



determination
empowerment
engagement
revitalization
awareness
hope...

Hope and Hard Work:

Making a Difference in the Eastern Coal Region

Volunteers with George's Creek Watershed Association compile data on their watershed in western Maryland. This group, like the ones in this book and hundreds more scattered throughout Appalachia, are combining a little hope and hard work to create lasting change in their communities.



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Introduction

Note: Dr. Comp wrote this essay while on annual leave from the Office Of Surface Mining to accept a Bridge Residency at the Headlands Center for the Arts, funded by the Institute for Noetic Sciences.

The Appalachian Coal Country, actually hundreds of counties spread across 13 states east of the Mississippi and more accurately described as the Eastern Coal Region, is one of America's forgotten places and perhaps its largest forgotten ecosystem. Most often described and photographed as a land of overwhelming environmental and human desolation, the Eastern Coal Region stretches from northeastern Pennsylvania south, down the Appalachian Mountains and into central Alabama, while interior coal fields in parts of Oklahoma, Iowa, Indiana, and Illinois reflect a similar history and culture. Here in this vast region our nation can confront – and overcome – its environmental and economic past, adding thousands of acres of reclaimed, healthy lands and waters – and peoples – to our national treasure. Within the conflicted history and ravaged landscapes of this region are the seeds of hope, change, sustainability, and even healing. Here we can rescue a vast ecosystem spread across the eastern mountain core of our nation, region by region, watershed by watershed, even person by person.

Throughout this Eastern Coal Region, orange-coated dead streams and vast black piles of waste rock called “boney” or “culm banks” or “gob piles” have come to symbolize this place. The broken remnants of company towns, “patch towns,” or “coal camps” scattered by the scores throughout these mountains, contain people still caught in the free-fall of globalization, mechanization, industrial decline, and an old company-town mindset that can seem passive in its acceptance. These are places where the number of families with children living in poverty too often exceeds fifty percent and where the surrounding environment only enforces a sense of overwhelming abandonment. Not since World War II and its still-remembered spike in production, employment and human meaning (as well as the vast environmental consequences of winning the war with coal taken with little regard for the consequences), has there been much good news in Coal Country.

Dr. Allan Comp and Stacy Levy, a member of the AMBCART design team, plant trees and shrubbery in Vintondale, Pa., site of a new AMD-treatment park created by AMBCART.



■ T. Allan Comp, Ph.D.

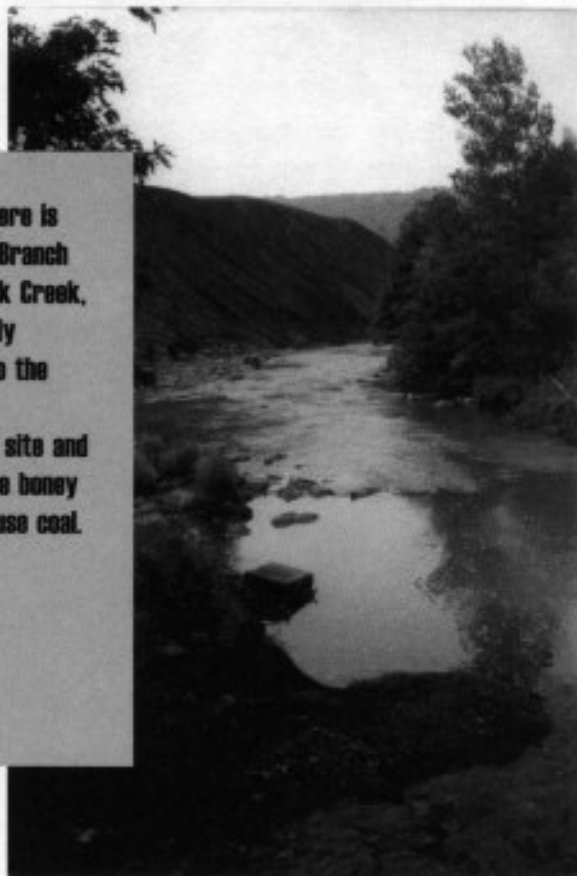
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Remarkably, quietly, there is new hope beginning. In spite of the seemingly overwhelming legacy of past despoliation and neglect of this vast ecosystem and its inhabitants, today there are small groups of determined citizens working – almost always as volunteers – to bring real change to Coal Country. State by state, watershed by watershed, partnership by partnership, these groups of volunteers are building on a deep tradition of hard work and close ties to community, to their land, and to a place, a watershed, they call home. These are the new stewards of America's most ravaged environmental frontier, a huge ecosystem of people, land and water waiting to be reclaimed, returned to both environmental and economic health. This regional ecosystem is at the core of the eastern United States and its people share some of America's oldest regional cultures. These watershed groups are pioneering in a land of hardy mountain pioneers, their approach is grass roots at its smallest and strongest, and the consequences of their work reverberate deep in the local culture as well as the regional ecosystem.

