Statement of Mutual Intent
Strategic Plan

for the

Restoration and Protection of Streams and Watersheds Polluted by Acid Mine Drainage from Abandoned Coal Mines

1995 Progress Report

SIGNATORIES/SUPPORTERS OF THE STATEMENT OF MUTUAL INTENT

USDI, Office of Surface Mining
U.S. Environmental Protection Agency - Region III
West Virginia Division of Environmental Protection
Pennsylvania Department of Environmental Resources
Pennsylvania Fish and Boat Commission
Headwaters RC&D Council and Headwaters Charitable Trust
Maryland Department of Environmental Resources
Ohio Department of Natural Resources
International Association of Fish & Wildlife Agencies
Stoneycreek & Conemaugh Rivers Improvement Project
Southern Allegheny Conservancy
Southern Allegheny R C & D
Western Pennsylvania Coalition for Abandoned Mine Lands
USDI, Bureau of Land Management
USDI Assistant Secretary for Land & Minerals Management
USDI, National Biological Service
USDA, Natural Resources Conservation Service
Trout Unlimited
National Fish & Wildlife Foundation
National Mined Land Reclamation Center
Heinz Endowments
Blacklick Creek Watershed Association
Citizens' Coal Council
USDI, Bureau of Mines
USDI, Fish & Wildlife Service
Ohio River Valley Water Sanitation Commission
Sierra Club
Pennsylvania Environmental Defense Fund
Pennsylvania Organization for Watersheds and Rivers
The Conemaugh Valley Conservancy
The Casselman River Task Force
The Loyalhanna Creek Watershed Association
The Loyalhanna Abandoned Mine Drainage Coalition
The Office of Congressman John P. Murtha, 12th. Distr. PA
The Office of Congressman Frank Mascara, 20th. Distr. PA

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Foreword

Mine drainage, particularly acid mine drainage (AMD), is the most pervasive water pollution problem in Appalachia. Despite extensive studies and the millions of dollars that have been spent on mine drainage control activities, the problem has not been eliminated.

The same watersheds which contain the coal to fuel the nation's industrial growth and military might have also paid a price--that is, drainage basins with little or no aquatic life, unsuitable water supplies, and the resultant lost recreational and economic viability. Citizens of the coalfields have grown tired of living with these mining impacts and are banding together in increasing numbers, sharing a common vision to restore creeks, streams, and rivers to their former capabilities throughout Appalachia. As Plutarch noted: "... *water continually dripping will wear hard rocks hollow*," Appalachian residents know that gradually, together they can make a difference in the water quality in their streams.

The Office of Surface Mining(OSM) Reclamation and Enforcement's Appalachian Clean Streams Initiative (ACSI) was established in 1994 to galvanize the efforts of various groups that are involved in AMD clean-up. At the same time, the Environmental Protection Agency (EPA), Region III, formulated its Mine Drainage Initiative (MDI). The Statement of Mutual Intent (SMI) and its Strategic Plan were born out of the ACSI and the MDI as a concept for partnerships and progress in restoring streams. Both the Statement of Mutual Intent and its Strategic Plan are included in the Appendix.

The initial Statement of Mutual Intent partners in this fight for cleaner streams are shown on the inside front cover. As the months and years go by, it is the goal of the ACSI and the MDI to bring more and more individuals, groups, and agencies together for stream cleanup work.

This First Progress Report of the Statement of Mutual Intent Strategic Plan (SMISP) describes the objectives of the agreement, the first year's accomplishments, the initial benchmarks that have been established for measuring progress in future years, and plans for the future. This report identifies present day mine drainage control activities being undertaken by a variety of federal, state and local governments, by industry, and, most importantly, at the grassroots level by citizens and watershed associations.

The report encompasses mine drainage control activities in the Commonwealths of Virginia and Pennsylvania and the states of West Virginia, Maryland in EPA Region III, and Ohio. Ohio, as an EPA Region V state, was included in this report because it is a northern Appalachian coal producing state in support of the SMSIP and it was prepared to participate in the fisheries survey and to provide other data for this report. Considerable mine drainage remediation activities are underway in other states. Next year's report will include more information from the coal producing states of EPA Regions IV and V, i.e. Kentucky, Tennessee, Alabama, Indiana and Illinois.

OSM Director Bob Uram: ***"This is something that not one agency can do, not one person can do it, not even government can do it working alone...this is a project where we need everybody's assistance. We're looking for this program to accomplish on-the-ground results--with miles and miles and miles of streams being cleaned up throughout Appalachia."***

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Introduction

SCOPE OF THE MINE DRAINAGE PROBLEM

It has been estimated that Appalachia has over seven thousand five hundred (7,500) miles of streams impacted by abandoned coal mine drainage. Severely impacted streams are typically devoid of fish and other aquatic life because of low pH levels and smothering effects of iron and other metals deposited on the stream beds. Additionally, the water quality impacts of mine drainage on aesthetics, fisheries, and tourism have resulted in less desirable areas for visitors and recreational users resulting in lost business opportunities. The Pennsylvania Fish and Boat Commission estimated an annual lost value of about $67 million for fishery recreational uses on the AMD impacted streams in Pennsylvania. In just one watershed of West Virginia, the Paint Creek, a 15 mile project will result in 30 miles of fishery restoration and accrue an estimated $2,300,000 of recreational benefits each year, based on State estimates of 85,000 person days of use per year and an average expenditure of $27.50 per person per day. The increased fishing on this stream would generate revenues from licenses, bait and direct fishing revenues as well as indirect revenues from camping, canoeing, sightseeing, purchase of supplies, clothing, food, and gasoline.

Several previous studies have focused on defining mine drainage impacts on states in the eastern coal fields. In 1969 the Appalachian Regional Commission defined the scope of the AMD problem in its study of eight states in the Appalachian Region. In 1980, the OSM commissioned an inventory by the US Geological Survey (USGS) of the water quality and quantity in the Appalachian region. These USGS Eastern Coal Province Hydrology area reports characterized the widespread impacts of mine drainage through water quality and benthic indicators.

In 1995, EPA Region III conducted a survey of State fisheries biologists to determine streams with acid mine drainage impacts; Figure 1 shows the results of this survey. In all, over 5,100 miles of streams are impacted in West Virginia, Pennsylvania, Maryland, Virginia, and Ohio.

Anthony Abar, Maryland Department of Environmental Resources: *"If we can get the public to demand it, we will get the resources, and we will remake, if not make, new rivers.*

THE PURPOSE OF THE STATEMENT OF MUTUAL INTENT AND STRATEGIC PLAN

The Statement of Mutual Intent, signed on February 9, 1995 at a ceremony in Washington, D.C., is a pledge by government agencies and citizens to focus a shared concern about mine drainage problems into on-the-ground improvement efforts. Other groups interested in addressing mine drainage problems are encouraged to become signatories to the Statement.

The Statement of Mutual Intent's Strategic Plan (SMISP), developed by OSM and EPA's Region III, provides a framework for all signatories to collectively direct attention to the AMD problem and encourage clean-up efforts.

The objectives of the Statement of Mutual Intent and its Strategic Plan are summarized below:

1. Build a clearinghouse to share and exchange data and information--identifying mine drainage sites and cataloguing abatement techniques to restore water quality adversely affected by mine drainage.

2. Raise the awareness about the serious environmental problems associated with abandoned coal mine drainage.

3. Focus efforts to target streams degraded by mine drainage for cleanup.

4. Work to develop and apply the best technology available for remediating and preventing mine drainage.

5. Support an effective remining program to eliminate mine drainage problems.

6. Provide forums to transfer technologies and other information about improving, restoring watersheds degraded by mine drainage.

7. Develop shared information management systems to minimize overlap in data collection and development.

8. Prepare periodic reports describing the extent and severity of the mine drainage problem and the current status of ongoing efforts to improve and restore degraded watersheds.

States impacted by mine drainage have had efforts to address these issues for decades. Each state can proudly point to its successes in cleanup, reclamation, and prevention; but, because of the complexities and enormity of the problem, much still needs to be accomplished. However, the fact that technologies have improved and other water quality problems have been solved, lead many to think that now is the time to direct more attention and resources to AMD control. While it is accepted that all water quality problems associated with coal mining activities will not be solved overnight, it is hoped that the Statement of Mutual Intent will be the catalyst to channel energies and forge new partnerships among the many federal, state, and local agencies, the grassroots watershed groups and the coal industry. All have a common interest in restoring coal lands and impacted streams to their natural state. It can be assumed that because of the estimated, enormous costs of achieving this common goal, it cannot be attained in these times of severe governmental budget reductions without combining the resources and ideas of all!

EPA Region III Administrator W.Michael McCabe: *"Acid mine drainage pollution cleanup and prevention is a high priority in EPA Region III because of the more than 4500 miles of impacted streams. We share a common goal with the states, other federal agencies, watershed organizations and industry to restore these streams for fisheries and drinking water use. EPA will expend its energies to foster these partnerships. Our joint successes will improve the quality of life and economic well being to the affected communities and watersheds."*

Coal Mine Drainage Problems

ACID MINE DRAINAGE FORMATION

Problematic mine drainage forms when water and air contact certain minerals in rocks associated with mining. Pyrite and other iron-sulfide minerals react with water and oxygen, in the presence of certain bacteria, to form acid, which then dissolves other minerals in the rocks associated with coal.

Acid mine drainage is typically characterized by low pH (less than 6.0) and elevated levels of sulfates, acidity, and other metals--such as iron, manganese, and aluminum. These constituents often cause stream bottoms to become coated, most noticeably by iron, which results in the reddish-orange, so-called "yellow boy" stains familiar to the residents of mining areas throughout Appalachia.

Alkaline mine drainage (pH above 6.0) may also be a serious problem following mining where discharges are alkaline but may contain high levels of iron, manganese, and sulfates.

The geology of coalfield areas can have significant impacts on the AMD production and discharge for all types of mining. Coal deposits formed as decaying plant matter accumulated in ancient swamps and were subsequently buried under layers of sediments. This depositional environment and other post-depositional factors cause the differences between coal ranks (anthracite, bituminous, and lignite) and the tendency for some rocks to produce AMD when mined.

Acid mine drainage can be a product of both surface and underground coal mining operations, and of coal cleaning plants' waste piles. In surface mining, the solid rocks overlying the coal, or overburden, are removed, and in the process, broken into large and small rock fragments which are replaced in the mining pit after coal removal. This exposes the acid forming minerals in some rocks to water and air, resulting in a high probability of AMD formation if such minerals are present in sufficient quantity. In underground mining, large reservoirs of AMD may form in the cavern-like passageways below the earth's surface. These reservoirs are constantly replenished by ground-water movement through the mineral-bearing rocks, creating more AMD. The water from these "mine pools" seeps through the hillsides or gushes from abandoned mine entries, entering the streams, and depositing the metal-rich precipitates on everything in the downstream path. Coal cleaning refuse piles often contain excessive amounts of pyritic materials and water flowing through the piles will become acidic.

Mine drainage discharges can be as small as a tiny trickle, or they may be huge torrents of thousands of gallons per minute. If the receiving stream does not contain sufficient alkalinity to neutralize any added acid, its water quality may be adversely impacted and the stream's uses will be limited. Even if the stream has sufficient alkalinity to improve the pH, iron and/or aluminum precipitation may occur.

