.86	79	8	2.91	70	8	352	34	90

Appendix 4. Prioritization index (PI) for all mine discharges—Continued

Site number	pH (units)	Iron, total (lb/d as Fe)	Rank	Score	Acidity, total heated (lb/d as $CaCO_3$)	Rank	Score	Sulfate, total (lb/d as $CaCO_3$)	Rank	Score	Aluminum, dissolved (lb/d as Al)	Rank	Score	Manganese, total (lb/d as Mn)	Rank	Score	Discharge, instantaneous, (gal/min)	Final score	PI
210	5.8	9.43	58	8	<0.01	205	3	524	69	8	0.35	134	6	5.35	53	9	97	34	91
75	3.3	1.98	99	7	28.8	85	7	176	111	6	1.22	90	7	1.22	100	7	30	34	92
161	3.2	.86	129	6	19.7	96	7	185	106	7	.62	112	6	2.64	77	8	20	34	93
129	3.7	.17	179	4	18.8	98	7	306	91	7	1.75	80	8	3.67	66	8	17	34	94
72	3.7	.08	205	3	45.4	69	8	144	117	6	5.78	53	9	4.54	59	8	8.6	34	95
191	2.8	10.8	54	9	28.7	86	7	180	107	7	.52	118	6	.51	137	5	5	34	96
259	6.3	1.87	102	7	.01	227	2	4580	13	10	1.35	86	7	1.98	87	7	867	33	97
111	3.4	.19	175	4	29.5	84	7	216	104	7	3.06	69	8	2.34	82	7	30	33	98
154	3.5	.74	134	6	16.8	100	7	232	101	7	.24	143	5	2.69	76	8	28	33	99
128	3.6	.08	206	3	22.2	91	7	336	87	7	2.15	77	8	3.70	65	8	28	33	100
177	2.7	4.96	75	8	43.7	70	8	84.0	141	5	3.28	63	8	.14	184	4	7	33	101
94	3.0	3.90	83	7	21.4	94	7	51.0	167	4	.75	103	7	4.50	62	8	2.5	33	102
73	3.5	1.73	104	7	15.0	102	7	76.8	147	5	1.09	94	7	2.30	83	7	1.6	33	103
137	5.3	.11	192	3	64.8	61	8	367	82	7	2.16	75	8	.67	126	6	180	32	104
13	6.0	5.18	74	8	.01	210	3	749	52	9	.25	142	5	1.81	91	7	52	32	105
169	6.0	13.3	47	9	21.6	93	7	130	121	6	.05	192	3	2.16	86	7	15	32	106
174	5.0	16.2	42	9	30.6	82	7	83.7	143	5	.07	181	4	1.17	105	7	7.5	32	107
71	3.8	.10	198	3	24.3	90	7	100	135	6	3.10	68	8	2.69	74	8	3.8	32	108
77	3.8	.10	199	3	24.3	89	7	100	134	6	3.10	67	8	2.69	75	8	3.8	32	109
32	3.4	.24	167	4	13.8	105	7	207	105	7	1.32	88	7	.93	113	6	18	31	110
116	3.6	.16	184	4	13.7	106	7	178	110	6	1.15	92	7	1.19	103	7	15	31	111
234	3.5	3.22	86	7	13.8	104	7	104	131	6	.10	169	4	1.14	106	7	7.9	31	112
205	6.3	46.8	23	10	.01	221	2	549	67	8	.09	176	4	.99	110	6	75	30	113
78	4.5	.02	235	2	21.8	92	7	679	54	9	.63	111	6	.94	112	6	65	30	114
179	3.8	8.55	61	8	15.5	101	7	72.0	150	5	.06	185	4	.54	135	6	7.5	30	115
209	3.5	6.68	72	8	.01	199	3	230	102	7	.15	156	5	.92	114	6	64	29	116
2	3.1	.41	148	5	9.94	115	6	107	128	6	.56	116	6	.95	111	6	9	29	117
181	3.3	1.68	106	7	8.76	119	6	54.0	161	5	.19	149	5	.78	119	6	5	29	118
162	3.1	.15	185	4	7.80	124	6	84.0	142	5	.72	107	7	1.02	107	7	5	29	119
192	3.3	4.79	76	8	13.3	107	7	73.1	149	5	.30	138	5	.24	173	4	2.1	29	120

Appendix 4. Prioritization index (PI) for all mine discharges—Continued

Site number	pH (units)	Iron, total (lb/d as Fe)	Rank	Score	Acidity, total heated (lb/d as $CaCO_3$)	Rank	Score	Sulfate, total (lb/d as $CaCO_3$)	Rank	Score	Aluminum, dissolved (lb/d as Al)	Rank	Score	Manganese, total (lb/d as Mn)	Rank	Score	Discharge, instantaneous, (gal/min)	Final score	PI
26	3.1	0.41	147	5	8.82	118	6	39.6	170	4	0.99	96	7	1.01	108	7	1.5	29	121
236	5.4	.02	238	2	25.9	87	7	421	76	8	.39	127	6	.39	153	5	45	28	122
56	4.2	.06	216	3	7.68	125	6	55.2	158	5	.84	101	7	1.27	98	7	20	28	123
82	6.1	8.21	66	8	8.06	123	6	69.1	151	5	.02	211	3	.68	124	6	12	28	124
175	3.2	2.22	95	7	7.20	128	6	28.8	187	4	.32	137	5	.66	128	6	5	28	125
151	6.5	4.54	77	8	.01	238	2	287	94	7	.15	157	5	.39	152	5	126	27	126
35	6.0	3.00	89	7	.01	207	3	173	112	6	.12	164	4	1.84	90	7	48	27	127
23	3.4	.04	226	2	14.4	103	7	51.8	166	4	1.58	83	7	1.30	97	7	12	27	128
112	3.5	.06	219	2	10.7	113	6	132	120	6	1.15	91	7	.75	120	6	12	27	129
215	3.0	.35	152	5	9.46	117	6	53.4	163	4	.38	129	6	.58	132	6	7.3	27	130
258	3.8	1.51	108	7	6.42	131	6	38.4	174	4	.21	147	5	.33	160	5	3.3	27	131
213	3.0	.97	122	6	10.9	111	6	33.1	178	4	.99	95	7	.30	163	4	2.3	27	132
185	2.7	1.39	111	6	13.2	108	7	54.7	159	5	.62	114	6	.09	198	3	1.9	27	133
152	6.5	.14	186	4	.01	236	2	1250	38	9	.35	135	6	.35	158	5	289	26	134
123	6.4	.51	143	5	.01	231	2	1250	37	9	.39	128	6	.15	182	4	248	26	135
54	6.7	10.5	55	8	.01	251	1	129	122	6	.19	151	5	.84	118	6	111	26	136
29	4.1	.01	254	1	11.9	110	6	141	119	6	1.62	81	8	.32	162	5	19	26	137
214	3.1	.13	188	4	8.35	122	6	63.4	154	5	.85	100	7	.29	165	4	12	26	138
41	5.5	8.42	63	8	13.0	109	6	52.9	164	4	.01	213	3	.44	146	5	9	26	139
48	4.5	.61	141	5	4.80	139	5	53.8	162	5	.27	141	5	.87	116	6	8	26	140
113	3.3	.04	227	2	8.72	120	6	94.8	138	5	.91	98	7	.58	131	6	7.9	26	141
158	3.8	1.20	118	6	5.10	136	5	21.6	196	3	.44	123	6	.72	122	6	.5	26	142
122	2.9	1.66	107	7	8.69	121	6	14.6	215	3	.74	104	7	.09	200	3	.2	26	143
223	5.6	.75	132	6	1.74	169	4	78.0	146	5	.06	186	4	.90	115	6	25	25	144
220	3.5	.03	232	2	5.57	134	6	54.7	160	5	.47	121	6	.59	130	6	8.6	25	145
235	3.7	.06	215	3	5.69	133	6	60.7	155	5	.18	152	5	.71	123	6	7.9	25	146
216	5.5	6.27	73	8	9.65	116	6	39.4	172	4	.01	225	2	.33	159	5	6.7	25	147
217	2.9	1.32	114	6	10.7	112	6	29.7	184	4	.54	117	6	.09	196	3	2.5	25	148
247	6.6	.39	149	5	.01	244	1	675	55	8	.10	168	4	.68	125	6	67	24	149
268	6.3	.34	156	5	.01	226	2	326	89	7	.14	158	5	.33	161	5	40	24	150

Appendix 4. Prioritization index (PI) for all mine discharges—Continued

Site number	pH (units)	Iron, total (lb/d as Fe)	Rank	Score	Acidity, total heated (lb/d as $CaCO_3$)	Rank	Score	Sulfate, total (lb/d as $CaCO_3$)	Rank	Score	Aluminum, dissolved (lb/d as Al)	Rank	Score	Manganese, total (lb/d as Mn)	Rank	Score	Discharge, instantaneous, (gal/min)	Final score	PI
224	6.4	0.30	160	5	<0.01	229	2	270	95	7	0.05	194	3	1.40	94	7	30	24	151
33	3.9	.03	231	2	4.44	143	5	86.7	139	5	.50	120	6	.57	133	6	8.4	24	152
114	3.5	.04	228	2	5.94	132	6	79.2	145	5	.58	115	6	.48	142	5	5.5	24	153
30	3.1	.11	191	3	7.39	127	6	24.8	193	3	.74	105	7	.40	150	5	4.4	24	154
232	2.7	1.08	120	6	6.58	130	6	29.6	185	4	.02	206	3	.36	157	5	1.3	24	155
127	2.6	1.72	105	7	7.58	126	6	25.0	192	3	.02	209	3	.50	140	5	1.3	24	156
39	6.2	.62	140	5	.01	216	3	159	114	6	.08	180	4	.46	143	5	63	23	157
96	6.3	.38	150	5	.01	223	2	437	73	8	.08	178	4	.29	167	4	52	23	158
194	6.8	4.37	78	8	.01	255	1	150	115	6	.02	207	3	.45	145	5	13	23	159
120	3.2	.51	142	5	10.1	114	6	31.5	182	4	.07	183	4	.19	176	4	7.5	23	160
115	3.6	.05	224	2	4.31	145	5	56.2	157	5	.37	130	6	.51	136	5	3.9	23	161
159	4.6	.09	204	3	2.54	162	5	21.3	197	3	.36	132	6	.66	127	6	2.3	23	162
163	3.0	.17	178	4	3.36	155	5	28.8	186	4	.17	154	5	.50	139	5	2	23	163
253	3.7	.01	242	2	7.07	129	6	43.3	168	4	.98	97	7	.18	180	4	1.9	23	164
138	2.7	.33	157	5	4.11	146	5	16.7	206	3	.21	146	5	.44	147	5	1.6	23	165
47	3.2	.73	135	6	3.69	151	5	14.8	214	3	.17	153	5	.27	169	4	1.6	23	166
171	6.6	.79	131	6	.01	247	1	124	123	6	.11	166	4	.42	149	5	69	22	167
135	6.6	.86	130	6	.01	242	2	180	108	7	.09	170	4	.10	192	3	60	22	168
202	6.1	.10	200	3	.01	212	3	842	50	9	.14	160	5	.06	218	2	54	22	169
255	5.7	2.05	97	7	.01	203	3	86.4	140	5	.04	199	3	.14	185	4	24	22	170
260	6.0	2.03	98	7	3.46	153	5	36.7	176	4	.03	203	3	.09	202	3	18	22	171
51	4.3	.07	212	3	5.18	135	6	43.2	169	4	.45	122	6	.09	201	3	18	22	172
167	3.5	.10	197	3	4.56	142	5	16.8	205	3	.43	124	6	.40	151	5	5	22	173
27	3.0	.36	151	5	5.04	138	5	10.6	230	2	.50	119	6	.14	183	4	1	22	174
218	5.6	.27	161	5	.01	202	3	265	96	7	.06	188	4	.01	241	2	33	21	175
9	6.1	3.06	88	7	.01	215	3	30.6	183	4	.01	215	3	.21	175	4	6.7	21	176
269	3.7	.02	241	2	4.61	141	5	56.5	156	5	.69	108	7	.03	228	2	4.8	21	177
132	5.9	.44	146	5	2.99	158	5	38.2	175	4	.01	229	2	.44	148	5	4.3	21	178
25	5.9	3.18	87	7	4.68	140	5	19.7	200	3	.01	237	2	.19	177	4	3.9	21	179
131	3.3	.93	124	6	2.31	164	4	15.6	207	3	.06	189	4	.18	178	4	3.1	21	180

Appendix 4. Prioritization index (PI) for all mine discharges—Continued

Site number	pH (units)	Iron, total (lb/d as Fe)	Rank	Score	Acidity, total heated (lb/d as $CaCO_3$)	Rank	Score	Sulfate, total (lb/d as $CaCO_3$)	Rank	Score	Aluminum, dissolved (lb/d as Al)	Rank	Score	Manganese, total (lb/d as Mn)	Rank	Score	Discharge, instantaneous, (gal/min)	Final score	PI
143	3.9	<0.01	256	1	4.33	144	5	21.8	195	3	0.62	113	6	0.86	117	6	1.4	21	181
250	3.1	.16	183	4	3.02	157	5	26.9	189	4	.27	140	5	.06	212	3	1.4	21	182
64	6.4	.66	137	5	.01	233	2	68.4	152	5	.02	205	3	.39	154	5	19	20	183
37	3.6	.09	203	3	2.94	159	5	21.2	198	3	.19	150	5	.25	171	4	6.8	20	184
105	3.7	.70	136	5	2.45	163	4	17.3	204	3	.07	184	4	.29	166	4	6	20	185
53	3.6	.07	210	3	3.97	149	5	28.2	188	4	.43	125	6	.04	223	2	4.6	20	186
134	4.1	.02	234	2	3.46	152	5	38.9	173	4	.11	167	4	.46	144	5	4	20	187
57	5.5	2.50	91	7	3.92	150	5	12.1	225	2	.01	245	1	.38	156	5	1.6	20	188
233	2.7	.49	144	5	4.03	147	5	20.4	199	3	.05	195	3	.28	168	4	1	20	189
252	3.3	.05	221	2	3.07	156	5	19.2	201	3	.36	133	6	.12	186	4	.8	20	190
118	2.6	.22	172	4	2.64	161	5	6.84	237	2	.23	144	5	.12	187	4	.3	20	191
197	7.2	1.37	113	6	.01	268	1	180	109	6	.09	173	4	.06	217	2	60	19	192
66	6.8	.35	153	5	.01	259	1	83.5	144	5	.09	175	4	.18	179	4	58	19	193
229	6.2	.63	138	5	.01	217	2	97.9	136	5	.04	200	3	.11	189	4	24	19	194
18	6.4	.87	128	6	.01	235	2	31.7	180	4	.01	216	3	.11	188	4	11	19	195
226	5.5	1.44	109	6	.01	200	3	15.3	210	3	.01	219	2	.48	141	5	7.5	19	196
80	2.7	.62	139	5	3.36	154	5	6.24	241	2	.12	162	5	.03	227	2	.4	19	197
65	5.8	.12	190	3	.01	204	3	97.4	137	5	.09	174	4	.08	203	3	58	18	198
157	6.7	.13	187	4	.01	249	1	73.4	148	5	.01	217	2	.73	121	6	3.6	18	199
168	6.0	.91	127	6	.52	180	4	18.5	202	3	.01	242	2	.09	195	3	2.3	18	200
89	3.5	.34	155	5	1.48	171	4	10.8	229	2	.06	187	4	.08	207	3	1.5	18	201
108	7.0	.07	213	3	.01	262	1	310	90	7	.09	172	4	.03	225	2	60	17	202
61	6.7	1.44	110	6	.01	252	1	15.1	213	3	.09	171	4	.11	191	3	60	17	203
106	7.1	1.22	115	6	.01	264	1	3.06	253	1	.08	179	4	.39	155	5	51	17	204
230	6.1	.35	154	5	.01	211	3	25.1	191	3	.01	221	2	.17	181	4	7.2	17	205
263	6.5	.92	126	6	.01	239	2	52.4	165	4	.01	231	2	.10	193	3	4.8	17	206
67	4.2	.07	208	3	.86	177	4	18.5	203	3	.04	197	3	.22	174	4	2	17	207
90	2.9	.11	193	3	2.83	160	5	12.8	219	2	.17	155	5	.03	230	2	1.9	17	208
251	2.9	.09	202	3	2.15	167	4	15.1	211	3	.14	159	5	.05	220	2	.7	17	209
270	6.6	.11	194	3	.01	245	1	298	92	7	.12	163	4	.01	246	1	80	16	210

Appendix 4. Prioritization index (PI) for all mine discharges—Continued

Site number	pH (units)	Iron, total (lb/d as Fe)	Rank	Score	Acidity, total heated (lb/d as $CaCO_3$)	Rank	Score	Sulfate, total (lb/d as $CaCO_3$)	Rank	Score	Aluminum, dissolved (lb/d as Al)	Rank	Score	Manganese, total (lb/d as Mn)	Rank	Score	Discharge, instantaneous, (gal/min)	Final score	PI
238	5.3	0.01	246	1	4.03	148	5	119	125	6	0.04	198	3	0.01	244	1	14	16	211
183	4.2	.05	223	2	1.44	172	4	7.56	235	2	.14	161	5	.10	194	3	3	16	212
265	6.3	1.04	121	6	.46	182	4	6.91	236	2	.01	250	1	.08	206	3	1.2	16	213
245	6.0	.03	233	2	.01	209	3	67.7	153	5	.02	210	3	.02	234	2	12	15	214
107	5.2	.05	220	2	2.10	168	4	36.4	177	4	.03	202	3	.03	226	2	9.2	15	215
241	5.5	.22	171	4	.90	176	4	7.75	234	2	.01	226	2	.07	210	3	3.4	15	216
262	6.4	.31	159	5	.14	193	3	6.84	238	2	.01	238	2	.09	199	3	3	15	217
74	6.5	.32	158	5	.23	187	4	4.32	245	1	.01	241	2	.11	190	3	2.4	15	218
43	3.5	.16	181	4	.83	178	4	2.16	257	1	.05	196	3	.06	214	3	.5	15	219
102	4.7	.01	248	1	2.16	166	4	14.6	216	3	.06	190	3	.08	204	3	15	14	220
98	6.1	.26	163	4	.01	214	3	13.5	218	2	.01	240	2	.06	215	3	2.4	14	221
254	3.4	.05	225	2	1.20	173	4	11.4	226	2	.09	177	4	.02	233	2	1	14	222
86	6.6	.07	211	3	.01	240	2	15.1	212	3	.01	214	3	.05	219	2	9	13	223
200	4.6	.02	237	2	2.16	165	4	12.6	221	2	.05	191	3	.05	222	2	7.5	13	224
145	6.2	.01	260	1	.01	219	2	118	127	6	.01	228	2	.02	235	2	4.9	13	225
68	6.7	.01	253	1	.01	253	1	105	129	6	.01	234	2	.08	208	3	4.6	13	226
85	4.6	.06	217	2	.33	184	4	8.40	232	2	.01	239	2	.08	205	3	2.5	13	227
93	3.6	.01	244	1	.90	175	4	12.1	224	2	.03	204	3	.06	211	3	2.2	13	228
87	6.4	.24	168	4	.01	230	2	12.7	220	2	.01	243	2	.09	197	3	1.8	13	229
92	5.8	.02	240	2	.24	186	4	22.4	194	3	.01	236	2	.02	232	2	1.7	13	230
84	6.1	.24	165	4	.01	213	3	12.6	222	2	.01	259	1	.06	213	3	.5	13	231
133	3.8	.01	263	1	.73	179	4	5.28	242	2	.05	193	3	.08	209	3	.4	13	232
136	6.6	.16	182	4	.01	241	2	5.22	243	2	.01	220	2	.02	237	2	7.5	12	233
264	6.4	.06	218	2	.01	232	2	26.9	190	3	.01	246	1	.27	170	4	1.6	12	234
182	5.2	.18	177	4	.20	189	4	1.44	261	1	.01	255	1	.03	231	2	1	12	235
69	3.7	.01	262	1	.91	174	4	4.18	246	1	.11	165	4	.05	221	2	.4	12	236
99	6.2	.10	201	3	.12	194	3	6.72	239	2	.01	263	1	.06	216	3	.4	12	237
228	5.5	.26	162	5	.39	183	4	1.56	260	1	.01	262	1	.01	245	1	.1	12	238
243	6.3	.19	176	4	.01	224	2	12.3	223	2	.01	218	2	.01	251	1	7.9	11	239
246	6.4	.01	266	1	.01	234	2	32.3	179	4	.01	233	2	.01	243	2	3.9	11	240

Appendix 4. Prioritization index (PI) for all mine discharges—Continued

Site number	pH (units)	Iron, total (lb/d as Fe)	Rank	Score	Acidity, total heated (lb/d as $CaCO_3$)	Rank	Score	Sulfate, total (lb/d as $CaCO_3$)	Rank	Score	Aluminum, dissolved (lb/d as Al)	Rank	Score	Manganese, total (lb/d as Mn)	Rank	Score	Discharge, instantaneous, (gal/min)	Final score	PI
49	6.7	0.20	174	4	<0.01	250	1	11.0	228	2	<0.01	235	2	0.03	224	2	3.4	11	241
198	4.0	.01	243	2	.28	185	4	1.33	262	1	.04	201	3	<.01	256	1	.3	11	242
148	6.3	.24	166	4	.22	188	4	2.64	254	1	<.01	269	1	<.01	250	1	.2	11	243
196	6.8	<.01	259	1	<.01	258	1	31.7	181	4	.02	212	3	<.01	262	1	.12	10	244
119	5.0	<.01	252	1	1.54	170	4	3.55	252	1	<.01	232	2	.02	236	2	4	10	245
201	4.2	<.01	255	1	.50	181	4	2.11	258	1	.01	223	2	.01	242	2	1.6	10	246
150	7.3	.08	207	3	<.01	269	1	15.6	208	3	<.01	253	1	.01	240	2	1	10	247
83	4.5	<.01	257	1	.17	192	3	14.4	217	2	.01	224	2	.01	238	2	.8	10	248
237	3.6	.12	189	4	.20	190	3	1.73	259	1	<.01	266	1	<.01	252	1	.2	10	249
203	3.8	<.01	249	1	.19	191	3	2.52	255	1	.02	208	3	.03	229	2	.1	10	250
206	7.1	.04	229	2	<.01	266	1	15.6	209	3	.01	222	2	<.01	258	1	7.2	9	251
147	6.8	.49	145	5	<.01	254	1	3.66	251	1	<.01	260	1	<.01	247	1	.5	9	252
244	6.3	.01	245	1	<.01	222	2	6.34	240	2	<.01	230	2	<.01	265	1	4.8	8	253
267	6.6	.07	209	3	<.01	246	1	.02	270	1	<.01	264	1	.01	239	2	.4	8	254
52	3.8	.02	236	2	.12	195	3	1.32	263	1	<.01	248	1	<.01	248	1	.2	8	255
239	6.0	.05	222	2	.02	198	3	.11	269	1	.01	270	1	.01	261	1	.1	8	256
195	7.1	.01	250	1	.01	263	1	9.22	231	2	.01	227	2	.01	267	1	6.4	7	257
193	6.9	.03	230	2	.01	261	1	11.3	227	2	.01	244	1	.01	253	1	2	7	258
222	5.6	.01	268	1	.01	201	3	4.18	247	1	.01	249	1	.01	268	1	1.2	7	259
146	6.7	.02	239	2	.01	248	1	7.92	233	2	.01	252	1	.01	259	1	1.1	7	260
256	5.8	.01	258	1	.05	196	3	.30	268	1	.01	257	1	.01	257	1	.8	7	261
266	6.8	.06	214	3	.01	257	1	4.61	244	1	.01	258	1	.01	254	1	.8	7	262
240	5.8	.01	247	1	.03	197	3	.98	265	1	.01	268	1	.01	249	1	.2	7	263
88	6.5	.01	269	1	.01	237	2	3.74	250	1	.01	251	1	.01	266	1	1.2	6	264
153	6.3	<.01	267	1	<.01	225	2	1.19	264	1	<.01	265	1	<.01	263	1	0.3	6	265
91	6.8	<.01	264	1	<.01	256	1	4.14	248	1	<.01	247	1	<.01	260	1	1.5	5	266
257	6.9	<.01	251	1	<.01	260	1	4.09	249	1	<.01	254	1	<.01	269	1	1.1	5	267
50	7.1	<.01	261	1	<.01	267	1	2.40	256	1	<.01	256	1	<.01	270	1	1	5	268
199	7.1	<.01	265	1	<.01	265	1	0.96	266	1	<.01	261	1	<.01	264	1	0.5	5	269
45	9.7	<.01	270	1	<.01	270	1	0.41	267	1	<.01	267	1	<.01	255	1	0.04	5	270

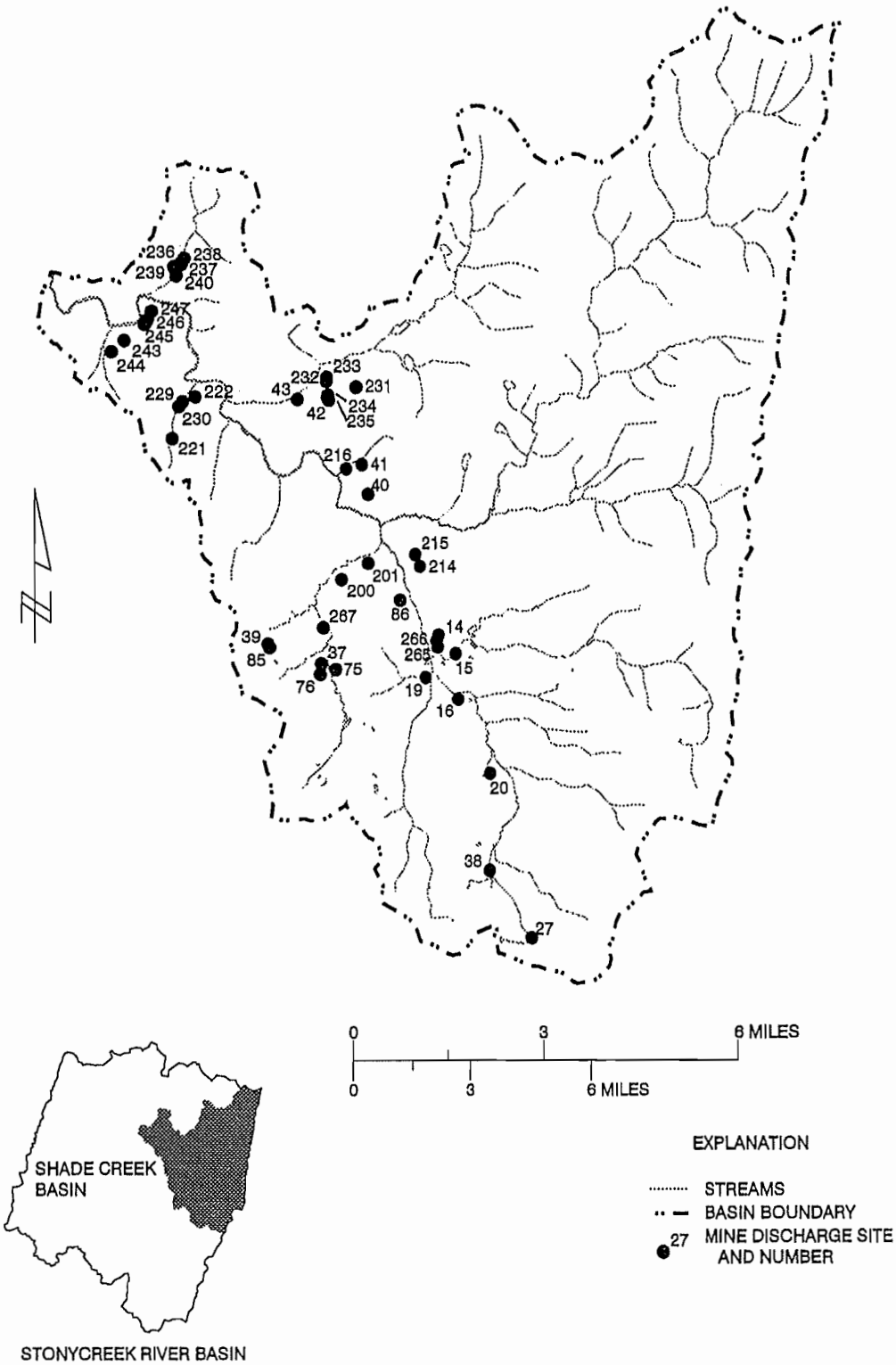


Figure 6. Location of the coal-mine-discharge sites in the Shade Creek Basin.

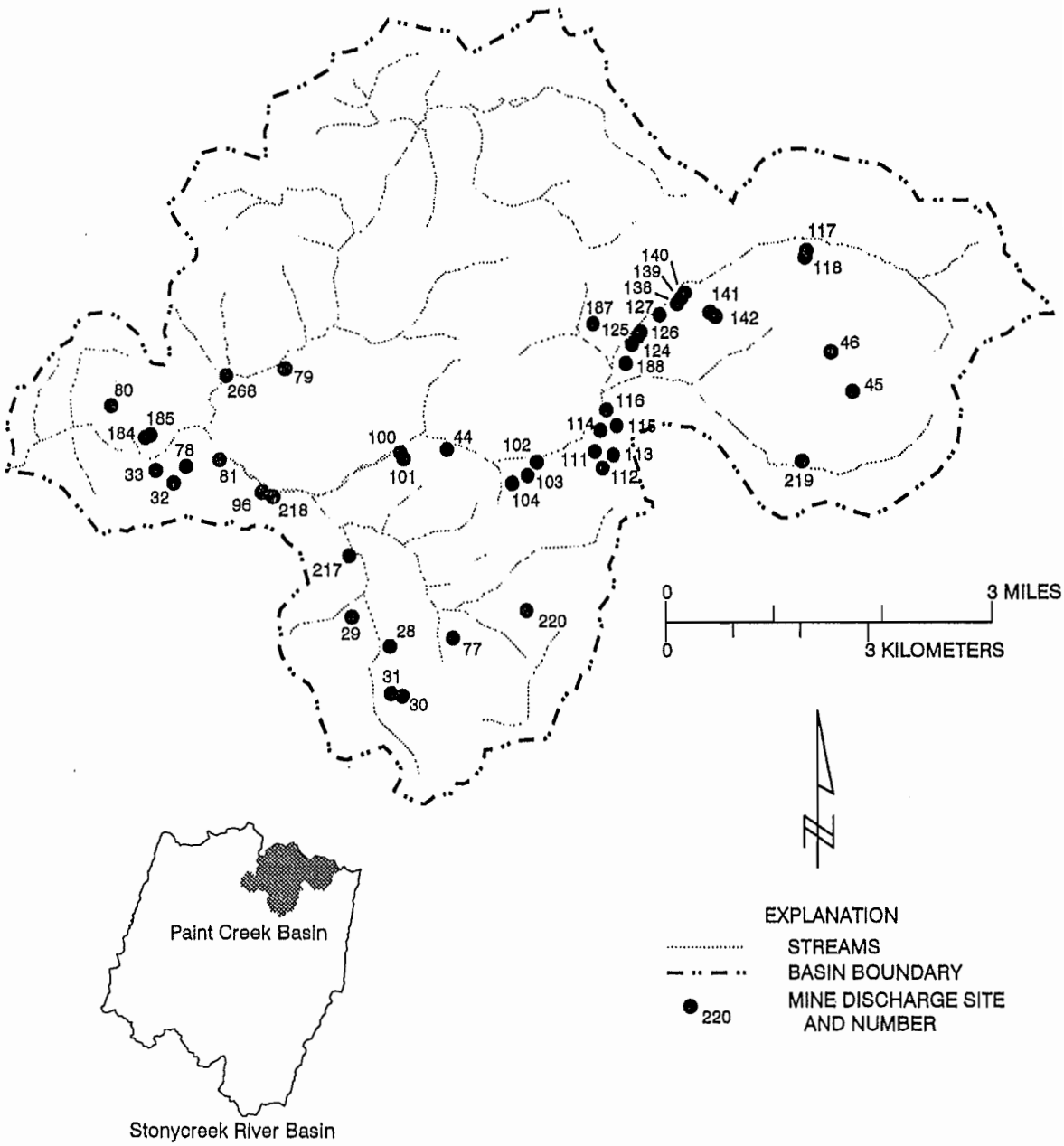


Figure 7. Location of the coal-mine-discharge sites in the Paint Creek Basin.

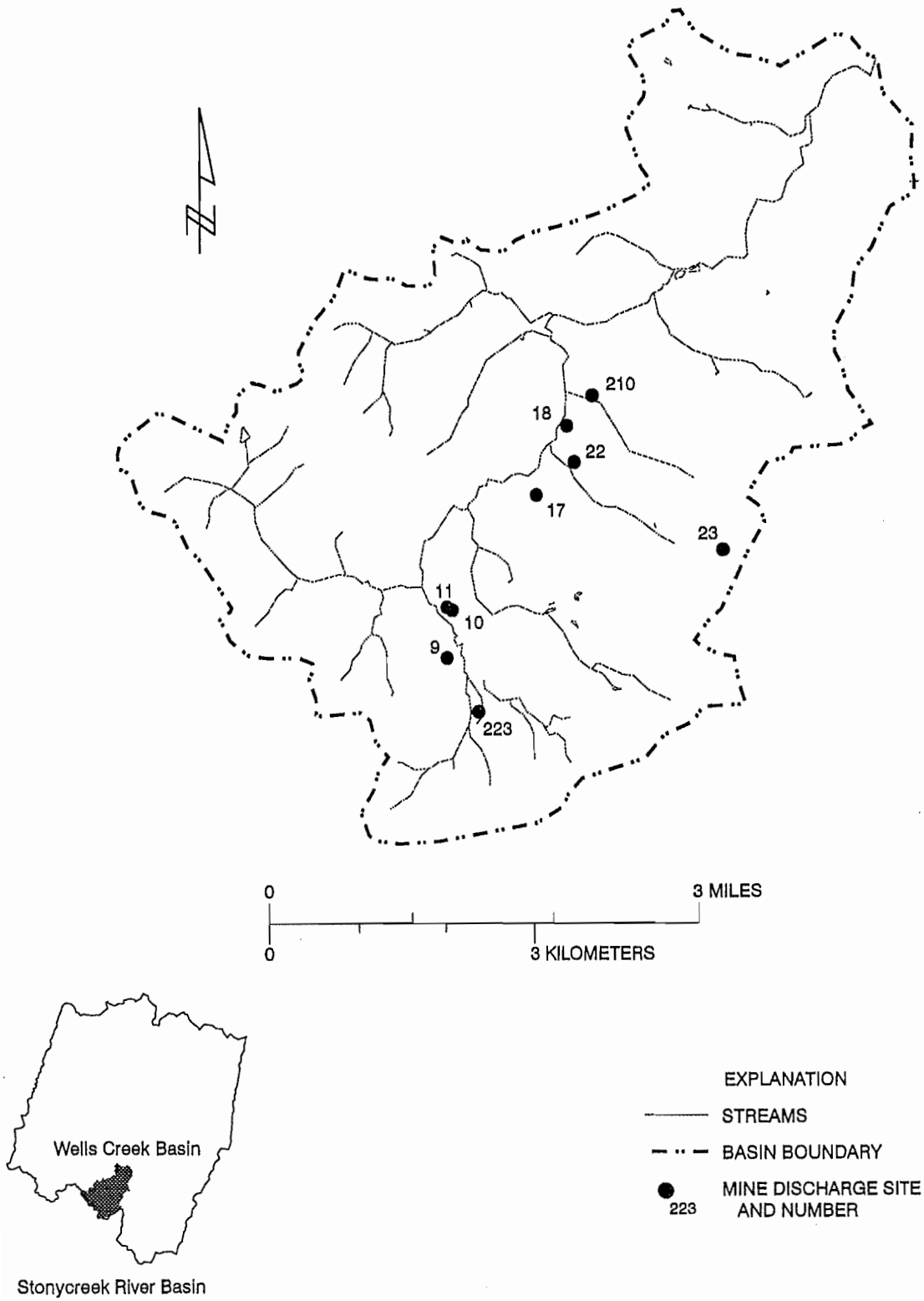


Figure 8. Location of the coal-mine-discharge sites in the Wells Creek Basin.