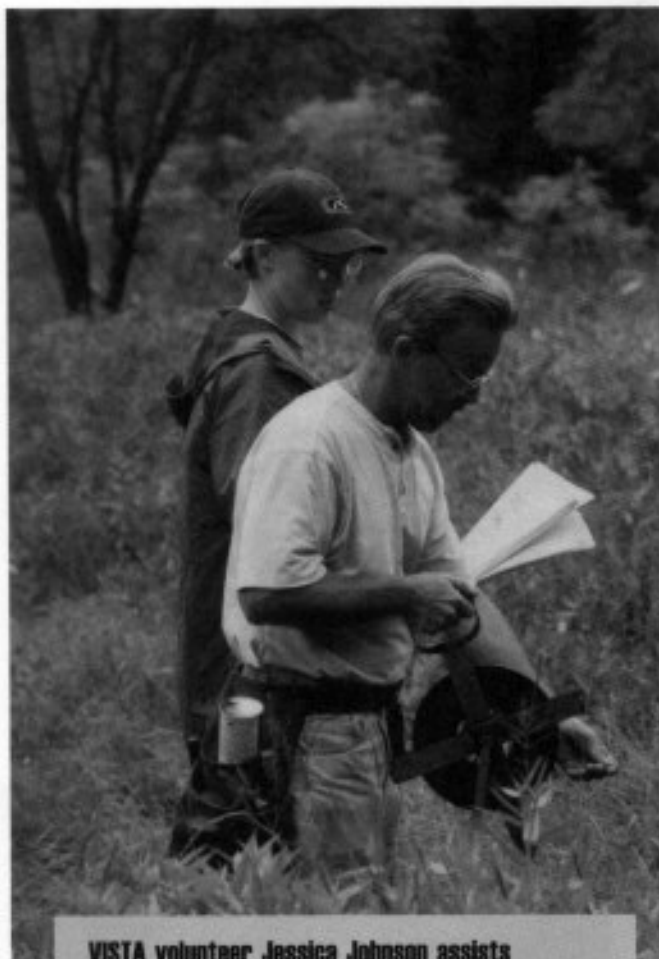
This booklet highlights the work of some these groups, their remarkable successes, their spirit of volunteerism, their skills in building partnerships and their capacity for hard work. Their attack is aimed primarily, but not exclusively, at acid mine drainage, or abandoned mine drainage, AMD, the ubiquitous and



AmeriCorps volunteers Dana Serovy, Carla Ruddock, and Mary Beth King work together to construct a large planter box at a building day in Vintondale, Pa. The boxes are to be used in the new AMDCART park.



Pictured here is the South Branch of Blacklick Creek, immediately adjacent to the AMDCART Vintondale site and an immense boney pile of refuse coal.



VISTA volunteer Jessica Johnson assists Earthtech engineers with staking the outline for the treatment ponds at the AMBCART park in Vintondale.