MINE DRAINAGE IMPACTS

Over the past 100 years, coal mining has caused increased amounts of acid, iron, sediments, manganese, aluminum, sulfates, and hardness in streams of coal producing states (particularly Maryland, Ohio, Pennsylvania, and West Virginia). The presence of acid and these minerals limits or decimate the aquatic life within a

stream. The same contaminants make the water unhealthy and/or unsuitable for drinking or livestock watering. Municipal water supplies have to adjust to poor intake water quality by providing additional treatment or seek other, non-AMD polluted supplies. The stream water is often too corrosive for industrial or manufacturing use. Recreational activities such as swimming, boating, water-skiing, canoeing, and whitewater rafting are either limited or are made unappealing and inhospitable. Navigational operations are affected by accelerated corrosion of barges, towboats, and locks and dams. The strangely-colored water and rocks are unappealing aesthetically and downgrade land values.

Max Peterson of the International Association of Fish & Wildlife Agencies: ***"This is one of those things where everybody that takes part in it will be a winner, because their children and grandchildren can look at streams that have been cleaned up and say: 'I had a little piece in making that happen!'"***

Because aquatic life, especially the fisheries, are so sensitive to low pH associated with coal mine drainage pollution, EPA and OSM decided that AMD impacts on fisheries would be a good baseline environmental measure. In 1995, EPA conducted a survey of State biologists familiar with impacted fisheries in their territories. The results of that survey can be found on Figures 1-4. The basic methodology was for the biologist to color code the impacted streams on USGS 1/100,000 scale topographic maps. Only streams which the biologists judged to have impacted fisheries were colored coded; streams without color codes in the study area may or may not be impacted. The data on impacted fisheries do not include impacts of sediment from mining, only metals and low pH levels.

Two levels of impacts were defined. The more severe is **No Fish**. A **No Fish** designation can include streams: (1) in which a few can be found surviving in an area where a tributary dilutes the stream or (2) near where a large spring may feed the stream, enabling a few fish to survive. The second level of impacted fishery would be **Some Fish**. Impacts to fisheries in this category include reduced number of species of fish and/or reduced productivity.

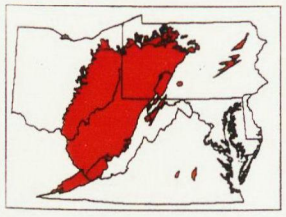
All of the data has been input into EPA's Geographic Information System (GIS) and is available in a wide variety of formats and data layers.

It should be noted that **not all** AMD impacted streams have been determined. If the state biologist had no knowledge or data on particular streams, those streams were not color coded. For example, in West Virginia it has been determined that more than 2,000 stream miles are impacted by AMD, based on chemical analysis, not just fishery impacts.

The fisheries survey was an offshoot of the SMISP. Because of its significance it has been highlighted in this section. It could have been described equally as well in this report's section on First Year Activities.

Streams with Fisheries Impacted by Acid Mine Drainage in MD, OH, PA, VA, WV

(Based on EPA Fisheries Survey – 1995)



Area Underlain by Coal

State	Stream Miles Impacted No Fish	Some Fish	Total
OH	258	349	607
PA	1714	1525	3239
WV	488	612	1100
VA	17	0	17
MD	42	110	152
TOTAL	2519	2596	5115

0 25 50 75 100

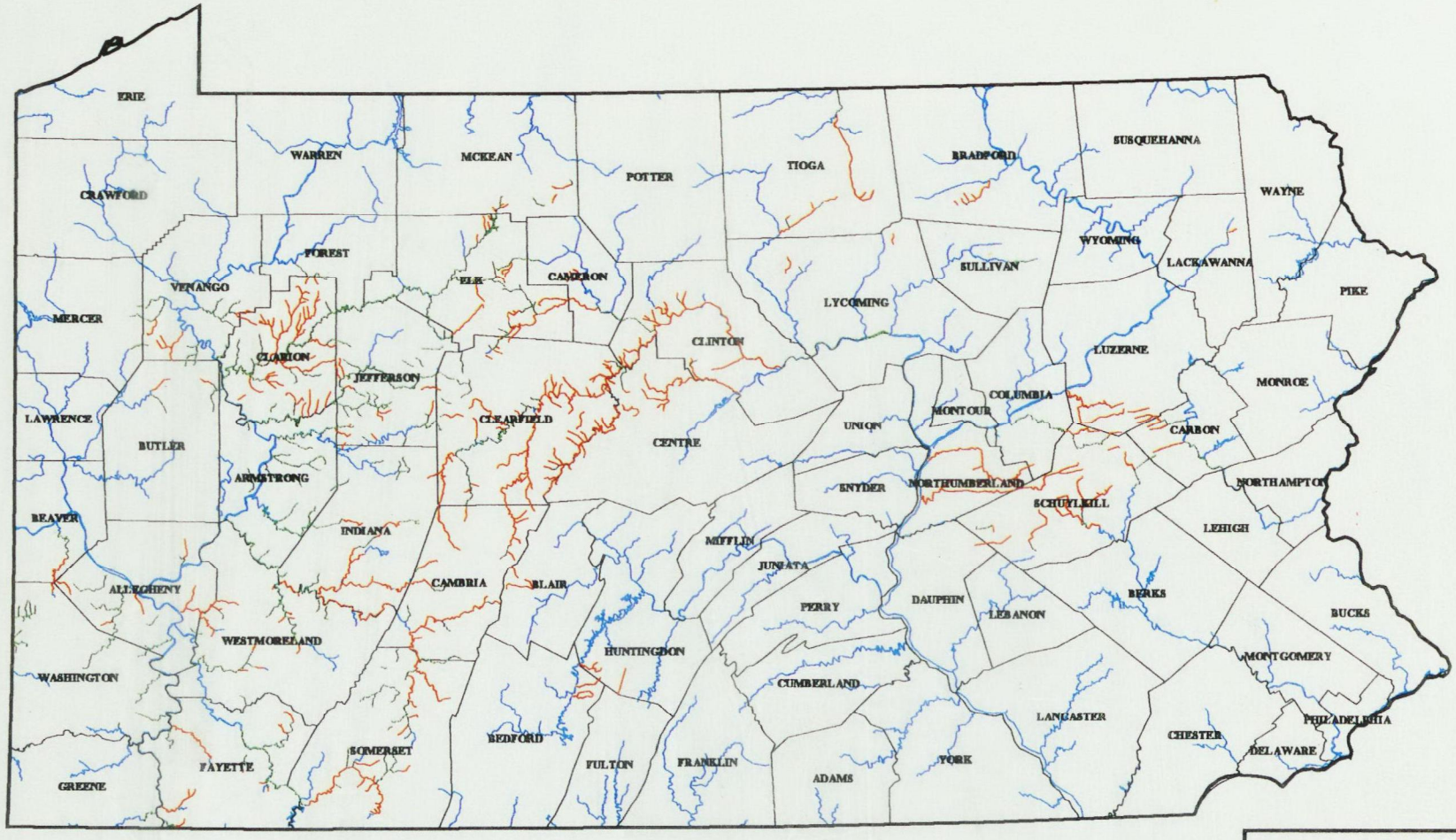
MILES

Scale 1 : 4400000

Figure 1

Streams and Fisheries Impacted by Acid Mine Drainage in Pennsylvania

(Based on EPA Fisheries Survey – 1995)



Legend:

No Fish

Some Fish

Impacted Stream Miles

No Fish ------- 1714

Some Fish ------- 1525

0 25 50

MILES

Scale 1 : 2300000

Figure 2

Streams and Fisheries Impacted by Acid Mine Drainage in West Virginia, Virginia, and Maryland

(Based on EPA Fisheries Survey – 1995)

0 25 50

MILES

Scale 1 : 3300000

Legend:

No Fish

Some Fish

Impacted Stream Miles

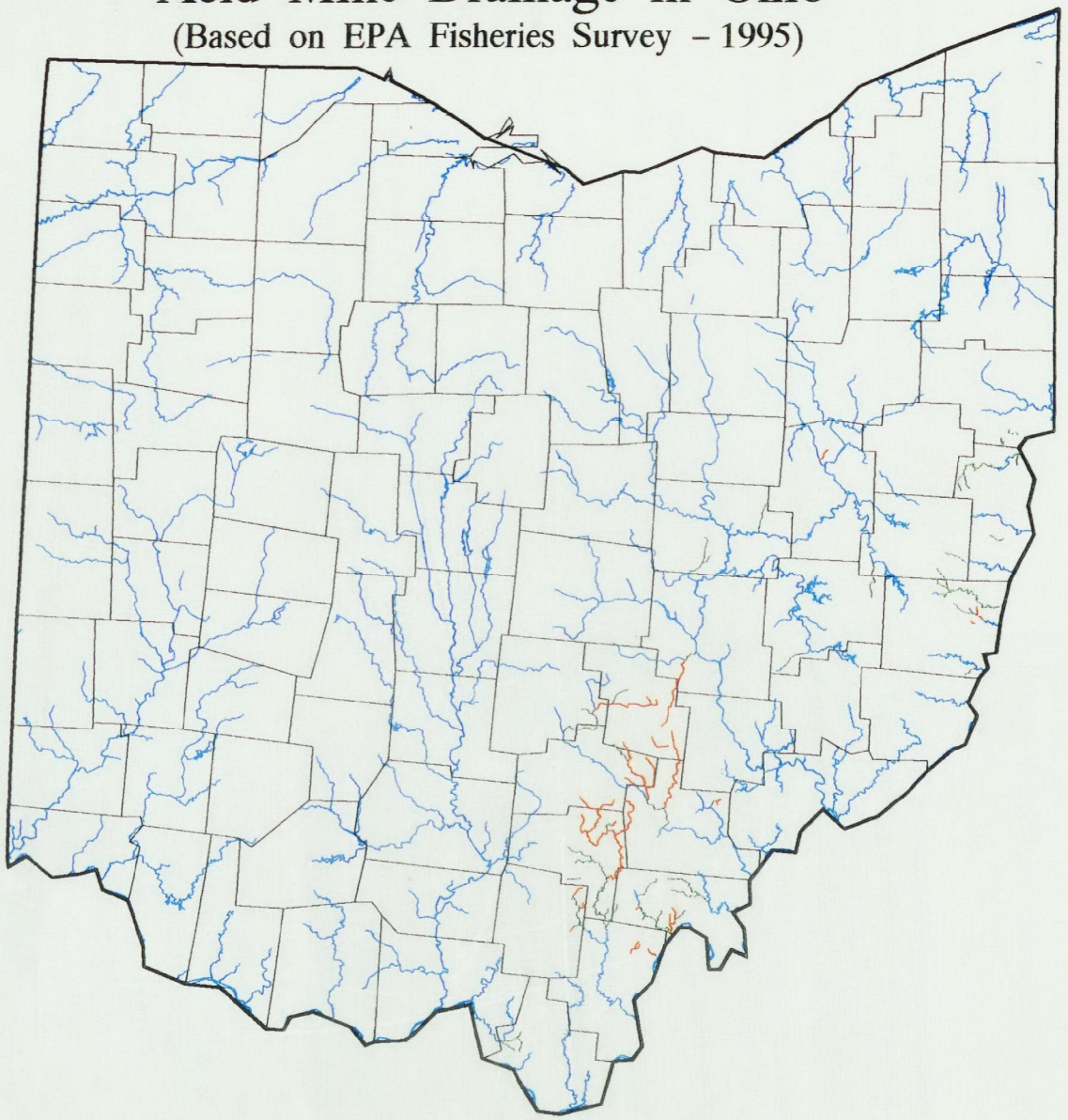
No Fish -------- 547

Some Fish ------- 722

Figure 3

Streams and Fisheries Impacted by Acid Mine Drainage in Ohio

(Based on EPA Fisheries Survey – 1995)



0 25 50

MILES

Scale 1 : 2500000

Legend:

No Fish

Some Fish

Impacted Stream Miles

No Fish -------- 258

Some Fish ------- 349

Figure 4

Mine Drainage Pollution Control

FEDERAL GOVERNMENT PROGRAMS/ACTIVITIES

Coal mine drainage pollution, largely from abandoned coal mines, is the number one water quality problem in Appalachia. Citizens, states, and the federal government have spent many years and millions of dollars but have barely made a dent in the cleanup of the more than 7500 miles of impacted streams in all of Appalachia.