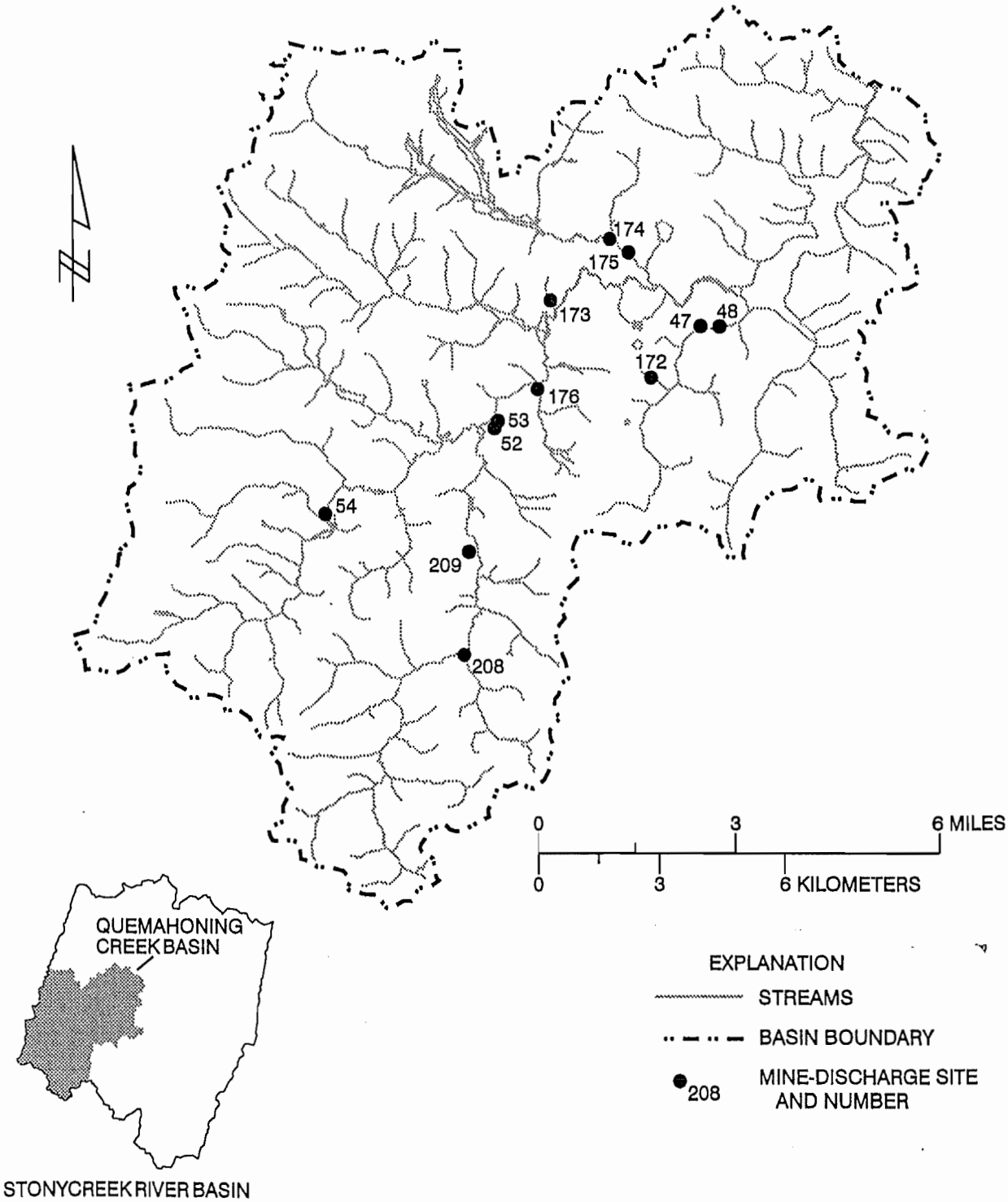


Figure 9. Location of the coal-mine-discharge sites in the Quemahoning Creek Basin.

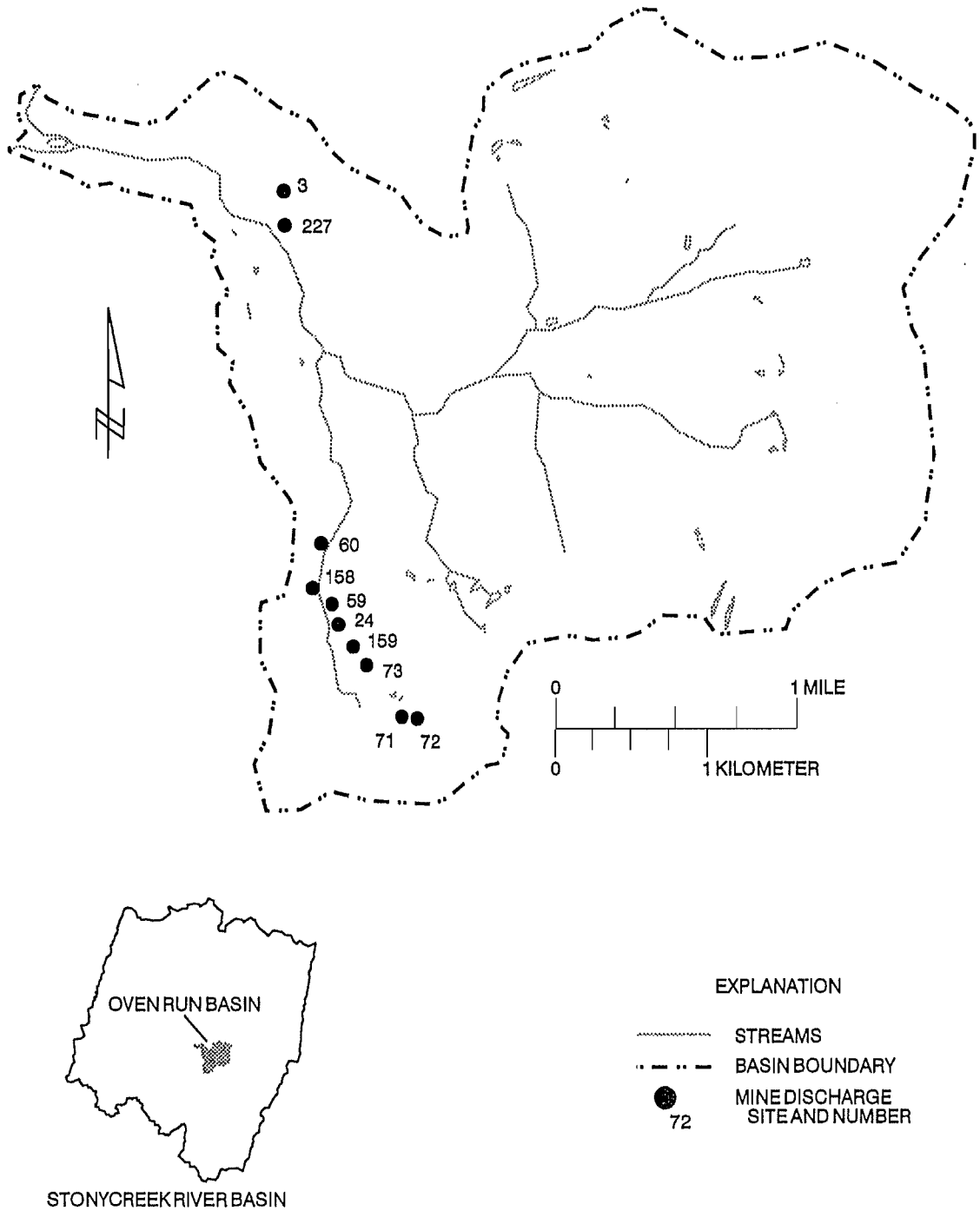


Figure 10. Location of the coal-mine-discharge sites in the Oven Run Basin.

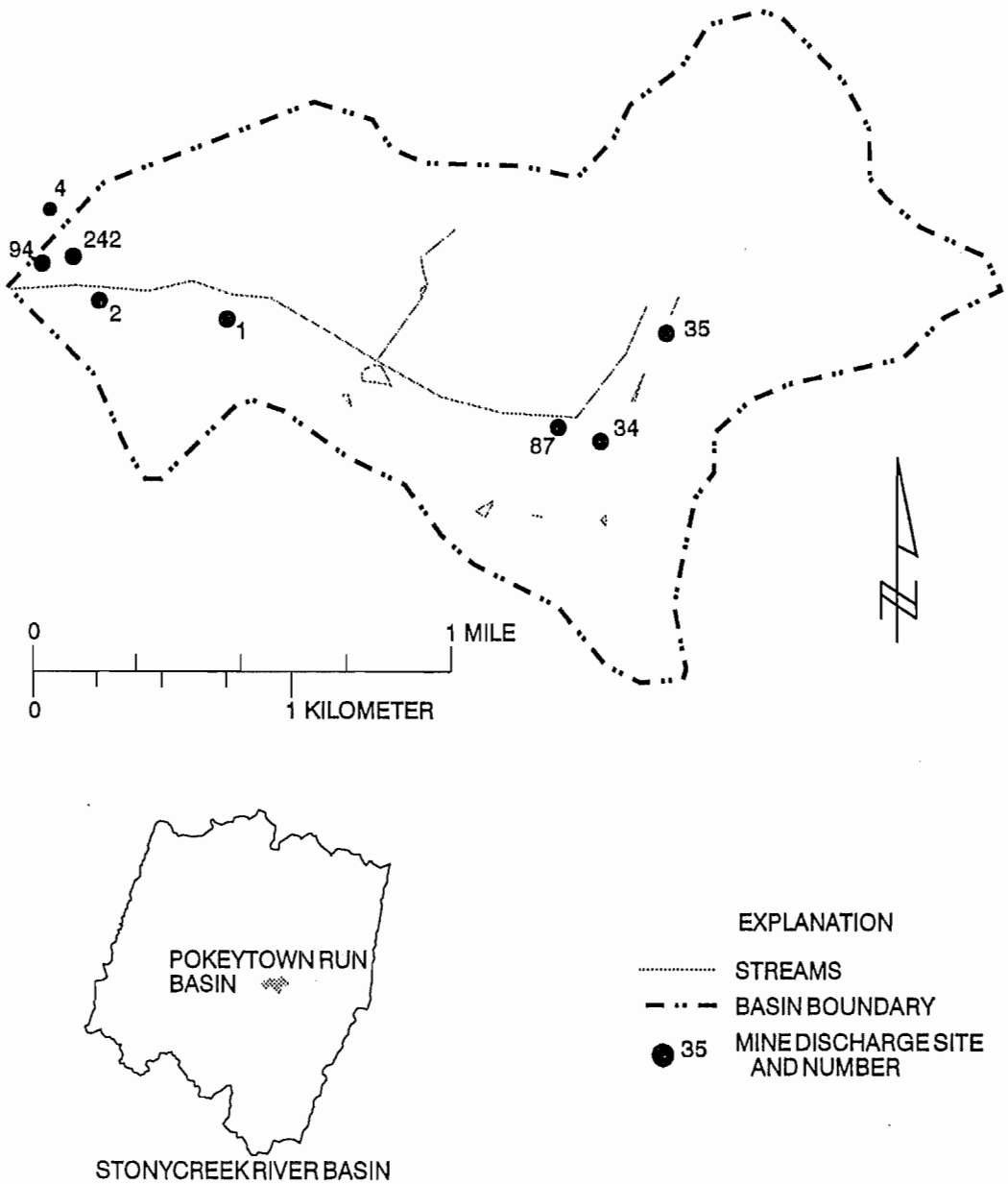


Figure 11. Location of the coal-mine-discharge sites in the Pokeytown Run Basin.

ATTACHMENT B

MATERIAL FROM REPORT ON THE WATER QUALITY AND
ACID MINE DRAINAGE IN THE LITTLE CONEMAUGH RIVER WATERSHED
CAMBRIA COUNTY, PENNSYLVANIA
(BARBIN 1995)

Chart #1 - Little Conemaugh River - Ranking of Discharges by Load

Subbasin	Basin	RANK	SITE	LOAD (lbs/day)	PERCENT of Total	
B	27	1	Berwind Mine @ St. Michael	31141	29.20%	89%
B	24	2	Sulfur Creek	11418	10.71%	
A	13	3	Trout Run	14301	13.41%	
A	20	4	Ehrenfeld	12742	11.94%	
A	14	5	Portage Sewer Treatment Plant	10370	9.72%	
A	9	6	Hughes Borehole	8318	7.79%	
B	22	7	Beaverdale	6755	6.33%	
B	29	8	South Fork Borough	2531	2.37%	
B	23	9	Allendale	2502	2.34%	
A	1	10	Kokomo	1497	1.40%	
A	12	11	Spring Run	1487	1.39%	
C	35	12	Staplebend	1234	1.15%	
C	36	13	Franklin Hillside	577	0.54%	
C	38	14	Clapboard	713	0.67%	
A	18	15	Wilmore Heights	208	0.19%	
C	37	16	East Conemaugh Borough	203	0.19%	
C	33	17	Saltlick Dam	189	0.18%	
A	8	18	Benscreek	129	0.12%	
A	4	19	Bear Rock Sportsmen	90	0.08%	
A	3	20	Bear Rock Run	68	0.06%	
C	31	21	Ace Strip	32	0.03%	
C	30	22	Stineman Mines	26	0.02%	
A	5	23	Scanlon Hill	21	0.02%	
A	7	24	Oil City	14	0.01%	
A	19	25	Laurel Run (Summerhill)	13	0.01%	
C	33	26	Brookdale	13	0.01%	
A	2	27	North Lilly	12	0.01%	
B	26	29	Laurel Run (South Fork)	8	0.00%	
B	25	30	Otto Run	8	0.00%	
A	6	31	Upper Cassandra	6	0.00%	
A	16	32	North Branch	4	0.00%	
A	15	33	Wilmore Pans	2	0.00%	
C	32	34	Bear Run	1	0.00%	
A	21	35	Flenner Mines	1	0.00%	
B	28	36	Sandy Run	7e-02	0.00%	
A	10	37	Noels Creek	0	0.00%	
			Total	106645	100.00%	
	Load is calculated from Total mg of acid, Iron and Manganese and aluminum					
	Conemaugh River Comparisons					

ATTACHMENT C

MATERIAL FROM *CONEMAUGH RIVER BASIN RECONNAISSANCE STUDY*
(USACOE 1994)

TABLE 21
ESTIMATED SEVERITY* OF AMD IMPACT IN CONEMAUGH RIVER BASIN

Station	UTM x NAD27(m)	UTM y NAD27(m)	Acidity CaCO3 lbs/day	Alkalinity CaCO3 lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day	SO4 lbs/day	pH	Acidity Severity	Alkalinity Severity	Fe Severity	Al Severity	Mn Severity	SO4 Severity	pH Severity
101	679,209.5	4,430,090.0	594.0	6534.0	25.7	15.3	26.1	9747.5	6.8	3	1	3	3	3	3	2
102	676,203.1	4,441,033.3	3477.6	5464.8	28.4	17.3	18.5	35173.4	7.2	4	1	3	3	3	4	1
103	678,131.2	4,448,698.7	8694.0	– 0 –	175.9	900.1	278.7	63689.8	3.8	4	4	3	4	4	4	3
104	679,998.7	4,456,733.7	18295.2	– 0 –	1359.7	2018.7	985.0	120748.3	3.9	4	4	4	4	4	4	3
105	676,746.7	4,461,315.4	32918.4	– 0 –	696.1	3038.1	1569.8	187772.0	4.2	4	4	4	4	4	4	3
106	676,742.4	4,427,008.9	84.2	1832.2	14.8	10.2	10.7	4169.9	6.7	2	1	3	3	3	3	2
107	683,131.8	4,430,769.6	145.2	13.6	1.4	0.7	0.2	805.6	5.0	3	3	1	1	1	2	3
108	684,878.5	4,435,038.6	42.1	147.4	23.8	0.2	2.4	3902.8	6.2	2	2	3	1	2	3	2
109	682,497.5	4,436,431.1	0.1	0.8	0.0	0.0	0.0	0.2	6.1	1	3	1	1	1	1	2
110	679,107.9	4,431,383.3	432.0	378.0	1.1	0.3	1.4	2401.7	6.3	3	2	1	1	2	3	2
111	677,257.1	4,431,401.6	140.4	224.6	33.0	15.7	33.6	3175.8	5.8	3	2	3	3	3	3	2
112	677,874.2	4,437,462.8	42.1	337.0	33.5	19.4	24.3	24282.2	6.6	2	2	3	3	3	4	2
113	675,175.7	4,437,307.5	379.1	10.5	4.8	19.6	35.0	4011.9	4.8	3	3	2	3	3	3	3
114	674,381.7	4,439,880.6	49.7	1242.0	46.7	13.9	13.6	1033.3	7.7	2	1	3	3	3	2	1
115	676,873.9	4,442,745.8	920.7	– 0 –	59.0	134.8	109.8	3305.6	2.8	3	4	3	3	4	3	4
116	677,728.4	4,445,696.6	29.2	3.2	0.2	1.6	0.8	309.3	5.0	1	3	1	2	1	2	3
117	675,271.2	4,450,575.5	1.5	24.8	0.3	0.1	0.2	13.9	7.1	1	3	1	1	1	1	1
118	667,692.2	4,447,719.6	324.0	1296.0	227.6	1.4	80.7	11113.2	5.8	3	1	3	2	3	3	2
119	664,522.2	4,447,649.9	16.2	202.5	4.0	1.5	2.3	312.7	6.1	1	2	2	2	2	2	2
120	664,725.9	4,444,816.3	77.8	233.3	14.3	1.5	2.6	269.2	6.3	2	2	3	2	2	2	2
121	669,048.5	4,448,459.3	43.2	280.8	20.6	0.6	9.7	1618.9	6.1	2	2	3	1	2	2	2
122	671,840.8	4,446,393.6	51.8	15.6	0.3	1.8	4.3	540.4	6.2	2	3	1	2	2	2	2
123	673,124.5	4,445,127.1	129.6	1263.6	3.7	1.7	1.2	4210.4	6.3	2	1	2	2	2	3	2
124	687,634.7	4,441,523.7	211.7	– 0 –	7.2	20.6	4.5	427.1	3.7	3	4	2	3	2	2	3
125	687,104.7	4,442,837.3	151.2	64.8	29.9	7.8	11.7	767.9	5.0	3	3	3	2	3	2	3
126	686,181.7	4,444,727.5	8424.0	– 0 –	1625.1	567.8	339.3	26353.1	3.3	4	4	4	4	4	4	3
127	685,930.0	4,446,294.8	76.7	766.8	5.9	1.0	0.8	318.2	6.3	2	2	2	1	1	2	2
128	684,652.7	4,450,120.2	165.2	– 0 –	10.2	6.3	14.6	509.3	3.5	3	4	2	2	3	2	3
129	683,134.7	4,457,086.9	101.0	11.9	43.1	21.4	2.6	921.3	5.7	2	3	3	3	2	2	2
130	679,995.7	4,456,857.0	6949.8	– 0 –	436.8	704.6	498.1	40736.5	3.4	4	4	4	4	4	4	3
131	666,166.1	4,454,688.6	75.6	226.8	1.2	1.0	0.2	149.3	7.2	2	2	1	1	1	1	1
132	672,466.8	4,457,328.9	35.6	4276.8	29.3	10.5	8.5	8357.6	7.3	2	1	3	3	2	3	1
133	668,624.2	4,458,969.6	9.3	9.3	2.3	3.9	0.8	38.1	7.0	1	3	2	2	1	1	2
134	675,455.0	4,460,976.6	86.4	2937.6	7.9	5.4	0.6	7633.4	7.4	2	1	2	2	1	3	1
135	677,614.5	4,463,588.0	140.4	112.3	248.4	23.3	33.4	5979.6	6.6	3	2	3	3	3	3	2
136	678,829.6	4,453,188.7	11664.0	– 0 –	318.2	854.1	542.6	43070.4	3.5	4	4	3	4	4	4	3
137	676,850.9	4,443,732.4	3157.9	– 0 –	1468.2	537.4	48.0	6995.2	2.9	4	4	4	4	3	3	4
138	677,498.7	4,463,492.7	45273.6	2829.6	516.4	1855.5	1457.2	191281.0	4.7	4	1	4	4	4	4	3
201	679,927.7	4,468,199.9	49680.0	– 0 –	6608.5	2952.7	1585.4	218268.0	4.5	4	4	4	4	4	4	3
202	680,070.8	4,468,138.6	554.6	– 0 –	7.3	64.7	7.7	1950.4	3.7	3	4	2	3	2	2	3
203	683,654.2	4,472,011.1	380.2	409.9	129.1	1.9	3.9	2103.9	6.7	3	2	3	2	2	3	2
204	687,463.0	4,470,676.7	907.2	29484.0	148.1	288.7	108.0	83779.9	7.5	3	1	3	3	4	4	1
205	687,161.0	4,470,295.8	26784.0	– 0 –	6089.3	1190.7	705.1	75664.8	3.5	4	4	4	4	4	4	3
206	690,341.1	4,471,474.2	67.0	120.5	0.3	0.2	0.0	23.6	8.7	2	2	1	1	1	1	1
207	693,414.1	4,473,114.1	84.2	702.0	1.7	0.5	0.8	2745.5	5.5	2	2	1	1	1	3	2
208	693,593.1	4,472,668.3	9504.0	– 0 –	1083.0	708.6	247.1	44841.6	6.0	4	4	4	4	4	4	2
209	696,057.2	4,473,463.6	2268.0	– 0 –	513.8	186.7	79.9	9149.1	6.4	3	4	4	3	3	3	2
210	696,644.1	4,471,954.6	358.0	– 0 –	9.6	37.8	8.5	896.2	3.2	3	4	2	3	2	2	3
211	701,299.4	4,469,884.0	0.9	4.5	0.0	0.0	0.0	1.0	6.6	1	3	1	1	1	1	2
212	696,595.6	4,473,804.7	7106.4	– 0 –	1183.2	511.7	141.1	25250.4	4.9	4	4	4	4	4	4	3
213	698,626.2	4,476,154.1	12.7	215.7	0.7	0.2	0.1	40.1	7.6	1	2	1	1	1	1	1
214	698,583.3	4,475,906.1	2404.1	– 0 –	266.3	177.9	28.4	6239.2	3.8	3	4	3	3	3	3	3
215	699,137.7	4,475,368.4	32.4	388.8	1.5	3.6	0.5	831.1	7.3	1	2	1	2	1	2	1

TABLE 21 (Continued)

Station	UTM x NAD27(m)	UTM y NAD27(m)	Acidity CaCO3 lbs/day	Alkalinity CaCO3 lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day	SO4 lbs/day	pH	Acidity Severity	Alkalinity Severity	Fe Severity	Al Severity	Mn Severity	SO4 Severity	pH Severity
216	700,564.2	4,474,866.4	64.3	73.4	0.9	4.6	1.3	255.2	7.1	2	3	1	2	2	2	1
217	701,802.5	4,474,439.9	136.1	272.2	0.9	0.9	0.4	102.1	7.4	3	2	1	1	1	1	1
219	701,703.2	4,477,337.9	77.8	557.3	4.0	0.8	3.8	246.9	7.2	2	2	2	1	2	2	1
220	703,104.4	4,479,329.2	14.6	– 0 –	1.2	1.7	0.7	80.8	3.9	1	4	1	2	1	1	3
221	702,709.1	4,479,562.3	17.7	487.1	6.0	1.0	3.6	195.7	7.2	1	2	2	1	2	1	1
222	696,050.3	4,479,675.0	6.3	219.2	0.5	0.4	0.1	77.4	8.1	1	2	1	1	1	1	1
223	696,179.7	4,479,866.6	0.4	15.1	0.0	0.0	0.0	43.3	7.3	1	3	1	1	1	1	1
224	688,249.7	4,468,484.1	62.6	3288.6	2.6	1.2	0.5	263.1	8.2	2	1	2	2	1	2	1
225	689,526.4	4,467,288.1	40716.0	– 0 –	9533.8	1266.6	778.6	63830.2	4.3	4	4	4	4	4	4	3
226	689,856.6	4,467,021.9	1458.0	– 0 –	440.9	1160.7	598.4	25602.5	3.5	3	4	4	4	4	4	3
227	690,535.0	4,467,088.4	32.0	343.7	1.8	5.7	2.3	135.5	6.9	1	2	1	2	2	1	2
228	691,426.2	4,466,586.5	14310.0	– 0 –	1242.0	1525.0	741.7	27081.0	2.9	4	4	4	4	4	4	4
229	691,572.8	4,466,673.5	3186.0	– 0 –	146.8	301.0	113.7	11685.6	3.8	4	4	3	4	4	3	3
230	692,112.3	4,464,410.1	10044.0	– 0 –	1590.8	878.2	464.4	17577.0	3.2	4	4	4	4	4	3	3
231	691,908.6	4,464,432.7	7.9	236.5	0.8	0.6	0.1	42.6	7.9	1	2	1	1	1	1	1
232	695,829.9	4,465,888.4	27.0	108.0	1.1	1.0	0.4	72.4	6.8	1	2	1	1	1	1	2
233	698,449.2	4,466,068.2	– 0 –	393.1	1.0	1.6	0.6	40.8	6.7	1	2	1	2	1	1	2
234	695,790.7	4,465,671.4	3682.8	– 0 –	254.2	275.9	103.1	7154.7	3.4	4	4	3	3	4	3	3
235	696,720.4	4,462,995.7	97.2	291.6	4.4	2.3	0.8	124.4	7.2	2	2	2	2	1	1	1
236	676,611.2	4,466,078.8	19602.0	– 0 –	3866.9	1987.3	1114.1	133222.3	4.3	4	4	4	4	4	4	3
301	679,094.1	4,470,882.7	91.6	103.0	1.3	1.1	1.6	69.3	5.9	2	2	1	2	2	1	2
302	676,309.9	4,467,444.7	43.2	172.8	14.7	19.7	19.8	1962.4	6.4	2	2	3	3	3	2	2
303	674,823.8	4,468,307.7	243.0	19.4	10.9	26.8	12.1	1480.4	5.8	3	3	2	3	3	2	2
304	674,964.2	4,468,357.3	49680.0	– 0 –	7284.3	3887.5	2919.9	378934.2	3.7	4	4	4	4	4	4	3
305	674,766.5	4,470,058.8	71.3	570.2	1.3	1.3	0.3	311.9	6.0	2	2	1	2	1	2	2
306	670,457.8	4,475,741.3	121.0	241.9	2.2	2.1	0.4	178.4	4.3	2	2	2	2	1	1	3
307	667,473.7	4,476,001.0	– 0 –	1420.2	1076.5	2447.0	2846.1	466677.7	4.3	1	1	4	4	4	4	3
308	667,291.1	4,474,145.9	24.2	3.5	5.6	0.6	1.7	60.0	5.7	1	3	2	1	2	1	2
309	664,257.4	4,471,265.3	19.4	155.5	2.1	1.3	0.3	86.5	7.7	1	2	2	2	1	1	1
310	658,757.2	4,473,966.5	918.0	– 0 –	379.2	76.3	3.6	2002.2	4.2	3	4	3	3	2	3	3
311	662,317.9	4,465,260.0	7.0	9.8	0.6	0.5	0.1	5.5	6.8	1	3	1	1	1	1	2
312	662,151.9	4,465,185.4	73.4	220.3	1.6	1.7	0.5	139.5	7.0	2	2	1	2	1	1	2
313	657,862.5	4,467,167.2	20.4	199.6	0.5	0.3	0.1	100.7	7.8	1	2	1	1	1	1	1
314	657,714.7	4,467,910.6	28.2	234.9	2.8	2.3	0.2	53.6	7.5	1	2	2	2	1	1	1
315	658,023.5	4,469,721.7	41.0	1210.7	4.3	2.5	0.5	352.9	8.4	2	1	2	2	1	2	1
316	656,466.9	4,472,511.7	7.8	54.4	1.0	1.8	0.3	193.8	6.9	1	3	1	2	1	1	2
317	656,475.2	4,472,906.7	270.0	1890.0	21.6	15.0	4.3	1701.0	7.2	3	1	3	3	2	2	1
318	650,903.4	4,476,805.8	13.0	194.4	1.5	1.5	0.1	167.8	7.1	1	2	1	2	1	1	1
319	645,276.1	4,468,060.8	285.1	803.5	24.9	13.7	4.1	241.1	6.8	3	2	3	3	2	2	2
320	647,755.1	4,474,957.0	56.2	1544.4	21.5	21.0	1.9	640.2	7.2	2	1	3	3	2	2	1
321	645,222.9	4,475,194.4	8488.8	42444.0	759.7	6326.3	4859.8	876893.0	4.8	4	1	4	4	4	4	3
322	647,027.1	4,475,167.9	3175.2	60.5	1281.0	68.9	147.6	7983.4	5.2	4	3	4	3	4	3	2
323	645,318.6	4,474,878.6	1.0	58.3	0.1	0.0	0.1	14.6	7.3	1	3	1	1	1	1	1
324	673,738.5	4,470,016.4	45716.4	28236.6	3895.3	3280.8	2346.3	314098.6	6.1	4	1	4	4	4	4	2
325	676,270.3	4,467,422.2	233.3	777.6	133.5	227.4	184.4	20769.7	5.4	3	2	3	3	4	4	2
401	688,564.4	4,482,799.7	1814.4	– 0 –	82.2	215.3	18.9	2422.2	4.6	3	4	3	3	3	3	3
402	683,548.3	4,481,915.9	5875.2	86.4	435.5	403.0	42.6	25920.0	4.5	4	2	4	4	3	4	3
403	676,464.5	4,483,028.9	16848.0	– 0 –	11795.0	6001.3	261.6	45770.4	3.8	4	4	4	4	4	4	3
404	684,567.0	4,494,934.1	1.9	29.8	9.4	2.5	0.4	9.3	6.4	1	3	2	2	1	1	2
405	681,631.7	4,493,849.9	11.0	51.4	0.7	0.0	0.1	150.2	6.5	1	3	1	1	1	1	2
406	685,092.0	4,491,127.2	4519.8	– 0 –	536.5	372.2	9.0	3742.2	2.8	4	4	4	4	3	3	4
[illegible]	6[illegible].8	[illegible]9,351.[illegible]	1836.[illegible]	1904.6	727.9	356.2	83.4	29.6	6.2	3	1	4	4	3	1	1

TABLE 21 (Continued)

Station	UTM x NAD27(m)	UTM y NAD27(m)	Acidity CaCO3 lbs/day	Alkalinity CaCO3 lbs/day	Fe lbs/day	Al lbs/day	Mn lbs/day	SO4 lbs/day	pH	Acidity Severity	Alkalinity Severity	Fe Severity	Al Severity	Mn Severity	SO4 Severity	pH Severity
409	665,728.0	4,482,743.1	17366.4	– 0 –	1607.5	2527.2	361.1	98807.6	4.9	4	4	4	4	4	4	3
410	664,818.1	4,487,150.1	55.1	146.9	7.1	4.2	0.9	290.1	7.2	2	2	2	2	1	2	1
411	664,391.5	4,487,810.1	18.6	204.9	2.5	0.4	0.5	60.7	7.3	1	2	2	1	1	1	1
412	663,141.7	4,484,454.0	367.2	918.0	380.1	177.3	48.6	761.9	5.9	3	2	3	3	3	2	2
413	661,612.2	4,481,338.9	34.6	414.7	27.0	5.2	8.2	1104.2	6.1	1	2	3	2	2	2	2
414	653,999.5	4,481,690.4	12960.0	– 0 –	1778.0	1222.3	532.6	107770.5	3.9	4	4	4	4	4	4	3
415	677,678.9	4,503,902.6	7.1	327.9	0.5	0.1	0.0	147.5	7.3	1	2	1	1	1	1	1
416	673,732.8	4,504,469.5	298.1	1304.1	8.5	0.9	1.1	756.4	6.1	3	1	2	1	2	2	2
417	672,144.2	4,504,491.1	793.8	1375.9	33.5	23.5	16.0	4752.2	NA	3	1	3	3	3	3	NA
418	668,863.6	4,504,548.5	158.8	340.2	11.5	23.9	10.6	1613.7	6.8	3	2	2	3	3	2	2
419	667,742.8	4,503,835.1	270.0	1620.0	151.9	107.9	30.9	5805.0	6.9	3	1	3	3	3	3	2
420	665,991.8	4,501,031.4	1598.4	599.4	714.5	336.5	87.9	19640.3	6.8	3	2	4	4	3	3	2
421	666,940.7	4,500,219.7	267.8	51.8	147.1	18.3	36.0	1852.4	6.4	3	3	3	3	3	2	2
422	659,987.3	4,495,578.1	112.3	622.1	2.1	0.4	0.2	233.3	8.1	2	2	2	1	1	2	1
423	655,433.9	4,494,482.2	– 0 –	748.4	2.2	0.6	0.7	691.7	7.6	1	2	2	1	1	2	1
424	675,746.1	4,497,704.3	55.1	105.6	2.6	8.1	1.7	611.4	5.0	2	2	2	2	2	2	3
425	669,300.7	4,493,695.3	34.6	186.6	0.7	0.3	0.1	40.4	6.4	1	2	1	1	1	1	2
426	673,929.8	4,492,009.4	97.2	1360.8	2.7	0.2	0.8	949.6	7.3	2	1	2	1	1	2	1
427	669,038.7	4,494,149.1	118.8	3088.8	12.8	6.8	0.8	3391.7	8.3	2	1	3	2	1	3	1
428	660,572.3	4,492,872.8	1166.4	2721.6	6.3	2.4	6.2	2799.4	7.7	3	1	2	2	2	3	1
429	655,766.9	4,487,995.4	558.4	– 0 –	11.7	53.3	13.2	1979.2	3.4	3	4	2	3	3	2	3
430	654,899.6	4,486,570.7	5832.0	– 0 –	2661.3	997.3	186.6	50835.6	4.2	4	4	4	4	4	4	3
431	653,110.0	4,490,599.6	108.9	393.1	46.3	1.7	2.6	997.9	6.6	2	2	3	2	2	2	2
432	652,309.2	4,481,631.1	11826.0	788.4	1326.9	1769.2	676.4	199465.2	4.9	4	2	4	4	4	4	3
433	649,531.4	4,482,704.0	2.8	70.7	0.2	0.1	0.0	65.0	6.9	1	3	1	1	1	1	2
434	645,153.6	4,478,891.5	NA	NA	NA	NA	NA	NA	4.2	NA	NA	NA	NA	NA	NA	3
435	644,760.9	4,481,163.5	0.0	0.6	0.0	0.0	0.0	0.1	7.4	1	3	1	1	1	1	1
436	660,422.7	4,495,121.6	2894.4	3618.0	60.1	37.6	257.6	35999.1	6.1	4	1	3	3	4	4	2
501	644,976.2	4,485,850.1	129.6	194.4	8.6	2.1	37.1	3633.1	6.3	2	2	2	2	3	3	2
502	644,299.5	4,482,366.8	69.1	121.0	3.2	0.2	26.7	2977.3	7.3	2	2	2	1	3	3	1
503	642,158.4	4,483,229.6	1.1	19.4	0.1	0.0	0.0	3.1	7.7	1	3	1	1	1	1	1
504	640,314.3	4,482,479.1	0.9	5.2	0.1	0.0	0.0	1.8	8.2	1	3	1	1	1	1	1
505	640,459.5	4,478,003.1	2.6	90.7	1.0	1.2	0.0	9.8	8.2	1	2	1	2	1	1	1
506	636,428.9	4,479,202.5	46645.2	6663.6	506.4	2588.8	5197.6	791635.7	4.7	4	1	4	4	4	4	3

* Severity rating of 4 is greatest impact; severity rating of 1 is least impact.
NA = Not available

TABLE 19

SITES FOR STREAM SAMPLING BY THE
U.S. ARMY CORPS OF ENGINEERS AND
U.S. GEOLOGICAL SURVEY
CONEMAUGH RIVER BASIN

LITTLE CONEMAUGH RIVER BASIN

Station No.	Station Name	Quadrangle
201	Little Conemaugh River at East Conemaugh (at gage)	Johnstown
202	Clapboard Run at Franklin	Johnstown
203	Saltlick Run at Mineral Point (below Saltlick Reservoir)	Nanty Glo
204	Little Conemaugh River at South Fork (above confluence with South Fork of Little Conemaugh River)	Geistown
205	South Fork of Little Conemaugh River at South Fork	Geistown
206	Laurel Run at Summerhill	Geistown
207	North Branch of Little Conemaugh River at Wilmore	Ebensburg
208	Little Conemaugh River at Wilmore	Ebensburg
209	Trout Run at Portage	Ebensburg
210	Trout Run at Redbird (above Miller Shaft discharges)	Ebensburg
211	Trout Run at Martindale (below Portage Reservoir)	Beaverdale
212	Little Conemaugh River (downstream from Portage Sewage Treatment Plant discharges)	Ebensburg
213	Noels Creek at Jamestown (at mouth)	Ebensburg
214	Little Conemaugh River (downstream from Hughes Borehole discharge)	Ebensburg
215	Little Conemaugh River (upstream from Hughes Borehole discharge)	Ebensburg
216	Bens Creek at Oil City (at mouth)	Ebensburg
217	Bens Creek at Bens Creek (above main refuse pile)	Cresson
218	Bear Rock Run at Lily (at mouth)*	Cresson
219	Little Conemaugh River at Lily (upstream from confluence of Bear Rock Run)	Cresson
220	Kokomo Run near Lily	Cresson

* Stream was dry; no sample was taken.