Volunteers perform macro invertebrate sampling in a tributary of Blacklick Creek in Cambria County, Pa.

unstable acid-and-metals-laden water that seeps or gushes from abandoned coal mines, lining streambeds with orange sediment that kills the bottom of the food chain, leaving streams dead. In a larger human perspective, AMD is the orange, silent signature of dying communities, lost biodiversity, the emblematic color of slow death.

Some watersheds may have one AMD discharge for every square mile in their watershed, a daunting prospect. But within the last ten years, sustainable, environmentally rational approaches to treating AMD have been developed. Termed "passive treatment," these systems learn from nature, employing native plants and native limestone to neutralize the acid, drop out the metals, and release both clean water and new hope.

Over the past several years, volunteer watershed groups in the Eastern Coal Region have been organizing to fight AMD and other problems in their watersheds, discharge by discharge, stream by stream. With help from a few government programs, private sector firms and lots of their neighbors, they are quietly destabilizing the negative expectations of Coal Country culture, creating patterns of community success and innovation, organizing constituents into effective, hard-working advocates for their watersheds. They remind all of us, like the Monday Creek T-shirt: "We all live downstream."

Today there are more than 200 of these groups, working as volunteers with little outside support, determinedly monitoring water quality, partnering with state and federal agencies and local businesses to find resources for passive treatment systems, cleaning their small valleys and creating the real possibility of recovery in Coal Country. They work in the face of seeming indifference, fighting to overcome 50 years of decline and neglect, fighting to create a better

world for their kids and a better downstream environment for us all.

These small heroes remind us that Coal Country need not be written off, abandoned while we work to save more pristine environments. Clean water inside this vast region could bring environmental and then economic recovery to hundreds of coal counties – and downstream improvements appreciated by millions. Unfortunately, these heroic groups are little known, even to each other, and the environmental problem they and their partners seek to address is seldom acknowledged as the largest in Appalachia. While thousands of miles of streams are coated with orange death, government agency and private foundation budgets are too often narrow in their focus, limited in their resources, slow and deeply frustrating to this new, local, watershed-focused determination to heal these old wounds, to create a legacy better than pollution. Congress knows too little about AMD and the press too often prefers Appalachian stereotypes of little value, but every new watershed group brings new awareness to their constituency and new perspective to their local press. Slowly and tenaciously, these groups are working to create an environmentally rational and developmentally sustainable future in a region where “man” created the mess, and men and women are now working hard to fix it.

In the small stories that follow, the reader will find very big results. These are effective citizens determined to be purposeful opportunists, not victims. They understand the complexity of their challenge, work carefully to address complex watershed issues even in the face of single-issue funding sources, care deeply about their watersheds, and they vote. The partnerships they have built extend across major federal offices (EPA, Interior, Agriculture), throughout every state system that administers those federal funds and other state funds, and deep into the private sector as well. Their success is a measure of the effectiveness of these few government programs in working with citizens, the interest of corporations in being a part of the solution, and the creativity of these citizen groups in assembling many partners. But we have only scratched the surface of a rapidly expanding need. The growing number of watershed groups willing to take on the hard work of making a real difference is expanding far more rapidly than the growth of either governmental partnering capacity or governmental funding. The challenge for the immediate future will be for government at all levels to match the hard work and hope of its citizens in the Eastern Coal Region. As a nation, we cannot afford to allow this vast ecosystem and these determined people to be less than full participants in the environmental and economic benefits of the new century.



John Pytash and Lloyd Williams join AMDART staff at an interpretive history workshop in Vintondale, to talk about the mining history of this small town.

Coal Creek Watershed Foundation

■ Combining local common sense with modern technology

The Coal Creek watershed, located in the Cumberland Mountains region of eastern Tennessee, is an area steeped in a dark history marred by economic hardships, environmental devastation, natural disasters and even bloodshed. Much of the strife can be traced to former coal mining practices in the region, which, having been undertaken prior to the 1977 Surface Mining Control and Reclamation Act, resulted in acid mine drainage that snuffed out life in Coal Creek while heavily impacting the larger Clinch River.