*OSM's Appalachian Clean Streams Initiative has been described earlier in this report. Additionally, OSM through its AML Fund is a major source of funding for mine reclamation and mine drainage cleanup. OSM has taken action this year to allow states greater flexibility in its use of the AML Fund by defining the "general welfare" provision of the AML Program to consider the economic impacts of AMD polluted streams on an area. AMD can now be classified as Priority II under the prioritization system set forth in SMCRA, Title IV. This clarification of statutory language makes stream cleanup much more viable than at any time in the history of the AML Program.

* EPA's Mine Drainage Initiative and its extensive work in conducting the impacted fisheries survey and development of mine drainage GIS have been described earlier. EPA is also a funding source through the states and its §319 and §104b3 programs. Through these funding sources several cleanup projects have been supported as well as financial aid to watershed groups.

* The Natural Resources Conservation Service (NRCS) has the lead role in the Rural Abandoned Mine Program (RAMP). The purpose of RAMP is to provide a means for reclaiming soil and water resources in rural areas that have been adversely affected by past coal mining activities.

* The Corps of Engineers also has programs which are directed to mine drainage inventory, assessment and cleanup.

* The U.S. Bureau of Mines(USBM) continues to be a leader in the research and studies of treatment technology, predictive technology, hydrologic studies, effectiveness of remining and evaluating the use of combustion wastes to abate AMD generation.

OSM and EPA have also leveraged the resources of several other federal agencies, Applachian state governments, watershed groups, and endowments to counteract abandoned coal mining degradation of streams.

STATE GOVERNMENT ACTIVITIES/PROJECTS

State governments have taken the lead in identifying, planning, and completing projects to eliminate acid mine drainage discharges and restore streams to a usable condition. These projects include reclaiming abandoned surface mines, sealing underground mines, excavating underground mines (daylighting), construction and operation of AMD treatment plants, design and construction of passive treatment systems, removing or reclaiming coal cleaning refuse piles, and providing technical assistance and resources to local watershed groups.

Many of these state remediation projects are identified in Table 1 (Pennsylvania Projects), Table 2 (Ohio Projects), and Table 3 (West Virginia, Maryland, and Virginia Projects). The status of the projects includes those completed within the last five years, under construction, designed, planned, or proposed. Cost figures given in the tables are for the entire project or are the incremental cost of that portion of a large Abandoned Mine Land project that can be attributed to mine drainage control. The entry in the"stream miles cleaned" column for projects not yet completed is included, when the data was available as a target.

NON-GOVERNMENT AGENCY ACTIVITIES/PROJECTS

NATIONAL MINE LAND RECLAMATION CENTER (NMLRC)

The objective of the Center is to develop and move innovative technology into the mining industry and regulatory agencies. The NMLRC is centered at West Virginia University but encompasses programs at Pennsylvania State Univesity, Universitiy of North Dakota, and Southern Illinois University at Carbondale. Pertinent ongoing NMLRC projects involve:

* NMLRC is surveying rocklined waterways containing limestone and AMD to determine if long term neutralization is occurring.

* NMLRC is conducting a field study in WV to determine chemical and fluid mass balance evolution in acid generating coal refuse.

* NMLRC is testing the validity of manganese as a surrogate of heavy metal removal in constructed wetlands treating AMD.

* NMLRC is evaluating underground mine AMD treatment with both compost and an anoxic limestone drain.

* NMLRC is investigating disposal of fluidized bed combustion ash in an underground mine to control acid mine drainage and subsidence. Another study investigates the use of FBC and FGD residues for use in anoxic limestone drains.

* NMLRC is investigating the effectiveness of treatment of AMD with armored limestone.

* NMLRC is investigating alkaline amendment to coal refuse and the use of limestone foundation drains for AMD control in coal refuse piles.

* NMLRC is investigating remining to reduce/prevent AMD.

* NMLRC is evaluating use of manganese oxide coated-media for removal of soluble manganese in AMD.

* NMLRC is continuing study of the long term performance of wetlands designed to treat AMD.

INTERNATIONAL ASSOCIATION OF FISH & WILDLIFE AGENCIES' PROJECTS

The International Association of Fish and Wildlife Agencies (IAF&WA) has teamed up with the Appalachian Clean Streams Initiative (ACSI) to focus the capabilities of State and federal agencies, industry, and citizen's groups, on developing ACSI restoration projects to correct the water quality damages caused by coal mining which took place before modern reclamation practices were put into use.

This program seeks to foster a level of technical, funding, and interagency cooperation. Under this plan, the best technical experts from federal and private

organizations will work with State experts to implement the latest scientific advances in elimination of acid-related pollution at the source. Twelve selected pilot projects, in eight Appalachian states, were studied by a group of technical experts under the guidance of the NMLRC. Preliminary recommendations included options for reclamation of surface mines; for reducing water infiltration into deep mines; for passive treatment of discharges; and for utilizing active treatment facilities and measures.

Eight IAF&WA projects proposed for the states covered by this report are listed within Tables 1-3.

SMISP IN ACTION
THE GREENS RUN INITIATIVE
A GOVERNMENT INDUSTRY COOPERATIVE PROJECT

Anker Energy Greens Run Initiative

Greens Run, a stream degraded by past mining, is a tributary of the Cheat River located near Albright, WV. The lower Cheat River is one of the state's waterways most severely impacted by acid mine drainage (AMD). Recently, the Cheat River was recognized by the American Rivers Association. as one of the ten most threatened and endangered rivers in the U.S.A..

The idea for the Greens Run ACSI project resulted from discussions between John Faltis, President of Anker Energy Corporation (AEC), and representatives from a local watershed organization (Friends of the Cheat). AEC presented a conceptual plan for the Greens Run project to the WV Division of Environmental Protection (WVDEP) and the OSM. This resulted in a memorandum of agreement between the WVDEP and the AEC, where the WVDEP is the project sponsor, with AEC being a no-cost contractor to the WVDEP. AEC elevated the Greens Run project within its organization and obligated financial, engineering, and construction resources for the project. The focus of the initial project phase is directed at the middle fork of Greens Run. AEC anticipates that this initial effort will act as a catalyst for future AMD abatement efforts in Greens Run and the Cheat River subbasin.

A steering committee, comprised of AEC, Friends of the Cheat, WV Rivers Coalition, the OSM, the WV DEP and the WV Division of Natural Resources was formed to direct the development of the Greens Run project.

In conjunction with the Greens Run initiative, the committee developed a vision document, entitled "River of Promise". The document, reflecting a shared vision and commitment that embraces a watershed/ecosystem approach for the restoration of the Cheat River, was ceremonially signed at the first annual Cheat River Festival on May 6, 1995.

The abatement plan provides for a state of the art anoxic limestone drain, utilizing 9,000 tons of limestone at an old deep mine seep on the middle fork of Greens Run. The seep contributes 281 tons of acid annually to the River.

The partnerships developed and vision shared in this initiative between government, industry and the environmental community are unprecedented. The successes experienced from this cooperative effort will serve as a model for future efforts.

TABLE 1 AMD REMEDIATION PROJECTS PENNSYLVANIA					
Map Symbol	Project Name	State - County	Watershed	Status/ Cost	Stream Miles Cleaned
●-1	Thomas Mill	PA - Somerset	Bens Cr./South Fk./Stoneycreek Riv./ Conemaugh River	Designed	7.5
●-2	Rocky Ridge	PA - Huntingdon	Roaring Run/ Sideling/Juniata R.	Designed	4.5
●-3	Cucumber Run	PA - Fayette	Cucumber Run/ Youghiogheny Riv.	Designed	1.5
●-4	Falls Creek	PA - Bradford	Schrader Creek/	Designed	8
●-5	Wildwood Treatment Plant	PA - Allegheny	Willow Run/Pine Cr./Allegheny Riv.	Completed	6
●-6	Little Toby Creek Treatment Plant	PA - Elk	Little Toby Cr./ Clarion River	Under Construction	12
●-7	Stoneycreek Treatment Plant	PA - Elk	Swamp Cr./	Completed	1
●-8	Mill Creek Restoration	PA - Jefferson	Mill Cr./ Clarion River	Completed/ Construction	10
●-9	Oven Run Site D	PA - Somerset	Oven Run/ Stoneycreek River	Construction	1
●-10	Brookwood Shaft	PA - Clearfield	Whiteside Run/ Moshannon Cr./ W. Br. Susquehanna River	Construction	
●-11	Babb Creek	PA - Tioga	Babb Cr./Pine Cr./ W. Br. Susquehanna Riv.	Completed/ Construction	10
●-12	Rausch Creek	PA - Schuylkill	Rausch Cr./ Pine Cr./Mahantango Cr./Susquehanna River	Completed	28
●-13	Aylesworth Creek	PA - Lackawanna	Aylesworth Cr./ Lackawanna Riv./ Susquehanna Riv.	Completed	1
●-14	Mary D South	PA - Schuylkill	Schuylkill River/ Delaware River	Completed	N.A.
●-15	Mead Run RAMP	PA - Elk	Mead Run	Completed	3
●-16	Monastery Run	PA - Westmoreland	Monastery Run/ Loyalhanna Cr./ Conemaugh River	Development	13

TABLE 1 (Cont.)
AMD REMEDIATION PROJECTS
PENNSYLVANIA

Map Symbol	Project Name	State - County	Watershed	Status/ Cost	Stream Miles Cleaned
●-17	Lackawanna River	PA - Lack-awanna	Lackawanna River	Development	N.A.
●-18	Silverbrook Mine * Wilson Discharge * Brinkerton Disch.	PA - Schuylkill	Little Schuylkill River	Development	N.A.
●-19	Jones Mine	PA - Beaver	Brady Creek	Design	N.A.
●-20	North Point	PA - Bedford	Six Mile Run	Design	N.A.
●-21	Coal Hollow	PA - Elk	Little Toby Cr./ Clarion River	Design/	N.A.
●-22	Schnepp	PA - Jefferson	Mill Creek/ Clarn River	Design	N.A.
●-23	Friedline	PA - West-moreland	Laurel Run/ Loyalhanna Cr./ Conemaugh River	Design	N.A.
●-24	Scrubgrass Run	PA - Allegheny	Scrubgrass Run/ Chartiers Cr./ Ohio River	Design	N.A.
●-25	Casselman River	PA- Somerset	Casselman-Youghiogheny	Construction/ $450,000	N.A.