TABLE 19 (cont)

SITES FOR STREAM SAMPLING BY THE
U.S. ARMY CORPS OF ENGINEERS AND
U.S. GEOLOGICAL SURVEY
CONEMAUGH RIVER BASIN

LITTLE CONEMAUGH RIVER BASIN

Station No.	Station Name	Quadrangle
221	Little Conemaugh River (above confluence of Kokomo Run)	Cresson
222	Howells Run (at mouth)	Ebensburg
223	North Branch Little Conemaugh River (above confluence with Howells Run)	Ebensburg
224	Sandy Run at Soukesburg	Geistown
225	South Fork of Little Conemaugh River (downstream from St. Michaels discharge)	Geistown
226	South Fork of Little Conemaugh River (upstream from St. Michaels discharge)	Geistown
227	Laurel Run at Creslo (at mouth)	Geistown
228	Otto Run at Sidman (at mouth)	Beaverdale
229	South Fork Little Conemaugh River (above mouth of Otto Run)	Beaverdale
230	Sulphur Creek near Sidman	Beaverdale
231	Otto Creek near Sidman (above confluence of Sulphur Creek)	Beaverdale
232	Beaverdam Run at Beaverdale (at mouth)	Beaverdale
233	Beaverdam Run below Beaverdam Reservoir	Beaverdale
234	South Fork Little Conemaugh River (above confluence of Beaverdam Run)	Beaverdale
235	South Fork Little Conemaugh River (below confluence of Bottle Run)	Beaverdale
236	Little Conemaugh River at Wm. Penn Avenue in Johnstown	Johnstown

TABLE 19 (cont)

SITES FOR STREAM SAMPLING BY THE
U.S. ARMY CORPS OF ENGINEERS AND
U.S. GEOLOGICAL SURVEY
CONEMAUGH RIVER BASIN

STONYCREEK RIVER BASIN

Station No.	Station Name	Quadrangle
101	Stonycreek River above Shanksville	Stoystown
102	Stonycreek River at Kantner	Stoystown
103	Stonycreek River at Blough	Hooversville
104	Stonycreek River above Paint Creek	Hooversville
105	Stonycreek River at Ferndale	Johnstown
106	Glades Creek at Turnpike	Berlin
107	Boone Run just above Lake Stonycreek	Central City
108	Clear Run above Indian Lake	Central City
109	Calendars Run above Indian Lake	Central City
110	Rhoads Creek at Shanksville	Stoystown
111	Schrock Run at Shanksville	Stoystown
112	Lamberts Run at Lambertsville	Stoystown
113	Wells Creek at Mostoller	Stoystown
114	Beaverdam Creek near Stoystown	Stoystown
115	Oven Run at Rowena	Stoystown
116	Fallen Timber Run at Hooversville	Hooversville
117	Quemahoning Creek outflow of Lake	Hooversville
118	Quemahoning Creek at Boswell	Boswell
119	Beaverdam Creek above Stoughton Lake	Boswell
120	North Branch Quemahoning Creek near Coal Junction	Boswell
121	Roaring Run at Pilltown	Boswell
122	Twomile Run above Quemahoning Lake	Hooversville
123	Higgins Run above Quemahoning Lake	Hooversville
124	Dark Shade Creek at Central City	Central City
125	Laurel Run at Central City	Central City
126	Dark Shade Creek at Reitz	Windber
127	Clear Shade Creek at Route 160 Bridge	Windber

TABLE 19 (cont)

SITES FOR STREAM SAMPLING BY THE
U.S. ARMY CORPS OF ENGINEERS AND
U.S. GEOLOGICAL SURVEY
CONEMAUGH RIVER BASIN

STONYCREEK RIVER BASIN

Station No.	Station Name	Quadrangle
128	Roaring Fork at Route 160 Bridge	Windber
129	Little Paint Creek at Scalp Level	Windber
130	Paint Creek just above Stonycreek River	Hooversville
131	South Fork Bens Creek near Thomasdale	Boswell
132	South Fork Bens Creek near Ferndale	Johnstown
133	North Fork Bens Creek at North Fork Reservoir	Rachelwood
134	Bens Creek at Ferndale	Johnstown
135	Solomon Run at Johnstown	Johnstown
136	Shade Creek at Seanor	Hooversville
137	Pokeytown Run at Wilber	Hooversville
138	Stonycreek River at St. Bridge in Johnstown	Johnstown

TABLE 19 (cont)

SITES FOR STREAM SAMPLING BY THE
U.S. ARMY CORPS OF ENGINEERS AND
U.S. GEOLOGICAL SURVEY
CONEMAUGH RIVER BASIN

CONEMAUGH RIVER (Reach from Johnstown to Blairsville)

Station No.	Station Name	Quadrangle
301	Hinckston Run below Hinckston Run Reservoir	Johnstown
302	Hinckston Run at Minersville (upstream of industrial discharge)	Johnstown
303	St. Clair Run at Morrellville	Johnstown
304	Conemaugh River at Coopersdale	Johnstown
305	Laurel Run at Oakhurst	Johnstown
306	Findley Run at Cramer	Vintondale
307	Conemaugh River at Seward	New Florence
308	Big Spring Run at Seward	New Florence
309	Baldwin Creek at New Florence	New Florence
310	Richards Run at Robinson	Bolivar
311	Lick Run at Ross Mountain Park	Rachelwood
312	Tubmill Creek at Ross Mountain Park	Rachelwood
313	Hypocrite Creek at West Fairfield	Wilpen
314	Snyders Run at West Fairfield	Wilpen
315	Henricks Creek near West Fairfield	Wilpen
316	Freeman Run at Bolivar	Bolivar
317	Tubmill Creek at Bolivar	Bolivar
318	Toms Run near Blairsville	Bolivar
319	McGee Run near Millwood	Derry
320	McGee Run at Blairsville	Blairsville
321	Conemaugh River at Blairsville	Blairsville
322	Mine drainage discharge to Conemaugh River at Blairsville	Blairsville
323	Stony Run near Blairsville	Blairsville
324	Conemaugh River at Oakhurst (upstream of sewage treatment)	Johnstown
325	Hinckston Run at Minersville (downstream of industrial discharge)	Johnstown

TABLE 19 (cont)

SITES FOR STREAM SAMPLING BY THE
U.S. ARMY CORPS OF ENGINEERS AND
U.S. GEOLOGICAL SURVEY
CONEMAUGH RIVER BASIN

BLACKLICK CREEK BASIN

Station No.	Station Name	Quadrangle
401	South Branch Blacklick Creek near Revloc	Nanty Glo
402	South Branch Blacklick Creek at Nanty Glo	Nanty Glo
403	South Branch Blacklick Creek at Vintondale	Vintondale
404	North Branch Blacklick Creek at Blue Goose	Colver
405	Dutch Run near Duman Lake	Colver
406	Elk Creek near Colver	Colver
407	Elk Creek near Belsano	Colver
408	North Branch Blacklick Creek at Vintondale	Vintondale
409	Blacklick Creek at Dias	New Florence
410	Brush Creek at Brush Valley	Brush Valley
411	Little Brush Creek at Brush Valley	Brush Valley
412	Brush Creek at Claghorn	New Florence
413	Ramsey Run at Heshbon	New Florence
414	Blacklick Creek at Josephine	Bolivar
415	Repine Run near Pine Flats	Commodore
416	South Branch Two Lick Creek near Wandin Junction	Commodore
417	North Branch Two Lick Creek at Wandin Junction	Commodore
418	Buck Run at Clymer	Clymer
419	Dixon Run at Clymer	Clymer
420	Two Lick Creek near Clymer	Clymer
421	Penn Run near Clymer	Clymer
422	Ramsey Run near Indiana	Brush Valley
423	Stoney Run near Indiana	Indiana
424	Leonard Run at Heilwood	Strongstown
425	Laurel Run near Nolo	Strongstown
426	Little Yellow Creek near Strongstown	Strongstown
427	Yellow Creek near Pikes Peak	Brush Valley

TABLE 19 (cont)

SITES FOR STREAM SAMPLING BY THE
U.S. ARMY CORPS OF ENGINEERS AND
U.S. GEOLOGICAL SURVEY
CONEMAUGH RIVER BASIN

BLACKLICK CREEK BASIN

Station No.	Station Name	Quadrangle
428	Yellow Creek near Homer City	Brush Valley
429	Tearing Run at Homer City	Indiana
430	Two Lick Creek at Graceton	Indiana
431	Cherry Run near Homer City	Indiana
432	Blacklick Creek at Blacklick	Bolivar
433	Muddy Run near Campbells Mill	Bolivar
434	Blacklick Creek near Blairsville	Blairsville
435	Stewart Run near Blairsville	Blairsville
436	Two Lick Creek below Two Lick Reservoir	Blairsville

CONEMAUGH RIVER
(Reach from confluence of Blacklick Creek near Blairsville to mouth of Conemaugh River at Saltsburg)

Station No.	Station Name	Quadrangle
501	Aultmans Run near Lewisville	McIntyre
502	Aultmans Run near Blairsville	Blairsville
503	Miller Run near Lewisville	Blairsville
504	Roaring Run near Conemaugh Dam	Blairsville
505	Spruce Run near Conemaugh Dam	Blairsville
506	Conemaugh River outflow at Conemaugh Dam	Blairsville
507	Conemaugh River at Tunnelton	Saltsburg

ATTACHMENT D

PASSIVE MINE WATER TREATMENT

Passive Mine Water Treatment

The successful passive treatment of contaminated mine water requires proper selection and sizing of treatment techniques. Selection of the passive techniques depends on the chemistry of the discharge and the effluent chemical targets. Sizing of the system depends on the contaminant loadings and effluent targets. A variety of procedures for selecting and sizing passive systems have been published (see US Bureau of Mines, and West Virginia University publications). Descriptions of the technologies currently utilized are presented below.

Passive Treatment Components

Anoxic Limestone Drain

An anoxic limestone drain (ALD) is a buried bed of limestone that decreases acidity and generates alkalinity through the dissolution of limestone. ALDs are appropriate for waters containing low concentrations (less than 1 mg/) of dissolved oxygen, ferric iron and aluminum. Because ALDs release alkalinity in a slow predictable manner, it is reasonable to design them for more than a decade of treatment (with little O&M). When properly implemented, the ALD technology is the most reliable alkalinity-generating passive technique available.

Constructed Wetland

A constructed wetland is a vegetated shallow-water system that collects precipitated metal solids such as FeOOH and MnO_2. The wetland is vegetated with emergent species (generally cattails, *Typha spp.*) that are usually planted on 2-3 foot centers in spoil or soil amended with an organic substrate. Water depths in constructed wetlands are 2-6 inches. Constructed wetlands also provide valuable wildlife habitat benefits.

Sedimentation Ponds

Sedimentation ponds are deep water systems that collect suspended sediment and precipitated metal solids. The ponds have variable depths, but typically are in the 4-6 foot range. Sedimentation ponds are commonly used as sediment traps in front of vertical flow ponds or as the primary iron oxide collector in aerobic systems.

Vertical Flow Pond

A vertical flow pond (VFP) is an alkalinity-generating system that does not have the chemical restrictions of anoxic limestone drains. While the design of VFPs varies, a typical system contains an underdrain plumbing system that is bedded in 1-3 feet of limestone aggregate which is overlain by 0.5-3 feet of organic substrate. The water level in the VFP is 1-3 feet above the surface of the organic substrate. Water enters the VFP on the surface and flows down through the compost and limestone to the underdrain, which discharges to a sedimentation pond or constructed wetland. Alkalinity is generated and metals are removed through a combination of microbial activity and limestone dissolution.

Open Channel Limestone Drain
Recent reports by West Virginia University researchers suggest that limestone filled ditches can provide moderate long-term acidity neutralization benefits. The systems require a steep terrain, so that metal solids that form are flushed away from the limestone, and the presence of a downstream sedimentation pond or wetland, where the metal solids are collected.

Pyroluscite System
This patented technology was developed by Allegheny Mineral Abatement (Midland, MD). The system consists of an open bed of limestone aggregate that is inoculated with a microbial mixture that is pre-selected for Mn and Fe removal. The systems are particularly effective for Mn removal (a slow process in constructed wetlands), but have recently been applied to a variety of mine water problems.

Successive Alkalinity Producing Systems (SAPS)
The SAPS concept, developed by Damariscotta of Clarion, PA, incorporates vertical flow ponds and sedimentation ponds or wetlands in a successive manner. The result is the capability to treat much higher concentrations of contaminants than is currently considered possible for ALDs or single VFPs. The vertical flow ponds used by Damariscotta in SAPS systems have unique design features. A proprietary variation on Damariscotta's VFP design is being used to remove and recover Al from acid mine drainage.

ATTACHMENT E

DEEP MINE SEALING

DEEP MINE SEALING

Prepared by: John W. Foreman, P.E.

INTRODUCTION

Abandoned deep mines are considered to be the prinipal source of mine drainage pollution. The majority of the older abandoned mines in the bituminous coal fields were developed to the rise from drift openings along the outcrop in order to take advantage of both gravity drainage and favorable haulage conditions during their active life. Inadequate barriers, interconnections with adjacent mines and mining close to the outcrop are conditions which exist in many of these mines. Mine entry by slopes and shafts and mining to the dip were procedures generally considered only when drift mines were not possible. These alternate systems resulted in more expensive mining costs; particularly in pumping and transportation. Active mine workings to the dip required that these areas of the mine be de-watered or pumped down at all times; and as a result, prolonged lay-offs and strikes caused extremely expensive additional costs not normally associated with drift mines to the rise. However, it is these abandoned drift mines to the rise that have caused the most damage with reference to mine drainage pollution. Considering all applicable conditions,mine sealing, in many instances, can be an effective means of mine water pollution abatement in these mines.

MINE SEALING METHODS & PROCEDURES

The initial consideration for the control of mine drainage from abandoned mines should be source of abatement which includes all types of mine seals. Deep mine sealing is the closure of mine entries, drifts,slopes, shafts, subsidence holes, fractures and other openings into underground mines with clay, earth, rock, timber,

concrete blocks, brick, steel, concrete, fly ash, grout and other suitable materials. The purpose of mine sealing is to either prevent air and/or water from entering a mine or inundation of a mine or section of a mine or the case maybe.

In some situations, the existing underground conditions maybe so complex that mine entry sealing by itself may not be possible. In these instances, a combination of several techniques may be required to effectively abate the existing drainage conditions. These procedures can or may include,in addition to mine entry sealing (drifts, shafts, slopes), internal sealing or underground dams, surface sealing, regulated discharges or flows by mine venting or pumping, surface and /or underground water diversion, and mine water treatment. However, treatment (neutralization) should only be considered only when source abatement procedures are not economically feasible.

A thorough examination of the topographic, geologic, hydrogeologic and mining conditions must be made in the area and each mine must be individually examined and evaluated before any mine seals are constructed. This study should include, but not limited to the following factors:

1. Topography, surface drainage and ground water levels.

2. Structure, strike and dip of strata, folding, anticlines, synclines, fracturing, joints, washes and faults.

3. Composition and stratigraphy of coal beds and associated strata.

4. Condition and extent of mine workings in the mine to be sealed and its relationship with other mines, active and abandoned, in the same and other coal seams in the area.

5. Mine drainage condtions in the mine to be sealed and its relationship with drainage conditions in other mines in the area.

On the basis of this information and data, the feasibility for mine drainage pollution abatement can be made. This will include a recommendation for the type and location of the applicable seal or seals.

The condition of the mine portals to be sealed will determine the method of construction. Remote installation of mine seals are recommended when the entries are caved at the portal and it is not feasible to re-open the entries due to major expenditure involved. Installation in accessible entries is generally preferred as it affords the opportunity for direct insitu construction and visual inspection of conditions.

Exploratory drilling is generally required to determine the general alignment and location of the inaccessible mine entries. Inaccessible entries can be further "examined" through the use of a borehole camera survey. In addition, certain geophysical and infrared scanning techniques can be employed in areas of inaccessible entries.

Air-Trap Seals

The conventional type air seal with discharge or air-trap seal is a system or scheme designed to exclude air from entering the mine but permitting the normal flow of water from the mine at the discharge. In this method, a wet mine seal with an air-trap (Figure 1) is installed in one or more openings with the lowest elevations. All other openings into the mine are sealed by masonry air seals, (Figure 2) or other methods designed to seal out or exclude air from entering the mine. The effectiveness of a mine-sealing project will depend on the ability to locate and seal off those openings which are a source of air supply to the mine. Air-mine sealing methods can be both difficult and expensive in mines which have been extensively worked under shallow cover resulting in numerous subsidence fractures. However, previous experience, in some instances, has indicated limited improvement in the water quality. Numerous mines were sealed by this method in the 1930's under the Works Progress Administration. In many of these mines, the work performed was not adequate to exclude air from the underground workings. Years later, many of these seals failed due to rock, dirt, and debris which clogged the discharge and produced a hydraulic head (or dam) of sufficient pressure to cause the seal to collapse. The air-trap seal has only a limited service in the field today.

Dry Seals

The dry, air or surface seal consists of the closure of mine drifts, slopes, shafts and subsidence areas where there will be very little or no hydrostatic pressure in the area of the seal. The primary function of the dry seal is to prevent or stop the transfer of air from

one place to another. This can include from mine to the outside, from one part of the mine to another, or from mine to mine. These seals are usually installed in deep mines as a means of air coursing as part of the mine ventilation system and are constructed in entries that generally will not be inundated. (Figure 3) Construction of dry seals can vary from concrete block barriers in a mine entry, to the filling of openings with clay, concrete, or other suitable materials.

Hydraulic Seals

Hydraulic or wet deep mine seals consist of sealing of mine entries, drifts, slopes, shafts and adjacent strata where there will be hydrostatic pressure in the area of the seal. Effective pressure grouting of the strata, and the installation of water-tight bulkheads or dams capable of withstanding the maximum hydrostatic head are the main factors to be considered in the construction of the hydraulic seal. Mine bulkheads or underground dams, differ from surface dams, as the entire water surface area of the dam is subject to practically the same pressure. Hydraulic seals include both the placement of bulkheads at the entries into the underground mine and the internal seal or underground dam placed well within the deep mine to isolated or impound water. In the majority of the older abandoned deep mines it is not feasible to enter the mine due to extensive caving in the mine openings. In these mines, it may be possible to construct hydraulic seals by remote installation. These methods can vary from the double bulkhead mine seals installed through vertical drill holes (Figure 4), to the installation of seals via of horizontal drillings. In most cases, the installation of mine seals through accessible entry by personnel is preferred over remote installation in inaccessible entries. Accessible entries provides the opportunity for "on-site" inspection of the construction work and conditions.

Mine Barriers

The mine barrier is an integral part of any hydraulic mine sealing and inundation plan. Mine barriers include both the outcrop barrier and the barrier pillar. The outcrop barrier is that portion of the seam that is left unmined between the coal outcrop and the mine workings. A barrier pillar is a portion of the seam that is left unmined along a property line or lines of adjoining mine properties, or between mines or between parts of mines. The principal function is to act as dams to prevent water that accumulates in a mine from suddenly breaking into adjacent mine working and causing loss of life, property, or both.

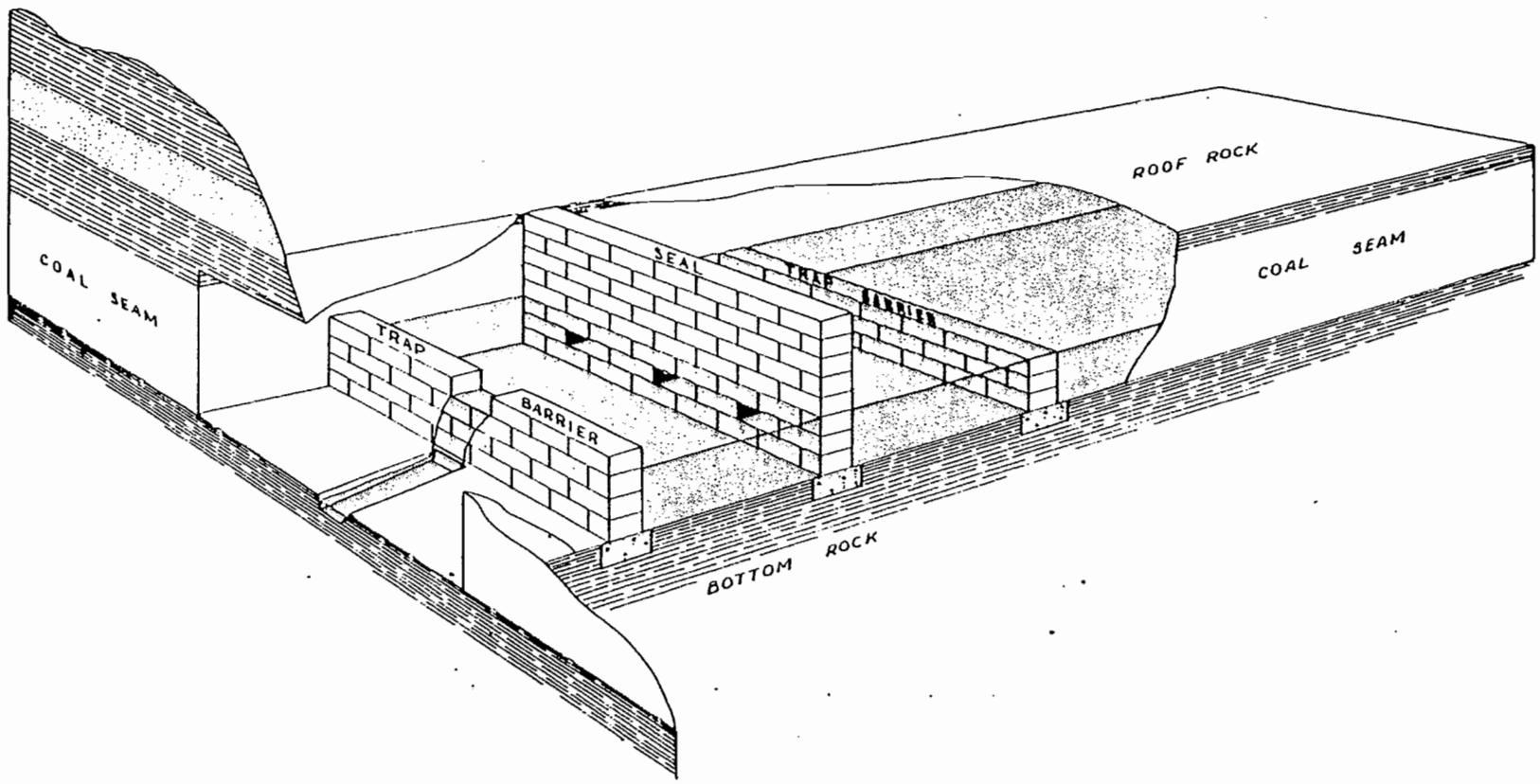
The location and nature of mine barriers, both the outcrop barrier and the barrier pillar, are extremely important particularly when inundating abandoned mines adjacent to active mines. In these cases, certain applicable outside areas and appertenances must also be considered in the inundation of abandoned mines.

Regulated Discharges

In many abandoned deep mines, hydraulic mine sealing alone is not feasible; particularly in areas where the difference in elevation between the lower discharges and upper sections of the mine workings are fairly large. In these mines it may be possible to seal some of the lower sections of the mine with hydraulic seals and use an other higher opening or openings as the point or points of discharge. The other openings above the discharge can probably be sealed with either dry or wet seals as the conditions would dictate. These discharges can be gravity discharges, vented discharges or by pumping in shafts, bore holes and other means of access. This plan or scheme can afford partial inundation and has resulted in a reduction of acid loading at various locations.

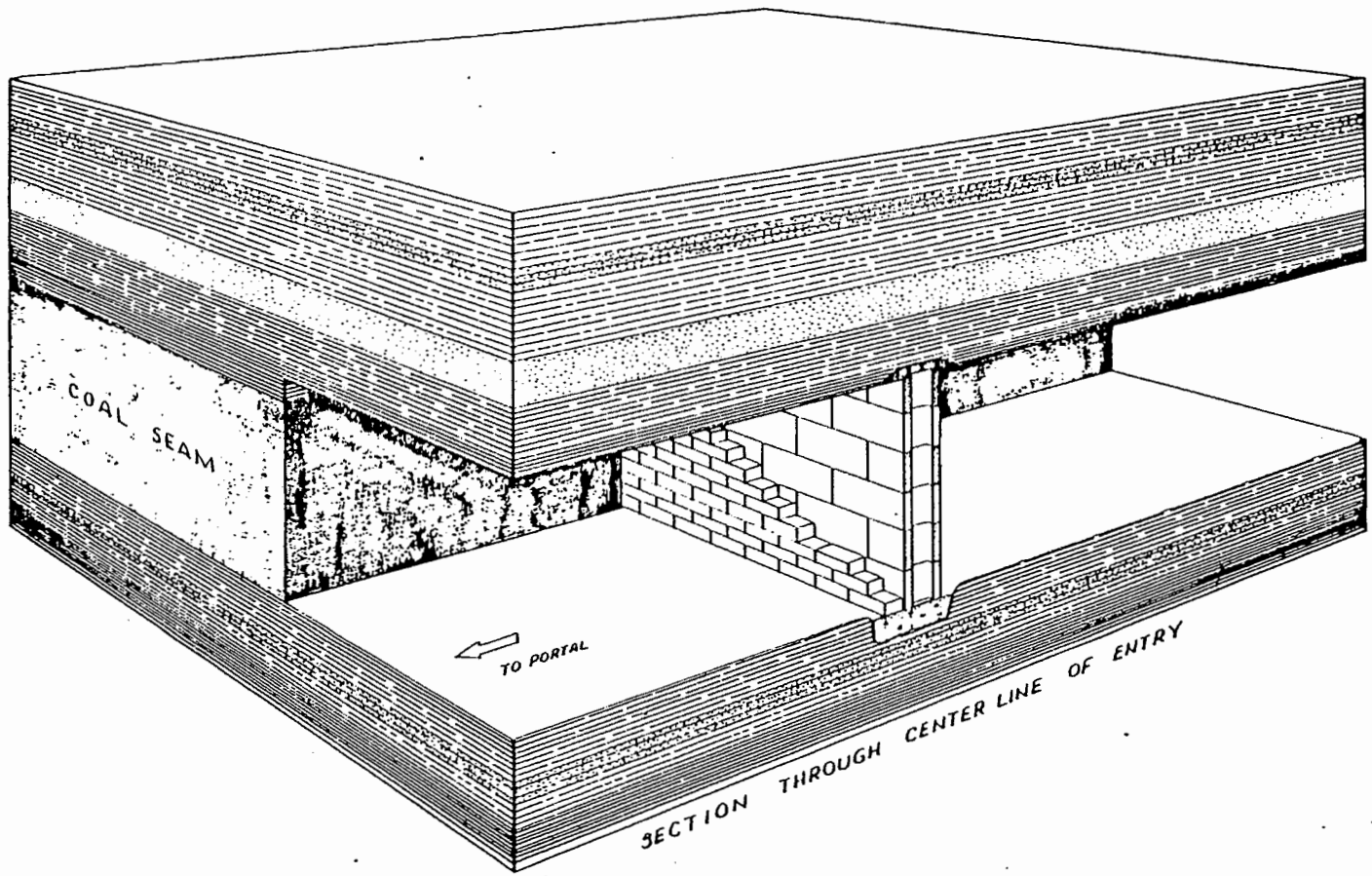
Additional Procedures

Other techniques that maybe used in conjunction with deep mine sealing and inundation practices for abandoned deep mines include surface and underground water diversion, dispersion and dilution of pollutants and mine water treatment. Specific cases involving some of these techniques in practice include the transfer of water from mines producing acid water to mines which produces alkaline water in such quantities as to maintain an acceptable alkaline discharge from the latter.Other cases include partial inundation with treatment (neutralization) of the discharges.



CONVENTIONAL TYPE AIR SEAL WITH DISCHARGE

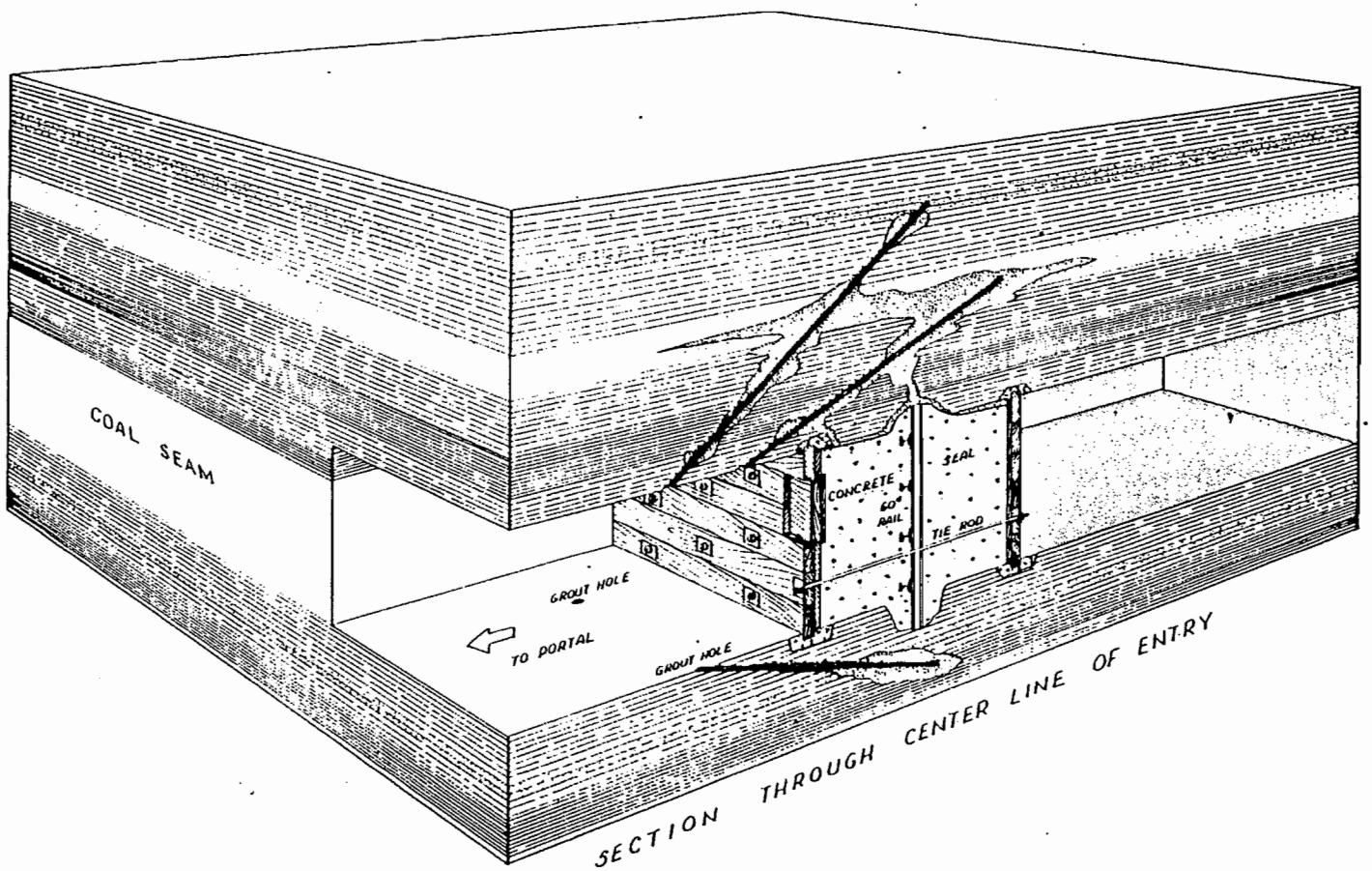
Fig. 1



TYPICAL MASONRY SEAL

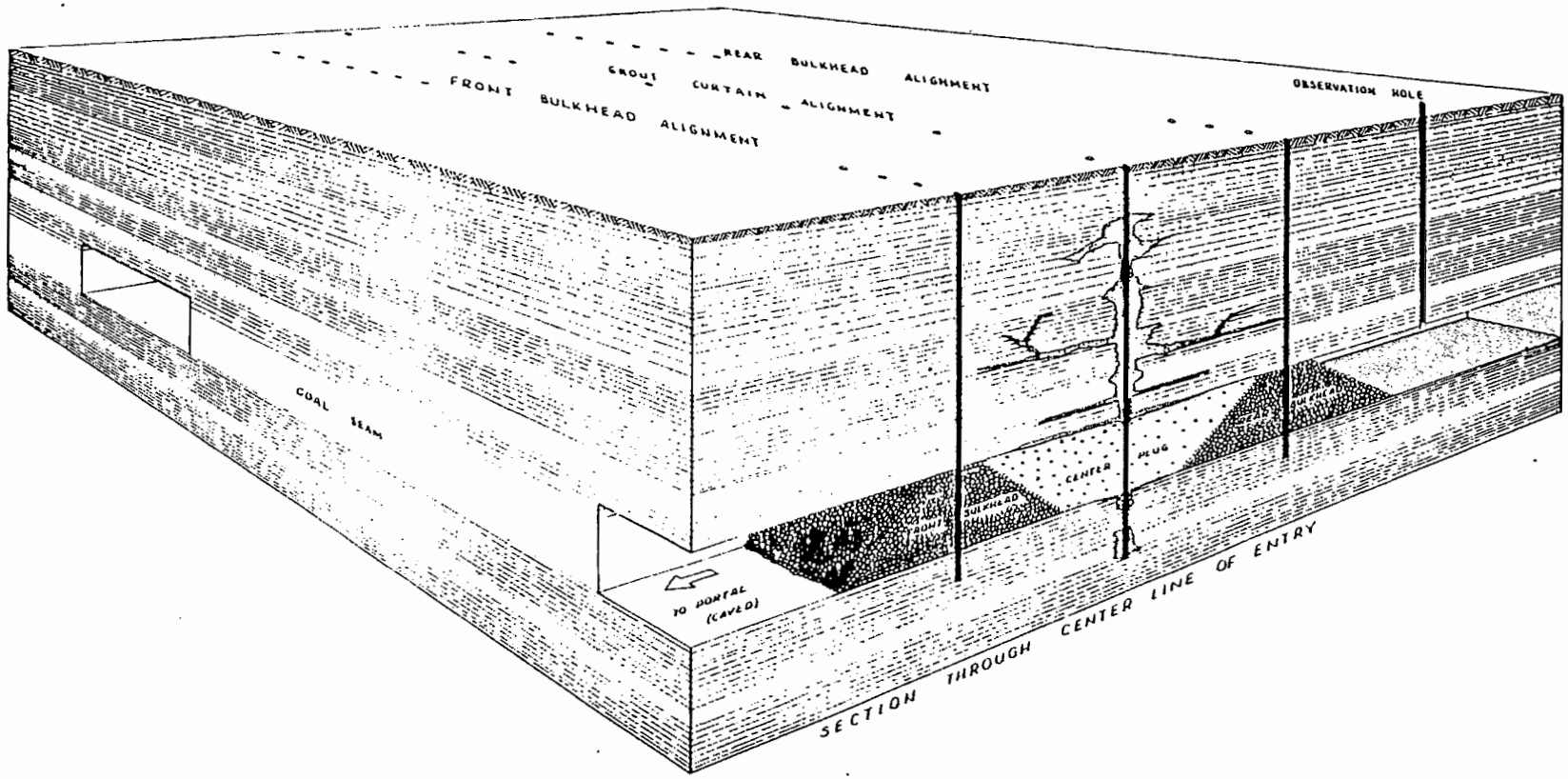
AIR SEAL - VENTILATION STOPPING

Fig. 2



DEEP MINE HYDRAULIC SEAL - UNDERGROUND BARRIER DAM

Fig. 3



DEEP MINE HYDRAULIC SEAL BY REMOTE INSTALLATION

Fig. 4

ATTACHMENT F

A REHABILITATION PLAN FOR ABANDONED MINE RECLAMATION
(BAMR 1997)

A REHABILITATION PLAN

FOR

ABANDONED MINE RECLAMATION

APPENDIX A

June 1997

A **Rehabilitation Plan** for abandoned mine reclamation should contain certain key elements. These elements are important whether the concern is mine fire control, mine subsidence prevention, mine hazard removal or mine drainage abatement. The elements are inter-related with information from one element feeding the others.