The struggles between mine workers and business leaders began in the 1880s, when the government started using convict labor to replace striking miners. Eventually, the workers of Coal Creek opted to go to war against the state of Tennessee. Their efforts resulted in an end to the system, but many miners who survived the war ultimately perished in two subsequent mining disasters which killed more than 250 men.

Coal Creek watershed covers an area of 36 square miles. As the I-75 bridge crosses the



Local, state, and federal elected officials, representatives of government agencies, and members of the Coal Creek Watershed Foundation are shown here on a field trip discussing methods to address water quality problems stemming from acid mine drainage on abandoned mine lands.



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Clinch River, one can get a good glimpse of the cloudy, polluted water running into the river from the mouth of Coal Creek. This creek is a potential economic gold mine. There are more than 30 miles of potential trout spawning area and a community anxious for redevelopment just waiting to be utilized.

In February 2000, a group of fishermen and local college students were working to clean up parts of Clear Creek, which also runs into Clinch River. The group decided to take a ride in hopes of finding trout spawning areas, and the group which eventually became Coal Creek Watershed Foundation was born. Their focus eventually expanded beyond simply restoring trout habitat to working toward improving the quality of life in the entire watershed.

The organization has adopted the same spirit of the miners who banded together and drafted a plan for the abolishment of convict mine labor practices. They are forming a restoration plan and have begun the impor-

U.S. Representative Zach Wamp (R-Tenn.) addresses students, residents, and local officials at Coal Creek Discovery Day 2000.

The event was hosted by the Coal Creek Watershed Foundation to educate interested parties about problems and ways to improve the quality of life in the Coal Creek watershed.



tant work of restoring Coal Creek themselves.

Coal Creek Watershed Foundation's success can be found in its ability to reach out to the public and educate them on the impacts of AMD in the surrounding area. The organization hosted numerous events during its first year.

For example, Coal Creek Watershed Foundation hosted Coal Creek Watershed Day in April 2000, which proved to be a resounding success. Numerous Coal Creek partners showed up to present on various subjects, and volunteers helped catch fish to determine the true damage in the creek. Special events were also held in surrounding towns.

Coal Creek Deadwood Removal day took place in June and brought out 137 volunteers to reduce flood impact by cleaning up deadwood surrounding bridge piers. Political officials and at least 250 students and volunteers also took part in Coal Creek Discovery Day in August at a local elementary school.

The organization is also working in other

ways to build up what they term "human infrastructure." These efforts include creating an interpretive motor trail that takes drivers throughout the watershed and exposes them to the rich history of the region. The trail was made possible through the assistance of several of Coal Creek's partners.

In fact, building partnerships has been a key to the organization's success. These include federal and state environmental regulatory agencies, as well as non-profit organizations and other national and local groups dedicated to preserving the environment.

Coal Creek Watershed Foundation is implementing the first phase of its master plan, which calls for the education of the local citizenry on the effects of AMD. By building partnerships and involving community residents, the organization has instilled a sense of activism and stewardship in the water-

shed that will provide fuel and human capital when the time comes to begin AMD remediation projects on Coal Creek. Public organization has been a key to getting things started.

Coal Creek Watershed Foundation's success can be found in its ability to reach out to the public and educate them on the impacts of AMD in the surrounding area.

Dark Shade Brownfields Project

■ Abandoned mine lands source of hope for the future

The Dark Shade Creek Watershed is located in Somerset County, Pennsylvania at the headwaters of the Stonycreek River Basin. The 34 square mile Dark Shade Basin typifies the Appalachian region with its scenic, remote, forested highlands and mountain streams contrasted by the industrial remains of abandoned mine lands, acid mine drainage and economically depressed communities.