TABLE 2 AMD REMEDIATION PROJECTS OHIO					
Map Symbol	Project Name	State - County	Watershed	Status/ Cost	Stream Miles Cleaned
●-1	Midvale	OH - Tuscarawas	Pone Run/Pike Run/Tuscarawas River	Completed/ $ 70,000	
●-2	Wills Creek Tipple	OH - Coshocton	Wills Creek Reservoir	Completed/ $ 255,620	
●-3	Tropic Coal	OH - Morgan	Black Fk./Moxahala Cr./Muskingum Ri.	Ongoing/ $ 413,780	
●-4	Howard Williams Lake	OH - Perry	Moxahala Cr./Muskingum Ri.	Completed/ $ 500,000	
●-5	Lick Run	OH - Athens	Lick Run/Hocking River/ Ohio River	Completed/ $ 127,140	
●-6	Carbondale	OH - Athens	Hewett Fork/ Racoon Cr./Ohio R.	Completed/ $ 221,380	
●-7	Zaleski/Saitz	OH - Vinton	Elk Fork/Racoon Cr./Ohio River	Completed/ $ 346,440	
●-8	Sunny King	OH - Athens	Goose Run/Snow Fk./ Monday Cr./Hocking R	Completed/ $ 48,993	
●-9	Murray City Gob Pile	OH - Hocking	Snow Fork/ Monday Cr./ Hocking River	Completed/ $ 20,000	
●-10	Kimberly/ MacCombs	OH - Athens	Monday Cr./ Hocking River	Completed/ $ 40,513	
●-11	Athens County Road One Gob Pile	OH - Athens	Hewett Fork/ Racoon Cr./Ohio River	Completed/ $ 18,116	
●-12	Brush Fork	OH - Hocking	West Br. Racoon Cr./Racoon Cr.	Completed/ $ 12,018	
●-13	Buckeye Furnace	OH - Jackson	Buffer Run/ Little Racoon Cr.	Planned/ $ 1,100,00	
●-14	Doctor Dew	OH - Athens	Hewett Fork/ Racoon Cr.	Ongoing/ $ 76,495	
●-15	Goose Run	OH - Jackson	Goose Run/L. Racoon Cr./ Racoon Cr./Ohio R	Ongoing/ $16,486	
●-16	Hewett Fork	OH - Athens	Carbondale Cr./ Hewett Fk/ Racoon Cr.	Planned/ $ 600,000	
●-17	Rock Run Gob Pile	OH - Perry	Monday Cr./ Hocking River	Planned/ $ 335,000	
●-18	Captina Creek IAF&WA Project	OH	Captina Cr./Ohio River	Designed/ $400,000	5

TABLE 2 (Cont.) AMD REMEDIATION PROJECTS OHIO					
Map Symbol	Project Name	State - County	Watershed	Status/ Cost	Stream Miles Cleaned
19	Wills Creek/Linton Mine Drainage	OH - Coshocton	Wills Creek	Planned/ $ 450,000	
20	Piedmont Lake - Lick Run	OH - Belmont	Stillwater Creek	Planned/ $ 1-3 million	
21	Howard Williams Lake- Phase II, Water Quality Assessment	OH - Perry	Moxahala Creek.	Planned/ $ 55,000	
22	Reboboth Gob Pile Pilot Project	OH - Perry	Rush Creek	Under Construction	
23	Indigo Wetland	OH - Perry	Rush Creek	Completed/ $ 10,000	
24	Natco Alkaline Injection - Phase I	OH - Stark	Sandy Creek	Planned/ $96,000	

TABLE 3
AMD REMEDIATION PROJECTS
WEST VIRGINIA, MARYLAND, VIRGINIA

Map Figure/ Symbol	Project Name	State - County	Watershed	Status/ Cost	Stream Miles Cleaned
●-1	Rosati Mine Drainage	WV - Preston	Bull Run/ Monongahela River	Completed/ $ 30,000	N.A.
●-2	Albert Highwall	WV - Tucker	N. Fk. Blackwater River/Cheat River	Active/ $ 980,000	N.A.
●-3	Blackwater River Limestone Drum	WV - Tucker	Blackwater River/Cheat River	Completed/ $ 880,000	12
●-4	Cherry Run # 3	WV - Preston	Cherry Run/Big Sandy Cr./Cheat R.	Designed/ $ 125,000	N.A.
●-5	Douglas Highwall	WV - Tucker	N. Fk. Blackwater River/Cheat River	Completed/ $ 543,000	N.A.
●-6	Greens Run Cleanup	WV - Preston	Greens Run/Cheat River	Designed/ $ 200,000	N.A.
●-7	Martin Cr. Refuse	WV - Preston	Martin Cr./ Muddy Cr./Cheat River	Designed/ $ 35,000	N.A.
●-8	Webster Refuse	WV - Preston	Webster Run/Cheat River	Completed/ $ 35,000	N.A.
●-9	Big Nob Acid Mine Drainage	WV - Randolph	Taylor Run/Tygart River	Completed/ $ 90,000	N.A.
●-10	Upshur Rt. 10/15 Portals	WV - Upshur	White Oak Run/ Middle Fk. River/ Tygart River	Completed/ $ 200,000	N.A.
●-11	Middle Fork River Limestone Fines Neutralization Proj.	WV Barbour, Randolph, Upshur	Middle Fork River/ Monongahela River	Ongoing through 10% set-aside funds	38
●-12	Weaver Highwall	WV - Randolph	Beaver Cr./Tygart R./Monongahela R.	Completed/ $ 150,000	N.A.
●-13	Whitman Flats	WV - Randolph	Panther Run/ Middle Fk. River/ Tygart River	Ongoing/ $ 1,000,000	N.A.
●-14	Paint Creek IAF&WA Project	WV -	Paint Cr./Kanawha River	Designed/ $1,535,000	15
●-15	Bismark Strip Drainage	WV - Grant	Little Cr./Abram Cr./North Branch of Potomac River	Being Constructed/ $ 325,000	N.A.

TABLE 3
AMD REMEDIATION PROJECTS
WEST VIRGINIA, MARYLAND, VIRGINIA

Map Figure/ Symbol	Project Name	State - County	Watershed	Status/ Cost	Stream Miles Cleaned
●-16	Omega Mine	WV -	Cobun Cr./ Monongahela River	Ongoing OSM ($225,000); Anker Energy ($200,000); WVDEP ($250,000); CONSOL ($200,000); Allegheny Power ($300,000);	N.A.
●-17	Middle Fork IAF&WA Project	WV -	Tygart Valley River	Designed/ Phase 1 - $1,400,000 Phase 2 - $2,600,000	38
●-18	Abram Creek IAF&WA Project	WV -	North Branch, Potomac River	Designed/ Phase 1 - $3,800,000 Phase 2 - $2,600,000 Phase 3 - $2,600,000	35
●-19	North Branch Dosers	MD - Garrett	North Branch Potomac River	Completed	N.A.
●-20	North Branch IAF&WA Project	MD - Garrett	North Branch Potomac River	Planned/ $6,250,000	32
●-21	Black Creek IAF&WA Project	VA - Wise	Black Cr./Powell River	Planned/ $2,000,000	8
●-22	Ely Creek IAF&WA Project	VA - Lee	Ely Cr./Powell River	Designed/ $1,000,000	3
●-23	Peak Cr.	VA - Wise	Indian Cr./Pound River/ Big Sandy River	Proposed	N.A.

WATERSHED COALITIONS

The Role of Watershed Coalitions in Cleaning Up Mine Drainage

Grassroot organizations, in the form of watershed coalitions, associations, advocacy groups, improvement committees, etc., are the heart and soul of the movement to clean up AMD polluted streams. Without the impetus and on-the-ground efforts they provide, this massive stream restoration program is bound to fail.

Grassroot organizations are initially formed by environmentally conscious citizens whose goal is to clean up an AMD-degraded watershed. As the coalition grows, its composition changes to include, in addition to the local and other citizen organizers, representatives from: federal, state and local government agencies; academic institutions ranging from grade schools to universities; foundations; environmental groups; local businesses and industry; public service organizations; and others. The final success of the effort depends upon the contributions that each person and group makes.

SMISP in ACTION
CREATING A WATERSHED COALITION

The Monday Creek Restoration Project is a dynamic, direct result of the Appalachian Clean Streams Initiative. Mary Ann Borch, a Vista Volunteer for Rural Action, Athens, Ohio began organizing the project after attending the November 1-2, 1994 EPA/OSM AMD Workshop in Morgantown, WV. The workshop experience convinced her that an ACSI partnership was the best way to build upon current community efforts dealing with environmental damage, including a severe AMD problem in Monday Creek.

Ms. Borch described ACSI at a meeting of local university and agency officials on November 21. All participants agreed with the ACSI mission and selected the Monday Creek watershed as a project site.

Monday Creek was selected due to the work already accomplished by Ohio University on Snow Fork, by the National Environmental Training Cooperative (NETC) at Hocking College, and the U.S. Forest Service's interest in AMD work on National Forest lands in the area, as well as local citizen concerns about the watershed.

By February 1995, she had expanded the partnership on Monday Creek Restoration to include six Federal and State agencies, and three colleges and universities.

In May 1995, Ms. Borch applied for an EPA grant to proceed with preparation of a watershed management plan and reclamation of a 22 acre coal waste gob pile. The waste pile pollutes Rock Run with toxic sediment and acid mine drainage in the headwaters of Monday Creek.

The application shows the fruits of her efforts to bring together a partnership of agencies for the purpose of improving the water quality in Monday Creek.

Funding for the Rock Run project was provided by the Ohio Division of Reclamation, Rural Action, and the U.S. Forest Service as well as "in-kind" services from Ohio University, American Electric Power, and the U.S. Bureau of Mines.

Lisa J. Morris, Chief, Ohio Division of Reclamation stated in a letter to Mary Ann Borch on May 8, 1995, "*... to have accomplished so much in such a brief period of time through Rural Action is nothing short of remarkable.*"

The coalition's role is many faceted. Momentum must be maintained through meetings and other forms of information transfer and new members should be recruited. Citizen members help collect the information and data needed to define the scope of the problem, design the remediation project and secure funding. Information collected includes the location of mines and their discharges; mine maps; stream and mine discharge sample analyses; geologic data; and land use and capability information. They secure cooperation from local landowners whose land may be affected by a project and help get assistance from non-government people and groups as needed. They play pivotal roles as potentially successful remediation methods are identified and designed and attain necessary government agencies' interest in the project to secure the necessary funding. Finally, after construction, they are key to the continued effectiveness of the remedial measure which will require some degree of maintenance and cost.

Active Coalitions

Many active watershed coalitions have been identified in the states covered by this report. Tables 4-6 provide concise information about each group. Coalitions are also located on Figures 5-7. Contacts for each coalition are given in the tables. If more information about the activities of any group is desired the OSM clearinghouse described on page 23 also can provide such information.