The development of rehabilitation plans is an evolutionary process. Plans begin with a vision and move forward through the initiative, commitment and perseverance of the involved partners. It is not something that can be put together in a week or month. In the beginning, the content of the plan and each element in the plan may be more conceptual than real. As work is completed, the focus will become clearer and the plan will take on some substance.

A Rehabilitation Plan should include the following elements:

1. **A Manageable Area.** Whatever the mining problem being addressed, the selected area must be manageable from both the standpoint of implementation and of achieving the purpose of the plan. Each kind of mining problem will have different means for determining what is a manageable area. In general, a manageable area is one in which rehabilitation can occur within a reasonable time, at a reasonable cost and achieve defined goals

   Acid Mine Drainage Abatement - For acid mine drainage abatement, the purpose is to restore the surface water quality and quantity to their pre-mining, natural condition. The degree of pollution, the resources available to develop a plan and the potential for restoring stream uses

are important factors in selecting a manageable area. Large drainage basins may have to be divided into smaller units and addressed as separate areas to insure manageability.

Water Supply Replacement -- For water line replacement, the purpose is to restore safe drinking water to those whose water was contaminated or diminished due to mining. The number of people, the availability of a safe source, the distance between homes, the boundaries of public utility service areas are important.

Mine Hazards -- For mine hazards, the purpose is to remove a threat to human health or safety. The size of the hazard, the proximity to habitation, and the risk to people are important.

2. **Problem Definition**. The abandoned mine land problems within the "manageable area" should be identified and assessed as completely as possible.

   Acid Mine Drainage Abatement -- For acid mine drainage abatement, all sources of pollution should be considered including mine related, sewage, agricultural, other point and non-point sources. Water quality and quantity data from the pollution sources and the stream should be used to identify, assess and prioritize the problem. Biological surveys of the streams would be needed for use of funds from the 10% set-aside program. Much of this information is available from the Department of Environmental Protection, the Pennsylvania Fish and Boat Commission and other state and federal agencies.

   Water Supply Replacement -- For replacements, the number of people without water, their present means for obtaining water and the health risk of being without water should be determined.

   Mine Hazards-- For hazards, the risk to people should be thoroughly described. Factors such as proximity of the problem to occupied dwellings, accessibility to the problem area by the public and the history of deaths or injury should be detailed.

3. **Goals.** Goals must be reasonable and achievable. There should be a deadline for achieving the established goals. The time schedule will be used to develop the financing plan. Goals can be short-term and/or long-term. The benefits to be gained by achieving the goals should be thoroughly discussed

   Acid Mine Drainage Abatement -- In general, the goal for acid mine drainage abatement should be to restore the uses of the streams in the watershed. A goal to merely improve water quality may be achievable but not be reasonable if the improvement does not restore stream uses. Raising the pH of a stream from 3.0 to 5.0 may be achievable but if the stream uses are not restored has any benefit accrued in the area of concern? Similarly, a goal to restore stream uses may be reasonable but not be achievable because a source of

pollution is too large to be abated or treated within a reasonable cost or reasonable time.

Water Supply Replacement -- The goal for water replacement should be to provide potable water to people whose supplies have been impacted by past mining activity.

Mine Hazards -- The goal for mine hazards is to eliminate a threat to public safety and health. The risk to the public as measured by the physical conditions at the site, the proximity of the site to people and the costs should be considered in establishing a goal.

4. **Solutions.** Technical alternatives for addressing the problems, including the costs, must be considered. The alternatives should identify both conventional technologies and innovative technologies that reduce the cost of reclamation. The pros and cons of the alternatives should be discussed. The recommended solution should be the one that best achieves the goals at the least cost.

5. **Financing.** A plan for paying for the recommended solution is essential to showing that the goals are achievable. The financing plan should include all sources of funding such as grants, in-kind services, donations of material or equipment, available cash, etc.

   The financing plan should identify the partners in the project, their contribution and any agreements that commit the partners to funding the project.

   The financing plan should address each project within the plan, its schedule for completion, its capital costs and its annual operation and maintenance costs.

6. **Implementation.** A strategy for implementing the rehabilitation plan is essential. It should identify who--will do what--by when. It should address all of the elements listed above and be as detailed as necessary to insure the work will get done. The implementation strategy need not be completed when work begins but it should address each element to some degree. It will evolve as work progresses so that at some point in time, it will be clear as to who-will do what-- by when.

7. **Measures of Success.** The rehabilitation plan should identify measures for determining if the plan has been successful. Have the goals been achieved? Are partnerships flourishing? Has the funding occurred as proposed? The measures should be monitored during the life of the plan and a periodic status report prepared.

Comprehensive Plan

BAMR Home Page

ATTACHMENT G

JAPANESE KNOTWEED ISSUES AND MANAGEMENT INFORMATION

KNOTWEED ISSUES AND MANAGEMENT

Provided By Brian Eick, National Park Service

Issue

Japanese knotweed and the closely related Giant knotweed (*Polygonum cuspidatum* and *P. sachalinense*), hereafter referred to collectively as knotweed, are recognized as invasive, non-native plants in Pennsylvania. Though not formally listed as a noxious weed, knotweed is well known as a troublesome plant that can disrupt natural ecosystems. The plant spreads quickly in disturbed areas to form dense thickets that exclude native vegetation. High density of knotweed is associated with lower native plant diversity and decreased habitat quality for avian, mammalian and amphibian species. Knotweed poses a significant threat to riparian areas, where it can quickly colonize scoured shores and islands. Once established, populations are extremely persistent and difficult to eradicate. Knotweed is abundantly found along riparian areas in the Kiski-Conemaugh River Basins, but the exact acreage of infestation is unknown.

Description

The two knotweeds are upright, shrublike, herbaceous perennials that can grow to over ten feet in height. Giant knotweed grows taller and has larger leaves than Japanese knotweed. Knotweed can tolerate a wide range of soil conditions, high temperatures and drought. It prefers full sunlight, but can tolerate partial shade. Knotweed spreads by seed and vegetatively through the long, underground rhizome. Knotweed prefers disturbed areas and rarely invaded intact forest communities.

Further Research Needed

Several questions exist about the extent of threat and control of knotweed. Though recognized as lowering native plant and animal diversity, knotweed may also effect water quality. Further research is needed to determine if knotweed in riparian zones effects sedimentation rates. Anecdotal evidence indicates that knotweed may possibly be a poor soil stabilizer in riparian areas compared to native vegetation resulting in increased sedimentation. Additionally, further information is needed about eradicating knotweed along rivers and streams and reestablishing native vegetation. Finally, an assessment may be needed to determine the full extent, severity and threat of knotweed in the Kiski-Conemaugh basins.

Management Practices

Treatment recommendations have been developed for an upland site by Penn State University and implemented by the National Park Service at the Staple Bend Tunnel Unit of Allegheny Portage Railroad National Historic Site. These recommendations may also work in riparian areas, however, further research is needed. The National Park Service will be examining possible methods of controlling knotweed along the South Fork of the Little Conemaugh River at Johnstown Flood National Memorial. It must be remembered that knotweed will never be fully eliminated in these watersheds. In addition to eradicating knotweed in critical areas, action should be taken in reducing the spread of the plant. Such actions include increasing public awareness of the plant and its threat,

monitoring for new infestations and eradicating colonizing plants, reducing soil disturbance when possible, and quickly reestablishing native plants if soil disturbance takes place.

Further Contacts

The following people can provide greater detail about the threats of knotweed, other information sources and research needs.

Dr. Larry McCormick, Pennsylvania State University, (814)865-3595

Will Mountain, PA State Botanist, (717)772-5209

The Nature Conservancy has an excellent web page on knotweed at: http://tncweeds.ucdavis.edu/esadocs.html

ATTACHMENT H

DRAFT KISKI-CONEMAUGH GREENWAY PLAN TASK WORK LIST

DRAFT

SCOPE OF WORK
KISKI-CONEMAUGH GREENWAY PLAN

Kristin D. Ragley, Greenways Coordinator
Kiski-Conemaugh River Basin Alliance

Greenway Plan Task Work List

Map #	Greenway Segment	Watershed	Completed Tasks/Known Facts	Identified Tasks/Unknowns
1	Freeport to Schenley	Kiski	Kiski Junction Railroad is one owner.	Rail-with-trail possibility.
2	Schenley to Leechburg	Kiski		Greenway route.
3	Leechburg		12-foot easement achieved for a future trail. Borough is applying for TEA-21 $.	Greenway route.
4	Leechburg to Vandergrift	Kiski		Possible use of Rt. 66. Possible use of an old bridge.
5	Vandergrift and Apollo	Kiski		Greenway route to Roaring Run Trail(RRT).
6	RRT to Edmon	Kiski	2 mi. of trail is complete. Canal locks, old mine, rail posts, & canal history is identified. RRT is connected to Arcadia Natural Area which has waterfalls and abundant native hemlock. RRWA is applying for TEA-21 $.	Land ownership issues with Kiski Realty. Remedy Trucks Discharge. Possible use of old logging roads. Possible greenway spur through Arcadia.
7	Arcadia Spur	Kiski		Feasibility of grading a trail.
8	Edmon to Avonmore	Kiski		Possible water trail with dry hydrant design included. Greenway route.
9	Avonmore to Saltsburg	Kiski		Greenway route.
10	North Park Trail(Saltsburg)	Kiski	3/4 mi. of trail is complete. Proposed development of North Park into trailhead/visitor site. Borough is applying for TEA-21 $.	
11	Saltsburg to Blairsville	Conemaugh	Near Tunnelview Historic Site with PA Mainline Canal remnants.	Greenway route.
12	Conemaugh Dam Trail Spur	Conemaugh	3.3 mi. of trail proposed. CVC is applying for TEA-21 $. Passes 4 historic stone bridges. Follows PA Railroad(PRR) of early 1900's.	
13	Blairsville to Packsaddle Gap	Conemaugh	2 mi. of canal remants near. Packsaddle Gap serves as water trail. Chestnut Ridge is viewshed.	Possible use of old towpath for biking trail. Possible rebuilding of bridge from Blairsville.

Greenway Plan Task Work List

Map #	Greenway Segment	Watershed	Completed Tasks/Known Facts	Identified Tasks/Unknowns
14	Packsaddle Gap to Conemaugh Gorge	Conemaugh	Near State Game Lands No. 153. Near old iron furnace in New Florence. Near small park in Bolivar. Development of 48-acre natural area containing Buttermilk Falls. Conemaugh Gorge is 2nd deepest in PA. Near State Park and State Forest lands. Laurel Ridge is the viewshed. Near Charles F. Lewis Natural Area and old logging trail with waterfalls and other geologic features. Clark Run Ravine here.	Rail-with-trail possibility. Possible greenway along Rt. 56, Rt. 403, or an abandoned road bed below Rt. 56. Possible purchase of Laurel Ridge viewshed on northern side.
15	Laurel Ridge Trail Spur	Conemaugh	Runs 70 miles to Ohiopyle State Park.	Possible connection to it.
16	Downtown Johnstown	Little Conemaugh	U.S. Army Corp. approved Cultural Resource-Environmental Assessment Report.	Johnstown Urban Greenway including Flood Museum. Possible heritage site at the old Bethlehem Steel plant.
17	Johnstown to Franklin Ball Field	Little Conemaugh	Steel mill history dating to early 1900's.	Greenway route. PennDOT issues.
18	Franklin Ball Field to Staple Bend Tunnel	Little Conemaugh		Several possible greenway routes. Possible access area in conjunction with ballfield curator. Possible upgrade of Ball Field. Possible trailhead/parking area identified. Location trail will join with continuation on Park Service property near Staple Bend Tunnel.
19	Staple Bend Tunnel to Mineral Point	Little Conemaugh	Drainage of old Portage trace. Rough gravel surface on trace. Routine maintenance of trace.	Restoration of Tunnel. Possible connection to Ghost Town Trail @ Nanty Glo? Elimination of "knot weed". Interpretive signs. AMD sites along trace. Possible trailhead at Mineral Point. Location trail will join with continuation toward Franklin. Possible users of trail. Vandalism/unauthorized vehicle issues.

Greenway Plan Task Work List

Map #	Greenway Segment	Watershed	Completed Tasks/Known Facts	Identified Tasks/Unknowns
20	Salt Lick Dam Spur	Little Conemaugh		Identify landowners. Identify best way to cross Rt. 22.
21	Mineral Point to Ehrenfeld	Little Conemaugh	Letter of intent from Bethlehem to donate property after impending sale of area dams. Ehrenfeld trailhead currently under construction.	Possible acquisition of hillside above trolley trace. Repair retaining wall on trolley trace. Construct scenic overlook at stone arch bridge. PennDOT issues with road/bridge portions of greenway.
22	South Fork Flood Museum Spur	Little Conemaugh	Johnstown Flood National Memorial is a heritage point. Cambria County Conservation District's Disaster's Edge Environmental Educational Center is a heritage point.	Land ownership issues. Greenway route.
23	Ehrenfeld to Summerhill	Little Conemaugh		Land ownership issues. Determine best way to cross Rt. 219. PennDOT issues.
24	Summerhill to Portage	Little Conemaugh		Land ownership issues. Try to acquire easement from Wilmore Sportsmen to avoid 1/5 of a mile of Rt. 53. PennDOT issues.
25	Kane Run Spur	Little Conemaugh	Land acquisition.	
26	Portage to Lilly	Little Conemaugh	Small community grant for Cassandra Derby Park. Picnic tables and some materials in place. Construction of park planned.	Land ownership issues. PennDOT issues. Land acquisition discussion is underway for hillside between Jamestown and Cassandra via Hughes Borehole. Several possible greenway routes.
27	Bear Rock Spur	Little Conemaugh		
28	Lilly to Cresson	Little Conemaugh	National Park Service lands.	Land ownership issues. Trail route to follow proposed sewer easement or some other. PennDOT issues.

Note: The tasks above include only specific ones that have previously been completed or identified. The project tasks in the scope will also be completed and identified for each trail segment.

APPENDIX D

MINUTES OF PUBLIC PARTICIPATION MEETINGS

PUBLIC PARTICIPATION MEETINGS

A. INFORMATIONAL PUBLIC MEETINGS

The Kiski-Conemaugh River Basin Alliance and its five member watershed organizations hosted a total of 15 informational public participation meetings throughout the five-county region. More than 260 citizens attended the two rounds of meetings. The first round was held to introduce citizens to the Rivers Conservation Program. The second round sought to obtain public input on the needs of the area.

The meetings' participants raised the following considerations:

Round 1 (1997):

July 17, 1997 at the Blairsville Armory
Conemaugh Valley Conservancy

River Clean Up - Participants suggested that the river needed to be cleaned up before recreational opportunities were explored. Interest was also expressed in establishing a River Keepers Program to clean up and discourage the dumping of garbage.

Pollution - Participants were concerned with sewage entering the Conemaugh River.

Flood Prevention and Recreation Improvement - Yellow Creek and Two Lick Creek were cited as areas that could benefit from flood prevention and recreational improvement initiatives. A question was raised concerning boat access to the Conemaugh Lake. There was also concern about the water level at Conemaugh Dam for recreational pursuits.

Historical Preservation - Citizens were concerned with the preservation of canal remains #27 and #28.

July 23, 1997 at the Apollo Community Center
Roaring Run Watershed Association

Trail Development - Attendees would like to see the trail extended and benches added. It was suggested that any trail or walkway development should be handicap accessible.

River Clean Up - Interest was expressed in establishing a river keepers program in conjunction with ALLARM.

Pollution - It was noted that AMD is present at the Trucks Discharge.

Rivers Conservation Program - Citizens asked questions about how the Rivers Conservation Program works. They were particularly interested in how the projects proposed in the

study will be funded and who will be responsible for implementing them. Additionally, the citizens wanted more information about how particular projects will be included in the study.

River Access - A resident is building a campground and will sign an easement for a launch site, if illegal garbage dumping is cleaned up and prevented in the future.

Water Level - Participants expressed concern over the water level of the Kiski River and how it can be controlled.

July 24, 1997 at the Ehrenfeld Ball Field
SCRIP
(Following a meeting of the Allegheny Ridge Heritage Coalition)

Acid Mine Drainage - Participants were concerned with progress at Hugh's Borehole and other AMD sites in the Stonycreek sub-basin.

Flood Prevention - A ball field had been recently constructed and the citizens were concerned with preventing flooding from the near-by creek.

July 30, 1997 at the Hooversville Community Building
SCRIP

Educational Outreach - Participants suggested involving local schools in the study. There was also interest in a wetland easement and education center at Roaring and/or Flint Run.

Wild and Scenic River Designation - Citizens expressed interest in seeking a "Wild and Scenic River Designation" for the Stonycreek Gorge.

Wildlife Benefits - Citizens were interested in the benefits to wildlife that the Rivers Conservation Program and the resulting projects would provide.

Deep Mining - A potential deep mining site within the Stonycreek sub-basin is located underneath a landfill. An application for the deep mine is currently under review. The citizen who brought this up at the meeting was concerned with the possible consequences of mining under a landfill.

July 31, 1997 at the Indiana Holiday Inn
Blacklick Creek Watershed Association

Watershed Association - A group of citizens from Clymer expressed interest in forming a new watershed association and asked for guidance in the process.

Soil and Sediment - Citizens were concerned with preventing soil erosion along creek banks which would prevent landowner land loss. Cleaning up the sediment in Brush Creek was of particular concern.

Acid Mine Drainage - Citizens were concerned with AMD discharge sites within the Blacklick Creek sub-basin, particularly in Two Lick Creek.

Trails - There was interest in extending the Greenway to include the Ghost Town Trail. Citizens also suggested developing urban bike trails.

River Safety - Due to recent boating accidents, citizens were interested in developing regulations in order to prevent canoe accidents during high water periods.

August 6, 1997 at the Ligonier Town Hall
Loyalhanna Watershed Association

Acid Mine Drainage - AMD sites were identified at Saxton Run, Monastery Run and at the head of Hanna's Run, Fairfield Township.

Sedimentation - Sedimentation is a major problem in the Loyalhanna sub-basin. Causes include logging, residential development (i.e. dirt roads, gravel driveways), and coal mining on the Chestnut Ridge.

Land Use - Citizens would like to see measures developed to protect land use. Salem Township has no local land use protection. Derry Township has little local land use protection. Donegal Township is believed to have a progressive orientation. They are supportive of bike trails. Sign control problems have occurred with development of the strip along Rt. 31. Reconstruction of a timber bridge along Four-Mile Run.

Storm Water Management - Management of storm water is needed within the Loyalhanna sub-basin, particularly in Mill Creek. Citizens also suggested checking into the availability of matching funds to acquire critical acres for flood control.

Limestone Quarry - The Chestnut Ridge Conservancy is concerned with a limestone quarry located on top of the Chestnut Ridge. The Conservancy believes that the quarry has a high potential for polluting both the Conemaugh River and Loyalhanna Creek.

Sewage - Citizens were concerned with sewage problems including mixed interceptors. Particular areas of concern were Darrlington, Buttermilk Falls, Wilpin and Waterford.

Water Availability - Idlewild is the biggest summer customer of water, when the water flow is at the lowest. A citizen suggested exploring the possibility of Idlewild getting water from Latrobe, where a surplus is available, instead of from Ligonier.

Water Quality - A citizen was concerned about stream channelization and dredging in cold water fisheries. Additionally, he expressed concern about flood plain encroachments that occur on

public and private lands and permitting of FEMA projects. To protect water quality, wetland issues need to be addressed.

August 7, 1997 at the Johnstown Flood Museum
Conemaugh Valley Conservancy and SCRIP

Sewage - Citizens were concerned with sewage in the Stonycreek River.

Trails and Greenways - The establishment of a greenway corridor between Laurel Run and Vintondale (approx. 10 miles) was suggested. A citizen also would like to explore the possibility of establishing a trail on the Ferndale side of the river. Additionally, a trail could be constructed from Minersville to Johnstown through the Cambria Iron Works.

Flood Prevention - Islands in the Stonycreek River cause flooding and storm water run-off problems in Riverside and Ferndale.

Recreational Opportunities - Cleaning up Paint Creek could present recreational opportunities.

August 13, 1997 at the Latrobe Municipal Building
Loyalhanna Watershed Association

Rivers Conservation Program - Citizens asked questions about the nature and details of the Rivers Conservation Program.

Greenways - A participant suggested extending the greenway upstream from the confluence of the Loyalhanna.

Recreational Opportunities - Citizens suggesting exploring the possibility of damming parts of the river to provide better fishing opportunities. A boat launch added at Kingston would allow canoes and small boats to reach Creekside and Legion Keeper Park in Latrobe. Citizens also proposed developing access to trails and fishing creeks near Livermore in the Conemaugh sub-basin. Recreational access to the river for boats is needed.

River Clean Up - The waterways of the Blacklick Creek and the Conemaugh River need to be cleaned up. Is it possible to add a walking path around the water right-of-way? Another citizen stated that the Conemaugh River is a site of frequent garbage dumping and a good candidate for a clean up project such as a River Keeper Network.

Dredging - Dredging sections of the Loyalhanna would reduce flooding and create wetlands. The dredge material could be used to build a levee, which would be a possible solution to flooding problems in Unity Township and Latrobe Borough.

The First Ward in Latrobe to Kingston is an area that needs to be dredged because flooding occurs there every year with heavy rainfall and/or snowmelt.

Dredging the Loyalhanna (near the end of Avenue A in Latrobe) was suggested to take out vegetation and build up riverbanks.

Round 2 (1998):

April 20, 1998 at the Blairsville Armory
Conemaugh Valley Conservancy

Trails - A rail trail will be developed from Indiana to Homer City. Would it be possible to clean up Yellow Creek and Two Lick Creek to compliment this development? (Possible U.S. Forest Service Project) Additionally, flooding concerns need to be addressed along the trails.

Acid Mine Drainage - The Brenheiser Mines discharge below the Conemaugh River under the Rt. 217 bridge crossing. There are also discharges on Rt. 403 going towards Vintondale, along the Wehrum Road that connects Rt. 22 to Vintondale, and in the Blacklick Creek.

In Aultman Run in Jackson Township there is an AMD discharge concentrated with aluminum. The area could provide recreational opportunities if the AMD is addressed.

Tunnelton Restoration Project - A water company has bought an old mine site and is converting it to a 100-unit mobile home park. The area is near canal resources right along the river. Sewage, runoff, cultural and trail issues should be addressed.

Timbering - Timbering is a problem along Blacklegs Creek. Westmoreland County has implemented a timber operator certification program. Could this practice be extended throughout the basin? It would benefit citizens to create a list of reputable and environmentally aware timer operators and to make that list available to the public.

Land Use - The Audubon society has a program to work with golf courses to help them create "green" courses. Is it possible to encourage this certification program?

Rivers Conservation Program - Participants questioned how issues from the report are prioritized. It was suggested to include implementation projects in the report.

Citizens were interested in the time frame of the plan. Will implementation directly follow the study's end? Will any early implementation occur?

River Access - Participants suggested developing river access points along the main stem of the Conemaugh River. Access points could be located in Bens Creek, Blacklick (Josephine and Heshbon), and Stonycreek. This water trails system could utilize existing parks for access.

The access points could also be used for fire companies to access streams for pumper use. This could be a possible U.S. Forest Service project.

Streambank Stabilization - Is it possible to work with farmers and/or secure funding to protect and stabilize streams?

Sewage - Need to identify areas where sewage is a problem.

April 29, 1998 at the Boswell American Legion
SCRIP

Erosion - There is a need to create a dirt and gravel road maintenance program (DEP Dirt and Gravel road survey) to prevent erosion. Need to create an updated list of priority of lists.

Land Use - Citizens were interested in how land use practices will be addressed. It was suggested to have a seminar with local representative to develop a set of regulations for land use planning. Clear cutting needs to be stopped. Need to practice sustainable forestry and promote reforestation projects.

Pollution - Are any proactive steps being taken to address pollution? For example, are coal mining companies putting money towards addressing AMD?

April 30, 1998 at the Indiana Holiday Inn
Blacklick Creek Watershed Association
(Summary includes written comments)

Land Use - A citizen was concerned with the effect of development and subsequent storm water on Marsh Run. Unplanned development and the stripping of hills of trees and foliage will affect the flow of Marsh Run in the future if steps are not taken to limit parking lots and "excessive" development around Indiana. She suggested having the development plan reviewed by a county-funded hydrologist. Additionally, she suggested forming a "Friends of Marsh Run" group.

River Clean Up - A citizen was interested in the cost of cleaning up Yellow Creek from Rt. 954 to Rt. 119. He believes that it costs $250,000 for one discharge. Is there a plan to clean this stretch?

Another citizen noted that clean rivers are important for economic development. Clean water is just as important to the infrastructure as roads. Unfortunately, people are accepting red water and scarred landscape.

PennDOT culverts are not environmentally friendly; it should be held environmentally accountable.

Two Lick Creek needs to be studied and cleaned up. (It flows besides Floodway Park.) If clean, it could be better utilized for fishing and other recreational activities in conjunction with Rails to Trails.

Citizens were concerned with flooding, stream bank stabilization and debris deposits in Two Lick Creek.

Cultural Resources - Coke Ovens from the 1950s and a woolen mill from the 1930s are located in the Yellow Creek area. A tributary to the Conemaugh River in the Bolivar/Robinson area has logging dams.

Wetlands - Wetlands are located near Cresson and Lilly. Is it possible to create a wetlands commission to control development around wetlands similar to the state game commission? Large areas of wetlands need to be purchased and protected.

Will a GIS map of wetlands be available?

The wetland along the Ghost Town Trail near Vintondale should be included.

Water Quality - There is a database available from EASI, the Environmental Alliance for Senior Involvement, for water quality data. Seven tests have been conducted on 20 streams in Indiana County. The new prison project takes water from Two Lick Creek and discharges it to Crooked Creek.

Rivers Conservation Study - Will the study include a separate chapter for each watershed? Is HAB's HAER being incorporated into the plan? (It includes a list of historic sites.) Is the "Heritage Trails -- A Regional Trail Plan" being used?

Sediment - The Brush Creek sediment problem was documented by the PA Fish and Boat Commission.

Acid Mine Drainage - Richards' Mine Drainage Treatment site is located along Two Lick Creek, upstream from Clymer along Rt. 403, and all of Two Lick Creek between Diamondville and Clymer.

Dixon Run, Buck Run and Yellow Creek between SR 954 and SR 119 are also polluted with AMD.

Citizens said that a dedicated, specific source of funds is needed to clean up AMD.

Runoff from spoil piles in Nanty Glo and other areas need to be contained from running into rivers.

A citizen was concerned with mine discharge of approximately 800 gpm spewing into the North Branch of the Blacklick Creek at Red Mill, Cambria County. Cleaning the drainage would restore three miles of fishable creek.

Revenue - Citizens suggested seeking alternative ways for producing funding such as taxes. They also suggested looking to the Access fund.

Aquifer Protection - Citizens expressed the need to protect and preserve local aquifers.

Non-Point Source Pollution - Agricultural non-point source pollution is a problem in the Blacklick Creek sub-basin.

Riparian Buffer Zones - A citizen suggested creating riparian buffer zones along highways.

Other Stream Issues - Sample Run, Little Yellow Creek, fishery in Blacklegs Creek.

May 5, 1998 at Morris' Tavern, Sidman
SCRIP
(Summary includes written comments)

Trails - Members of the Greater Johnstown Saddle Club were concerned about trails being open to equestrian use. They extended an offer to help clear and maintain the trails.

Recreation - Needs, benefits and existing facilities need to be inventoried.

Citizens suggested constructing put ins and take-outs for waterways as they become fishable or useable for other recreational pursuits.

Cultural Resources - The South Cambria Street Car Line maintenance building in East Taylor Township is a cultural resource. It is currently occupied by Merlo Construction.

Water Quality - Citizens were concerned with issues of water quality in the basin.

Economic Development - Will the study address helping businesses become established along the rivers as they are cleaned up?

May 6, 1998 at the Johnstown Flood Museum
Conemaugh Valley Conservancy and SCRIP

Greenways and Trails - The scenery in Johnstown and the Conemaugh Valley is magnificent. Now that the river is cleaner there are opportunities that didn't previously exist. Ferndale is very scenic, but waste needs to be cleaned up. It would be nice to establish railroad trips on the B &O railroad from Meyersdale to Johnstown. Would like to see even more efforts to establish trails and greenways in the Stonycreek Valley. There are great opportunities for kayaking and canoeing.

What is the extent of the Mayer trail?

Are there plans for river related activities as the Conemaugh winds through Johnstown?

Restore Carpenters Park to the Johnstown trolley line.

The plan should identify specific areas on maps for river recreation.

Acid Mine Drainage - What is the status of the Topper Run Site Pump Storage Project at the Cooney Brothers Mine in St. Michael? This is a nasty stream. According to economic analysis, active treatment is not feasible. Sludge disposal is expensive, but help is being sought to defray the costs.

AMD drains along the Mayer Trail.

Can resource recovery efforts play a role in addressing AMD discharges?

An effort to use limestone in flow management projects could raise alkalinity. Can gabion baskets filled with limestone be used for treatment of the rivers? Use limestone for water diversion beds.

Water Use - Concern was expressed about water from Quemahoning Dam. It is piped to Bethlehem Steel in a 66-inch pipe that may need replaced. Instead of replacing pipe, would it be feasible to use water directly from the river if the water level was higher?

Education - What are the environmental education issues and is there a possibility for an environmental education center in the area?

Economics - The plan should note the economic impacts of the river. Identify business opportunities that may come about because of river cleanup.

Pollution - Can scrap piles along the river from mills and other industry be cleaned up? Are all NPDES discharges being regulated? Is there monitoring of industries that discharge into streams?

Cultural Resources - The Cambria Iron Works is an important resource. What sites along the Conemaugh River will be noted as historic? The Vickroy House in Ferndale is historic.

May 12, 1998 at Owens' Grove, Apollo
Roaring Run Watershed Association

Trails - Citizens would like access for a trail along the river and access to the river along the Babcock/Wilcox property. They would like to see the development of a trail through Avonmore to the Allegheny. The Roaring Run Watershed Association would like to buy R.R. Row in Apollo. Piers in the river between Hyde Park and Leechburg have a walking bridge and can be used for a walkway to cross the river with the trail. Avonmore needs river access; they are working on dry hydrants. Additionally, there is a possible put-in location in Avonmore near the Sewage Treatment Plant. There is a Bethlehem Steel property that might be used for a trail to connect from Apollo to Vandergrift to Leechburg.

Economic Development - The Apollo Area Economic Development Authority conducted a study, the Charette Study, of the Apollo area.

River Clean Up - Tires are a problem in the river near Avonmore. Other litter needs to be cleaned up. Water quality is improving.

May 27, 1998 at the Ligonier Town Hall
Loyalhanna Watershed Association

Water Quality - The Loyalhanna Watershed Association listed water quality as one of it major concerns. Saxman Run tributaries and Nine Mile Run are areas critical to water quality. Other citizens echoed this concern.

Forest management is also crucial to the water quality. The Forbes State Forest, Bureau of Forestry, has been holding public meetings on the topic. It was suggested to explore the possibility of assisting the Bureau develop its long-range plan.

Participants suggested included water quality data in the study, referencing where specific data was collected. There is a need to create a universal water study report and sampling guidelines. Additionally, sampling points throughout major tributaries was suggested.

Watershed Education - Watershed education is another concern of the LWA. A water demonstration area near the Ligonier High School is an example of a project underway.

Additional areas of concern of the LWA include land acquisition, recycling, and recreational areas.

Acid Mine Drainage - It was noted that mine drainage is not always acid. It often contains alkaline, iron, and/or aluminum. Therefore, "acid mine drainage" is not an accurate term. Mine drainage is a severe problem in the Loyalhanna sub-basin.

Participants suggested contacting the Loyalhanna Mine Drainage Coalition for the use of their long-range plan.

Ground Water - Participants suggested ground water monitoring as a possible project. A local farmer in attendance claimed that the ground water level has been going down over the years. Additionally, he said that the level has never recovered from the last drought. It would be a good idea to monitor a local, critical area to serve as a benchmark. Contacts include the Washington County Ground Water Coalition, the Wellhead Protection Group and the Army Corps of Engineers.

Erosion and Sedimentation - The Westmoreland Conservation District currently does a good job of preventing erosion and sedimentation problems because it is well funded. Provisions should be included in the plan in case the conservation district is under-funded in the future. Should obtain the long-range plan for the Westmoreland County Conservation District - funding is needed to implement the plan.

Sewage and Nutrient Management - Suggested separating sewage and nutrient management into two separate areas in the plan because they are perceived and handled differently.

Ecosystem Stability - Citizens were concerned with the quality of the food chains in the area. Although fish are present in some of the waterways, food for the fish is often lacking. An aquatic study of Yellow Creek was done by IUP. The PA Herpetological Atlas is in progress.

Pollution - Non-point source pollution; lawn, park, golf course run-off; and herbicides, pesticides, etc. were areas of concern.