The Dark Shade Watershed is home to the 3,500 residents living within the communities of Shade Township and Central City Borough. It bears witness to an extraordinary grassroots effort to clean up one of Appalachia's worst abandoned mine drainage (AMD)-impacted waterways. After five years of work with AMD&ART, Dark Shade is the first coal-impacted watershed to be recognized by the EPA as a Brownfields Assessment Pilot Project. The purpose of this brownfields project is to determine how industrial sites and abandoned mine lands within the Dark Shade Watershed can be reclaimed for devel-



The machine shop and motor repair barn of the long-abandoned Reitz No. 4 mine is part of the nation's first coal-impacted watershed recognized as a brownfield.



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opment, including residential, industrial, and recreational. The project will also explore the design of abandoned mine water treatment systems that will benefit those living within the Dark Shade Basin and those living downstream. The Dark Shade Brownfields Project (DSBP) offers an effective way for state and federal agencies and private industry to cooperate in supporting environmental cleanup and economic development in the Appalachian coalfields. Most importantly the DSBP is engaging local residents in the watershed assessment, community planning, and design process.

The U.S. Department of Agriculture and the Pennsylvania Mountain Service Corps are also assisting the OSM and EPA redevelopment effort in Dark Shade. USDA awarded Central City and Shade Township a Rural Business Opportunity Grant to identify new business and employment opportunities within Shade Township and Central City. AmeriCorps members working with DSBP bring the project to the residents of Dark Shade Creek, coordi-

Local citizens participate in the cleanup of Dark Shade Creek in Somerset County, Pennsylvania. The Dark Shade Brownfields Project is working to bring together local, state, and federal entities to develop a comprehensive restoration plan for the watershed.



nate the volunteer monitoring efforts and strengthen local partnerships.

The DSBP is going through the same steps as other brownfields projects: inventory, assessment, and redevelopment planning. To meet their commitment to broad public participation, the DSBP first held a public meeting for the watershed and quickly realized that even smaller "Trib Team" meetings in each of the five sub-basins within the Dark Shade Watershed would be much more effective. Residents living within these sub-basins contributed input about brownfields sites that they are most concerned with and have the most impact on their communities. These local meetings with residents were crucial in identifying AMD discharges and brownfield sites because most brownfield sites were abandoned as many as 70 years ago, and there is not much past site use information available.

Because both industrial sites and underground mines contribute to the industrial contamination of this brownfield, the assessment phase of the project is in two parts. The first being performed is brownfields site assessment on priority "traditional" brownfield sites within the Dark Shade watershed. The second assessment is being conducted

Dark shade is the first coal-impacted watershed to be recognized by the EPA as a Brownfields Assessment Pilot Project.

through a united effort between DSBP, the newly formed Shade Creek Watershed Association (SCWA), PADEP and local coal companies. SCWA volunteers take water samples at strategic points throughout the watershed in order to gain a better understanding of the effects of AMD on Dark Shade Creek.

With a significant commitment to outreach and education, the DSBP established an early relationship with U.S. Dept of Agriculture, assisting them in working with the communities of Shade Township and Central City to develop a community-visioning plan. The visioning plan incorporates watershed restoration and brownfields redevelopment with community issues such as education, housing, and infrastructure. The overall goal in blending the two efforts is to create a watershed restoration plan and brownfields redevelopment plan that is a single coherent approach, to establish cleanup plans for the Dark Shade Watershed and also attract new businesses.

The transformation from a community that once relied on the extraction of natural resources to a community that utilizes local assets and capitalizes on restoring the watershed by bringing to light its many historical, recreational, and natural assets is the key to revitalizing Dark Shade communities.

Monday Creek Restoration Project

■ AMD treatment becomes a multidisciplinary concept

Monday Creek, located in the Appalachian region of southeastern Ohio, is a 27-mile long tributary of the Hocking River, the latter which flows directly into the Ohio River. The Monday Creek watershed drains a 116 square-mile area, with streams winding through portions of Athens, Hocking, and Perry counties.