TABLE 4 WATERSHED COALITIONS/ASSOCIATIONS PENNSYLVANIA				
Map Symbol	Coalition	State - County	Funding	For More Information contact:
▲-1	Babb Creek Trust Fund	PA - Tioga		Robert McCullough 717-322-1021
▲-2	Big Wapwallopen Creek Watershed Association	PA - Luzerne		Jaquie Fine
▲-3	Blacklick Creek Watershed Association	PA - Cambria & Indiana	N.A.	Jim Lafontaine, 412-354-5450
▲-4	Chest Cr. Watershed Association	PA - Cambria	N.A.	Paul Short 814-674-5084
▲-5	Clarion River Basin Commission: Mill Cr. and Little Toby Cr. Coalitions	PA - Clarion, Elk, Forest, McKean, & Jefferson	Local donations.	Bob Kaufman, President, 814-226-2164
▲-6	Cowanshannock Creek Watershed Association	PA - Armstrong	Requested 10% set-aside funds.	John Bohanak, 412-548-3427
▲-7	Crooked Creek Watershed Association	PA - Indiana	Requested 10% set-aside funds.	Leroy Vatter, Vice President 412-463-0822
▲-8	Headwaters Charitable trust	PA - Eight central counties		Eric Carlson 814-765-4612
▲-9	Lackawanna River Corridor Association	PA - Lackawanna	EPA appropriation ($20,000,000); NIER ($4,000,000)	Bernard McGurl, Exe. Director, 717-282-6640
▲-10	Lackawanna River Watch	PA - Lackawanna	N.A.	Arthur Popp 717-347-6311
▲-11	Little Clearfield Creek Watershed Association	PA - Clearfield	N.A.	George Gill 814-236-0872
▲-12	Little Schuylkill Conservation Club	PA - Schuylkill	N.A.	Ray Ripco 717-668-1163
▲-13	Little Toby Cr. Watershed Assoc.	PA - Elk	Operation Scarlift ($2,000,000); EPA 319 funds; Headwaters Charitable Trust. Requested: Set-aside, PL 566, & IAF&WA.	William Sabatose, Pres. 814-265-6562
▲-14	Little Sewickley Cr. Watershed Assoc.	PA - Allegheny	N.A.	Susan Craig 412-741-8388
▲-15	Loyalhanna Watershed Assoc./ Monastery Run Improvement Project	PA - Westmoreland	10% set-aside ($187,000). Requested: EPA 319 ($399,00), NRCS PL 566 ($800,000)	Lysle Sherwin, Executive Director, 412-238-7560

TABLE 4 (Cont.)
WATERSHED COALITIONS/ASSOCIATIONS
PENNSYLVANIA

Map Symbol	Coalition	State - County	Funding	For More Information contact:
▲-16	Mill Creek Coalition	PA- Clarion, Jefferson	Local donations; EPA 319; EPA to Bur. of Oil & Gas Man.; National Guard; Requested: Set-aside, PL 566,	Peter Dalby 814-226-2164
▲-17	Mountain Watershed Association	PA - Westmoreland	None	Beverly Braverman 412-455-2886
▲-18	Pine Creek Headwaters Protection Group	PA - Tioga		Phil Stillerman 717-724-5097
▲-19	Roaring Run Watershed Association	PA - Armstrong	Requested 10% set-aside funds	Bob Knepshield, Pres., 412-478-1233
▲-20	Schrader Creek Watershed Association	PA - Bradford	Requested 10% set-aside funds	Hugh McMahon, President 717-265-2121
▲-21	Scrubgrass Run Watershed Project	PA - Allegheny	EPA 319 ($43,000); local	Lisa Trainor or Jodi Krug 412-429-2241
▲-22	Sewickley Creek Watershed Association	PA - Westmoreland	USBM research ($ 194,000)	Robert Hepler, Pres., 412-925-9190
▲-23	Slippery Rock Watershed Association	PA - Butler		Tim Van Dyke 814-797-1191
▲-24	Squaw Run Watershed Association	PA - Allegheny		Mrs. Leonard Schugar
▲-25	Stoneycreek-Conemaugh River Improvement Project	PA - Cambria & Somerset	EPA 319; local match; 10% AMD set-aside; SCS PL 566 watershed improvement; and Title IV funds..	Walter Rossman, Cambria Co. 814-472-2120 & David Mankamyer, Somerset Co. 814-445-4652
▲-26	Swatara Watershed Alliance	PA - Lebanon		Jo Ellen Litz 717-274-1175
▲-27	Turtle Creek Watershed Association	PA - Allegheny & Westmoreland	None	Amy Cortese, Exe. Director 412-829-5042
▲-28	West Branch Susquehanna Rescue	PA - Cambria		John Yuhas 814-948-5153
▲-29	Western PA Coalition for Abandoned Mine Reclamation	PA - Western Pa. Counties		Mark Killar 412-837-5271

TABLE 5 WATERSHED COALITIONS/ASSOCIATIONS OHIO				
Map Symbol	Coalition	State - County	Funding	For More Information contact:
▲-1	Monday Creek Restoration Project	OH	Applied for EPA 319 Funds; Division of Reclamation(DOR) State AML	Mary Ann Borch 614-698-2227
▲-2	Racoon Creek Improvement Committee	OH	Applied for EPA 319 Funds; DOR State AML	Connie White 614-669-7001

TABLE 6 WATERSHED COALITIONS/ASSOCIATIONS WEST VIRGINIA, MARYLAND, VIRGINIA				
Map Symbol	Coalition	State - County	Funding	For More Information contact:
▲-1	Friends of the Cheat "River of Promise" - Cheat River (Includes the Greens Run initiative)	WV - Randolph, Taylor, Monogalia, Preston, Barbour	Anker Energy ($200,000);	David Bassage,Pres. 304-379-3141 Ron Stemple
▲-2	Downstream Alliance - Includes: Sandy Cr., Laurel Run, Roaring Cr., Muddy Cr., Whiteday Cr., Booths Cr., Prickett Cr., Cobun Cr., Deckers Cr.	WV - Preston, Barbour, Monogalia, Marion, Taylor	N.A.	David Houser, 304-892-4372
▲-3	Friends of Deckers Creek	WV - Preston, Monongalia	N.A.	Scott Fogarty, 304-291-5646
▲-4	North Br. Potomac River Advocacy group "Flowing to the Future"	West Virginia and Maryland - Area Wide	N.A.	Herb Sachs, Commissioner, INCOPOT
▲-5	Friends of the Little Kanawha	WV - Area Wide	N.A.	Margo Davis
-6	WV Sierra Club Rivers Committee	WV - State Wide	N.A.	Jim Sconyers 304-789-6277
-7	Trout Unlimited, Mountaineer Chapter	WV - State Wide	N.A.	Don Garvin 304-472-8716
-8	West Virginia Organizing Committee	WV - State Wide	N.A.	John Humphreys 304-752-0901

TABLE 6 (Cont.)
WATERSHED COALITIONS/ASSOCIATIONS
West Virginia,Maryland, Virginia

Map Symbol	Coalition	State - County	Funding	For More Information contact:
9	White Day Creek Watershed Association	WV - Preston, Monongalia	N.A.	Richard Gerken 304-363-4662
10	Black Water River "Stakeholders"	WV- Tucker	N.A.	Karen Bonner 304-866-4680
11	Davis Creek Watershed Association	WV - Kanawha	N.A.	Bill Vandale 304-744-3521
12	Dunkard Creek "Stakeholders"	WV - Monongalia	N.A.	Cam Lemley 304-879-5988
13	Lower Paint Creek Watershed Association	WV - Raleigh, Fayette, Kanawha	N.A.	Dwight Siemiazcko 304-595-3325
14	Tug Fork "Stakeholders"	Tri-State - WV, VA, Ky	Corps of Engineers NPS	Bob McCoy 304-426-8761
15	WV Rivers Coalition	WV State Wide	Public/Government	Roger Harrison 304-472-0025
16	Mountain Monitors			Richard DiPretero 304-296-8963
17	Greenbriar River Watershed Association	WV - Pochantos Greenbriar, Monroe,Summers		Leslie McCarty 304-653-4722
18	4-H Road Community Association, Inc.	WV - Monongalia	N.A.	Joan Sims

AMD Watershed Associations and Remediation Projects in Pennsylvania

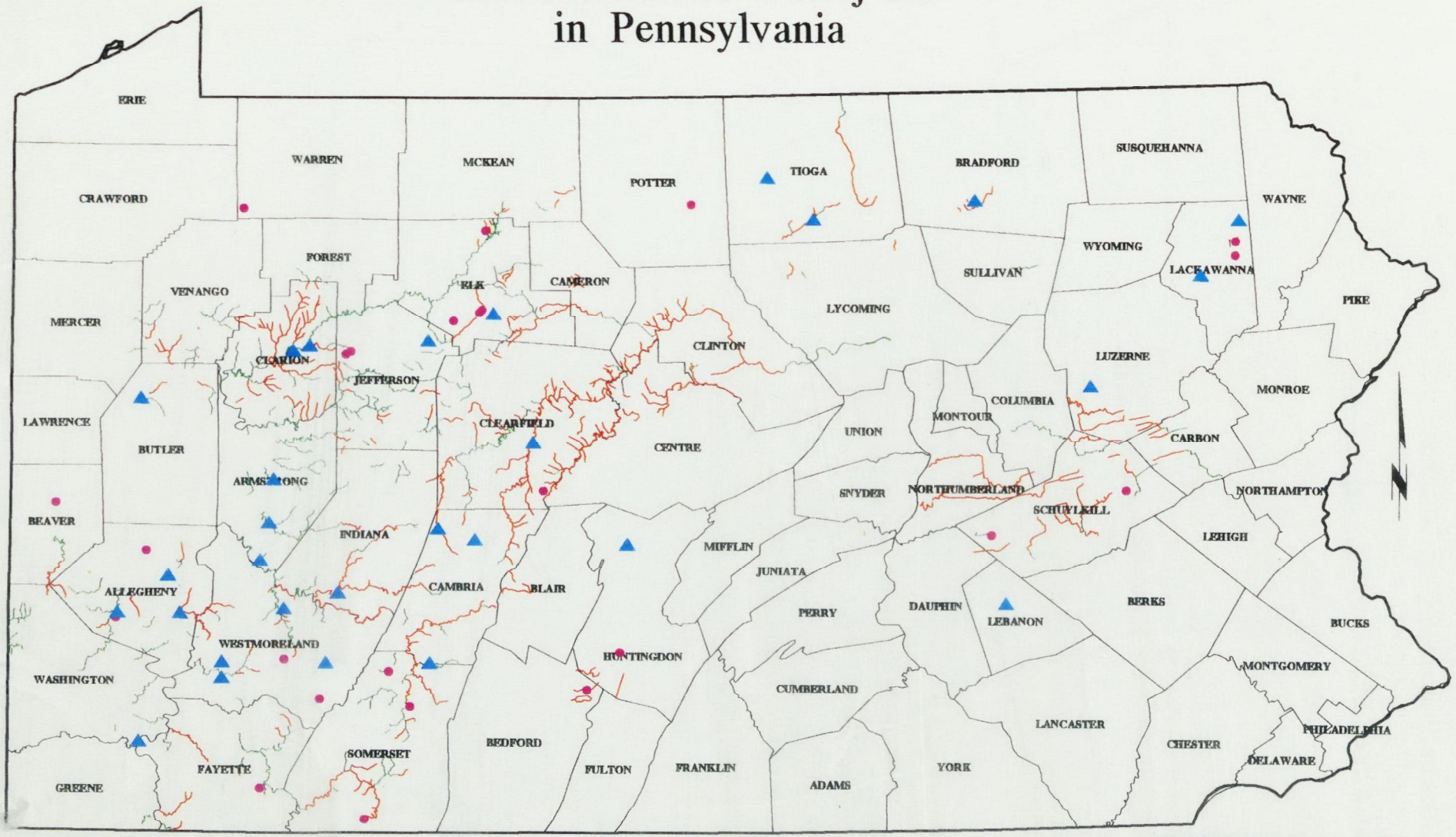
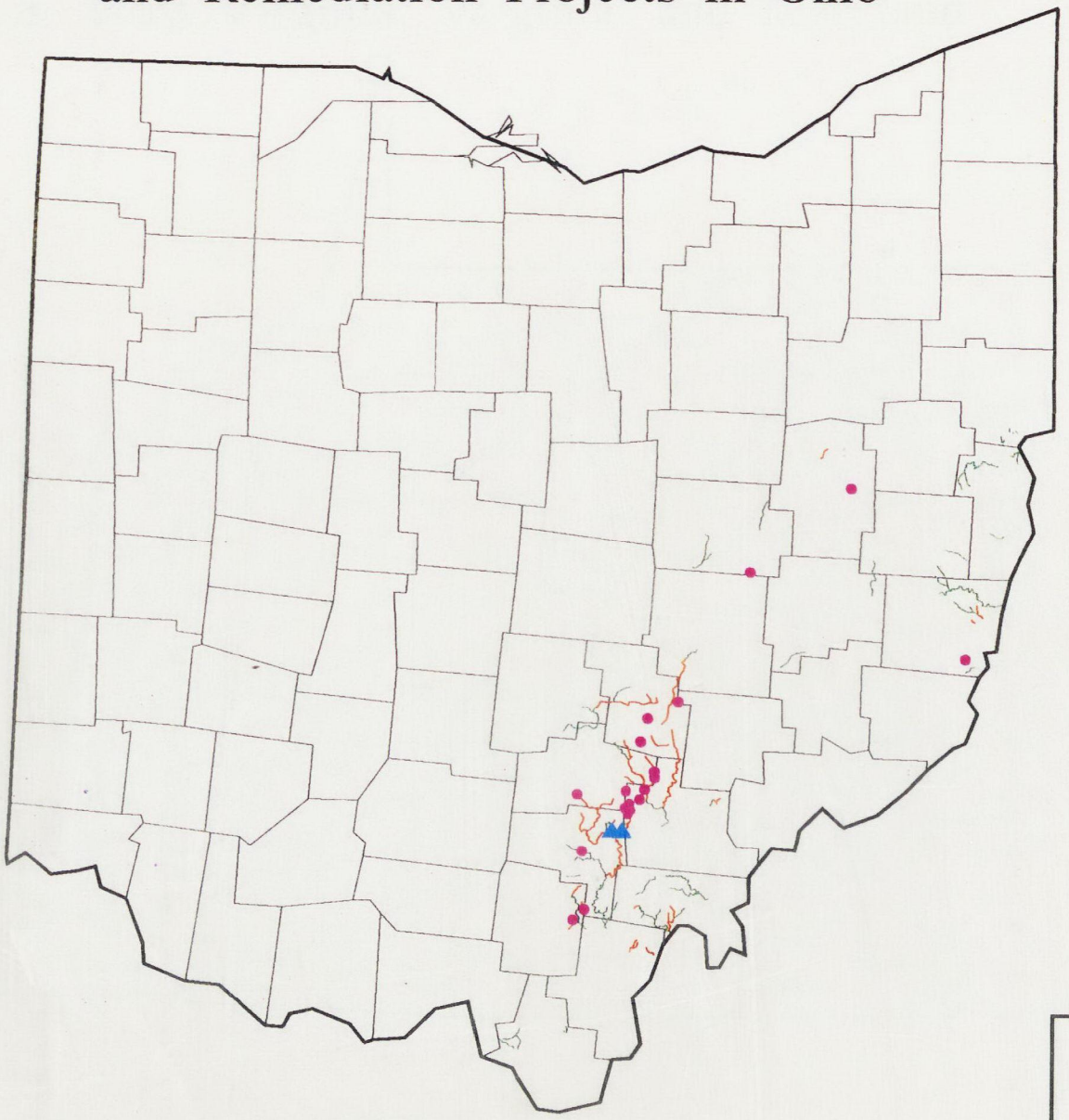