Public Access - Public access was expressed as a concern in the Loyalhanna sub-basin.

B. DRAFT PLAN REVIEW MEETING

Following completion of the Draft River Conservation Plan (February 1999), the K-C Alliance and the watershed groups hosted a set of six public meetings in the spring of 1999. These meetings were held to provide an overview of the Draft Plan and to obtain comment on the document.

Executive Summaries and draft Action Plans concerning the individual watersheds were given at each meeting and contained the following:

Action items, measures and approaches, management agents, funding options, priority levels, phasing and timetables were reviewed for this watershed.

The meeting's participants raised the following considerations:

March 23, 1999 at the Hebron Lutheran Church in Blairsville
Conemaugh Valley Conservancy

Viewsheds – At Alum Bank, there is 800 feet of bank frontage right along road, part of which could be acquired for a scenic overlook of Packsaddle Gap. However, the owner does not want to part with all of it.

Hazardous Wastes – There is a radioactive dump upstream from Alum Bank that is currently being cleaned up.

March 24, 1999 at Owens' Grove, Apollo
Roaring Run Watershed Association

Natural Resources – There is a Buttermilk Waterfalls off of the Kiskiminetas, along Gravel Bar Creek, between Apollo and Vandergrift that has precious sedimentary stones. This resource could fit in with greenway study but river access is on private land.

Cultural Resources – Remnants of old towpath exist at the end of the Gravel Bar Creek and should be in the PA Mainline Canal report.

River Trails –

Q: Are river trails included in the plan?
A: Yes, they are currently being explored in the greenway feasibility study.

Land Trails – The West Penn Trolley trace should be investigated as a possible land trail, especially along Route 66 between Vandergrift and Leechburg, where there is no space for a trail.

Historical Resources – It was suggested that the Scalp Level area of Somerset County be promoted as a historic site because of the prominent artists originating from the area and because of the awesome potential to tie history and environment together educationally.

Local Government Involvement – Concern was raised over the seeming difficulty that so many grassroots organizations have working with local officials because of their reluctance to believe that recreation and tourism could evolve as the primary economic industries of the area. It was noted that with the current work being done, officials will eventually have a very hard time denying that the shift from large industry to tourism is occurring in the area.

Land Ownership –

Q: How does the Alliance approach landowners?
A: All landowners should be approached in a non-threatening, cordial way from the beginning. It was noted that, from everyone's experience, this straightforwardness needs to occur if successful partnerships are to be established and maintained.

Watershed Associations –

Q: Is there a pamphlet outlining how to start a watershed organization?
A: The EPA and the DCNR-Bureau of Watersheds has information. The Allegheny Watershed Network also has some information. It was recommended that a watershed group be started, or spun off of the Roaring Run Watershed Association, to include the entire Kiskiminetas River Watershed.

Tire Dumps –

Q: Concerning the tire dumps within the watershed, could the PA Cleanways program be considered a management agent?
A: It was recommended that the individual watershed groups work with Sue Weisman of PA Cleanways on such restoration projects.

March 25, 1999 at the Indiana Holiday Inn
Blacklick Creek Watershed Association

Cogeneration –

Q: Are the cogeneration projects included?
A: Revloc is mentioned.

Plan Detail - Concern over the level of detail of the plan was raised. Specific areas and implementation projects were left out.

Abandoned Mine Drainage –

Q: Why wasn't the DEP Registry of AMD in Blacklick Creek researched?
A: The research for the plan was meant to be an interactive process between the watershed groups, the Alliance, and GAI, utilizing everyone's knowledge on various projects and information. Several trips to DEP office in Ebensburg were made to retrieve existing information.

Comprehensive Plan Benefits - There does not seem to be specific actionable items or dollar amounts associated with the plan.

Q: What is the advantage of a comprehensive plan and what kind of money is available for implementation because of the study?
A: The plan will leverage additional state dollars once it is included on the PA River Registry and it also broadens funding opportunities for implementation money because of its comprehensive river basin approach. Also, coordination between watershed group projects shows partnership and could be used to demonstrate matching funds to complimentary projects that are identified within the plan.

Land Use –

Q: What is the Alliance's stand on zoning ordinances? As a group, could we work on zoning ordinances?
A: The Alliance is a non-regulatory group and cannot act on zoning issues. Currently, the Indiana County Planning Commission is working on various zoning issues. To have successful zoning, communities need good control over land use and a comprehensive plan to support the ordinances. Strong community support and state planning action grants are needed. Through the Governor's *Growing Greener Initiative*, the priority issue identified for conservation money is land use planning programs.

Plan Wording - Within the plan, the perception of Blacklick Creek Watershed Association seems negative through various wording and needs changed.

Management Agents – EIS should not be used as a management agent because it is a for profit entity.

Education - Public education on chemical dumping needs addressed within the plan because people do not realize the negative effect of pouring toxic chemicals down the drain or into the river.

Q: Who responsible for this education?
A: Possible answers are DEP, DCNR, and PA Department of Education. Also, the Alliance's and AMD&ART's Stream Team is holding its first multidisciplinary environmental education symposium for high school educators on May 8th at Latrobe High School. Such issues could be presented in this kind of forum.

Also, Blacklick Creek Watershed Association's Education section of the Action Plan should include newsletters, but not press releases.

Website –

Q: Is there a website available to the public?
A: Currently, there is a website with the following address:
www.surfshop.net/users/mccombie/index.htm.

A more comprehensive, professional website is needed for the river basin.

Non-Point Source Pollution - Within the Non-Point Source Pollution section of the Action Plan, the *Non-Point Source Pollution in the Stonycreek and Little Conemaugh Watersheds* reference needs eliminated and the priority level should be changed from 3 to 2.

Trails – The Homer City to Indiana trail needs named the "Hoodle Bug Trail". There are no flooding problems here and the project is under construction, so the implementation timetable needs changed from 2001-2003 to 1999-2000.

Green Golf Course Initiative –

Q: What is the Green Golf Course Initiative?
A: It is an initiative started by the Audubon Society to encourage the use of safe, sedimentation-free lawn care products on golf courses. It was noted that education in this area is needed and that Penn State has information on safe pesticide and nutrient management. It was also suggested that the DEP and the Fish Commission could get involved.

March 30, 1999 at the Windber Coal Heritage Center
SCRIP

Cogeneration – Cogeneration plants and bony piles should be identified.

Fly Ash – Initiatives such as the Cambria County Conservation District's Project Grass may be able to utilize fly ash, but federal regulations prohibit use. Fly ash needs identified in plan for its potential beneficial use. A study, possibly conducted by the Conservation District and Penn State to determine innovative approaches to testing fly ash, could persuade regulators to allow use.

Cultural Resources – The original maintenance building and some of the rails of the Southern Cambria Trolley line are still intact in Brookdale.

Plan Wording – Some of the wording concerning the SCRIP projects needs rewritten.

Management Agents – EIS may not be proper as a management agent because of its for profit status.

Biological Resources – The issue of invading, non-native species, like "knotweed" needs addressed. Some information may be obtained from the National Park Service, who is currently conducting a study.

Natural Resources – The current status of the Manufacturer's Water Company sale of five area dams to the Cambria and Somerset Commissioners may need reported in the final study. The dams are on track to be open to the public in early 2000.

Historical Resources – Cairnbrook is listed on the National Historic Registry but is not included in the study.

March 31, 1999 at the Johnstown Flood Memorial
SCRIP

Landfills –

Q: How has the plan addressed landfills?
A: It recommends that the individual organizations monitor DEP permits closely. The Alliance also could create a landfill layer on the GIS model.

April 8, 1999 at Adams Memorial Library, Latrobe
Loyalhanna Watershed Association

Sewage – It was noted that the Darrlington area sewage problem is not the only major one that needs addressed. Also, individual sewage plans are not coordinated with local groups. It was suggested that each major problem area needs identified for the watersheds, and a comprehensive plan needs developed for the entire basin.

Point-Source Pollution –

Q: Is it addressed in the plan?
A: Yes, the 311 NPDES permits are identified and it is recommended that a comprehensive plan for the basin identify priority problem areas.

Management Agents – The DEP needs identified as a management agent for non-point source pollution. RAMP needs taken out. Public law 566 needs identified as an agent for AMD. PA Cleanways and PA Greenways Partnership need added also, where appropriate.

Organizational Structure –

Q: Is there anything in plan concerning future organizational structure?
A: No. Only individual watershed organizations are listed as management agents for concerns within their specific watersheds.

Funding – ISTEA needs replaced with the more recent TEA-21.

APPENDIX E

FUNDING SOURCES DIRECTORY
STATE AND FEDERAL REGULATIONS

The following pages provide information on potential funding sources for action plan items identified in this River Conservation Plan. This information is not all-inclusive, but it does identify many commonly used funding vehicles. Sources for further information and detail are also provided.

Contents of this section include:

On-Line Funding Source Information

A wealth of funding information is available from agency and organization websites. A partial listing of some valuable sites is provided in the table on the following page.

General Watershed Issues

- DEP Fact Sheet *Potential Funding Sources for Watershed Groups*
- DCNR Community Conservation Partnership Initiative
- EPA Environmental Finance Program *Guidebook of Financial Tools, Section 2.C. Grants*
- EPA Environmental Finance Program *Stream Corridor Protection Funding Options – Pennsylvania*
- NRCS Watershed and River Basin Planning and Installation

AMD and Other Water Quality Issues

- *Potential Funding Sources for Mine Drainage Abatement* from EPA's *A Citizen's Handbook to Address Contaminated Coal Mine Drainage*
- DEP Ten Percent Set-Aside Program for Acid Mine Drainage
- Funding excerpt from Working Draft of DEP's *Pennsylvania's Nonpoint Source (NPS) Management Program 1998 Update*
- NRCS Rural Abandoned Mine Program

Following this information is a summary of environmental protection regulatory authority.

ON-LINE FUNDING INFORMATION		
Item	**Agency/ Organization**	**Web Address**
Guidebook of Financial Tools	EPA	http://www.epa.gov/efinpage/guidebk/guindex.htm
Environmental Finance Center – University of Maryland	EPA/ University of Maryland	http://www.mdsg.umd.edu/EFC/elinks.html
Potential Funding Sources for Watershed Groups	DEP	http://www.dep.state.pa.us/dep/deputate/watermgt/wc/Fact Sheets.htm#Watershed Support Fact Sheets
Wetland and Riparian Stewardship in Pennsylvania	DEP	http://www.dep.state.pa.us/dep/deputate/watermgt/wc/Subjects/nonpointsourcepollution.htm
Sources of Funding for Watershed Activities	DEP	http://www.dep.state.pa.us/dep/deputate/enved/watershed/Sources_Funding_Watershed.htm
Community Conservation Partnership Initiative	DCNR	http://www.dcnr.state.pa.us/grants.htm
United Environment Fund	United Environment Fund	http://www.uef.org
The Foundation Center	The Foundation Center	http://www.fdncenter.org
USDA Conservation Programs	NRCS	http://www.nrcs.usda.gov/NRCSProg.html

GENERAL WATERSHED ISSUES

Fact Sheet

COMMONWEALTH OF PENNSYLVANIA • DEPARTMENT OF ENVIRONMENTAL PROTECTION

POTENTIAL FUNDING SOURCES FOR WATERSHED GROUPS

Many watershed groups have volunteers to work on numerous projects within their watershed boundaries. They try to resolve or remediate current problems by giving many hours of service, and they may help in the prevention of future water quality problems as well.

However, to perform these services, groups need money for the purchase of equipment and supplies. This funding is not always easy to find. The following is a list of potential funding sources and references for use by watershed groups. This is not all inclusive, and you may find other sources not currently on the list. Make sure you are aware of the administrative requirements for any grant you pursue. The Department of Environmental Protection does not endorse the use of any specific group from the list and is supplying names for informational purposes only.

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	PLANNING	IMPLE-MENTA-TION	OTHER
DEP Nonpoint Source Management Program, Harrisburg, PA	717-787-5259	Grants for planning and nonpoint source pollution control projects.	X	X	X
DEP Stormwater Management Program, Harrisburg, PA	717-772-4048	Watershed planning for stormwater control (counties) and implementation of programs at local levels (municipalities).	X	X	
DEP Coastal Zone Management Program, Harrisburg, PA	717-787-5259	Grants for planning and construction in the Lake Erie and the Delaware Estuary Coastal Zones.	X	X	
NRCS, PL 83-566, The Watershed Protection and Flood Prevention Act, Harrisburg, PA	717-782-4429	Plan development for natural resource concerns within a watershed area; cost-sharing available to carry out plan.		X	
DCNR Rivers Conservation Program, Harrisburg, PA	717-787-2316	Conserve and enhance river resources by offering planning grants, technical assistance, implementation grants, development grants, and acquisition grants.	X	X	
Canaan Valley Institute, West Virginia	304-866-4739 800-922-3601	Promotes the development and growth of local associations committed to improving or maintaining the natural resources of their watersheds, in the Mid-Atlantic Highlands portions of PA, MD, VA and all of WV.	X	X	X
Great Lakes Protection Fund, Pennsylvania Office - Meadville, PA	312-201-0660	Occasional small planning grants and natural resource grants for regional efforts in the Great Lakes area. For information specific to Pennsylvania call 814-332-6816.	X	X	
EPA National Estuary Grant Program	202-260-6502	Supports the development of programs to protect coastal watersheds in estuaries of national significance, which includes the Delaware Estuary in Pennsylvania.	X		

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	PLANNING	IMPLE-MENTA-TION	OTHER
Vira I. Heinz Endowment, Pittsburgh, PA	814-669-4847 John Dawes	Provides funds to the Western Pennsylvania Watershed Protection Program to implement comprehensive ecosystem management programs in selected western Pennsylvania watersheds. In addition, small matching grants are provided to DCNR for the Coldwater Heritage Program.	X	X	X
Western Pennsylvania Watershed Protection Program sponsored by the Howard Heinz Endowments	814-669-4847 John Dawes, Grant Administrator	Provides funding to grassroots organizations and watershed associations for site specific watershed remediation in western Pennsylvania.	X	X	
The Leo Model Foundation, Inc., Philadelphia, PA	215-546-8058	Grants for habitat conservation, watershed conservation, and species preservation in the USA and other countries.	X	X	
The William Penn Foundation, Philadelphia, PA	215-988-1830	Grants to preserve natural areas, including environmental education and planning, within the Foundation's geographic area (primarily southeastern Pennsylvania).	X	X	X
Educational Mini-Projects Program, Harrisburg, PA	717-236-1006	Small grants for Pennsylvania-based, grassroots educational projects that address nonpoint source watershed concepts.			X
EPA Environmental Education Grants, Region III, Philadelphia, PA	215-566-5546	Grants awarded to small nonprofit groups for various projects in Region III.	X	X	
Harrisburg Foundation, Harrisburg, PA	717-236-5040	Grants awarded to groups for environmental projects. They also administer special foundation grants set up for specific environmental projects by specific donors. The Foundation serves Cumberland, Dauphin, Perry, Lebanon and Franklin Counties in southcentral Pennsylvania.	X	X	
Charles A. and Anne Morrow Lindburgh Foundation, Minneapolis, MN	612-338-1703	Grants awarded for the conservation of natural resources and water resource management.	X		X
Fish American Foundation, Alexandria, VA	703-548-6338	Grants awarded for: streambank stabilization materials, instream habitat improvements, contracted heavy equipment, and stream morphology work.		X	
Coldwater Heritage Partnership, Partnership between Department of Conservation and Natural Resources, PA Fish and Boat Commission and Trout Unlimited, Harrisburg, PA	717-787-2316	Grants for prioritizing watersheds in need of protection, for assessment of coldwater ecosystems and for the development of watershed conservation plans.	X	X	X
American Canoe Association, Springfield, VA	703-451-0141 Contact: David Jenkins	May provide funding for various watershed-related projects including starting groups and lobbying.	X		X

SOURCE OF ASSISTANCE	CONTACT PHONE NUMBER	BRIEF DESCRIPTION OF PROGRAM	PLANNING	IMPLE-MENTA-TION	OTHER
Dirt and Gravel Road Maintenance, Harrisburg, PA	State Conservation Commission at 717-787-8821 or local County Conservation District	This is available to local municipalities and state agencies who have jurisdiction over dirt and gravel roads. Groups may be able to work with their local municipality regarding projects dealing with best management practices for erosion and sedimentation control problems and fugitive dust in watersheds.	X	X	
National Park Service, Rivers, Trails and Conservation Assistance Program, Philadelphia, PA	215-597-1581 Joseph DiBello, Chief	The National Park Service works with communities to conserve land and river resources and provides funding for various projects dealing with the conservation of these resources including the development of trails and greenways.	X	X	

Further references:

1. A Guidebook of Financial Tools. In draft. Being produced by the EPA Environmental Financial Advisory Board and the Environmental Finance Center. Web address: http://www.epa.gov/efinpage/guidebk/guindex.htm
2. Catalog of Federal Domestic Assistance. U.S. General Services Administration. Web address: http://www.gsa.gov/fdac.htm
3. Wetland and Riparian Stewardship in PA - A Guide to Voluntary Options for Landowners, Local Governments and Organizations. The guide lists various technical and financial assistance programs available to reduce impacts from nonpoint source pollution. Contact the Alliance for the Chesapeake Bay at 717-236-8825.
4. 1997 Directory of Funding Sources for Grassroots River and Watershed Groups. This is a directory of foundations and others that fund watershed efforts. Available for $35 from River Network at 800-423-6747 or e-mail rivernet2@aol.com
5. Consideration of performance of a Community Environmental Project (CEP) instead of civil penalties in certain cases where the alleged violator has suggested a CEP. The Department of Environmental Protection will coordinate with local government and groups to identify appropriate projects. Contact local DEP regional office for more information.
6. For information about training regarding grant proposal writing and winning grants contact the Nonprofit Management Development Center at LaSalle University in Philadelphia. There is a cost associated with the training. 215-951-1701.
7. Your local library has information about grants including the Environmental Grant Making Foundations Book. Some libraries, including the Dauphin County Library in Harrisburg, have a computer database that can be searched by subject for funding sources pertaining to watersheds or streams.
8. The United Environment Fund fosters growth of environmental organizations throughout the United States by helping them develop a stronger, more diversified funding base. Web address: http://www.uef.org
9. The Foundation Center is an independent, nonprofit information clearinghouse that collects, organizes, analyzes and disseminates information about foundations, corporate giving, etc. They maintain five foundation libraries throughout the United States, and they have cooperating collections of information located in public libraries including libraries in Pennsylvania. Besides publications and supplementary materials, some libraries provide other services for grant seekers. For information about these cooperating collections call 1-800-424-9836. Foundation web address: http://www.fdncenter.org
10. Catalog of Federal Funding Sources for Watershed Protection. USEPA. 1997. Provides information on federal funding programs for watershed protection and local-level watershed projects. Call the National Center for Environmental Publications and Information at 513-489-8190 or 800-490-9198, ask for EPA Document 841-B-97-008.

This fact sheet and related environmental information are available electronically via Internet. Access the DEP website at http://www.dep.state.pa.us) choose Information by Subject/Water Management/Watershed Conservation/Watershed Support).

DCNR

Community Conservation Partnership Initiative

NOTE: This information was obtained from the DCNR website at www.dcnr.state.pa.us/grants.htm and it has been edited to fit the format of this River Conservation Plan.

DCNR Opens Application Period for Keystone Grants

Planning, Implementation and Technical Assistance Grants
Technical Assistance Program
Acquisition and Development Grants

The new Department of Conservation and Natural Resources (DCNR) establishes cabinet-level status for Pennsylvania's state parks and forests and also places conservation and recreation programs dealing with local recreation, heritage parks, rivers conservation, greenways, trails, and open spaces under a single agency. A key priority of this agency is to bring its programs into towns and cities across Pennsylvania and to provide leadership linking agency resources with local conservation efforts.

The Community Conservation Partnership initiative joins DCNR with communities, nonprofit groups and the private sector in conserving Pennsylvania's valuable natural and cultural heritage. DCNR partnership involve greenways, open spaces, community parks, rail trails, river corridors, natural areas, indoor and outdoor recreation and environmental education. Agency programs will be liked with efforts to conserve natural and historic resources, provide recreation, enhance tourism, and foster community development.

DCNR Partnership Opportunities

The new DCNR provides a single point of contact for communities and nonprofit conservation agencies seeking state assistance in support of local conservation initiatives. This assistance can take the form of grants, technical assistance, information exchange and training. These programs are described below:

Heritage Parks Grants promote public-private partnerships to preserve and enhance natural, cultural, historic and recreation resources to stimulate economic development through heritage tourism. Grants are available to municipalities, nonprofit organizations or federally designated commissions acting on behalf of the municipalities in a heritage park area. Grants are awarded for a variety of purposes including feasibility studies; development of management action plans for heritage park areas; specialized studies; implementation projects; and hiring of state heritage park managers. Grants require a 25-50 percent local match.

Community Grants are awarded to municipalities for recreation, park and conservation projects. These include the rehabilitation and development of parks and recreation facilities; acquisition of land for park and conservation purposes; and technical assistance for feasibility studies, trails studies, and site development planning. Grants require a 50 percent match except for some technical assistance grants and projects eligible as small community projects. The small community component provides 100 percent funding - $20,000 maximum - for material costs and professional design fees to municipalities with fewer than 5,000 residents so they may develop basic recreation projects.

Land Trust Grants provide 50 percent funding for acquisition and planning of open space and natural areas which face imminent loss. Lands must be open to public use and priority is given to habitat for threatened species. Eligible applicants are nonprofit land trusts and conservancies.

River Conservation Grants are available to municipalities, counties, municipal and intermunicipal authorities, and river support groups to conserve and enhance river resources. River support groups must be nonprofits which are designated to act on behalf of interested municipalities. Planning grants are available to identify significant natural and cultural resources, threats, concerns and special opportunities and to develop river conservation plans. Implementation grants are available to carry out projects or activities defined in an approved river conservation plan. Grants require a 50 percent match.

Rails-to-Trails Grants provide 50 percent funding for the planning, acquisition or development of rail-trail corridors. Eligible applicants include municipalities and nonprofit organizations established to preserve and protect available abandoned railroad corridors for use as trails or future rail service.

Special Projects

The Bureau plays a pivotal role in special projects like:

The Governor's Conference on Greenways and Trails
The State Recreation Planning Program
The June Rivers Month Sojourn

Planning, Implementation and Technical Assistance Grants

Community Grant Program

Municipalities are the only eligible applicants. The Department provides grant funding at a level not to exceed 50 percent of eligible costs except when noted otherwise. A municipality may submit **one** grant application for one project type listed under this program per funding cycle. Project types include:

- Circuit Riders: Three-year grant program to hire a full-time recreation and/or park director to share services through an intergovernmental cooperative effort created by two or more municipalities. Available grant funding for the circuit rider's salary decreases from 100 percent the first year to 75 percent the second and 50 percent the third. No funding is provided in the fourth year.

- Comprehensive Recreation, Park and Open Space Plans: Grants to develop a comprehensive long-range planning document that provides strategies to address a municipality's recreation, park and open space needs.

- Feasibility Studies (Swimming Pool/Recreation Facilities): Grants to determine the feasibility of acquiring, developing or rehabilitating swimming pools, ice rinks, sports complexes, recreation centers, etc. DCNR usually requires the completion of these studies before a municipality is funded for development or rehabilitation of major facilities under the Keystone Acquisition and Development Grants.

- Greenways: Grants to explore establishing, developing and managing linear corridors of open space along streams, shorelines, wetlands, canals, ridge tops, etc. These corridors are studied to create recreational trails and bikeways, park connectors, and for environmental protection. DCNR has separate grant programs for river conservation and rail-trail planning.

- Master Site Plans: Grants to *design* the proposed development of a neighborhood, community, or regional park. Site control, either through ownership or a long-term lease, is required.

- County Natural Areas Inventories: Grants to inventory important natural areas, habitats for species of special concern, significant natural plant communities and areas important for open space, recreation and wildlife habitat. Inventories are done on a county or multi-county area.

- Peer-to-Peer Technical Assistance: Grants of up to 90 percent of eligible costs ($7,500 maximum) to study problem-specific issues dealing with the administration of park and recreation facilities and/or services. These are short-term projects conducted primarily by experienced park and recreation professionals who work closely with community leaders.

Rails-to-Trails Grant Program

Both municipalities and appropriate organizations are eligible applicants. The Department provides grant funding at a level not to exceed 50 percent of eligible costs. An eligible applicant may submit **one** application per funding cycle under this program.

- Rail-Trail Feasibility Studies: Grants to determine the feasibility of converting an available railroad rights-of-way to a trail. Site control, either through ownership or a long-term lease, is not required in order to conduct the study.
- Rail-Trail Master Plans: Grants to develop a design detailing the proposed development of the trail. Site control, either through ownership or a long-term lease, is required.
- Rail-Trail Special Purpose Studies: Grants to develop a detailed study on a particular issue or structure (culverts, bridges, tunnels) that impacts the conversion of a rail corridor to a trail. Site control, either through ownership or a long-term lease, is required.

Rivers Conservation Grant Program

Both municipalities and appropriate organizations are eligible applicants. The Department provides grant funding at a level not to exceed 50 percent of eligible costs (maximum $50,000 grant). An applicant may submit **one** application per funding cycle under this program.

- Rivers Conservation Plans: Grants to study watersheds or rivers, including streams and creeks, to identify significant river resources, potential threats to these resources, and recommend restoration, maintenance or enhancement actions.
- Rivers Implementation Projects: Grants directed to resolution of specific issues for a river that is on the Pennsylvania Rivers Conservation Registry. Examples of eligible projects under the PITA program include: investigations into river access, water quality monitoring, and preparation of ordinances and zoning documents.

Note: *A municipality or appropriate organization may submit* ***one*** *application per grant program (Community, Rivers, or Rails Program) and no more than* ***two*** *grant applications per funding cycle.*

Community Conservation Partnership Initiative

Technical Assistance Program

The program helps local governments, land trusts, rails-to-trails and river conservation groups and others interested in recreation, parks, open space and conservation provide services to their

constituents through various means. Other organizations, including municipal and civic associations, state agencies, schools, trusts, day care centers, camps, etc., take advantage of the services.

Consultations

Professional recreation and park advisors in the central and field offices provide assistance on numerous issues. Whether one-on-one over the phone, or in meetings with one or more officials in a community or organization, advisors bring a wealth of resources.

- Personnel - Hiring practices, job descriptions, salaries, the "Personnel Referral Service"
- Management - Developing citizen boards, governmental and organizational cooperation, facility design, delivery system evaluation, feasibility studies
- Finance - Budgeting, untapped revenue sources
- Liability - Risk management information, techniques/sources
- Rails-to-Trails - Advise on the planning, acquisition and development of rail-trail corridors
- Rivers Conservation - Advise and assist in the development of river conservation plans

Workshops

The Bureau sponsors annual workshops series and also instructs at conferences sponsored by others.

- Swimming Pool Management - the Bureau sponsors a dozen or more sessions yearly, for public and private pool and beach operators, to train participants in the safe and cost-effective facility management and operation.
- Playground Design/Safety - the Bureau sponsors yearly sessions to train municipal, school, day care and other playground providers in facility safety-design, operation and maintenance.
- Instructional Participation at Other Conferences - the Bureau participates in numerous conferences and programs to explain its programs and assist other organizations.

  PA Recreation and Park Society
  PA Planning Association
  PA State Assoc. of Township Supervisors, etc.
  The Civil Engineers Society
  PA Municipal Secretaries Institute

Publications

The Bureau offers dozens of publications and hundreds of sample items (Requests for proposals,

concession arrangements, intergovernmental agreements, surveys) to help local governments and other organizations understand how similar groups deal with these issues.

Budget and Salary Survey
Hiring Municipal Recreation and Park Personnel
Swimming Pool Management Manual
"Recreation Outreach" newsletter
"PA Rivers Newsletter"
"A Stream Stabilization and Management Guide for Landowners"
PA Scenic Rivers Program
PA Rivers Conservation Program

Community Conservation Partnership Initiative

Acquisition and Development Grants

Community Grant Program

Municipalities are the only eligible applicants. The Department provides grant funding at a level not to exceed 50 percent of eligible costs except for Small Communities/Small Projects type which is 100 percent funding for approved material costs and professional design fees. A Municipality may submit one application for one project type and no more than two applications per funding cycle. Projects include:

Acquisition - grants for the purchase of land for park, recreation and conservation purposes. Projects may include acquisition of land for new areas, inholdings or expansion of existing sites.

Park Rehabilitation and Development - grants for the rehabilitation of existing parks, indoor and outdoor recreation facilities and development of new park and recreation areas.

Small Communities/Small Projects - this is a special component for municipalities with a population of 5,000 or less. Grants are limited to a maximum of $20,000 and will provide up to 100 percent funding of only material costs and professional design fees. Grants are for the rehabilitation and development of basic outdoor park and recreation facilities and minor indoor recreation renovations. The labor and construction equipment must be provided by the municipality or donated.

Rails-to-Trails Grant Program

Both municipalities and appropriate organizations are eligible applicants. The Department provides grant funding at a level not to exceed 50 percent of the eligible costs. Applicants may submit one application per project type and no more than two grant applications in any funding cycle. Projects include:

Rails-to-Trails Acquisition - grants for the purchase of abandoned railroad rights-of-way for public recreational trail use and purchase of adjacent land for access or related support facilities.

Rails-to-Trails Rehabilitation and Development Projects - grants for the rehabilitation and development of abandoned rights-of-way and support facilities for public recreational trail use.

Rivers Conservation Grant Program

Both municipalities and appropriate organizations are eligible applicants. The Department provides grant funding at a level not to exceed 50 percent of the eligible costs. Rivers conservation acquisition and development grants are limited to a maximum of $50,000. Applicants may submit one application per project type and no more than two grant applications in any funding cycle. Projects include:

Rivers Conservation Acquisition Projects - grants for the purchase of land for rivers conservation purposes.

Rivers Conservation Development Projects - grants for the development of river conservation projects as recommended in the approved Rivers Conservation Plan.

United States Environmental Protection Agency

Environmental Finance Program

A Guidebook of Financial Tools
Section 2.C.
Grants

NOTE: This information was obtained from the EPA website at www.epa.gov/efinpage/guidbk98/gbk2c.htm and it has been edited to remove material not relevant to this River Conservation Plan and to fit the format of this document.

2.C. GRANTS

Description: A grant is a sum of money awarded to an eligible entity without a demand for repayment. Typically, grants are awarded by the federal government to State or local governments, or by States to local governments, for the purpose of financing a particular activity or facility. The grant award represents a monetary transfer payment from one organization to another for a purpose deemed necessary or desirable by the awarding organization. Grants also can be made by or to the private sector, particularly non-profit organizations. Matching grants, for example, on a one-to-one basis, are now being used both the public and private sectors.

Advantages: The primary advantage of grants is that State and local governments and other eligible recipients do not have to use their own resources to pay the specific eligible costs that the grant monies cover. In cases where grant recipients do not have the needed resources, grants enable valuable work to move forward. In other cases, grants make it possible for recipients to pursue additional environmental and/or other activities or to forgo expenditures entirely. Grants can be highly equitable when they address affordability concerns, and may be the only way that some recipients, such as smaller communities, can proceed. Furthermore, grants can leverage additional resources through matching funds.

Limitations: Applying for grants can be costly, time-consuming, and problematical. It requires trained staff on the part of the grantee to determine grant opportunities and submit often detailed grant applications. These grant applications can often take months for the awarding organizations to process and award. Even then, due to the intense competition at both the State and the local levels for the limited pool of grant funds, State and local governments and other recipients may find it increasingly difficult to acquire funding for many projects.

Due to grant project eligibility limitations, only a percentage of the total project costs may be eligible for project assistance. Providing matching funds, often ranging from 5 to 50 percent, may be difficult. Even when grant funding is approved, the grantee may need to seek short-term debt instruments to cover cash shortages while awaiting the arrival of the funds.

Grant funds often have conditions that affect the scope, intent, nature or cost of the project or program in question. For example, USEPA Section 105 grants are negotiated grant agreements which obligate State air programs to use the funds to perform certain activities that may or may not coincide with the State's own priorities for its air program. Certain grant conditions, such as mandatory grant reviews and production of detailed reports, may increase the overall cost of the project. Most federal grants also require that grantees comply with other federal laws and regulations regarding a range of factors such as wage rates, anti-discrimination and environmental requirements. In recent years, grant funding has been increasingly unstable, making it difficult to plan ahead.

Summary: Grants remain the cheapest way for grant recipients to fund environmental work, and may be the only way to get a project moving, particularly those of smaller, disadvantaged entities. Federal grants are still the largest source of environmental grant monies compared to States, communities, and then non-profit sector. Grants clearly demonstrate the federal commitment specific environmental priorities. However, federal grants have many limitations. These grant monies tend to be unstable, slow-moving, highly competitive, and not readily expandable, compared to other financing tools such as bonds. Because of the large number of different federal grants and constantly changing requirements, grants are not summarized in a Comparison Matrix at the end of the section. Potential grant recipients should, and need to, consult the **Catalog of Federal Domestic Assistance** available from the U.S. General Services Administration. The catalog also can be accessed electronically on the World Wide Web at **http://aspe.os.dhhs.gov/cfda/index.htm**. The catalog has its own write-up in the *Guidebook* in **Section 5.B.: Electronic Services**.

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LIST OF GRANTS
(In Alphabetical Order)

1. Agriculture: Forest Service -- Cooperative Forestry Assistance 2. Agriculture: Forest Service -- Economic Action Programs
3. Agriculture: Forest Service -- Landowner Assistance Programs
4. Agriculture: Forest Service -- Urban and Community Forestry Program
5. Agriculture: NRCS -- Environmental Quality Incentives Program
6. Agriculture: Rural Business-Cooperative Service -- Business Enterprise Grants
7. Agriculture: Rural Business-Cooperative Service -- Economic Development Grants
8. Agriculture: Rural Utilities Service -- Distance Learning and Telemedicine Grants
9. Agriculture: Rural Utilities Service -- Water and Wastewater Disposal Systems Grants
10. Appalachian Regional Commission Supplemental Grants
11. Commerce: EDA -- Public Works and Infrastructure Development Grants
12. Commerce: EDA -- Special Economic Development & Adjustment Assistance Grants
13. Commerce: NOAA -- Coastal Services Center Cooperative Agreements
14. Commerce: NOAA -- Coastal Zone Management Administration Implementation Awards
15. Defense: Army Corps of Engineers -- Civil Works Projects
16. EPA: Environmental Education and Training Grants
17. EPA: Environmental Justice Grants to Small Community Groups
18. EPA: Environmental Monitoring for Public Access & Community Tracking Grants
19. EPA: Performance Partnership Grants
20. EPA: Program Grants
21. EPA: Section 319 Nonpoint Source Pollution Control Grants
22. EPA: Superfund Technical Assistance Grants
23. EPA: Sustainable Development Challenge Grants
24. EPA: Underground Storage Tank Trust Fund Program Grants
25. EPA: Wetlands Protection Development Grants
26. Environmental Technology Initiative
27. FEMA: Flood Mitigation Assistance
28. FEMA: Hazard Mitigation Assistance
29. Foundation and Corporate Giving
30. HUD: CDBG -- Economic Development Initiative Grants
31. HUD: CDBG -- Entitlement Grants
32. HUD: CDBG -- Small Cities Program Nonentitlement Grants
33. HUD: CDBG -- States' Grants Program Nonentitlement Grants
34. Interior: Fish and Wildlife Service -- National Coastal Wetlands Conservation Grants

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LIST OF GRANTS Continued

35. Interior: Fish and Wildlife Service -- North American Wetlands Conservation Act Grants
36. State Grant Programs
37. State Revolving Fund (SRF) Drinking Water Principal Subsidies
38. Transportation: Federal Transit Administration -- Livable Communities Initiative
39. Transportation: Transportation Equity Act for the 21st Century (TEA-21)

[**Special Note:** We received a writeup for an innovative new grant tool after this section was completed. Please see the write-up for the **EPA: Clear Air Partnership Fund** in Appendix A on page A-4.]