Since 1994, the Monday Creek Restoration Project has worked in partnership with other organizations, citizens, and state and federal agencies to identify water quality problems, conduct field research and site characterization, and prioritize and plan ongoing restoration activities. Large portions of Monday Creek are essentially dead because of the adverse effects of acid mine drainage, caused by heavy mining in the area during the 19th century.

The primary geologic resource of economic interest in the Monday Creek watershed is coal. Within the 74,212-acre watershed, approximately 15,000 acres of abandoned underground mines and 4,000 acres of surface-mined lands exist.

Clay is another important mineral resource in the watershed. Clay, used in pro-



Norah Newburg describes watershed diversity to a 4th grade group at Mill Creek Elementary in Hemlock, Ohio. Monday Creek Restoration Project not only works to treat AMD but also provides educational outreach to the watershed.



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ducing bricks, was mined in the same areas as coal was extracted. One of the major brick plants was the Straitsville Impervious Brick Company (locally known as Seven Chimneys) at Rock Run. Bricks were produced at the Seven Chimneys plant from the early 20th century until the 1970s. Coal was mined and used as a fuel for the brick kilns, and as a result, approximately 13 acres of coal wastes and coal slurry were deposited in an adjacent valley. Deep mines located above the gob pile caused acid mine drainage to flow into and around the site. Precipitation and groundwater ran through this gob pile and carried sediment, toxic metals and acidity into Rock Run. These flows contributed 25 to 150 gallons per minutes of acid water into Rock Run in the headwaters of Monday Creek.

In 1996, the Monday Creek Restoration Project applied for and was awarded a Section 319 Nonpoint Source grant through the Ohio Environmental Protection Agency under provi-

sions of Section 319(h) of the Clean Water Act. This grant involved reclamation activities to cap the gob pile at Rock Run and treat acid mine drainage from a mine opening. A total of \$300,000 was obtained in federal funds, with matching state and local funds for a total grant of \$509,886. State funds included engineering and site construction by the Division of Mines and Reclamation and public involvement through Ohio University. Local funding included developing a video; tree planting, bank stabilization, and stream cleanups through the efforts of local volunteers; and educating local students on water quality issues.

Following engineering design, construction began in September 1998. A series of wetland ponds (Successive Alkaline Producing Systems, or SAPS) were installed. During the spring of 1999, the gob pile was graded, acid ponds were drained, the gob material was capped with a coal combustion by-product, and topsoil was placed over the cap. Grasses were seeded over the entire areas. Downstream from the SAPS, limestone channels were constructed to carry surface water from the site.

As a result of this reclamation, water quality in Rock Run has significantly improved. The pH of water in the vicinity of Rock Run gob pile was 4.2 prior to reclamation activities. The pH in those same locations is around 7.0 today – healthy water. This improvement allows aquatic life to return to Rock Run and a segment of Monday Creek downstream of the confluence with Rock Run.

Monday Creek Restoration Project is also working on an innovative project combining artists, landscape architects, and engineers to develop a remediation system at a dis-



Volunteers are shown here working on one of the many smaller projects Monday Creek Restoration Project has sponsored. The organization is working to make AMD a thing of the past in southeastern Ohio.

The pH in the vicinity of Rock Run gob pile was 4.2 prior to reclamation activities. The pH in those same locations is around 7.0 today – healthy water.

charge site in Murray City, Ohio. The system will integrate art, history, and education and will serve as a community park for people to enjoy. The project is in the planning phase and was developed through joint efforts by the Office of Surface Mining and the National Endowment for the Arts.

These restorations not only improve the physical and biological environments, but also restore community pride and the commitment by local residents to enhance the quality of their communities. The Monday Creek watershed provides access to hiking trails and other outdoor sources of recreation, and cleaning up the area undoubtedly will enhance the economic potential of the area, which is rich in history and natural beauty.