Figure 5

AMD Watershed Associations and Remediation Projects in Ohio



Legend:
- Watershed Associations
- Remediation Projects
- No Fish
- Some Fish

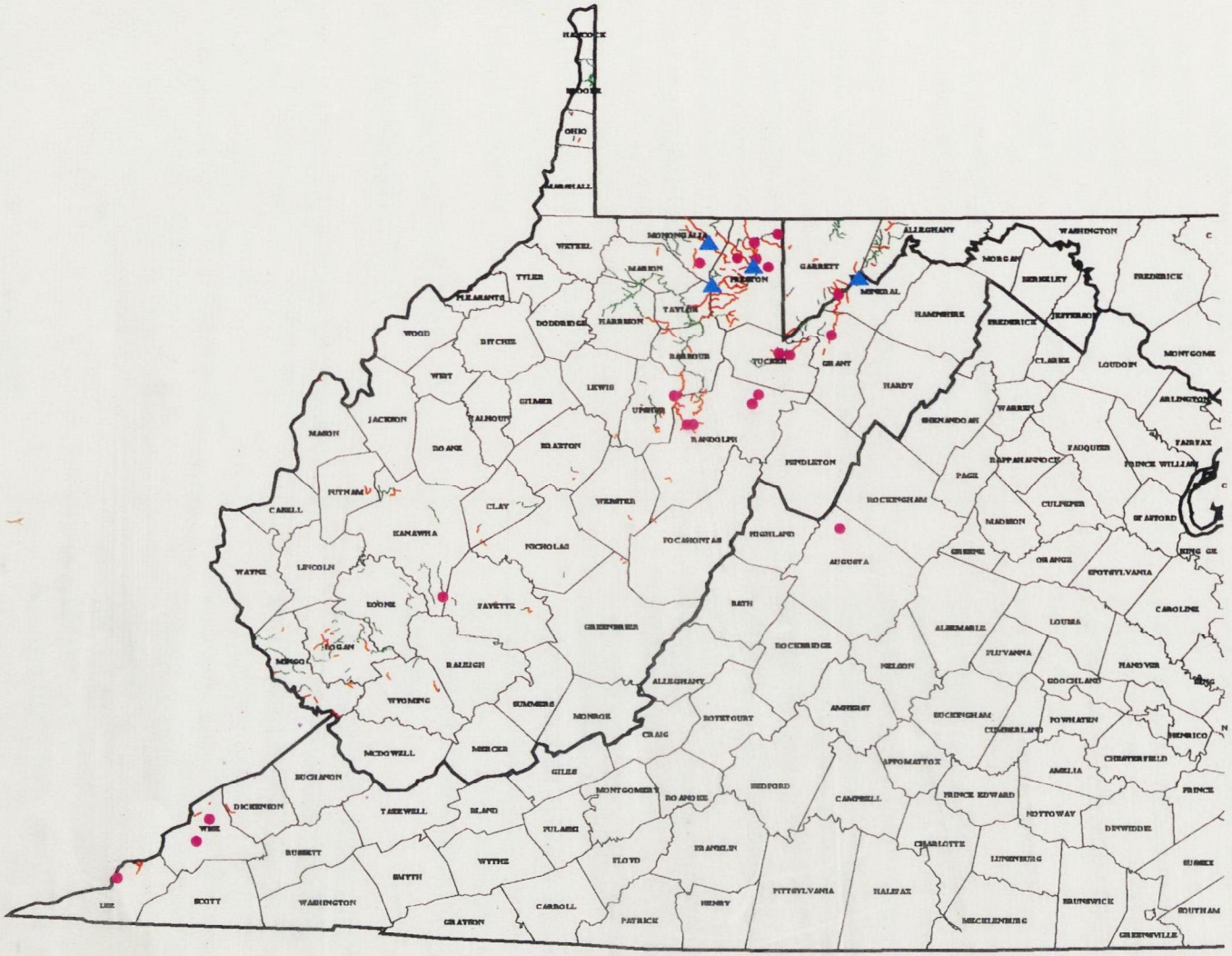
0 25 50

MILES

Scale 1 : 2500000

Figure 6

AMD Watershed Associations and Remediation Projects in West Virginia, Virginia, and Maryland



0 25 50

MILES

Scale 1 : 3300000

Legend:

- Watershed Associations
- Remediation Projects
- No Fish
- Some Fish

Figure 7

First Year Activities on the Strategic Plan

During this first year, OSM and EPA have been performing tasks which will accomplish the stated objectives of the SMISP. OSM and EPA staff have been meeting jointly, with other agencies, with states, and active watershed groups to define roles and strengthen the existing strategic plan. These are important tasks needed to identify all ongoing AMD abatement projects and planning efforts. Once a comprehensive knowledge of activities is documented, this information can be shared with all involved in the efforts to clean streams. In this manner, duplication of effort or counterproductive activities can be avoided and information on failures and successes can be shared.

The development of the SMISP centered on establishing goals that would marshal the available resources of all stakeholders to clean up pollution from abandoned mine sources. These goals included compiling technical and environmental data on stream conditions and remedial techniques; guidance on how to organize a clean-up effort; sources of potential funding; as well as networking and technology transfer opportunities. Let's look at what was envisioned, and where we are:

THE CLEAN STREAMS CLEARINGHOUSE

People working on cleaning streams need a central source of information. OSM has established such a source in the Appalachian Regional Coordinating Center in Pittsburgh. The Clean Streams Clearinghouse (CSC) can be contacted at (412) 937-2849, and includes the following:

The OSM World Wide Web (WWW) Site - Like many government agencies and private concerns, the information superhighway has a "rest stop" hosted by OSM. OSM's WWW Home Page is accessible through the Internet at **http://www.osmre.gov** to any computer user with the proper telecommunications gateway and Web software. The OSM Homepage will provide a full range of menu services, ACSI information and links to other appropriate *Web-sites* . The Web address is publicly accessible; should problems occur, the OSMRE Support Center at (202) 208-2929 can be contacted to answer questions and resolve access problems.

The OSM Mine Drainage Library - this definitive collection of literature on mine drainage technology had origins in the former Bituminous Coal Research, Inc. holdings. This library contains the single largest number of articles on mine drainage information in one location. In addition to the most complete holdings anywhere of data written up to 1980, the library is currently acquiring major works published from 1980 to the present which are not among the existing holdings. Holdings will be available using standard inter-library loan procedures through participating local libraries.

AMD Electronic Bibliography - A description of the holdings of The Mine Drainage Library will ultimately be available in digital format. The plan is to have annotated abstracts of each article or publication on disk and also accessible through the Internet. The file will be in WordPerfect or ASCII format so that key-word search capabilities will allow the user to search for particular authors, topics, etc. Currently, the abstracts of several

thousand document titles through 1980 are available. Updates to the present are being pursued for inclusion. The federal government mandate to provide easy access to digital information has also resulted in plans for this data to be available on the Internet. OSM's WWW site will ultimately have hypertext links to the Electronic Bibliography at an FTP server.

In addition, a new bibliography by the US Bureau of Mines will provide abstracts of post-1977 technical papers related to mine drainage treatment technologies. This bibliography will also contain several complete papers, identified as the most comprehensive, on each of the 21 treatment technologies studied. This document should be available early in 1996.

Andrew McElwaine, Program Director of the Heinz Endowments, at the signing of the Statement of Mutual Intent: *"It's a very good day for the environment, especially in the Appalachian region!"*

The Clean Streams Contact List - People cleaning streams need to know who else is out there working on the problem. Building a network of persons with common goals results in better-informed efforts to restore streams. Shared information creates many intangible efficiencies and other benefits. On-the-ground track records, community support, funding information, technical support, and many other useful things can be found out by using such a telephone/address listing. The Clean Streams Contact List, available on disk, through the WWW, or as a paper copy, reads like a **Who's Who** of the clean streams community. Listings of citizens, local, state, and federal government contacts who are involved in the clean streams effort have been compiled and are regularly updated. For a copy, contact the OSM Clean Streams Clearinghouse.

The Clean Streams Watershed-based Directory of Information - Those persons cleaning streams need to know of available data sources in their area and also need to be aware of other past or planned ACSI-related activities in their watershed of interest. A directory of such information, organized by drainage basins, is under development by OSM's CSC. This dynamic document will be available on disk, electronically, and in paper copy through the CSC and the WWW.

The AMD Geographic Information System (AMDGIS) - A GIS is a relatively new computer-based data repository that can be evaluated graphically with a series of maps. The GIS technology has spread rapidly throughout government as an exciting and versatile planning and analysis tool. Any data that has a component of latitude and lognitude coordinates can be located and illustrated as information on a computer-generated map. For instance, if a stream has been sampled for water quality and measurements have been made of flows, this information can be displayed on a map of the watershed. The water quality data can be "filtered" in any number of ways to show data of particular interest. As an example, let's say you want to know where the water quality of a stream is below pH of 6.0 and flows are less than 250 gallons per minute (gpm). By asking the GIS this type of query, a map is generated on the computer screen showing where the streams in the area survey met the conditions of the query (pH less than 6, flows greater than 250 gpm).