DEPARTMENT OF AGRICULTURE
FOREST SERVICE
COOPERATIVE FORESTRY ASSISTANCE

Description: Cooperative Forestry Assistance provides formula grants to State forestry agencies to assist in the advancement of forest resource management with respect to non-federal forests and other rural lands. Among the program's objectives are encouragement of the production of timber, control of insects and diseases affecting trees and forests, control of rural fires, improvement and maintenance of fish and wildlife habitat, planning and conduct of urban and community forestry programs, and efficient utilization of wood and wood residues, including the recycling of wood fiber. State agencies can use the assistance to provide funds to owners of non-federal lands, rural communities, urban municipalities, nonprofit organizations, and State and local agencies for programs which help to achieve ecosystem health and sustainability by improving wildlife habitat, conserving forest land, reforestation, improving soil and water quality, preventing and suppressing damaging insects and diseases, wildfire protection, expanding economies of rural communities, and improving urban environments.

Actual Use: In Fiscal Year 1997, cooperative forestry grant obligations totaled $91,629,000, with individual grant amounts ranging from $25,000 to $6 million. Almost sixteen thousand landowners and 2.15 million acres were enrolled in forest stewardship programs. Approximately 1,800 rural and 8,000 urban communities were being assisted.

Potential Use: State forestry agencies can support a wide range of environmental protection and enhancement activities. Sound forestry practices can be essential to watershed protection and preservation of streams, lakes and wetlands. The Forest Service estimates that program grant obligation totals in each of Fiscal Years 1998 and 1999 will be about $104,000,000. The Service projects that more than 4,000,000 acres will be enrolled in forest stewardship programs by the end of the year 2000.

Advantages: This program provides State forestry agencies with resources they would not otherwise have to promote and support environmental protection and remediation.

Limitations: Some cooperative forestry assistance is restricted to owners of non-industrial private forest land.

Reference for Further Information: Contact U.S. Department of Agriculture, Forest Service, State and Private Forestry Division, Cooperative Forestry Staff, P.O. Box 96090, Washington, DC 20090-6090, Telephone: 202-205-1657, Fax: 202-205-1174, Internet: **www.fs.fed.us/spf/**.

DEPARTMENT OF AGRICULTURE
FOREST SERVICE
ECONOMIC ACTION PROGRAMS

Description: The Economic Action Programs framework under Cooperative Forestry Assistance includes a set of programs aimed at helping communities to diversify and strengthen their local economies through a whole range of forest-based resources. It focuses on integrating economic development and environmental protection concerns in the context of sustainable community development goals. The three major program components are Rural Community Assistance, Forest Products Conservation and Recycling, and Market Development and Expansion. Rural Community Assistance focuses on helping the whole community capitalize on available local human and natural resources to improve the quality of life and the social and economic situation. Communities are helped to organize, plan, and implement actions that are community-based, comprehensive, and partnership oriented. Forest Products Conservation and Recycling encourages and facilitates more efficient use of forest resources to enhance economic development and promote better stewardship of the forest resource. Emphasis is on stimulating public and private sector innovation. Opportunities include new uses for wood and other forest based resources through recycling and value-added secondary manufacturing, and alternative goods and services. Market Development and Expansion is meant to strengthen local and regional economies through the creation of domestic and international markets for forest resources.

Actual Use: The Michigan Forest Management Division emphasizes employment retention through sustainable economic activities in the forest products industry. The New Mexico Forestry Division has initiated a forest health/rural wealth partnership to assist forest-based communities to utilize forest products in ways that help improve the health of forest ecosystems.

Potential Use: State foresters can promote conservation and recycling of forest resources in conjunction with the production and marketing of environmentally friendly goods.

Advantages: Economic Action Programs focus on integrating economic development and environmental protection concerns. They can help organize diverse community interests for renewable resource based economic development and conservation.

Limitations: State forestry agencies must participate meaningfully in the program if it is to provide needed environmental assistance while promoting forest-based economic development.

Reference for Further Information: U.S. Department of Agriculture, Forest Service, State and Private Forestry Division, Cooperative Forestry Staff, P.O. Box 96090, Washington, DC 20090-6090, Telephone: 202-205-1657, Fax: 202-205-1174, Internet: **www.fs.fed.us/spf/**.

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DEPARTMENT OF AGRICULTURE
FOREST SERVICE
LANDOWNER ASSISTANCE PROGRAMS

Description: Cooperative Forestry Assistance includes technical and financial assistance to help private landowners create sustainable forest land management plans and implement their forest stewardship objectives. The Forest Stewardship Program (FSP) uses cooperative agreements with State forestry agencies to deliver professional natural resource management advice to non-industrial private forest (NIPF) land owners. It provides technical and planning guidance to landowners who agree to maintain the land under a detailed natural resource management plan for at least ten years. A completed Forest Stewardship plan is required of landowners seeking cost share assistance via the Stewardship Incentives Program (SIP). This program supports a wide range of forest management activities to

develop and implement Forest Stewardship plans. Eligible activities beyond plan development include reforestation and afforestation, forest and agroforest improvement, soil and water protection and improvement, riparian and wetland protection and improvement, fisheries habitat enhancement, wildlife habitat enhancement, forest recreation enhancement, and windbreak and hedgerow establishment, maintenance and renovation. Preference is given activities designed to attain multiple objectives, such as forest and agroforest improvements which enhance wildlife habitat or create recreation opportunities. Federal reimbursement of approved landowner expenses may be up to 75%, to a maximum of $10,000/year, in exchange for landowner agreement to maintain and protect SIP-funded practices for at least ten years. The Forest Legacy (FL) Program supports State acquisition of partial interests (e.g., conservation easements) in privately owned forest lands to restrict development of environmentally sensitive areas.

Actual Use: Landowner assistance programs have been a basic component of cooperative forestry and typically involve thousands of landowners and millions of acres.

Potential Use: These programs can improve environmental management of privately owned non-industrial forest land and can induce landowners to replant and maintain private forests.

Advantages: Federal funds help states provide otherwise unaffordable technical assistance and cost sharing to private land owners.

Limitations: Participation by private forest owners is voluntary and the limit on federal reimbursement reduces the attractiveness of the program while program accomplishment standards may promote emphasis on larger parcels within the pool of eligible lands.

Reference for Further Information: U.S. Department of Agriculture, Forest Service, State and Private Forestry Division, Cooperative Forestry Staff, P.O. Box 96090, Washington, DC 20090-6090, Telephone: 202-205-1389, Fax: 202-205-1271, Internet: **www.fs.fed.us/spf/**.

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DEPARTMENT OF AGRICULTURE
FOREST SERVICE
URBAN AND COMMUNITY FORESTRY PROGRAM

Description: The Urban and Community Forestry Program is implemented through Forest Service Regional/Area Offices working with State Foresters and key cooperators such as Soil and Water Conservation Districts, state forestry associations, and city foresters/arborists. Each State Forester is required to establish a State Urban Forestry Advisory Council and a full-time Urban and Community Forestry coordinator position. The State advisory councils recommend program and funding priorities and assist the State foresters in preparing State Urban and Community Forestry Strategic Plans. Projects must include community volunteerism as a major element and must have the objective of solving some specific, described problem. States may use no more than twenty percent of their annual funding for purchasing, planting, or maintaining trees in communities. Direct funding grants for the purchase and planting of trees or for maintenance activities are on a 50/50 matching basis.

Actual Use: The Ohio Department of Natural Resources' Division of Forestry works with the Ohio Environmental Protection Agency and Attorney General's Office to use air pollution fines for pass-through grants to communities for targeted tree planting projects.

Potential Use: State forestry agencies can support restoration of urban watersheds and help preserve forest lands threatened by residential and commercial growth, in coordination with related environmental projects.

Advantages: The program explicitly promotes ethnic and cultural diversity in urban and community forestry efforts.

Limitations: Grants to communities and nonprofit urban forestry organizations require a 50% match, potentially

eliminating participation by low-income communities.

Reference for Further Information: U.S. Department of Agriculture, Forest Service, State and Private Forestry Division, Cooperative Forestry Staff, P.O. Box 96090, Washington, DC 20090, Telephone: 202-205-1389, Fax: 202-205-1271, Internet: **www.fs.fed.us/spf/.** Ohio Department of Natural Resources, Division of Forestry, 1855 Fountain Square Court, Columbus, Ohio 43224, Telephone: 614-265-6694, Internet: **www.hcs.ohio-state.edu/ODNR/Forestry.htm.**

DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE (NRCS)

ENVIRONMENTAL QUALITY INCENTIVES PROGRAM

Description: The Environmental Quality Incentives Program (EQIP), authorized by the Federal Agricultural Improvement and Reform Act of 1996, is a single, voluntary conservation program, that replaces the Agricultural Conservation Program, Agricultural Water Quality Incentives Program, Great Plains Conservation Program and Colorado River Basin Salinity Control Program. It provides technical, financial, and educational assistance to farmers and ranchers through the NRCS. In line with maximizing the overall environmental benefits, the NRCS may designate a watershed, an area or a region of special environmental sensitivity as a priority area and give special consideration to applicants who have conservation plans that address the natural resource concern(s) for which the priority area was designated. Half of the program's assistance is targeted to livestock-related natural resource concerns and half to general conservation priorities. It includes cost-share assistance for up to 75% of the cost of conservation practices such as grassed waterways, filter strips, manure management facilities, capping abandoned wells, and wildlife habitat enhancement. Incentive payments can be made for up to three years to encourage livestock and agricultural producers to adopt land management practices such as nutrient, manure, irrigation water, wildlife, and integrated pest management. Total cost-share and incentive payments are limited to $10,000 per person per year and $50,000 for the contract term of 5 to 10 years. Cost-sharing assistance may not be given to construct animal waste storage or treatment facilities serving large confined livestock operations.

Actual Use: In Fiscal Year 1997, EQUIP made $171,000,000 in grants and provided $5,066,644 in educational assistance. The NRCS estimates that EQUIP will make $156,000,000 and $174,000,000 in grant obligations in Fiscal Years 1998 and 1999, respectively.

Potential Use: This program is expected to have a static funding level through fiscal 2002. It can be used for a wide range of water quality protection measures.

Advantages: The effective consolidation of programs can make it easier to use for both the clients and the administering agency, but the cost-share limit may retard participation.

Limitations: If a federal income tax deduction is taken for agricultural soil and water conservation expenses, cost-sharing payments cannot be excluded from gross income. The program has a $200 million/year authorization but annual funding could be less.

Reference for Further Information: U.S. Department of Agriculture, Natural Resources Conservation Service, Conservation Operations Division, PO Box 2890, Washington, D.C. 20013, Telephone: 202-720-1845; Fax: 202-720-1838; Internet: **www.nhq.nrcs.usda.gov/CCS/FB96OPA/ EQIPfinal.html.**

DEPARTMENT OF AGRICULTURE
RURAL UTILITIES SERVICE
WATER AND WASTE DISPOSAL SYSTEMS GRANTS

Description: These grants provide assistance for meeting rural water and waste disposal needs. Funds may be used to install, repair, improve, or expand water and waste disposal facilities. Eligible grant applicants include political subdivisions of a State (municipalities, counties, districts and authorities), associations, cooperatives, nonprofit corporations, and Indian Tribes.

Actual Use: Projects have included construction of water systems involving lines, wells, pumping stations, storage tanks and treatment plants; improvements to water systems such as new lines, wastewater facilities and booster pumps; renovation of water systems including distribution lines, wells and pressure tanks; construction of wastewater collection and treatment systems; replacement of wastewater plants and upgrade of collection lines; repair of wastewater lines and construction of lift stations; and purchase of landfill sites and trucks/equipment for solid waste disposal.

In Fiscal Year 1997, $518 million was obligated to 617 projects. Assistance ranged from $3,000 to $4.147 million and averaged $677,198. Estimates for the next two years are for 850 and 800 plus grants, and obligations of $522 million and $500 million, respectively.

Potential Use: These grants could be used to acquire capital to finance additional wastewater, drinking water, and solid waste facilities. Depending on interpretation of applicable legislation and regulations, the grants might also finance waste-to-energy and recycling facilities, and non-point source programs.

Advantages: Equity and leveraging possibilities are high, since State revolving funds, as well as HUD and EDA grants or loans, can be combined with these grants. State revolving funds can pre-finance these grants (and/or loans), thus covering up-front design and initial construction costs.

Limitations: Projects cannot service areas in towns of over 10,000 people. Grants (as opposed to loans) are made only if needed to reduce user charges to a reasonable level. For a grant of up to 70 % of eligible costs, service area median household income must be below the poverty level or below 80% of the State nonmetropolitan median household income (whichever is higher).

Reference for Further Information: U.S. Department of Agriculture, Rural Business-Cooperative Service, 14th and Independence Avenues, SW, Room. 5405-South Bldg., Washington, DC 20250, Telephone: 202-690-2670, Internet: **http://www2.hqnet.usda.gov/rus/water/programs.htm**. Information on these grants is also available in the *Catalog of Federal Domestic Assistance*, and at the *Catalog's* World Wide Web site, **http://aspe.os.dhhs.gov/cfda/ideptagr.htm**.

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APPALACHIAN REGIONAL COMMISSION (ARC)
SUPPLEMENTAL GRANTS

Description: ARC supplemental grants are awarded to States, public bodies, and private non-profit organizations for projects that create opportunities for self-sustaining economic development and improved quality of life for the people of Appalachia. The program seeks to stimulate investments in public services and facilities that attract private sector investments and accelerate social and economic development.

Actual Use: In fiscal year (FY) 1997, more than $60 million in grants supported 353 projects, including water and sewer systems, industrial parks, revolving loans, training and education, and business incubators. Grants funded in

FY 1997 ranged from $2,150 to $1,500,000 with an average of $170,402. Funding estimates in FY 1998 and 1999, were $104,305,000 and $55,994,000, respectively.

Potential Use: The types of physical infrastructure projects supported could include more water and wastewater treatment systems and could be extended to include solid waste facilities, recycling facilities, waste-to-energy facilities, small business air pollution and waste audits, and recreation. Project resources might also be devoted to brownfields cleanup and redevelopment activities.

Advantages: Funding for the Appalachian Regional Commission has been quite stable over the years, and highly equitable given the economic need of the region as a whole. Project funding is specific and remains an opportunity.

Limitations: Grants are limited to counties in all or part of the States comprising Appalachia -- including Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia and West Virginia. The program generally only supplements other federal grants and 20 percent of eligible costs must come from sources other than the federal government. ARC supplemental grant assistance is limited to 50 percent of total project costs except in distressed counties where assistance is limited to 80 percent.

Reference for Further Information: U.S. Environmental Protection Agency (EPA), Environmental Financial Advisory Board (EFAB) Advisory, *Small Community Financing Strategies for Environmental Facilities*, August 9, 1991(this report contains a general description of the ARC supplemental grant program). Additional information on these grants and ARC programs can be found in the *Catalog of Federal Domestic Assistance* and at its World Wide Web site: **http://aspe.os.dhhs.gov/cfda/index.htm** - wherein there the assistance programs of all federal departments and agencies can be accessed via various organizational and topical formats.

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DEPARTMENT OF DEFENSE
ARMY CORPS OF ENGINEERS
CIVIL WORKS PROJECTS

Description: The Army Corps of Engineers' Civil Works Directorate has numerous environmental responsibilities. Not only is the Corps the largest provider of water-based recreation facilities, it also administers a major environmental permitting program and operates hydropower facilities which provide 24 percent of the nation's electricity. Now among the Corps' responsibilities is management of the Formerly Used Sites Remedial Action Program (FUSRAP), which was transferred from the Department of Energy in 1997. Although major projects require congressional approval, the Corps' Continuing Authority projects, which must cost under $5 million, can take care of emergency repairs to streambanks and shorelines, small beach erosion control projects, Section 107 Small Navigation Projects, projects to mitigate shore damage at federal navigation projects, small flood control projects, and snagging and clearing for flood control. Some types of projects have federal cost limits of $500,000. Depending upon the type of project, cost sharing may be 50 percent federal, 80 percent federal, or potentially more complicated. For most assistance, preapplication consultation and coordination is essential and the application is simply a letter to the District Engineer, indicating clear intent to provide all required local participation.

Actual Use: The Corps spends about $500 million a year on environmental activities. The Continuing Authorities Program had $50 million for Fiscal Year 1998 and the President's budget requests $47 million for Fiscal Year 1999. Recent projects include work to prevent Judsonia, Arkansas', sewage lagoon levee from collapsing into the Little Red River and plans to combine structural flood control with creation of fish and wildlife habitats in New Jersey's Raritan River Basin.

Potential Use: State and local governments can work with the Corps' District Engineer to define environmentally sensitive project objectives and identify realistic sources of the non-federal share of costs.

Advantages: The Continuing Authorities Program eliminates the need for project-specific congressional

authorizations for relatively small projects and the federal share of costs can make such projects affordable for state and local governments.

Limitations: Projects must be engineering feasible, economically justified, and complete within themselves.

Reference for Further Information: Contact U.S. Army Corps of Engineers, Directorate of Civil Works, 20 Massachusetts Avenue, NW, Washington, DC 20314-1000; Phone: 202-272-1975; Internet: **www.usace.army.mil/**.

ENVIRONMENTAL PROTECTION AGENCY (EPA)
ENVIRONMENTAL EDUCATION AND TRAINING GRANTS

Description: The National Environmental Education Act authorizes project grants to establish environmental education and training programs. EPA's Office of Environmental Education runs an Environmental Education and Training Program (EETP), to train educational professionals in the development and delivery of environmental education programs, and Environmental Education Grants (EEG), to support projects to design, demonstrate, or disseminate practices, methods or techniques related to environmental education and training. EETP supports classroom training in environmental education and studies including environmental sciences and theory, educational methods and practices, environmental career or occupational education, and topical environmental issues and problems. It also supports development of environmental education programs and curricula, including those to meet the needs of diverse ethnic and cultural groups. EEGs support the design, demonstration, or dissemination of environmental curricula, including development of educational tools and materials. Projects must focus on improving environmental education teaching skills, or educating communities, the general public, teachers, or students about public health, or building State, local or tribal government capacity to develop environmental education programs.

Actual Use: In Fiscal Year 1997 EPA awarded a small grant to Haskell Indian Nations University to support extension of environmental education to under-served American Indian audiences through distance learning (See **Section 2.C., Agriculture: RUS -- Distance Learning and Telemedicine Loans and Grants)**. Large awards have been made to the University of Michigan and the North American Association for Environmental Education. In Fiscal Year 1997, grant obligations totaled $1.95 million. For Fiscal Years 1998 and 1999, grant obligations are estimated at $1.95 and $1.82 million, respectively.

Potential Use: Environmental Education Grants can be used to develop a grass-roots capability to understand and evaluate environmental conditions and measures proposed to address them.

Advantages: Grants make environmental education projects feasible in circumstances in which they are not otherwise possible. Environmental education prepares voters to deal rationally with critical issues which might be manipulated by vested interests.

Limitations: Funds cannot be used for acquisition of real property, including buildings, or the construction or substantial modification of any building. These grants require a 25% non-federal match and the training program grants are for five years subject to the availability of funds.

Reference for Further Information: U.S. EPA, Office of Communications, Education and Public Affairs, Environmental Education Division, Mail Code 1704, 401 M Street, SW, Washington, DC 20460, Telephone: 202-260-4965, Fax: 202-260-4095, Internet: **www.epa.gov/.**

ENVIRONMENTAL PROTECTION AGENCY (EPA)
ENVIRONMENTAL MONITORING FOR PUBLIC ACCESS

AND COMMUNITY TRACKING (EMPACT) GRANTS

Description: The EMPACT grants program is a pilot program designed to provide public access to clear, understandable, timely and accurate environmental monitoring data in at least 75 of the 86 larger metropolitan areas. The purpose is to assist the public in day-to-day decision-making about their health and the environment. The emphasis is on active partnerships between local and state government, research institutions, non-governmental organizations, the private sector, and the federal government in the use of advanced and innovative technologies to monitor environmental conditions and communicate clearly understandable, time-relevant and credible information to the lay public. Proposed partnerships must be established with formal agreements which outline the roles and responsibilities of individual partners. Each application must include provision for an Internet home page used for describing the program and for posting local environmental data. Grant or cooperative agreement awards range from $250,000 to $600,000 for a period of 12 to 24 months.

Actual Use: This is a new $3.5 million pilot program, for which full applications were due on May 15, 1998.

Potential Use: If the program is expanded, it could support provision of contemporaneous environmental information in a form readily understood by and useful to voters and taxpayers.

Advantages: Federal funding can facilitate the public understanding of environmental information that is essential for reasoned decision making in both public and private policy arenas.

Limitations: While it may yield valuable experience, this pilot program is for the most populous metropolitan areas and there is no assurance that it will be expanded or continued.

Reference for Further Information: Contact Environmental Protection Agency, Office of Research and Development, National Center for Environmental Research and Quality Assurance, Environmental Engineering Research Division, Mail Stop 8722R, Washington, DC 20460, Telephone: 202-564-6824, Fax: 202-565-2446, E-mail: karn.barbara@epa.gov, Internet: **es.epa.gov/ ncerqa/rfa/empact.html.**

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ENVIRONMENTAL PROTECTION AGENCY (EPA)
PERFORMANCE PARTNERSHIP GRANTS

Description: Performance Partnership Grants (PPGs) are multi-program grants made to State or Tribal agencies by EPA from funds allocated and otherwise available for categorical grant programs. They are voluntary and provide States and Tribes the option to combine funds from two or more categorical grants into one or more PPGs. PPGs are authorized by the 1996 Omnibus Consolidated Rescissions and Appropriations Act (PL 104-134). The authority covers the following sixteen program grants funded from EPA's State and Tribal Assistance Grants appropriation:

1. Air pollution control (CAA section 105);
2. Water pollution control (CWA section 106);
3. Nonpoint source management;
4. Water quality cooperative agreements (CWA section 104(b)(3));
5. Wetlands program development CWA section 014(b)(3));
6. Public water supervision (SDWA sections 1443(a) and 1451(a)(3));
7. Underground water source protection (SDWA section 1443(b));
8. Hazardous waste management (Solid Waste Disposal Act section 3011(a)):

9. Underground storage tank (Solid Waste Disposal Act section 2007(f)(2));
10. Radon assessment and mitigation (TSCA section 306);
11. Lead-based paint activities (TSCA section 404(g));
12. Toxics compliance and monitoring (TSCA section 28);
13. Pollution prevention incentives for States (PPA section 6605);
14. Pesticide cooperative enforcement (FIFRA section 23(a)(1));
15. Pesticides and program implementation (FIFRA section 23(a)(1))
16. Pesticide applicator certification & training/pesticide program (FIFRA section 23(a)(2)); and
17. General Assistance Grants to Indian Tribes (Indian Environmental General Assistance Act).

Actual Use: States began to seek PPG authority and negotiate with EPA in FY 1997.

Potential Use: All fifty States and the Tribal agencies could negotiate and implement PPGs allowing them increased flexibility in implementing and funding environmental priorities. $169,900,000 in grants were obligated in Fiscal Year 1997.

Advantages: PPGs give States and Tribes more flexibility to address their highest environmental priorities, thus increasing equity and environmental incentives. They provide incentives to States and Tribes to improve environmental performance and links between program goals and outcomes. PPGs also cut administrative burdens/costs for recipients and EPA by reducing the numbers of grant applications, budgets, work plans and reports. EPA will build partnerships with States and Tribes via shared goals and division of responsibilities.

Limitations: No extra funds are available via use of PPGs. States and Tribes must first develop environmental indicators and performance measures to ensure progress is made to agreed on goals.

Reference for Further Information: U.S. EPA, Office of the Administrator, Office of Regional Operations and State/Local Relations, 401 M Street, SW, Washington, D.C. 20460, Mail Code:1501.

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ENVIRONMENTAL PROTECTION AGENCY (EPA) PROGRAM GRANTS

Description: Federal grants for various purposes including State and local program research, demonstrations, development, and implementation. The amount available, application criteria, and requirements differ from grant to grant, depending on Congressional authorization and internal EPA grant policies. Some grant programs are specifically authorized for a particular purpose, while other grant programs give significant discretion to the supervising EPA office.

Actual Use: The table on the following page provides a partial list of EPA grants, organized by the office that administers the grant. This list is provided only as an example; it is not necessarily comprehensive or current, since grants change from year to year according to Congressional authorization. Historically, EPA grants have funded both State and local programs in all environmental media. A number of grants are targeted to research and demonstration projects; other grants provide support for State and local program activities that coincide with federal environmental quality priorities.

Potential Use: State and local governments could use EPA grant funds to cover the costs of whatever program activities and/or capital purchases meet the applicable grant criteria.

Advantages: Federal grants provide State and local governments with the means of meeting national environmental quality goals. They may also provide funds otherwise unavailable to State or local programs, thus enhancing equity, environmental incentives, and financial leveraging considerations.

Limitations: Funds may be targeted to specific statutory goals. Programs must compete for limited funds and sign EPA grant agreements to perform activities. Each grant is very specific, thus limiting State and local flexibility.

Reference for Further Information: U.S. EPA grants can be accessed on the Agency's Web Page under: *Grant Programs Administered by EPA* at **http://www.epa.gov/ogd/grants.htm**. The respective EPA program offices will also have information on the grant programs that they oversee. In addition, the *Catalog of Federal Domestic Assistance* contains descriptions of all federal grant programs, including EPA's, and can be obtained at the Government Printing Office. EPA grant programs can also be accessed in the *Catalog* electronically through its Internet Website at **http://aspe.os.dhhs.gov/cfda/ideptaa.htm** - which is the section for Independent Agencies.

PARTIAL LISTING OF EPA PROGRAM GRANTS BY OFFICE, 1995

Office of Water	Water Pollution Control State and Interstate Program Support Grants (Section 106) Water Quality Control Information System Grants State Public Water System Supervision Grants State Underground Water Source Protection Grants Water Pollution Control -- Lake Restoration Cooperative Agreements National Estuary Program Grants Nonpoint Source Planning Grants Nonpoint Source Set-Asides (under Title VI of the CWA) Wetlands Protection -- State Development Grants
Office of Research and Development	Solid Waste Disposal Research Grants Water Pollution Control -- Research, Development and Demonstration Grants Toxic Substances Research Grants Safe Drinking Water Research and Demonstration Grants Environmental Protection -- Consolidated Research Grants Air Pollution Control Research Grants Pesticides Control Research Grants
Office of Administration	Environmental Protection Consolidated Grants -- Program Support
Office of Prevention, Pesticides, and Toxic Substances	Consolidated Pesticide Compliance Monitoring and Program Pollution Prevention Grants Program Cooperative Agreements Toxic Substances Compliance Monitoring Program Grants Asbestos Hazard Abatement (Schools) Assistance Toxic Release Inventory Data Quality Assurance Program
Office of Solid Waste and Emergency Response	Hazardous Waste Management State Program Support Superfund State Core Program Cooperative Agreements Hazardous Substance Response Trust Fund (Superfund) State Underground Storage Tank Trust Fund Program Solid Waste Management Assistance Grants Superfund Innovative Technology Evaluation Program

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ENVIRONMENTAL PROTECTION AGENCY (EPA)
SECTION 319 NONPOINT SOURCE POLLUTION CONTROL GRANTS

Description: Section 319(h) of the Clean Water Act provides for formula grants to States and tribes to implement projects or programs that will help to reduce non-point sources of water pollution within identified priority watersheds. All project funding must implement EPA-approved nonpoint source management programs and include at least 40 percent nonfederal match.

Fundable projects include the design, demonstration, implementation, and evaluation of Best Management Practices (BMPs) for animal waste, nonpoint pollution reduction in priority watersheds, groundwater protection from nonpoint sources, public education programs on nonpoint source management (e.g., basin-wide landowner and homeowner education). Also covered now are lake projects previously funded under the Clean Water Act Section 314 Clean Lakes Program. Nonprofit organizations may submit applications to State lead agencies for funds in accordance with the State's work program.

Actual Use: State grants average $2 million and range from $268,651 to $5,310,372. Indian tribe grants average $50,000 and range from $45,000 to $55,000. In Fiscal Year 1997, grant obligations totaled $100 million. Grant obligation estimates for Fiscal Years 1998 and 1999 are $105 million and $200 million, respectively. Best management practices have been designed and implemented for stream, lake and estuary watersheds and for animal wastes and sediment, pesticide and fertilizer control. Several States have used Section 319 funds to support their Farm*A*Syst source water protection programs (see **Section 5.A., Cooperative Extension Systems**).

Potential Use: States can use funds to implement portions of nonpoint source management programs addressing critical priorities.

Advantages: Grant funds can make some otherwise unaffordable water quality activities feasible.

Limitations: States must provide a non-federal match of at least forty percent and meet maintenance of effort requirements. Only $100 million is available nationally and projects or programs must be conducted within the state's non-point source priority watersheds.

Reference for Further Information: U.S. EPA, Office of Wetlands, Oceans and Watersheds, Assessment and Watershed Protection Division, Nonpoint Source Control Branch, Mail Code: 4503F, 401 M Street, SW, Washington, DC 20460; Telephone: 202-260-7100, E-mail: ow.general@epa.gov, Internet: **www.epa.gov/owow/NPS/guide.html**. A description of this grant program can be found in the *Catalog of Federal Domestic Assistance* and at the *Catalog's* World Wide Web site, **http://aspe.os.dhhs.gov/cfda/ideptdoc.htm.**

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ENVIRONMENTAL PROTECTION AGENCY (EPA)
SUPERFUND TECHNICAL ASSISTANCE GRANTS

Description: EPA's Office of Solid Waste and Emergency Response administers Superfund Technical Assistance Grants (TAG) for Citizen Groups at Priority Sites. The program provides project grants for incorporated community groups to hire technical advisors who can assist them in interpreting technical information concerning the assessment of potential hazards and the selection and design of appropriate remedies at sites eligible for cleanup under the Superfund program. Funds may be used at sites listed or proposed for listing on the National Priority List (NPL) where cleanup is underway to obtain technical assistance in interpreting information regarding the nature of the hazard, remedial investigation and feasibility study, record of decision, selection and construction of remedial action, operation and maintenance, or removal action.

Incorporated groups of individuals who may be affected by a release or threatened release at any Superfund facility are eligible. Affected individuals are homeowners, landowners and others who can demonstrate direct effects from

the site, such as actual or potential health or economic injury. Competing groups are encouraged to consolidate and submit a single application. Only one grant is made per site, for a maximum of $50,000 unless waived for up to an additional $50,000. A twenty percent match, including in-kind contributions, is required unless waived or lowered due to financial burden. The Superfund TAG Handbook provides detailed application instructions.

Actual Use: These grants help citizens acquire technical advisors to help them understand proposed clean-up remedies, better understand the technical problem at the site, and respond to EPA actions. Since the program began in March 1988, EPA has issued 196 awards totaling more than $72 million (including new awards, waivers and deviations). EPA superfund technical assistance grant obligations totaled $700,000 in Fiscal Year 1997 and are projected to be $1,000,000 and $500,000 in Fiscal Years 1998 and 1999, respectively.

Advantages: Technical assistance grants provide resources to help those directly affected by hazardous chemical waste sites to understand the situation and what is being done to correct it.

Limitations: Grants are limited to Superfund site communities and can be no more than $50,000-$100,000 for what is typically a six-year period. Funds cannot be used to develop new information or underwrite legal actions.

Reference for Further Information: U.S. EPA, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response, Community Involvement and Outreach Center, Mail Code 5204G, 401 M Street, SW, Washington, DC 20460, Telephone: 703-603-8863; Fax: 703-603-9100; E-mail:superfund.info@epa.gov; Internet: **www.epa.gov/oerrpage/superfnd//web/tools/tag/ index.htm.**

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ENVIRONMENTAL PROTECTION AGENCY (EPA) SUSTAINABLE DEVELOPMENT CHALLENGE GRANTS

Description: This EPA grant program is designed to encourage people, organizations, governments and businesses to work cooperatively to develop flexible, locally-oriented approaches that link place-based environmental management with sustainable development and revitalization. The program funds projects that improve the environment, build sustainable futures for communities, help local economies and encourage partnerships among community groups, businesses, government and others. It looks for projects yielding the greatest environmental and economic benefits, and leverage the most community investment and resources.

Actual Use: The Sustainable Development Grant Program solicits project proposals for grants of up to $250,000. Proposals are received from public entities, agencies, institutions and organizations (such as State and local governments, and federally recognized tribes and regional entities), and non- profit private agencies, institutions and organizations.

The Program obligated $5 million in grants in Fiscal Year 1997. Projects funded have ranged from better forest management practices in New Hampshire to a network of 26 community supported organic farms in the Mid-Atlantic region to a mid-city green projects building materials exchange in Louisiana to a smart wood certification program in Washington.

Potential Use: The program could potentially fund the demonstration of a wide variety of environmentally and economically sustainable projects in all environmental media and program areas. These projects could help identify those practices which show promise of being truly sustainable and those which are not and should be avoided. EPA estimates that the program will have grant obligations in Fiscal Years 1998 and 1999 of $5 million and $9.3 million, respectively.

Advantages: Funding authorities are broad and the program supports an unusually wide range of creative and innovative approaches, and provides support to segments of the private sector. Project support represents seed funding and successful grantees leverage substantial additional public and private resources. Environmental

incentives are very high and built into the program.

Limitations: The program requires a nonfederal match of 20 percent of a project's total budget and federal assistance may not exceed $250,000.

Reference for Further Information: U.S. EPA, Office of Air and Radiation, 401 M Street, SW, Washington, D.C. 20460, Telephone Number:202-260-2441, Contact: Pamela Hurt.

ENVIRONMENTAL PROTECTION AGENCY (EPA) UNDERGROUND STORAGE TANK TRUST FUND PROGRAM GRANTS

Description: EPA's Office of Solid Waste and Emergency Response oversees two grant programs dealing with underground storage tanks. The State Underground Storage Tanks (UST) Program provides project grants to assist state governments in the development and implementation of underground storage tank programs, so as to build their capacity to operate their programs in lieu of the federal program. A high priority is to encourage owners and operators to upgrade or replace their tanks well in advance of the deadline. Owners and operators of UST systems have until December 22, 1998, to upgrade, replace or close substandard systems. The Leaking Underground Storage Tank (LUST) Trust Fund Program provides project grants (cooperative agreements) to support state corrective action and enforcement programs that address releases from underground storage tanks containing petroleum. Funds are used to provide resources for the oversight and cleanup of petroleum releases from underground storage tanks where owners and operators are unknown, unwilling or unable to take corrective actions themselves. States may also oversee responsible party cleanups A ten percent state cost share is required.

Actual Use: The average LUST grant is $1.5 million and the range is from $300,000 to $4.3 million. All 50 states and six territories have cooperative agreements with EPA to conduct cleanups and provide oversight of responsible party cleanups. Some states, such as New York, provide additional funds to support their cleanup efforts. Funding for the grants (cooperative agreements) was approximately $50.3 million in Fiscal Year 1997. Funding estimates for Fiscal Years 1998 and 1999 are $55.25 million and $57.7 million, respectively.

Potential Use: The program can be used not only to solve the immediate problem of leaking underground petroleum storage tanks, but also to raise public awareness of the pollution threat to groundwater.

Advantages: Federal funds make it feasible for states and territories to conduct programs dealing with the environmental threat of leaking underground petroleum storage tanks. The program has been effective, reflecting the specific benefits of cleanup projects and the flexibility afforded the states to consider affordability issues and implement various financing arrangements.