Lawrence Hoffman, Pennsylvania Fish and Boat Commission: ***"Working together as partners we can achieve many goals...for our citizens, their children, and their children's children. We hope we can enhance these waters...so that we can get back to fishing, boating, and swimming."***

By adding data to the GIS on active and abandoned mine locations, AMD discharges, geology, land use, roads, topography, property ownership, etc., groups trying to clean streams have an extremely powerful tool to analyze the scope of AMD problems and prioritize cleanup efforts.

EPA Region 3 has begun to enlarge its GIS data base beyond the fisheries impacted stream data described earlier in this report. The remediation projects and watershed association locations listed in the earlier tables have also been created as a GIS layer by EPA. The states of West Virginia and Pennsylvania have also been very active in enhancing their GIS capabilities and increasing their data layers,such as mine sources. A cooperative effort among the states and OSM to add their GIS data layers into EPA's GIS repository has been spearheaded by EPA.

OSM, in cooperation with the Stoneycreek Conemaugh Rivers Improvement Project (SCRIP), is developing a pilot GIS for two watersheds of the Conemaugh River in western Pennsylvania (Shade Creek and South Fork) that will demonstrate the potential for the use of GIS in planning stream cleanup. If successfully demonstrated as a planning tool, this GIS will be the prototype for other groups beginning to scope out their watershed mine drainage problems.

The Clean Streams List Server-People cleaning streams need to have access to the latest clean stream news and a way to seek answers to questions. Any persons with an Internet address may subscribe to the Cleanstream Listserver by sending the message "subscribe cleanstream" to the Internet address: **majordomo@osmre.gov**. The listserver administrator will respond with a brief subscriber questionnaire used for approval processing, and then the free subscription will begin. The Listserver is simply a broadcasting mechanism to repeat any message sent to the Internet address: **cleanstream@osmre.gov**. For instance, if a researcher has useful findings on constructed wetlands to distribute, a message can be received by all Cleanstream Listserver subscribers by e-mailing information to **cleanstream@osmre.gov**. If EPA or OSM wants to announce selection of a cleanstream project for funding, or opening of a window for 319 project proposals, the message can be circulated by e-mail to the listserver. Announcements of upcoming conferences are periodically posted to the listserver. If you experience any trouble reaching the listserver to subscribe or send messages, contact the Cleanstream Listserver administrator at (412) 937-2863.

EPA NONPOINT SOURCE BULLETIN BOARD (NPS BB)

The EPA Region III Philadelphia office has loaded the Statement of Mutual Intent and related Strategic Plan onto the national Nonpoint Source Bulletin Board (NPS BB) for interested parties to read and download. EPA Region III plans to load additional mine drainage information and has included similar information on EPA's Region III Homepage. To become a NPS BB member dial (301) 589-0295 to connect

your computer with the EPA server. To access the bulletin board a PC or terminal, telecommunications software (such as Crosstalk or Pro Comm), a modem, and a phone line are necessary.

Robert K. Kaufman, Western Pennsylvania Coalition for Abandoned Mine Lands: *"I got interested in this business 15 or so years ago and there weren't any grass roots...there was rock, and shale, and red water..."*

CITIZENS' GUIDE FOR WATERSHED RESTORATION OF MINE DRAINAGE-IMPACTED STREAMS

Communities wanting cleaner streams need to know where to start. The Citizens' Guide will help point the way with a step-by-step process. Clear explanations of the mine drainage problem and simple overviews of the abatement technology will be provided in the guide. Directions for evaluating the scope of the problem; advice on how to organize a coalition; and information on potential funding sources will be included along with references of other publications with more detailed information. The guide, designed by citizens who have undertaken their own mine drainage projects, is planned to be available by late 1996.

THE CLEANSTREAMS NEWSLETTER

Arrangements have been initiated with the National Mined Land Reclamation Center in Morgantown, West Virginia to publish a newsletter about efforts to control mine drainage problems. The newsletter, if funding is successfully secured by West Virginia and other states, will contain profiles of clean-up efforts, technological news, and other articles of general interest.

EFFECTIVE REMINING PROGRAM

An important aspect of the AMD cleanup effort is the remining of abandoned mines for salvageable coal while providing reclamation and AMD reduction. The Clean Water Act allows less stringent limits for remining but requires compliance with water quality standards which creates an obstacle. EPA and OSM are committed to promoting effective remining programs in the states. Eliminating barriers to remining and increasing environmentally acceptable incentives for the pracice are important for enticing industry to remine more abandoned mines and provide reclamation and pollution reduction at no cost to the public. As required by the Energy Policy Act of 1992, OSM has proposed rulemaking for some remining incentives. The most notable proposal is to exclude remining violations from permit blocking. OSM and EPA are seeking input on an expanded list of barriers and incentives, and have met with state agencies to identify attributes of good state remining programs. A guidance report will be developed for approval by OSM and the EPA Office of Science and Technology.

* Legislation is pending in Pennsylvania for several incentives, including monitoring and other assistance, particularly if remining occurs in impacted watersheds targeted for cleanup.
* West Virginia and Maryland now have water quality standards variance procedures which may increase remining activity.
* On October 9th., OSM Director Bob Uram announced the new "Remining for Real" initiative, in which states, industry, watershed groups and OSM will strive to remove site-specific barriers to remining.

Ron Donlan, Southern Allegheny Conservancy: *"It's not just about clean water, it's about the people."*

MINE DRAINAGE CONFERENCES, TOURS, AND FORUMS

Where do you go to find out more about clean stream efforts? Tour a constructed wetland that is part of a successive alkaline producing system (SAPS) at the Mill Creek site in central Pennsylvania, near Clarion. Visit the brand new Blackwater River limestone drum and doser facility, or the world's largest anoxic limestone drain at the nearby Davis Highwall reclamation site near the towns of Davis and Thomas, West Virginia.

OSM, EPA, and various states regularly host tours to showcase the latest in effective AMD abatement techniques. The OSM and EPA will continue to support and organize these events as an excellent way of technology transfer for on-the-ground effectiveness.

Meetings and conferences remain one of the most productive ways to transfer technology, share experiences, and to foster the SMISP precepts.

OSM and the USBM were sponsors and organizers of the 3rd International Mine Drainage Conference as part of the American Society for Surface Mining Reclamation (ASSMR) annual meeting in Pittsburgh in April 1994. This meeting, attended by over 1200 mining and technical professionals involved in reclamation around the world, centered around AMD issues and technology.

EPA and OSM conducted the first AMD Summit in Johnstown, Pennsylvania on September 28, 1994. More than 300 people, including citizens, state, county, and federal government, consultants, etc. attended the meeting to discuss the extent of the problem and to share current and planned activities to combat the problem. EPA hosted an Acid Mine Drainage Workshop in Morgantown, West Virginia on November 1-2, 1994 to brainstorm possible approaches to increase stream restoration activities.

In April, 1995, more than 300 people attended the West Virginia Surface Mining Drainage Task Force Symposium in Morgantown.

A regional conference on Mine Drainage and Watersheds, hosted by eight Pennsylvania organizations and attended by over 200 people, was held from June 1-3, 1995 at Clarion University.

In July 1995 a clean streams organizational and scoping meeting was held in Chattanooga, Tennessee with representatives from nine OSM field offices, three EPA Regions, the US Army Corps of Engineers, Natural Resources Conservation Service, Fish & Wildlife Service, and nine states (PA, WV, MD, OH, KY, TN, VA, AL, IN). Ninety five recommendations/ideas were offered for future action by governmental agencies to further the SMISP goal of restoring streams adversely affected by AMD.

On September 13, 1995 Bruce Babbitt, Secretary of the U.S. Department of the Interior visited the Scrubgrass Run project site near Pittsburgh. As part of the visit, he conducted a town meeting that included discussion with representatives of other watershed groups from Pennsylvania, Ohio, and West Virginia to learn of their progress, problems, and future plans.

The Annual Meeting of State Abandoned Mine Land Agencies was held in French Lick, Indiana in October 1995 with a technical session on AMD reclamation.

As part of the SMISP, these types of meetings will continue to receive support from the federal government. Future meetings include the 1996 ASSMR meeting which will partly focus on AMD when it is held in Knoxville, Tennessee in April 1996. Additionally, a workshop/conference is planned for June of 1996 at Wilkes University, Wilkes Barre, Pennsylvania. Also the Blacklick Creek Watershed Association of Pennsylvania is planning an education and awareness conference on AMD problems for March, 1996.

SPEAKERS AND EXHIBITS

OSM, EPA, USBM, COE, NRCS, NMLRC, and various state AML-related agencies can provide speakers, displays, and literature for organized events related to AMD abatement. If your watershed organization is having a meeting, contact the OSM Clearinghouse in Pittsburgh or EPA Region III office in Philadelphia for possible scheduling of these resources.

VISION TO THE FUTURE

As the first year of efforts draws to a close, we should reflect on the past with satisfaction, even though there is much yet to do, and remember the promise the future will hold. We must constantly rededicate ourselves to the hard work that lies ahead--visualizing the potential of our streams and rivers running clear and clean.

In Future Years

The partners to the Statement of Mutual Intent are committed to its goals and through our collective efforts we will make clean streams a reality. No one agency or group can do it alone, and reaching these goals will involve efforts by each of the partners. Many projects and initiatives have been started and many new ones will be added in future years.

INCREASE EFFORTS TO FUND REMEDIATION PROJECTS

Maximize potential of the AML fund for clean-stream uses.	Increase state utilization of AML funds for mine drainage cleanup through the flexibility given in the OSM expanded definition of a Priority 2 project.
Continue efforts by Federal agencies to provide more funding by streamlining grant program procedures.	Assist watershed groups with the various grant processes.
Obtain increased industry support for SMISP.	Continue to fund projects through the EPA's 319 & 104(B)3 grants.
Seek funding support to implement the IAFWA pilot projects.	Provide technical assistance to help resolve specific AMD problems.

DEVELOP PARTNERSHIPS

Develop in each state a networking of state, local, and federal groups together with the grassroots groups.		Build grassroot support by raising awareness of citizens on the magnitude of the problem through education.
Identify ways for public involvement in the cleanup effort and outreach.	**Gary A. Marqhein, NRCS:** ***"It's been said that the protection of our environment is not the job for just a few --but, for all of us."***	Initiate State-wide forums next year to bring grassroot groups together to share successes and concerns.
Coordinate with other entities and interest groups in a holistic approach to avoid duplication and produce a synergistic effect.		Continue SMISP efforts by Federal and State agencies despite budget cuts.

CONTINUE EPA AND OSM INITIATIVES

Continue information transfer activities such as the OSM's ACSI Clearinghouse and conducting meetings/conferences.	Provide more information electronically via the EPA and OSM bulletin boards and listserver.
Expand stream indicator coverage to all states with AMD problems.	Continue development and use of Geographic Information Systems on the watershed and regional/national levels.

APPENDIX

RESTORATION AND PROTECTION OF STREAMS AND WATERSHEDS POLLUTED BY ACID MINE DRAINAGE FROM ABANDONED COAL MINES

STATEMENT OF MUTUAL INTENT

SPONSORED BY THE OFFICE OF SURFACE MINING'S
APPALACHIAN CLEAN STREAMS INITIATIVE
AND THE
ENVIRONMENTAL PROTECTION AGENCY'S
REGION III - MINE DRAINAGE PROGRAM

FEBRUARY 9, 1995
WASHINGTON, D.C.