Limitations: The programs are nearing a critical juncture which could lead to premature reductions in effort. The deadline for upgrading or replacing substandard systems is late December, 1998, but some small operators may not yet be in compliance due to financial difficulties.

Reference for Further Information: Contact Environmental Protection Agency, Office of Underground Storage Tanks, Implementation Division, 401 M Street, SW, Washington, DC 20460; Mail Code: 5403G, Telephone: 703-603-7175, Fax: 703-603-9163, Internet: **www.epa.gov/.**

ENVIRONMENTAL PROTECTION AGENCY (EPA) WETLANDS PROTECTION DEVELOPMENT GRANTS

Description: Environmental Protection Agency (EPA) regional offices administer project grants to State or tribal agencies, interstate/inter-tribal agencies, and local governments in developing new or enhancing existing wetlands protection programs. Grants are intended to encourage wetlands protection program development or to enhance/augment existing effective programs. Project proposals must clearly demonstrate a direct link to increasing a state's, tribe's, or local government's ability to protect its wetlands resources. The required minimum match is twenty-five percent of the total project costs. While projects funded should support the initial development of a wetlands protection program or the enhancement/refinement of an existing program, current priorities are Wetland/Watershed Protection Approach Demonstration Projects and River Corridor and Wetland Restoration Projects.

Actual Use: Each state has received at least one grant. In Fiscal Year (FY) 1997, grant obligations totaled $15 million and grant awards ranged from $1500 to $489,000. Grant obligations are estimated to remain at $15 million for both FY 1999 and FY 2000. Funds have been used to support development of wetland water quality standards which can be used as a primary tool in water quality certification decisions. Funding has been focused on wetlands/watershed protection, approach demonstrations and river corridor and wetlands reservations projects.

Potential Use: Grants can be used to support redesign of wetland and watershed protection programs that need to be changed to reflect evolving demographic and ecological realities.

Advantages: Design or improvement of wetlands protection programs can be made financially possible by these federal grants.

Limitations: Grant funds cannot be used for operational support of wetlands protection programs. The lack of operational support funds is a serious impediment to State involvement in wetlands protection.

Reference for Further Information: U.S. EPA, Office of Wetlands, Oceans and Watersheds, Wetlands Division, 401 M Street, SW, Washington, DC 20460, Mail Code: 4502F, Telephone: 800-)832-7828 or 202-260-1917, Fax: 202-260-2356, Internet: **http://www.epa.gov/OWOW/wetlands/ partners.html**.

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ENVIRONMENTAL TECHNOLOGY INITIATIVE (ETI)

Description: ETI is an interagency effort led by the U.S. Environmental Protection Agency (EPA) supporting partnerships and projects that promote improved public health and environmental protection by advancing the development and use of innovative environmental technologies. The Initiative promotes innovative technologies that prevent pollution, control and treat air and water pollution, remediate contaminated soil and groundwater, assess and monitor exposure levels and mange environmental protection information.

Actual Use: ETI has provided funding support in excess of $100 million for more than 250 partnerships and projects throughout the United States advancing the development and use of innovative environmental technologies. Many of the partners participating in ETI projects are investing three to four dollars for every ETI dollar invested.

Potential Use: As the costs and an difficulties of meeting environmental challenges grow, the need for new and better environmental technologies will grow. The potential prospects for the environmental technology industry are truly staggering. The United States' environmental technology industry is already a high-wage, high growth industry. More than a million Americans are employed in over 50,000 companies nation-wide. Our market for environmental technology is the largest in the world and global markets are expected to grow by hundreds of

billions of dollars in the coming years.

Advantages: Use of the innovative environmental technologies being developed and promoted by ETI partnerships and projects can cut regulatory compliance costs, reduce public health risks, gain superior environmental results, make companies more efficient and competitive, and improve community environmental services. Private sector equity, environmental incentives, and leveraging possibilities are all high.

Limitations: Before innovative environmental technologies can achieve regulatory acceptance, technology developers must decipher and meet a disjointed system of verification requirements in each State where a potential market exists. Once regulatory acceptance is achieved, the innovative technologies must then prove themselves and gain acceptance for actual field use.

Reference for Further Information: U.S. EPA; Office of Policy, Planning, and Evaluation, Policy and Technology Innovations Division, 401 M Street SW, Washington, DC 20460, Mail Code: 2127, ETI Infoline: 202-260-2686, Internet site: **http://www.epa.gov/oppe/eti.**

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FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)FLOOD MITIGATION ASSISTANCE

Description: The Federal Emergency Management Agency (FEMA) provides planning grants to assist communities with development of flood mitigation plans and project grants for implementation of planned measures to reduce flood losses. State agencies, participating National Flood Insurance Program (NFIP) communities, and qualified local organizations are eligible. Planning grants support assessment of long-term risk of flood damage to homes and other structures insurable under the NFIP and identification of actions needed to reduce risk of flood losses. Communities must have Flood Mitigation Plans to be eligible for project grants. Implementation project grants may support measures such as dry flood-proofing, elevation, relocation, acquisition, or demolition of insured structures, erosion control and drainage improvements, and beach nourishment activities such as planting of dune grass. They can be used for minor, localized structural projects, such as erosion control and drainage improvements, that are not fundable by state or other federal programs.

Actual Use: The Flood Mitigation Assistance program obligated about $17 million in grants in Fiscal Year 1997, so risk assessments and mitigation plans were principal activities. FEMA estimates that grant obligations will be $20 million in Fiscal Years 1998 and 1999, respectively. The program's accomplishments, including examples of the types of projects funded, are contained in a Biennial Report to the Congress. This report can be obtained from FEMA upon request.

Potential Use: This program has the potential to help support coastal watershed protection and dune preservation activities.

Advantages: The Flood Mitigation Assistance program can in specific circumstances fill funding gaps left by other federal and State programs. FEMA may fund up to seventy-five percent of the cost of eligible activities. Each State and territory receives a guaranteed base funding for Planning ($10,000) and Projects ($100,000).

Limitations: Communities that have been suspended from the National Flood Insurance Program are not eligible. This is a relatively small program. A twenty-five percent non federal match is required.

Reference for Further Information: U.S. Federal Emergency Management Agency (FEMA), Mitigation Directorate, 500 C Street, SW, Washington, DC 20472, Telephone: 202-646-4621, Internet: **www.fema.gov/home/MIT/fmasst.htm**. FEMA Regional Offices in Boston, MA, New York, NY, Philadelphia, PA, Atlanta, GA, Chicago, IL, Denton, TX, Kansas City, MO, Denver, CO, San Francisco, CA, and Bothell, WA (check with FEMA Headquarters for appropriate contracts and numbers).

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) HAZARD MITIGATION GRANTS

Description: The Federal Emergency Management Agency (FEMA) provides State and local governments project grants to implement measures that will permanently reduce or eliminate future damages and losses from natural hazards. A State Administrative Plan and State 409 Plan, which describe projects, are required for FEMA to identify a need for funding assistance. The State solicits, reviews, prioritizes and selects applications, then forwards them with project narratives, descriptions and fact sheets to FEMA for review. FEMA can fund up to seventy-five percent of eligible project costs and the State or project applicants must provide the nonfederal share. State agencies, local governments, public entities, private non-profit organizations, Native American Tribes, and Alaskan Native villages are eligible for subgrants from the States. Funds may be used for the acquisition of real property.

Actual Use: FEMA funded 51 projects in Fiscal Year 1997 and 45 in Fiscal Year 1998. Drainage improvement and vegetation management projects are among those the types of environmentally-related activities that have been funded.

Potential Use: Real property can be required for treatments which will meet environmental objectives while mitigating natural hazards.

Advantages: The federal share can be up to seventy-five percent of total eligible costs, making otherwise unaffordable projects feasible.

Limitations: The program is based on fifteen percent of all other public and individual disaster grants. Projects must be in Presidentially declared disaster areas and applicants must work through the state agency that is responsible for setting priorities for funding. The State or project applicant must provide a twenty-five percent match. The nonfederal match, however, can be a combination of cash, in-kind services, or materials.

Reference for Further Information: U.S. Federal Emergency Management Agency (FEMA), Mitigation Directorate, Program Implementation Division, 500 C Street, SW, Washington, DC 20472, Telephone: 202-646-4621, FEMA Regional Offices in Boston, MA, New York, NY, Philadelphia, PA, Atlanta, GA, Chicago, IL, Denton, TX, Kansas City, MO, Denver, CO, San Francisco, CA, Bothell, WA, Internet: **www.fema.gov/mit/hmgp.htm.**

FOUNDATION AND CORPORATE GIVING

Description: Foundation and corporate giving are an important source of funding for activities in education, health and human services, civic and community affairs, and culture and the arts. They are also a significant and growing source of funding for environmental projects. Most such funding is in the form of grants for well-defined projects (i.e., time, cost, and deliverables) that meet the immediate priorities of the funding source, and are not funded by governments.

Actual Use: More than 7,500 major foundations in the United States with assets totaling about $170 billion make annual donations exceeding $10 billion. Corporations alone support 2,300 philanthropic programs in the form of foundations or as direct-giving programs. In 1995, 703 foundations made environmental gifts totaling more than $425 million.

The Global Futures Foundation is a nonprofit environmental foundation that supports integrated programs leading to source reduction, pollution prevention, low-cost market development and incentive driven regulatory structures

which reduce economic and environmental costs. Patagonia, Inc. is a clothing firm that devotes 1% of sales to its environmental grants program and gave more than $1.1 million in 1995-6 to over 200 projects for preserving and restoring the environment.

Potential Use: Foundation and corporate giving could fund innovative environmental projects in many areas, and total support could reach more than a billion dollars. Grants typically go for research, education, and demonstration projects, but also could be used to fund projects involving planning, monitoring, and technology.

Advantages: These grants are not directly dependent on tax dollars and grant conditions may be less burdensome. Innovation is encouraged and equity provided since grantees are not supported by governments. Grantees are forced to leverage other resources or become self-sustaining.

Limitations: Funding levels may be highly variable, competition for resources is very intense and awards are usually directed to innovative projects. Environmental impacts may be limited if projects are too small and esoteric. Since funding is typically for very short, defined periods of time, it is a real challenge for grantees to succeed or become independent.

Reference for Further Information: *The Foundation Directory* features the nation's largest foundation funders. The *National Directory of Corporate Giving* profiles over 2,300 corporate philanthropic programs. These books are available from the Foundation Center, 79 Fifth Avenue, New York, NY 10003-3076, Telephone: 212-620-4320. See also Environmental Data Resources, Inc., *Environmental Grantmaking Foundations, 1995 Directory*, Rochester, NY, 1996.

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DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD) COMMUNITY DEVELOPMENT BLOCK GRANTS (CDBG) ECONOMIC DEVELOPMENT INITIATIVE GRANTS

Description: The CDBG Economic Development Initiative (EDI) awards project grants to help local governments eligible under HUD's Section 108 Loan Guarantee Program carry out economic development projects. The grants must enhance the security of loans guaranteed under the Section 108 Program or improve the viability of projects financed under the Section 108 Program.

Actual Use: Fiscal Year 1996 assistance ranged from $975,000 to $3.5 million, with an average grant of $1.8 million. For Fiscal Year 1998, EDA estimates $38 million in funding for 50-75 standard EDI projects and $25 million for funding for up to 25 brownfields projects. In Fiscal Year 1999, $ 400 million in EDI funds will be allocated to the proposed Community Empowerment Fund and $50 million in funds will be allocated for up to 50 brownfields projects.

Projects funded include a wide range of economic development activities including commercial, industrial and economic development revolving loan funds. Eligible activities include acquisition of real property; rehabilitation of publicly-owned real property, housing rehabilitation, economic development activities, acquisition, construction reconstruction, or installation of public facilities, and, in the colonias, public works and other site improvements. Brownfields EDI grants will result in a similar range of activities for qualified Brownfield sites.

Potential Use: Depending on interpretation of Section 108 criteria, grants might finance or leverage loans funding facilities in water, wastewater, solid waste, recycling, waste-to-energy, and small business air quality improvements.

Advantages: Equity and leveraging opportunities are high and built into the program. Some very specific environmental projects have been completed in low-income areas.

Limitations: EDI grant funds only be used in conjunction with projects and activities assisted under the Section 108

loan Program. Principal beneficiaries of the grants must be low and moderate income persons. Many non-environmental projects are funded and payment is on a cost-incurred basis.

Reference for Further Information: The U.S. Department of Housing and Urban Development (HUD) publication, *Programs of HUD*, contains a description of this CDBG program. Information on it can also be found in the *Catalog of Federal Domestic Assistance* and its Internet site at **http://aspe.os.dhhs.gov/cfda/idepthud.htm** - which has links to these HUD grants.

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DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD) COMMUNITY DEVELOPMENT BLOCK GRANTS (CDBG) ENTITLEMENT GRANTS

Description: The CDBG Entitlement Grants Program seeks to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities. It supports activities that benefit low-to moderate income citizens in cities in Metropolitan Statistical Areas (MSAs) designated by OMB as a central city of the MSA and other cities over 50,000 in MSAs and qualified urban counties of at least 200,000 (excluding entitlement cities located in such counties). Federal formula grants based on population, income, housing, and growth lag are awarded to eligible entities. Specific activities that can be carried out include acquisition of real property, relocation and demolition, rehabilitation of residential and nonresidential structures, and the provision of public facilities and improvements, such as water and wastewater treatment facilities.

Actual Use: HUD obligated more than $3 billion in entitlement grants in fiscal year (FY) 1997 and plans to obligate approximately that much in both FYs 1998 and 1999. Nine hundred and eighty-six local governments were eligible to receive these grants in FY 1998. Grantees must certify that at least seventy percent of grant funds received are spent for activities that principally benefit low- and moderate-income persons. Water and wastewater treatment facilities and brownfields-related activities are among the types of eligible projects that have been funded by these important grants.

Potential Use: Depending on interpretation of grant criteria, these CDBG grants might be used to increasingly finance brownfields cleanup and redevelopment activities, as well as air pollution and solid waste facilities.

Advantages: This grant program is HUD's major program and has been relatively stable.

Limitations: These grants assist a limited number of relatively large communities with distressed areas. To apply, communities must develop and submit a number of detailed documents including a Consolidated Plan, annual action plan and certifications. Post award requirements include annual performance reports, audits, and detailed records maintenance. Many non-environmental projects are funded, competition is fierce, and assistance is provided on a reimbursement basis.

Reference for Further Information: The U.S. Department of Housing and Urban Development (HUD) publication, *Programs of HUD*, contains a description of this CDBG program. Information on it can also be found in the *Catalog of Federal Domestic Assistance* and its Internet site at **http://aspe.os.dhhs.gov/cfda/idepthud.htm** - which has links to these HUD grants.

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DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD) COMMUNITY DEVELOPMENT BLOCK GRANTS (CDBG) SMALL CITIES PROGRAM NONENTITLEMENT GRANTS

Description: These grants support decent housing, a suitable living environment, and expanded economic opportunities for low and moderate income persons. They fund activities in nonentitlement areas (cities with 50,000

or less people and counties with less than 200,000 people that do not receive entitlement grants) in New York and Hawaii. Eligible activities include the acquisition, rehabilitation or construction of public works facilities and improvements, clearance, housing rehabilitation, code enforcement, home ownership assistance, relocation payments, economic development, existing urban renewal projects, and certain public services.

Actual Use: HUD obligated just over $60 million for these grants in fiscal year (FY) 1997 and plans to obligate like amounts in FYs 1998 and 1999. Water and wastewater systems are among the projects funded by this assistance. State fund allocations are determined by formula taking into account population, income levels, per room housing density; age of housing, and other factors.

Potential Use: Depending on HUD interpretation of grant criteria, these grants might be used to finance air pollution control, solid waste, recycling, and waste-to-energy facilities, as well as a range of brownfields cleanup and redevelopment activities.

Advantages: Environmental justice and equity concerns in terms of addressing ability-to-pay are good. Leveraging possibilities with State revolving loans and rural utility water and wastewater funding and/or pre-financing are high.

Limitations: Priority is given to grants that benefit low and moderate income persons or aid in the elimination of slums or blight. At least seventy percent of each grant made must benefit low and moderate income persons. For metropolitan areas, low and moderate income is a level equal to or less than HUD's Section 8 low income limit. For non-metropolitan areas, low and moderate income is defined as eighty percent of the median income for those areas in the State.

Reference for Further Information: The U.S. Department of Housing and Urban Development (HUD) publication, *Programs of HUD*, contains a description of this CDBG program. Information on it can also be found in the *Catalog of Federal Domestic Assistance* and its Internet site at **http://aspe.os.dhhs.gov/cfda/idepthud.htm** - which has links to these HUD grants.

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DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD) COMMUNITY DEVELOPMENT BLOCK GRANTS (CDBG) STATES' GRANTS PROGRAM NONENTITLEMENT GRANTS

Description: These grants help provide communities with decent housing, a suitable living environment and expanded economic opportunities. They finance activities in nonentitlement areas (cities with 50,000 or less people and counties with less than 200,000 people which do not receive entitlement grants) that benefit low to moderate income citizens. Puerto Rico and all States except New York and Hawaii receive funds to administer these grants to localities. Each State develops its own program and funding priorities. Fundable activities include buying real property, relocation and demolition, rehabilitation of residential and nonresidential structures, and providing public facilities and improvements such as water and wastewater treatment facilities.

Actual Use: HUD obligated more than $1.2 billion in nonentitlement grants in fiscal year (FY) 1997 and plans to obligate about as much in both FYs 1998 and 1999. Grantees must ensure that seventy percent of grant funds benefit low- and moderate-income persons. Water and wastewater treatment systems are among the projects eligible for assistance. State allocations are set by formula using population, income levels, per room housing density; age of housing, and other factors.

Potential Use: Depending on each State's interpretation of grant criteria, CDGB entitlement grants might also be used to finance air pollution control, solid waste, recycling, and waste-to-energy facilities, as well as a range of brownfields cleanup and redevelopment activities.

Advantages: The program is equitable from an affordability perspective. Leveraging can be high, as communities can combine State revolving loans, as well as rural utility grants and loans, for water and wastewater systems.

Limitations: Grants are limited to low and moderate income communities experiencing distress. For metropolitan areas, low and moderate income is a level equal to or less than HUD's Section 8 low income limit. For non-metropolitan areas, it is defined as eighty percent of the median income for those areas in the State. A State may only use up to $100,000 plus two percent of its grant to administer the program and must match each federal dollar over $100,000 used for administration with a dollar of its own.

Reference for Further Information: The U.S. Department of Housing and Urban Development (HUD) Fact Sheet, State Community Development Block Grant Program, describes the program. HUD, Office of Block Grant Assistance, Small Cities Division, 415 7th Street, SW, Washington, DC 20410, Telephone: 202-708-1322. The HUD publication, *Programs of HUD*, also has a description of this CDBG program. Information on it can also be found in the *Catalog of Federal Domestic Assistance* and its Internet site at **http://aspe.os.dhhs.gov/cfda/idepthud.htm**.

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DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE NORTH AMERICAN WETLANDS CONSERVATION ACT GRANTS

Description: The North American Wetlands Conservation Act Grant Programs promote long term conservation of wetland ecosystems and the waterfowl and other migratory birds, fish and wildlife that depend upon such habitat. It provides project grants on a matching basis for acquisition, enhancement and restoration of wetlands and associated habitat. The programs are meant to encourage voluntary public-private partnerships to conserve wetland ecosystems by creating an institutional infrastructure and providing a source of funding. The funding cap for Standard Grants is $1 million, while the cap for Small Grants is $50,000. The nine-member North American Wetlands Conservation Council, created by the North American Wetlands Conservation Act of 1989, reviews the merits of wetlands conservation proposals submitted for funding. The Council considers the extent to which the project fulfills the purpose of the Act, the North American Waterfowl Management Plan, or the Canadian-Mexican-U.S. Tripartite Agreement, as well as its consistency with the National Wetlands Priority Conservation Plan developed under the Emergency Wetlands Resources Act of 1986. While anyone can apply for a grant at anytime, the Council goes through the proposal selection process three times a year. It then makes recommendations to the Migratory Bird Conservation Commission for consideration of funding.

Actual Use: In March 1998, nineteen U.S. projects in fifteen states were approved for about $10.2 million in federal funding, to be matched by almost $24.5 million from partners. For example, $655,000 was approved for the Teton River Valley Ecosystem Project in Idaho.

Potential Use: The programs can fund acquisition of real property interests such as conservation easements, fee simple title, and wildlife management agreements.

Advantages: The programs take a non-regulatory approach encouraging voluntary partnerships to develop and implement wetland conservation projects to benefit wetland dependent wildlife.

Limitations: The current funding authorization expires at the end of fiscal 1998; however, reauthorization appears likely.

Reference for Further Information: For a copy of the *1998 Grant Application Instructions*, contact the U.S. Department of the Interior, Fish and Wildlife Service, North American Wetlands Conservation Council Coordinator, North American Waterfowl and Wetlands Office, 4401 North Fairfax Drive, Room 110, Arlington, VA 22203, Telephone: 703-358-1784, E-mail: r9arw_nawwo@mail.fws.gov, Internet: **www.fws.gov/**.

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STATE GRANT PROGRAMS

Description: Almost all States have environmentally-related grant programs for eligible local governmental units, and sometimes the private sector. Since the source and type of grant varies considerably from state-to-state, localities should obtain copies of State grant catalogs for specific information. State grants fall into several categories: (1) annually appropriated grant monies; (2)

federally mandated grants; and (3) grants arising from referendum bond acts, which historically have been the largest source of State grant monies.

Actual Use: Annually appropriated States grants historically have been small, and typically provide funds for programs (as opposed to construction) for which there has been no federal funding, e.g., water and wastewater operator training, drinking water and air pollution, and nonpoint source control. Federally mandated grants include the twenty percent match required for the SRF, and other environmental requirements such as facility operator certification, monitoring and testing, and small business clean air audits. By far the largest State grants arise from environmental bond acts passed by referendum, which historically have been the main source of funding for environmental infrastructure, parks and conservation, and solid and hazardous waste. Recent years have seen a surge in large State referendum bond acts. For example, New York's 1996 $1.75 billion bond act included money for drinking water grants, watersheds, small business (water and air) and brownfields grants. California passed a $994 million bond act financing drinking water grants, New Jersey a $340 million bond act which included incentive matching grants for localities and nonprofits, Massachusetts a $399 bond act which included watershed and farmland protection grants, and Florida a $300 million bond act which included habitat protection grants.

Potential Use: States have become increasingly creative in leveraging grants, and providing assistance to non-traditional clients such as nonprofits and small businesses. Many States now provide matching incentive grants to localities for local fundraising and to nonprofit organizations, such as in New Jersey and New York. Minnesota and Maryland provide dollar-for-dollar matching grants for private contributions for wildlife and wetlands protection, including private mitigation.

Advantages: State grants can be directed to pressing compliance needs and small communities, thus reducing costs and enhancing equity. State grants may be more flexible and entail less red tape than federal assistance, and can be further leveraged.

Limitation: Historically, State grants have not been large or predictable. Funding tends to come and go, and monies are available on a first-come-first-serve basis, favoring projects ready to proceed. Many restrictions still apply, such as on grants to non-profits and individuals. Grants, compared to loans, may result in more costly and slower projects, since the money is regarded as "free".

Reference for Further Information: Contact State Budget Offices for further information.

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STATE REVOLVING FUND (SRF) DRINKING WATER PRINCIPAL SUBSIDIES

Description: The 1996 Amendments to the Safe Drinking Water Act (SDWA), which established the Drinking Water State Revolving Loan Fund program (DWSRF) capitalized by federal grants and State matching grants, provides for loan subsidies in the form of "forgiveness of principal" to communities defined as disadvantaged. A principal subsidy is the same as grant. The SDWA provisions from creation of revolving loan funds permits states to use up to 30% of the federal capitalization grants for principal subsidies. States must established affordability criteria which guide the circumstances when a "disadvantaged" community may received a principal subsidy. Affordability criteria typically are based on the target service charge compared to median household income. Principal subsidies are not permitted under the Clean Water SRFs.

Actual Use: Most States plan to use the principal subsidy authority under the DWSRF. Principal subsidies are available to private public purpose drinking water projects as well as publicly-owned projects. States with many small communities and low median household incomes may reach the 30% limit set by the Act. However, in many States the loan demand is so large that principal subsidies will be a smaller percentage than this limit. In New York, principal subsidies come from environmental bond act monies instead of SRF funds, and may provide up to 75% of project funding.

Potential Use: Principal subsidies may allow drinking water projects to proceed which otherwise wold be delayed or not undertaken. They also may be combined with SDWA provisions allowing a 30-year loan instead of the 20 year limit on most SRF loans. SRFs can set aside a set amount of monies for investment purposes to assist in subsidizing loans. For a $100,000 principal subsidy, an SRF could invest $71,430 a year at 7%, yielding $5,000 a year for 20 years to pay for the subsidy.

Advantages: SRF grants make projects more affordable for smaller communities and may be the crucial factor is whether such a community proceeds or not. Hence, accessibility as well as equity are enhanced. SRFs can leverage their subsidy potential through sound investments. Based on a states affordability levels, projects entitled to principal subsidies can be prequalified for assistance, thus easing administrative burdens and uncertainties.

Limitations: Principal subsidies reduce the leveraging potential of loanable funds, as well as their revolving nature. Thus, States must be very careful not to undercut the long term solvency of SRF funds by providing too many grants as opposed to loans. Accessibility to loans for other communities declines by the amount of principal subsidies offered.

Reference for Further Information: Localities should consult their State DWSRF officials to determined principal subsidies policies and affordability criteria. State Intended Use Plans published annually will describe principal subsidy benefit recipients.

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DEPARTMENT OF TRANSPORTATION TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY (TEA-21)

Description: The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 set new standards for environmental sensitivity. The Transportation Equity Act for the 21st Century (TEA-21) signed June 9, 1998, reauthorized, modified and extended ISTEA largely continuing the improved relationship between transportation and the environment. ISTEA made wetlands mitigation efforts eligible under both the National Highway System and Surface Transportation Program. Eligible activities included mitigation banking, wetland preservation and restoration efforts, and State and regional wetland planning. TEA-21 retains wetland mitigation project eligibility and adds natural habitat. It allows up to 20% of reconstruction, resurfacing, rehabilitation or restoration project costs for environmental restoration and pollution abatement, including retrofit or construction of stormwater treatment systems to address environmental problems caused or contributed to by transportation facilities. Other eligible activities, including purchase of scenic easements, scenic beautification and landscaping, preservation of abandoned railway corridors, and mitigation to address water pollution due to highway runoff, are reauthorized with 40% more money.

The Congestion Mitigation and Air Quality Improvement Program continues with $9.1 billion authorized. A new Clean Fuels Program is authorized at $1.2 billion. The Congestion Pricing Pilot Program becomes the Value Pricing Pilot Program and the number of project States grows from 5 to 15, with funding of $8 million/year. A new $100 million National Wetlands Restoration Pilot Program to offset wetlands degradation caused by highway construction before 12/27/77, is authorized. A 5-year, $120 million program is authorized to research relationships between transportation, community preservation and the environment, and the role of the private sector.

Actual Use: The new authorities tend to build on experience under ISTEA.

Potential Use: Contingent upon regulations implementing changes made by the reauthorization, state transportation agencies will be able to undertake a variety of measures to combat air pollution, restore and preserve wetlands, and otherwise mitigate environmental impacts.

Advantages: Inclusion of support for environmental measures diminishes counterproductive tensions between transportation infrastructure development and environmental protection.

Limitations: If the legislation's potential is to be realized, transportation agencies must be willing to take advantage of the environmental authorities conveyed.

Reference for Further Information: U.S. Department of Transportation, The Federal Highway Administration, 400 7th Street, SW, Washington, DC 20590; Telephone: 202-366-5004, Internet: **www.dot.gov/**.

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URL: http://www.epa.gov/efinpage/guidbk98/gbk2c.htm

Incentive Program (SIP)	•			•	•			cost share up to 75%	of Forestry 717-787-2105	ag,er,rb,w	private forests
Wetlands Replacement Program - DEP	•			•	•			grants for wetland construction and plant materials	DEP Bureau of Water Quality Protection 717-787-6827	rb,w	individuals
Environmental Quality Incentives Program (EQIP)	•			•	•		•	cost share and incentives	NRCS 717-237-2204 or local RC&D - see back	er,rb	ag or livestock producers
Wetlands Reserve Program (WRP)	•			•	•		•	easement cost share and incentives	NRCS 717-237-2204 or local RC&D - see back	w	private land
Wildlife Habitat Incentives Program (WHIP)	•			•	•		•	cost share up to 75%	NRCS 717-237-2204 or local RC&D - see back	ag,rb,w	private land
Woodland Incentive Program (WIP)	•			•	•		•	cost share 50% for forest practices	DCNR Bureau of Forestry 717-787-2106	rb	private forest
State Revolving Loan Fund - Water Quality (SRF)	•	•		•	•		•	low interest loans	PENNVEST 717-787-8138	er,np	local govts
Stream Improvement Program - DEP	•	•			•			planning & design assistance	Bureau of Waterways Engineering 717-787-3411	np;er	local govt, land owners
Partners for								grants to			

Fish & Wildlife - USFWS	•	•		•	•			$10,000 to restore habitat	USFWS 814-234-4090, David Putnam	w,rb	private landowners
Advance Funding Program - PENNVEST	•	•	•		•			low interest loans & limited grants	PENNVEST 717-787-8137	er,np,rb,w	govt, public, private orgs
Water Quality Cooperative Agreements - CWA (Clean Water Act) section 104(b)(3) - EPA	•	•	•	•	•	•		grants -point source pollution	watershed issues: 202-260-1718; stormwater issues: 202-260-6053	np	state/local govt, orgs, individuals
Community Development Block Grants (CDBG)		•		•			•	formula grant	Bureau of Housing and Developm't 717-720-7045	np	local "central cities"
Stormwater Project Loans Or see PENNVEST		•		•			•	low interest loans	PENNVEST 717-787-8137	ag,er,np,rb,w	govt. agencies
Flood Protection Program - DEP		•		•	•			grants	Bureau of Waterways Engineering 717-787-3411	er,np,rb	local govts
Coastal Zone Management Program - Pennsylvania		•		•	•	•		matching grants	Bureau of Watershed Conservation 717-787-5259	ag,er,np,rb,w	state/local govts, univ
Construction Loan Program - PENNVEST		•		•	•		•	low interest loans, supplemental grants	PENNVEST 717-787-8137	np	local govt & agencies

County Water Supply Plan/Wellhead Protection Grants		•		•	•		•	grants	Bur. of Water Supply Managem't 717-787-0122	er,rb,w	counties
Community Grant Program -DCNR		•		•	•		•	50% cost share, 100% for small towns	Bureau of Rec & Conservation 717-783-2658	er,rb,w	municipalities (for parks)
Small Watershed Program - (Public Law 566)		•		•	•	•	•	grants to to 65%, and loans	NRCS 717-237-2215, Jeff Mahood	np	state/local govt
Stormwater Management Program - DEP		•		•	•	•	•	grants to 75% & technical assistance	Bureau of Watershed Conservation 717-772-4048	ag,er,np,rb,w	counties, municipalities
State Planning Assistance Grant (SPAG) Program		•			•			50% local match required	Dept of Comm. & Econ. Dev't 717-720-7346	ag,er,np,rb,w	counties and municipalities
Small Communities Planning Assistance Program		•			•			grants	Dept of Comm. & Econ. Dev't 717-720-7340	ag,er,np,rb,w	small local govts
Watershed Restoration & Assistance Program (WRAP)		•	•	•	•	•		grants to $50,000, and small seed grants	DCNR Division of Watershed Support 717-787-5259	ag,er,np,rb,w	org's and public agencies
Community Based Restoration Projects -								matching funds to local aquatic restoration	NOAA Restoration Center 301-713-0174,		local govt, nonprofit orgs, watershed

NOAA		•	•	•	•	•	•	efforts	Chris Doley	er,rb,w	groups
Chesapeake Bay Trust Grants		•	•			•	•	mostly < $5000	Chesapeake Bay Trust 410-974-2941	ag,er,np,rb,w	local govt, orgs, nonprof
Rivers Conservation Grant Program - DCNR		•	•	•	•			up to 50% cost-share, max $50,000	DCNR Bureau of Rec & Cons 717-783-2658	er,rb,w	local govt & organizations
Sustainable Development Challenge Grant (SDCG)		•	•	•	•	•		up to $250,000. 20% local match req.	EPA SDCG Program 202-260-6812, Pam Hurt	er,np,rb,w	local govt & organizations
Chesapeake Bay Program Subcommittee Grants		•	•	•	•	•	•	1:1 nonfederal match	Chesapeake Bay Program 800-968-7229 for subcommittees, or DEP 717-787-5267	ag,er,np,rb,w	state/local govt, nonprofit, university
Nonpoint Source Pollution Grants - DEP		•	•	•	•	•	•	grants for planning and nonpoint source pollution control	DEP Bureau of Watershed Conservation, Division of Watershed Support 717-787-5259	ag,er,np,rb,w	state/local govt, cons dist, univ, watershed orgs
North American Wetlands Conservation Act (NAWCA)		•	•	•	•	•	•	50% nonfederal match required	NAWCA coordinator, USFWS 703-358-1784	w	local govt, other orgs
Environmental Education Grants - EPA Region 3		•	•			•		grants to nonprofits, to 75% of costs	EPA regional office 215-566-5527, Larry Brown	ag,er,np,rb,w	state/local govt, univ, nonprofit orgs

Community Forestry Program - DCNR		•	•	• (trees)	•		•	match grants: gov-50%, orgs-90%	DCNR Forestry 717-783-0385, Norman Lacasse	er, rb, np	municipalities, orgs
Land Trust Grants			•	•				up to 50% of cost	Bureau of Rec & Conservation 717-783-2658	ag,er,np,rb,w	land trusts, etc.
Environmental Education Grants - Pennsylvania DEP			•			•		grant up to $10,000	DEP Office of Policy & Comm 717-772-1828	ag,er,np,rb,w	schools, nonprofits, orgs
						*project examples: ag = agricultural, er = erosion, np = nonpoint source pollution, rb = riparian forest buffers, w = wetlands					

Environmental Finance Center, University System of Maryland 301-405-6383 — *Email: efc@mdsg.umd.edu - Web: http://www.mdsg.umd.edu/MDSG/EFC*

These Federal and State programs may be supplemented by local or regional fund-generating or pollution prevention intiatives. Examples of innovative funding ideas to improve water quality are described in "Financing Alternatives for Maryland's Tributary Strategies," a 120-page report available for $5 from the EFC. View a summary with funding categories.

Also, see creative financing techniques for preserving highly valued lands, such as stream buffers, on our web site. This fact sheet briefly describes mechanisms that communities can use to encourage land preservation.

And, view other resources for projects in Pennsylvania, including foundations, agencies and nonprofit organizations.

Other Pennsylvania Links

Pennsylvania Local Government Help Center
Pennsylvania State Agency links
Penn DCNR Grants and Assistance Programs
DEP Regional Offices
Pennsylvania Forest District Contacts
Pennsylvania Environmental Council

Stormwater Management in Pennsylvania
Department of Community and Economic Development community programs
Bureau of Farmland Protection

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[stream corridor restoration financing] [Other fact sheets]
[E-finance links]

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Last Updated on 3/99
By EFC webguy

NRCS WATERSHED AND RIVER BASIN PLANNING AND INSTALLATION
Public Law 83-566 (PL566)

Technical and financial assistance is provided in cooperation with local sponsoring organizations, state, and other public agencies to voluntarily plan and install watershed-based projects on private lands. The program empowers local people or decisionmakers, builds partnerships and requires local and state funding contributions. The purposes of watershed projects include watershed protection, flood prevention, water quality improvements, soil erosion reduction, rural, municipal and industrial water supply, irrigation water management, sedimentation control, fish and wildlife habitat enhancement and create and restore wetlands and wetland functions.