I. STATEMENT OF MUTUAL INTENT

The Office of Surface Mining, the Environmental Protection Agency - Region III, and all other parties to this Statement of Mutual Intent share a concern with improving and restoring water quality that has been polluted by mine drainage from abandoned coal mines in the States of Maryland, Pennsylvania, Virginia and West Virginia. We will increase the efforts, cooperation and partnership among us to restore and protect the streams and watersheds affected by mine drainage.

II. STATEMENT OF OBJECTIVES

The parties agree to:

1. Cooperate as a clearinghouse to share and exchange data and information as it relates to identifying mine drainage sites and establishing abatement techniques to restore and improve water quality within watersheds adversely affected by mine drainage.

2. Raise the level of awareness of government agencies, private organizations, and the general public on the serious environmental problems associated with mine drainage from abandoned coal mines.

3. Work with federal, state, and local government agencies, watershed organizations, mining organizations, environmental groups and other public and private organizations to target streams and watersheds which have been degraded by mine drainage.

4. Work to increase the understanding and applications of the best technology available for remediating and preventing mine drainage, and to support the development of new technologies.

5. Support efforts to establish and implement an effective remining program that reclaims abandoned coal mines.

6. Provide a forum for the purpose of transferring technologies and other information about improving, restoring, and preventing further harm to watersheds that have been degraded by mine drainage.

7. Develop shared information management systems to minimize overlap in data collection and development, to save resources and maximize the usefulness of data developed.

8. Prepare periodic reports describing the extent and severity of the mine drainage problem and the current status of ongoing efforts by all parties to this Statement of Mutual Intent to improve and restore degraded watersheds.

III. GENERAL PROVISIONS

1. This Statement of Mutual Intent does not alter, amend, or revise the authority or rights of any of the parties to this statement.

2. This Statement of Mutual Intent does not reflect a particular policy relating to the regulation of AMD, nor does it reflect an initiation or implementation of AMD policy from individual parties to the Statement or as a group.

3. All activities referred to in this Statement of Mutual Intent shall be carried out in full compliance with applicable laws and regulations.

4. Any party may withdraw from this Statement of Mutual Intent by notifying the other parties in writing.

Robert J. Uram, Director
Office of Surface Mining
U.S. Dept. of the Interior

Peter H. Kostmayer
Regional Administrator
U.S. EPA Region III

STATEMENT OF MUTUAL INTENT

FEBRUARY 9, 1995

NAME	ORGANIZATION	DATE
Stephen C Kee	WVDEP	2/09/95
Terry R Fabian	PADER	2/9/95
Laurence W Hoffman	PA Fish & Boat Commission	2/9/95
Whitney [illegible]	MD DNR	2/9/95
Tim [illegible]	Ohio DNR-DLR	2/9/95
[illegible]	[illegible]	2/9/95
W R Rossmon	SCRIP	2/9/95
[illegible]	S. Allegh. Cons.	
Dick Rice	Southern Alleghany R C&D	2/9/95
Robert K Kaufman	Western Pa Coalition for AML	2-9
Mike Dombeck	Bureau of Land Mgmt	2/9/95
Sylvia V. Baca	Deputy Dir Land Min Mngt	2/9/95
[illegible]	National Biological Service	2-9-95
Gary A. Maghetti	Natural Resources Conservation Service	2/9/95
Steven N. Moyer	Trout Unlimited	2/9/95
Whitney C [illegible]	National Fish & Wildl. Fdn	2/9/95
Raymond Lovett	National Mine Land Reclamation Ctr	2/9/95
Andrew McElwaine	Heinz Endowments	2/9/95

STATEMENT OF MUTUAL INTENT

FEBRUARY 9, 1995

NAME	ORGANIZATION	DATE
Robert L Eppley Pe	Blacklick Creek Water Shed Assoc.	3/2/95
Jan M. Lez	PA DER	3/8/95
Michael Stromposky		
Barney Reilly	CITIZENS COAL COUNCIL	7 APR 95

ADDITIONAL INDIVIDUALS/ORGANIZATIONS EXPRESSING COMMITTMENT TO THE PRINCIPLES OF THE STATEMENT OF MUTUAL INTENT

Congressman John P. Murtha, 12th. District, Pennsylvania

Congressman Frank Mascara, 20th. District, Pennsylvania

The Conemaugh Valley Conservancy

The Casselman River Task Force

The Loyalhanna Creek Watershed Association

The Loyalhanna Abandoned Mine Drainage Coalition

Mr. Mike Dombeck, Acting Director , Bureau of Land Management, Department of the Interior(DOI)

Mr. Ron Pulliam, Director, National Biological Survey,(DOI)

Mr. Paul Johnson, Chief, National Resource Conservation Service, Department of Agriculture

Ms. Rhea Grahm, Director, Bureau of Mines, DOI

Ms. Molly Beattie, Director, U. S. Fish and Wildlife Service, DOI

Mr. Alan H. Vicory, Executive Director, Ohio River Valley Water Sanitation Commission(ORSANCO), Cincinnati, Ohio

Ms. Wyona Coleman, Representing the Pennsylvania Chapter of the Sierra Club

Dr. Jeri L. Berc, State Conservationist, National Resource Conservation Service, Annapolis, Maryland, Department of Agrilculture

Mr. Kenwood E. Giffhorn, Executive Director, Pennsylvania Environmental Defense Foundation and Pennsylvania Organizations of Watersheds and Rivers

Mr. Paul Ziemkiewicz, Director, National Mine Land Reclamation Center, Morgantown, WV

A COOPERATIVE STRATEGIC PLAN FOR THE STATEMENT OF MUTUAL INTENT

SPONSORED BY THE OFFICE OF SURFACE MINING'S
APPALACHIAN CLEAN STREAMS INITIATIVE
AND THE
ENVIRONMENTAL PROTECTION AGENCY'S
REGION III - MINE DRAINAGE PROGRAM

FEBRUARY 9, 1995
WASHINGTON, D.C.

PREFACE

The Office of Surface Mining (OSM) and the Environmental Protection Agency's Region III (EPA) have developed this strategic plan to implement the provisions of the **Statement of Mutual Intent**. Specific tasks associated with each provision of the **Statement of Mutual Intent** are identified and targeted for completion by the next AMD Summit (Summit II). Future strategic plans will be developed at the end of this initial period that are multi-year and built upon the successes of the initial effort.

OSM, under the Appalachian Clean Streams Initiative (ACSI), and EPA Region III's Mine Drainage Program, have recognized, in part, that these two initiatives compliment and support each other. It is further understood that States in EPA Regions IV and V are participating in the ACSI, therefore, OSM and EPA will continue to work together to achieve the mutual goals and objectives of this plan.

Although this document refers only to acid mine drainage (AMD), the initiative recognizes that mine drainage includes additional sources of pollution from abandoned coal mines such as excessive metal loading, sedimentation and other pollutants. As this initiative is implemented, these other sources of pollution will be included.

COOPERATE AS A CLEARINGHOUSE TO SHARE AND EXCHANGE DATA AND INFORMATION AS IT RELATES TO IDENTIFYING MINE DRAINAGE SITES AND ESTABLISHING ABATEMENT TECHNIQUES TO RESTORE AND IMPROVE WATER QUALITY WITHIN WATERSHEDS ADVERSELY AFFECTED BY MINE DRAINAGE.

DEVELOP SHARED INFORMATION MANAGEMENT SYSTEMS TO MINIMIZE OVERLAP IN DATA COLLECTION AND DEVELOPMENT, TO SAVE RESOURCES AND MAXIMIZE THE USEFULNESS OF DATA DEVELOPED.

GOAL: Establish a national clearinghouse and library for all data and information relating to AMD.

GOAL: Establish an Internet address for the clearinghouse.

GOAL: Develop a joint EPA/OSM GIS that identifies AMD sites, sources, and affected watersheds.

RAISE THE LEVEL OF AWARENESS OF GOVERNMENT AGENCIES, PRIVATE ORGANIZATIONS, AND THE GENERAL PUBLIC ON THE SERIOUS ENVIRONMENTAL PROBLEMS ASSOCIATED WITH MINE DRAINAGE FROM ABANDONED COAL MINES.

GOAL: Develop an AMD Newsletter.

GOAL: Sponsor conferences and workshops.

GOAL: Develop a Citizens Guide to AMD and Reclamation that will provide a layman's guide to evaluating AMD sites, identifying remediation options, and considering potential funding sources.

GOAL: Assist the States in sponsoring forums for government and non-government organizations involved in AMD efforts within the State.

GOAL: Promote tours of AMD sites and reclamation projects.

WORK WITH FEDERAL, STATE, AND LOCAL GOVERNMENT AGENCIES, WATERSHED ORGANIZATIONS, MINING ORGANIZATIONS, ENVIRONMENTAL GROUPS AND OTHER PUBLIC AND PRIVATE ORGANIZATIONS TO TARGET STREAMS AND WATERSHEDS WHICH HAVE BEEN DEGRADED BY MINE DRAINAGE.

GOAL: OSM will seek to increase funds available and EPA will continue to provide funding and technical assistance for State directed clean-up projects and strategies.

GOAL: Provide technical and financial assistance to the International Association of Fish and Wildlife Agencies (IAFWA) projects in restoring aquatic resources.

GOAL: Compile an index of potential funding programs for AMD projects.

GOAL: Develop a directory of all government and non-government representatives for AMD related programs, projects, and other activities.

PROVIDE A FORUM FOR THE PURPOSE OF TRANSFERRING TECHNOLOGIES AND OTHER INFORMATION ABOUT IMPROVING, RESTORING, AND PREVENTING FURTHER HARM TO WATERSHEDS THAT HAVE BEEN DEGRADED BY MINE DRAINAGE.

GOAL: OSM will coordinate a Technical Notes section for technology transfer within the AMD newsletter.

GOAL: Place AMD related information on Electronic Bulletin Boards.

WORK TO INCREASE THE UNDERSTANDING AND APPLICATIONS OF THE BEST TECHNOLOGY AVAILABLE FOR REMEDIATING AND PREVENTING MINE DRAINAGE, AND TO SUPPORT THE DEVELOPMENT OF NEW TECHNOLOGIES.

GOAL: Support research efforts and demonstration projects that promote the science of AMD reclamation.

SUPPORT EFFORTS TO ESTABLISH AND IMPLEMENT AN EFFECTIVE REMINING PROGRAM THAT RECLAIMS ABANDONED COAL MINES.

GOAL: Develop a remining program that provides incentives for reclamation while protecting environmental quality.

PREPARE PERIODIC REPORTS DESCRIBING THE EXTENT AND SEVERITY OF THE MINE DRAINAGE PROBLEM AND THE CURRENT STATUS OF ONGOING EFFORTS BY ALL PARTIES TO THIS STATEMENT OF MUTUAL INTENT TO IMPROVE AND RESTORE DEGRADED WATERSHEDS.

GOAL: Produce an annual report that relies on measurable environmental and programmatic indicators, accountability measures, and performance with this Statement of Intent.

Acknowledgements: **Mr. James Boyer, OSM (retired), and Bernie Sarnoski, EPA,** for principal authorship of this document.

Mr. Dale Wismer, EPA (retired),
for the leadership in carrying the joint EPA and OSM initiative forward in the past year.

All who reviewed and commented on the draft document.

Photo credits Front Cover: Effects of mine drainage on the West Branch, Susquehanna River, downstream of Clearfield, PA
Photo by Lee Murphy, EPA

Page 15: Discharge from anoxic limestone drain in Middle Fork watershed in West Virginia
Photo by Katherine Attwood, EPA

Page 19: Mine drainage seep in Clearfield County, PA
Photo by Lee Murphy, EPA

Page 32: Effects of mine drainage on a tributary to the Cheat River in West Virginia
Photo by Katherine Attwood, EPA

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