Watershed plans involving an estimated Federal contribution in excess of $5,000,000 for construction, or construction of any single structure having a capacity in excess of 2,500 acre-feet, require Congressional committee approval. Other plans are approved administratively. After approval, technical and financial assistance can be provided for installation of works of improvement specified in the plans.

Project sponsors are provided assistance in installing planned land treatment measures when plans are approved. Surveys and investigations are made and detailed designs, specifications, and engineering cost estimates are prepared for construction of structural measures. Areas where sponsors need to obtain land rights, easements, and rights-of-way are delineated. Technical assistance is also furnished to landowners and operators to accelerated planning and application of needed conservation on their individual units. There are presently over 1600 projects in operation.

AMD AND OTHER WATER QUALITY ISSUES

Organization	Contact	Phone No.	Comments
U.S. Department of Interior Office of Surface Mining			
Clean Streams Initiative	James Taitt	(412) 937-2106	Provides funding for stream cleanups impacted by AMD from abandoned coal mines.
Abandoned Mine Land Program (AML)			Established by Title IV of SMCRA. Under this program, fees collected from coal operators go to the Abandoned Mine Reclamation Fund (AMRF). Most AMRF monies are potentially available for contaminated CMD cleanup.
Pittsburgh, PA	James Taitt	(412) 937-2106	AMD Program Coordinator.
Harrisburg, PA	Dave Hamilton	(717) 782-2285	PA ACSI Coordinator.
Maryland	Pete Hartman	(301) 724-4860	MD ACSI Coordinator.
Charleston, WV	Rick Buckley	(304) 347-7162	WV ACSI Coordinator.
Columbus, OH	Max Luehrs	(614) 866-0578	OH ACSI Coordinator.
Big Stone Gap, VA	Ronnie Vicars	(540) 523-0024	VA ACSI Coordinator.
Lexington, KY	Dave Beam	(606) 233-2896	KY ACSI Coordinator.
Knoxville, TN	Willis Gainer	(423) 545-4103	TN ACSI Coordinator.
STATE PROGRAMS			
Abandoned Mine Lands Program	Your state office		
Special Reclamation Fund	Your state office		
Acid Mine Drainage Abatement and Treatment Fund - 10% Set Aside.	Your state office		
State Revolving Fund	Your state office		
State Nonpoint Source Programs	Your state office		
State Division of Natural Resources	Your state office		
Civil Penalties	Your state office		
State's Development Office	Your state office		
Federal and State Appropriations	Your state office		
Governor's Discretionary Funds	Your state office		

Organization	Contact	Phone No.	Comments
State of Maryland			
State of Maryland	Suzanne Arcella *State Coordinator*	(401) 631-3584	RFPs for Maryland 319 Funds come out in April each year. The Maryland Mining Program can compete for funds.
Maryland Department of Environment *Water Management Administration*	J.L. Hearn *Director*	(410) 631-3567	MDE has an established tradition of supporting projects with funding in which they have an interest.
Maryland Bureau of Mines (BOM)	Connie Lyons John Carey	(301) 689-6764 (301) 689-6764	Source of additional contacts.
Maryland Geological Survey	James Reger Ken Schwartz Emery Cleaves	(410) 554-5523 (301) 689-6104 (410) 554-5504	Potential source of contribution; source of additional contacts.
State of Pennsylvania			
Mineral Resources Management Bureau of Abandoned Mine Reclamation	Ernie Giovennetti *Director*	(717) 783-2267	Source of potential funding; additional contacts; information.
State of Virginia			
Department of Mines, Minerals, & Energy Division of Mined Land Reclamation	Bob Herron *Coordinator*	(540) 523-8100	Source of potential funding; additional contacts; information.
State of West Virginia			
Stream Mitigation Fund	Ken Politan	(304) 759-0510	
Section 319	Lyle Bennett		
RESEARCH ORGANIZATIONS / ENDOWMENTS / TRUSTS			
Heinz Endowments	Andy McElwaine	(412) 281-5777	The Heinz Endowments holds two meetings per year (Spring and Fall) to allocate funds from two separate Heinz endowments. The Howard Heinz Endowment is solely for projects inside the State of Pennsylvania. The Vira Heinz Endowment occasionally considers projects outside of Pennsylvania and does fund AMD projects.

Organization	Contact	Phone No.	Comments
ENVIRONMENTAL ORGANIZATIONS			
Clean Water Action	David Zwick	(202) 895-0420	In-kind technical/scientific consultation; In-kind research support; networking.
American Rivers	Rebecca Wadders	(202) 547-6900	In-kind research support; media support; networking.
Friends of the Earth		(202) 783-7400	In-kind research support; media support; networking.
Friends of the River	Betsy Reifsnider	(415) 771-0400	Funds river preservation and restoration projects through Friends of the River Foundation; media support; networking.
Izaak Walton League of America		(703) 548-0150	In-kind research support; media support; networking.
National Water Resources Association	Tom F. Donnelly	(703) 524-1544	Bestows awards; networking.
River Network		(202) 364-2550	In-kind research support; media support; networking.
Sierra Club	Carl Pope	(415) 977-5500	Bestows awards; networking; media support.
Society for Ecological Restoration	William Jordan	(608) 262-9547	In-kind technical/scientific consultation; networking.
Thorne Ecological Institute	Steve Eandi	(303) 499-3647	In-kind technical/scientific consultation; networking.

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL PROTECTION

TEN PERCENT SET-ASIDE PROGRAM FOR ACID MINE DRAINAGE ABATEMENT

Acid mine drainage (AMD), an old and extensive problem in Pennsylvania, is the largest non-point source water pollution problem in the state today. Approximately 2,500 miles of streams have been degraded by acid mine drainage. Abandoned coal mines, located in 45 of Pennsylvania's 67 counties, are the predominant source of acid mine drainage. It has been estimated that Pennsylvania's acid mine drainage problem would require in excess of $5 billion in capital costs to fix.

The first major legislation that addressed acid mine drainage was the Clean Streams Law of 1965. In 1967, Pennsylvania created the Land and Water Conservation and Reclamation Fund and designated

120 million dollars of the fund for prevention, control and elimination of mine drainage pollution. These monies were used to conduct a number of studies of AMD polluted watersheds and to address many AMD problems with varying degrees of success. In 1990, Pennsylvania was authorized to establish a new fund known as the Ten Percent Set Aside Fund, to be used for acid mine drainage abatement. This fact sheet provides answers to frequently asked questions about the Ten Percent Set Aside Program.

What is the Ten Percent Set-Aside AMD abatement program?

The Federal Surface Mining Control and Reclamation Act (P.L. 95-87), of August 3, 1977, known as SMCRA, established a Title IV Grants Program providing monies to eligible states for abatement of abandoned mine problems. These problems were required to be addressed in a priority manner with varying degrees of health, safety and general welfare hazards comprising the first two priorities. Acid mine drainage abatement was defined as a Priority 3 problem and could not be addressed in Pennsylvania due to the enormous inventory of higher priority problems.

In 1990, Congress amended SMCRA to include a provision allowing states to establish an acid mine drainage abatement and treatment program in an amount up to 10% of their annual abandoned mine reclamation (Title IV) grant. Pennsylvania amended its reclamation plan and received approval from the Federal Office of Surface Mining (OSM) to establish a separate, interest-bearing AMD abatement and treatment fund. The fund and program are managed by the Bureau of Abandoned Mine Reclamation in the Department of Environmental Protection (DEP).

Monies from the fund may be used to abate and treat acid mine drainage in qualified hydrologic units affected by past coal mining practices at eligible sites. Eligible sites are defined as those where mining ceased prior to August 3, 1977 and where no continuing reclamation responsibility can be determined. Those sites with Priority 1 or 2 hazards where mining occurred between August 4, 1977 and July 30, 1982 also are eligible.

Qualified hydrologic units are defined as watersheds in which the water quality has been significantly affected by acid mine drainage from coal mining practices in a manner which adversely impacts biological resources. The sites must meet all other eligibility criteria of the Surface Mining Control and Reclamation Act.

How are potential sites submitted for consideration?

Interested parties may obtain an AMD Site Submission Form by calling or writing the Bureau of Abandoned Mine Reclamation, P.O Box 149, Ebensburg, PA 15931, Telephone No. (814) 472-1800. The applicant should provide the water quality and quantity data requested on the form (if available) and provide a map indicating the location of the AMD discharge. The applicant then sends the completed form, water data and map to the address indicated on the AMD Project Form.

The Department is aware of a number of local watershed organizations currently working closely with their County Conservation Districts to remediate mine drainage impacts on selected streams. While any abandoned mine site may receive consideration, the Department is particularly interested in forming partnerships with organized groups engaged in actively addressing these problems.

What minimum guidelines must a potential site meet to be qualified?

1. Mining must have been completed or abandoned prior to August 3, 1977 (or July 30, 1982 if high priority problems exist on the sites).
2. The Landowner(s) must be in agreement with the proposed project.
3. The discharge should be capable of being abated or treated using passive treatment technologies.
4. The proposed project must have a high probability of improving the biological resources of the receiving stream.

What other factors are considered when evaluating a site?

- The length of the receiving stream to be beneficially affected
- The cost and feasibility of the proposed abatement or treatment
- The water quality upstream of the proposed site
- The potential for improved use of public lands
- The potential for improved fishing and other water oriented recreation
- The potential for improved raw water quality for a public water supply
- The potential for forming partnerships with organized groups active in improving the watershed

How are projects selected for funding?

1. DEP reviews AMD Project Forms, the data submitted with the forms and any information that may exist in DEP files.
2. DEP reviews the sites, collects water samples, makes flow determinations and contacts the property owners.
3. If sufficient information exists, DEP proposes a solution and prepares a cost estimate for sites meeting program eligibility guidelines.
4. If insufficient information exists, arrangements are made to collect additional samples and flow data for eligible sites.
5. Information and data collected for each site are then presented to an internal review committee to be reviewed.
6. The internal review committee will then determine which sites may need more data, which sites are eligible for funding, and how those sites will be ranked. In ranking, the committee will consider local input, including Conservation Districts and watershed organizations.
7. DEP then proceeds to prepare abatement plans in conjunction with the Natural Resource Conservation Service and submits these plans to the federal grants agency for funding approval.

Who designs and constructs projects?

- DEP's Bureau of Abandoned Mine Reclamation or professional consultants under contract with the Bureau of Abandoned Mine Reclamation design the projects.
- The projects then are constructed by private contractors through Pennsylvania's public bidding process.

How can local agencies, watershed associations and individuals participate in the program?

- They can submit potential sites for consideration.
- They can assist in data collection such as water sampling and flow monitoring.
- They can assist in landowner contacts.
- They can assist in monitoring and maintaining constructed facilities.
- They can provide local sponsorship.
- They can seek other sources of funding which can be used in combination with Ten Percent Set-Aside funds to achieve more remediation.

For additional information contact:

Bureau of Abandoned Mine Reclamation

P.O. Box 149

Ebensburg, PA 15931

(814) 472-1800

Commonwealth of Pennsylvania
Tom Ridge, Governor

Department of Environmental Protection
James M. Seif, Secretary

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"WORKING" DRAFT

PENNSYLVANIA'S NONPOINT SOURCE (NPS) MANAGEMENT PROGRAM

1998 UPDATE

Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Watershed Conservation
Division of Watershed Support
Nonpoint Source Management Section

Tom Ridge, Governor
Commonwealth of Pennsylvania

James Seif, Secretary
Department of Environmental Protection

3940-BK-DEP2275

B. Funding

1. PA'S NPS Financial Management and Status Reporting

Pennsylvania's Section 319 Program uses the Commonwealth's Integrated Central System (ICS) to manage all funds including the matching funds. The ICS provides information systems in the areas of accounting, budget preparation, payroll/personnel, and purchasing. It also provides for the interchange of common information among the systems. The ICS Accounting System consists of five subsystems relating to revenue and receipts, general ledger, budget control, commitment and expenditure control, and special(grant and project) accounting. The Grant Accounting Subsystem identifies and reports transactions related to federal grants. In addition to ICS, the Nonpoint Grants Database tracks the budgets off all contracts receiving 319 funds. Financial Status Reports (FSRs) are sent to EPA by the Commonwealth of Pennsylvania's Public Protection and Recreation Comptroller annually.

Pennsylvania Department of Environmental Protection also prepares annual grant workplans which identify specific projects to reduce nonpoint source pollution along with a schedule for their implementation over a two year period. In addition to watershed implementation projects, watershed assessments and statewide education projects, the grant workplan describes the specific activities to be carried out by the PADEP under its base operating program during the same time period. Progress in satisfying the milestones stated in the annual grant workplan is evaluated every six months and reported in PADEP's periodic status report to EPA.

2. Pennsylvania's NPS Grants Tracking And Reporting System (GRTS)

Pennsylvania was part of the pilot program to develop a computerized system, the Section 319 Grant Reporting and Tracking System, for use by states and EPA in managing and reporting data on Section 319 grants. Information on all of the individual 319 funded projects is currently input using the new Lotus Notes.

3. Use of the Clean Water State Revolving Fund (CWSRF) for Nonpoint Source Management

Responsibility for implementation of the CWSRF in Pennsylvania is shared between the Pennsylvania Infrastructure Investment Authority (PENNVEST) and the Department of Environmental Protection (DEP). As the CWSRF capitalization grant recipient, PENNVEST is responsible for financial management of the Fund. DEP provides technical support to PENNVEST, which includes developing the project priority rating system, conducting technical and environmental reviews of projects and providing project ratings to PENNVEST.

Each year, PENNVEST provides between $90 and $100 million in CWSRF and state loan funds, and a limited amount of state grant funds, to traditional sewage collection and treatment projects. Funding for stormwater system improvements is also provided using only state funds.

PENNVEST'S Loan Program for Stormwater Projects

Act 16 of 1988 was amended to authorize the Pennsylvania Infrastructure Investment Authority (PENNVEST) to provide low interest loans to construct, improve or rehabilitate public stormwater facilities. Construction of projects consisting of new storm drains, detention basins, or storm sewer rehabilitation may be funded by these PENNVEST loans. Facilities eligible for this funding are: (1) new or updated storm sewer systems to reduce stormwater flooding or to separate stormwater from sanitary

sewers, (2) detention basins to control stormwater runoff, and (3) stormwater facilities to implement best management practices that reduce nonpoint source pollution.

As of September 3,1998, there were a total of forty-four approved loans with a cumulative loan amount of approximately $24.5 million. Construction of approximately twenty-five of these projects was completed by the end of 1997. For the 1997 calendar year, PENNVEST approved stormwater facility loans of $4.6 million for 7 projects.

PENNVEST'S Loan Program for Onlot Disposal Systems

Individual Onlot Sewage Disposal Systems Program provides lot interest loans to homeowners with an interest rate of one percent and a term of up to 15 years. Loans are for a minimum of $1,500 to a maximum of $15,000. Owners of individual onlot sewage disposal systems are eligible if the owner occupies the single family residential housing unit served by the system and if the owner's family income does not exceed 150 percent of the statewide median household income, adjusted for inflation. For 1997, the family income limit is $52,913.

This program is a cooperative effort among PENNVEST, the Pennsylvania Housing Finance Agency (PHFA), the Department of Environmental Protection (DEP), and local financial institutions to provide funding to address the public health and environmental needs which result from malfunctioning onlot systems in areas where public collection and treatment facilities are not practical in the immediate future. Eligible costs include all testing, design, permits, and construction costs associated with the repair, rehabilitation, improvement, expansion or replacement of an existing individual onlot sewage disposal system.

Title VI of the federal Clean Water Act authorizes the use of CWSRF funds to address nonpoint source problems through implementation of a management program under Section 319 of the Act.

While many states have elected to utilize CWSRF funds for a variety of such purposes, Pennsylvania has so far elected to do so on a fairly limited extent through implementation of its On-Lot Sewage Disposal System Loan Program for the Individual Homeowner.

This program was initiated in 1994 and, as of late 1997, has offered low interest loans totaling $2.8 million to 194 homeowners. The loans are used to repair or replace malfunctioning on-lot sewage disposal systems, eliminating related ground water and stream contamination problems.

Both PENNVEST and DEP recognize that the federal government is interested in seeing more varied and widespread use of CWSRF funds to address nonpoint source problems. Prior to making a significant shift in this direction, there are several important factors to be considered, including:

- Short and long term impacts on the financial integrity and stability of the CWSRF;
- Identification and prioritization of watersheds impacted by point and nonpoint sources (and determining their relative significance);
- Identification of other nonpoint source funding programs and the demand for additional funding;
- Development of an integrated priority rating system to assist in making project funding decisions;

- Identification of loan recipients and associated mechanisms for awarding and managing loans for nonpoint source projects;
- Demonstration(s) of how the CWSRF can be used for nonpoint source projects;
- Making appropriate revisions to Pennsylvania's CWSRF Intended Use Plan.
- Pennsylvania's use of CWSRF funding for nonpoint source problems will ultimately be reflected in future revisions to this Nonpoint Source Management Program and the CWSRF Intended Use Plan.

4. **Agriculture Linked Investment Program**

The Agriculture Linked Investment Act (Act 90, amended 1998) provides a low-interest loan program as an incentive to encourage the adoption of agricultural best management practices required in an approved nutrient management plan written under the Nutrient Management Act of 1993 (Act 6). The Agriculture Linked Investment Program (Agri-Link Program) provides $25 million in Treasury Department funds for low-interest loans to farm owners or operators participating in the Nutrient Management Act program. Farmers with approved Act 6 nutrient management plans are eligible for loans to a maximum of $75,000 over a seven-year loan period.

Farmers may apply with a participating lender (commercial bank, community bank, or Farm Credit Service) who will determine the eligibility of each applicant. The Treasury Department will provide Agri-Link Program funds to the eligible farmer through the participating lender. The State Conservation Commission will buy down the interest rates on loans provided through the program, resulting in interest rate to the farmer at below market rates. Targeted interest rates to the farmer may range from three (3) to five (5) percent. Information on the Agri-Link Program will be available through the State Conservation Commission, local conservation districts and participating lenders. Program funding will be available October 1998.

5. The following pages contain a listing of 319 funded projects by grant year and category for FY99 through FY90. For more information on 319 projects see Section I.

6. USDA's Environmental Quality Incentive Program (EQIP) grants for 1998 and 1997 are listed by watershed. For more information on EQIP refer to Section I.B. Agriculture.

Rural Abandoned Mine Program (RAMP)

Contact: USDA, Natural Resources Conservation Service

RAMP is authorized by Section 406 of the Surface Mining Control and Reclamation Act (SMCRA) of 1977 as amended by the "Abandoned Mine Reclamation Act of 1991" as subtitled under the Budget Reconciliation Act (PL-101-508). It is authorized for the purpose of reclaiming the soil and water resources of rural lands adversely affected by past coal mining practices. There were approximately 1.1 million acres of abandoned coal-mined land needing reclamation in 1977. The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), formally the Soil Conservation Service (SCS) administers the program, and funding is provided from money deposited in the Abandoned Mine Reclamation Fund. The program provides technical and financial assistance to land users who voluntarily enter into 5- to 10-year contracts for reclamation of up to 320 acres of eligible abandoned coal-mined lands and waters. The land user with NRCS technical assistance involved prepares a reclamation plan.

All active coal mining operators pay into the Abandoned Mine Reclamation fund at a rate of 35 cents per ton of coal produced from surface mining and 15 cents per ton of coal produced by underground mining. The fees are deposited in the interest-bearing fund, which is used to pay reclamation costs of AML projects. Expenditures from the fund are authorized through the regular congressional budgetary and appropriation's process.

Source: http://nrcs.usda.gov/NRCSProg.html

Note: The RAMP program was not funded in 1998/99, but may receive funding in the future.

ENVIRONMENTAL PROTECTION REGULATORY AUTHORITY

Following are excerpts from the Clarion River Basin Study, Pennsylvania Rivers Conservation Program (August 1997), identifying state and federal regulations for environmental protection.

STATE REGULATORY AUTHORITIES

Clean Streams Law Clean Water Act

Authority: Clean Streams Law, Clean Water Act, Act of June 22, 1937, P.L. 1987, as amended, 25 PA Code, Chapter 25, National Pollutant Discharge Elimination System; Chapter 93, Water Quality Standards, Chapter 102, Erosion Control.

Function: Provides regulations to control discharges of sewage or industrial waste into streams and lakes. Exclusively enforced by DEP, Bureau of Water Quality. Use regulated through a permit system.

Dam Safety and Encroachments Act

Authority: Dam Safety and Encroachments Act, the Act of November 26, 1978, P.L. 1375, No. 325 as amended, 25 PA Code, Chapter 105.

Purpose: Provide for the comprehensive regulation and supervision of dams, reservoirs, water obstructions and encroachments in the Commonwealth in order to protect the health, safety, welfare, and property of the people.

Endangered and Threatened Species - Fish, Amphibians, Reptiles, and Aquatic Organisms

Authority: Title 30 Chapter 75, Fish and Boat Code, revised February 9, 1991, PA Fish Commission.

Purpose: Protect Fish, Amphibians, Reptiles and Aquatic Organism of special concern.

Endangered and Threatened Species - Plant Species

Authority: Conservation of Pennsylvania Native Wild Plant, Title 25 Chapter 82, January 1, 1988, DEP.

Provision: Protect native wild plant species of special concern.

Endangered and Threatened Species - Wild Birds and Mammals

Authority: Title 34 Chapter 133, Game and Wildlife Code, revised December 1, 1990, PA Game Commission.

Provision: Protect wild birds and mammals species of special concern.

Fish and Boat Code

Regulatory Authority: Commonwealth of Pennsylvania, Fish and Boat Code, Act 1980-175, Title 30, PA. Consolidated Statues.

Purpose: To provide direction and guidance to the Commission in executing its mission of providing fishing and boating opportunities through the protection and management of aquatic resources.

Floodplain Management Act

Authority: Floodplain Management Act (Act 166) October 4, 1978, P.L., No. 166, Regulations, 16 PA Code 38, 1 et. seq.

Provision: Encourage the proper management of floodplain areas.

High Quality and Exceptional Value Waters

Authority: Clean Streams Law - P.L. 1987, 25 PA Code Chapters 93 and 95, (93.3, 93.9, 95.1)

Provision: High quality waters shall be maintained and protected at their existing quality ore-enhanced-unless proposed new, additional or increased discharge of pollutants is justified as a result of necessary economic or social development which is of significant public value and the proposed discharge, alone or in combination with other anticipate discharges, will not violate applicable water quality standards. Exceptional Value waters shall be maintained and protected, at a minimum, at their existing quality.

Historic Preservation Act

Authority: Act of 37 PA C.S. Sec. 500 et. seq.

Provision: The conservation of Pennsylvania's historic and natural heritage and the preservation of public records, historic documents and objectives of historic interest, and the identification, restoration and preservation of architecturally and historically

significant sites and structures are duties vested primarily in the PA Historical and Museum Commission.

Oil and Gas Development

Authority: The Oil and Gas Act; the Oil and Gas Conservation Law; the Clean Streams Law; Solid Waste Management Act, the Dam Safety and Encroachment Act; the Coal and Gas Resources Coordination Act; the Administrative Code; and 25 PA Code Chapters 78, 79, 91, 92, 93, 95, 97, 101, 102, and 105.

Purpose: The Oil and Gas Act is the basic law governing oil and gas wells.

Pennsylvania Sewage Facilities Act

Authority: Pennsylvania Sewage Facilities Act of January 1966 P.L. (1965) 1531, as amended, Regulations 25 PA Code, 71.1 et. seq.

Provision: Requires individuals to obtain a sewage permit for on-lot sewage disposal systems. Generally administered by either township or county. Sewage permits are normally required prior to obtaining building permit.

Solid Waste Management

Authority: The Solid Waste Management Act - Act 97 of 1980 and the residual and municipal waste regulations promulgated there under.

Provision: To regulate the ongoing generation, transportation, treatment, storage, and disposal of residual, municipal and hazardous waste.

Storm Water Management

Authority: Pennsylvania Storm Water Management Act of October 1978 (No. 167, P.L. 864) 32 P.S. 680 et.seq.

Purpose: Planning and Management of Storm water to address increased rates and volumes of runoff due to land development including Forest Management activities.

Surface Mining Conservation and Reclamation Act

Authority: Pennsylvania Surface Mining Conservation and Reclamation Act of May 31, 1945 (P.L. 1198), amended May 26, 1996.

Purpose: To regulate surface mining of coal resources in PA; permits are required for coal surface mining activities.

Water Rights Act

Authority: Water Rights Act of June 24, 1939, 32 P.S. Sections 631-641.

Provision: The Act provides for the permitting of surface water withdrawals by public supply agencies vested with the power, authority, right of franchise to sell water to the public. A water allocation permits is issued by the Department.

FEDERAL REGULATORY AGENCIES

Section 404 of the Clean Water Act

Authority: Section 404 of the Clean Water Act, enacted by Congress in 1972.

Provision: This gives the Corps of Engineers jurisdiction over "all waters of the United States," this includes water of the basin, its tributaries, adjacent and isolated wetland area.

Federal Endangered Species Act

Authority: Act of December 28, 1973, P.L. 93-205, 87 Stat. 884 as amended, 16 U.S.C. 50 CFR Part 17.

Provision: Gives federal protection to threatened and endangered species.

Federal Wilderness Act

Authority: Act of September 3, 1964, P.L. 88-577.

Provision: Protects certain public lands which have been designated as a component of the "National Wilderness Preservation System."

APPENDIX F

ACRONYMS AND ABBREVIATIONS/REFERENCES

PGC	Pennsylvania Game Commission
pH	A measure of the acidity or alkalinity of a solution, numerically equal to 7 for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity
PHMC	Pennsylvania Historical and Museum Commission
PHPC	Pennsylvania Heritage Park Commission
PHPP	Pennsylvania Historic Preservation Program
PNDI	Pennsylvania Natural Diversity Inventory
PPAG	Pennsylvania Planning Assistance Grants
RAMP	Rural Abandoned Mine Program
RRWA	Roaring Run Watershed Association
RTCA	Federal Rivers, Trails and Conservation Assistance
SAC	Southern Alleghenies Conservancy
SAPDC	South Alleghenies Planning and Development Commission
SCRIP	Stonycreek-Conemaugh River Improvement Project
SPAG	State Planning Assistance Grants
SPHPC	Southwestern Pennsylvania Historic Preservation Commission
SWPC	Southwestern Pennsylvania Commission
TEA-21	Transportation Equity Act for the 21st Century
USACOE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

REFERENCES

Allegheny Ridge Corporation. 1994. *Allegheny Ridge State Heritage Park.*

American Business Information, Inc. 1997. *Summary United States Census Data.*

Apollo Area Economic Development Council, Planning Charette. 1994. *Community at the Crossroads, The Apollo Area.* Apollo, Pennsylvania.

Barbin, W. G. 1995. *Report on the Water Quality and Acid Mine Drainage in the Little Conemaugh River Watershed, Cambria County, Pennsylvania.* SCRIP and Cambria County Conservation District.

Buchart-Horn Consulting Engineers. 1972. *Mine Drainage Abatement Measures for the Loyalhanna Watershed Study.* Department of Environmental Resources, Harrisburg, Pennsylvania.

Burmeister, W. F. *Appalachian Waters V: The Upper Ohio and Its Tributaries.* Appalachian Books, Oakton, Virginia.

Cambria County Conservation and Recreation Authority. Undated. *Mainline Trial/Path of the Flood Trail Feasibility Study.* Ebensburg, Pennsylvania.

Cambria County Conservation District. 1994. *Assessment of Nonpoint Source Pollution for the Little Conemaugh/Stonycreek Rivers.*

Clarion River Basin Commission. 1997. *Clarion River Basin Study, Pennsylvania Rivers Conservation Program.*

Cuff, D. J., *et al.* 1989. *The Atlas of Pennsylvania.* Temple University Press, Philadelphia, Pennsylvania.

Geyer, A. R. and W. H. Bolles. 1979. *Outstanding Scenic Geological Features of Pennsylvania.* Environmental Geology Report 7. Pennsylvania Geologic Survey. Harrisburg, Pennsylvania.

Heritage Preservation Commission. 1989. *Action Plan, America's Industrial Heritage Project.* Cresson, Pennsylvania.

Indiana County Office of Planning and Development. 1991. *Overall Economic Development Plan Update for Indiana County.* Indiana, Pennsylvania.

Indiana County Parks Department and Northern Cambria Community Development Corporation. 1992. *A Master Plan for the Ghost Town Trail.* Indiana, Pennsylvania.

Johnstown Area Heritage Association. 1991. *Johnstown Heritage Development Plan.* Johnstown, Pennsylvania.

Leberman, R. C. 1988. *The Birds of Western Pennsylvania and Adjacent Regions*. Special Publication 13, Carnegie Museum of Natural History, Pittsburgh, Pennsylvania.

Mackin Engineering Company. 1997. *Monongahela River Conservation Plan.* Pittsburgh, Pennsylvania.

McCoy, C. J. 1982. *Amphibians and Reptiles in Pennsylvania.* Special Publication 6, Carnegie Museum of Natural History, Pittsburgh, Pennsylvania.

Merritt, J. F. 1987. *Guide to the Mammals of Pennsylvania*. University of Pittsburgh Press, Pittsburgh, Pennsylvania.

National Audubon Society. 1997. *Pennsylvania Important Bird Areas*. National Audubon Society Mid-Atlantic Regional Office, Camp Hill, Pennsylvania.

National Park Service, *et. al.* 1989. *Saltsburg, Pennsylvania Site Concept Plan.*

National Park Service. 1992. *Juniata and Western Divisions, Pennsylvania Main Line Canal.* United States Department of Interior, National Park Service.

National Park Service, *et. al.* 1994. *Conemaugh River Greenway Concept Plan.*

National Park Service. 1995. *Heritage Trials, Strengthening A Regional Community*. Partnership Branch, Denver Center, Denver, Colorado.

Pennsylvania Association of Conservation Districts, Inc., *et al.* 1998. *Pennsylvania Handbook for Best Management Practices for Developing Areas.*

Pennsylvania Bureau of Forestry. 1998. PNDI Review of Kiskiminetas River Watershed. Pennsylvania Department of Conservation and Natural Resources, Harrisburg, Pennsylvania.

Pennsylvania Bureau of Water Quality Management. 1996. *Pennsylvania's Surface Water Quality Monitoring Network.* Pennsylvania Department of Environmental Protection, Harrisburg, Pennsylvania.

Pennsylvania Bureau of Water Quality Management. 1997. Listing of NPDES Permits in the Kiskiminetas River Watershed. Pennsylvania Department of Environmental Protection, Harrisburg, Pennsylvania.

Pennsylvania Department of Conservation and Natural Resources. 1997. *Stewardship Partnership Service.* Harrisburg, Pennsylvania.

Pennsylvania Department of Environmental Protection. 1996. *Commonwealth of Pennsylvania 1996 Water Quality Assessment – 305(b) Report*. Bureau of Water Quality Management, Harrisburg, Pennsylvania.

Pennsylvania Department of Environmental Protection. 1997. Landfill and Quarry Permits. www.state.pa.us.

Pennsylvania Department of Environmental Protection. 1998. *Commonwealth of Pennsylvania Section 303(d) List 1998*. Office of Water Management, Harrisburg, Pennsylvania.

Pennsylvania Department of Environmental Protection. 1998. Pennsylvania Wellhead Protection Program. www.dep.state.pa.us.

Pennsylvania Department of Environmental Protection. 1998. *Title 25, Chapter 93: Water Quality Standards*. Harrisburg, Pennsylvania.

Pennsylvania Department of Environmental Protection. 1998. Listing of NPDES Permits in the Kiski-Conemaugh Basin. Bureau of Water Quality Management, Harrisburg, Pennsylvania.

Pennsylvania Department of Environmental Resources. 1982. *State Water Plan, Subbasin 18*. Harrisburg, Pennsylvania.

Pennsylvania Department of Environmental Resources. 1993. *Pennsylvania Recreation Plan 1991-1997*. Harrisburg, Pennsylvania.

Pennsylvania Historical and Museum Commission. 1993. Properties on or Eligible for the National Register of Historic Places. Bureau of Historic Preservation, Harrisburg, Pennsylvania.

Right To Know Network. 1998. CERCLIS Site Information. www.rtk.net.

Rosenberg, K.V. and J.V. Wells. 1995. *Importance of Geographic Areas to Neotropical Migrant Birds in the Northeast*. Cornell Laboratory of Ornithology, Ithaca, New York.

Southern Alleghenies Conservancy. 1998. *Findings for the Inventory and Monitoring Phase of the Resource Recovery Program*. Bedford, Pennsylvania.

Stonycreek-Conemaugh River Improvement Project (SCRIP). *Fisheries of the Stonycreek and Upper Conemaugh Basin*. SCRIP, Johnstown, Pennsylvania.

United States Army Corps of Engineers. 1982. *Loyalhanna Lake Water Quality Report*. Pittsburgh District, Pittsburgh, Pennsylvania.

United States Army Corps of Engineers. 1994. *Conemaugh River Basin Reconnaissance Study*. Pittsburgh District, Pittsburgh, Pennsylvania

United States Army Corps of Engineers. 1995. *Conemaugh River Scenic Corridor, Special Project Report and Master Plan, Local Flood Protection Project, Johnstown Urban Greenway*. Johnstown, Pennsylvania.

United States Department of Agriculture, Natural Resources Conservation Service. 1996. *Monastery Run, Resource Plan and Environmental Assessment*. Harrisburg, Pennsylvania.

United States Department of Agriculture, Natural Resources Conservation Service, Forest Service, and Berks County Conservation District, Lebanon County Conservation District, Berks County Conservancy. 1997. *Tulpehocken Creek Watershed Protection Plan.*

United States Department of Agriculture, Northeastern Area. 1997. *Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers.* Annapolis, Maryland.

United States Department of Agricultural, Soil Conservation Service. 1968a. *Soil Survey of Indiana County Pennsylvania.*

United States Department of Agricultural, Soil Conservation Service. 1968b. *Soil Survey of Westmoreland County Pennsylvania.*

United States Department of Agricultural, Soil Conservation Service. 1977. *Soil Survey of Armstrong County Pennsylvania.*

United States Department of Agricultural, Soil Conservation Service. 1983. *Soil Survey of Somerset County Pennsylvania.*

United States Department of Agricultural, Soil Conservation Service. 1985. *Soil Survey of Cambria County Pennsylvania.*

United States Department of Commerce. 1991. *Census of Population and Housing Characteristics, Pennsylvania.* United States Bureau of the Census, Washington, D.C.

United States Environmental Protection Agency. 1972. *Cooperative Mine Drainage Survey, Kiskiminetas River Basin.* Wheeling, West Virginia.

United States Environmental Protection Agency. 1997. Surf Your Watershed. www.epa.gov/surf.

United States Fish and Wildlife Service. 1990. *Regional Wetlands Concept Plan, Emergency Wetlands Resources Act Northeast Region.* United States Fish and Wildlife Service Region 5, Newton Corner, Massachusetts.

United States Geological Service. 1996. *Effects of Coal-mine Discharges on the Quality of the Stonycreek River and its Tributaries, Somerset and Cambria Counties, Pennsylvania.* Lemoyne, Pennsylvania.

United States Geological Survey. 1910. *Geologic Atlas of the United States – Johnstown Folio, Pennsylvania.* United States Department of the Interior, Washington, D.C.

U.S. Travel Data Center. 1989. *The 1988-89 Economic Review of Travel in America.* Washington, D.C.

Westmoreland County Conservation District. 1997. *Long-Range Plan.* Greensburg, Pennsylvania.