Friends of the Cheat

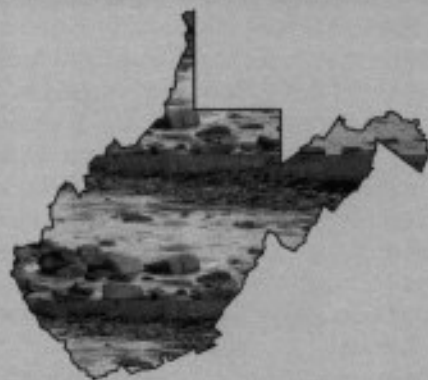
Public good becomes private interest in exciting partnership

From its headwaters in Pocahontas County, West Virginia, the Cheat River flows 157 miles to the Pennsylvania state line. In its lower 20 miles, the river has been so severely polluted by acid mine drainage that it is effectively dead. The continuing legacy of this pollution has been the loss of fish and wildlife, aesthetic damage, degraded drinking water, and losses to the local economy from diminished recreation activities such as fishing and boating.

In 1994, a mine that had been sealed off had become so full of acid mine drainage that it literally blew out the side of the mountain, releasing millions of gallons of untreated water into Muddy Creek, a tributary of the Cheat. The resulting discharge not only impacted the Cheat Canyon section of the river, but also suppressed the pH in a nearby lake to 4.5, killing fish 16 miles downstream. A second blowout in 1995 further accentuated the problem and caused America Rivers, Inc., a national river conservation organization, to



Volunteer cleanup efforts like this one illustrate one of the many ways Friends of the Cheat is engaging local citizens in actively restoring the area's streams.



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name the Cheat to its top ten list of the nation's most endangered rivers. Since the blowout the whitewater industry has suffered more than 50 percent drop in business, while whitewater sports nationally have seen a 33 percent increase.

Friends of the Cheat is a non-profit watershed organization serving the entire Cheat River watershed, with special focus in the lower portion of the drainage. It was created around two principles. The first is to "restore, protect, and promote the outstanding natural qualities of the Cheat watershed," and the second is to "foster a cooperative effort by state and federal agencies, private industry, academics, grassroots organizations, and local landowners to address the severe AMD problem in the Cheat Canyon."

Friends of the Cheat has done that and more. It has been almost six years since 30 inspired people first met to form the organization, and in that short time the group has made major strides toward fostering a sense

The Cheat River Festival has steadily grown during the past six years. Today, it is a major event that draws in hundreds of local residents to camp, eat, raft, and to celebrate locally driven efforts to restore the Cheat River and make acid mine drainage a thing of the past.



of shared pride and responsibility in a diverse group of watershed stakeholders, while inspiring more than \$12 million worth of reclamation projects, monitoring, and studies to start the long process of returning these streams to a healthy state.

Since being formed, Friends of the Cheat has celebrated great success with its River of Promise Task Force, a coalition of state and federal agencies, conservation groups, and industries that coordinates the massive effort to reclaim major tributaries within the Cheat River watershed. Today, the task force includes more than 20 signatories who all actively serve.

Shortly after the group was created in 1995, its members decided to host a small river festival to aid in its outreach efforts and to maybe raise some funds. Upon realizing that they needed some logistical help getting electricity to the festival site, the group contacted Anker Energy to see if it could borrow some generators. Ultimately, talks resulted in the company committing \$200,000 for Friends of the Cheat to complete a reme-

Since being formed, Friends of the Cheat has celebrated great success with its River of Promise Task Force, a coalition of state and federal agencies, conservation groups, and industries...

diation project anywhere in the watershed. The festival itself has continued for six consecutive years.

The group has celebrated a number of other successes as well. It has organized multiple river cleanups on various sections of the Cheat to remove trash brought in by high water. Friends of the Cheat has also helped fund the most comprehensive county wide study of stream health in the state, completed a half-hour documentary on issues concerning the watershed, and purchased the property where the group's annual festival is held at the mouth of Muddy Creek - near the site of the blowout that served as a catalyst for creating the organization.

Friends of the Cheat has been recognized by EPA as a "Top Ten Watershed Lesson Learned." It also received the Office of Surface Mining's Team Award in 1996 and the Sierra Club's Cranberry Award for efforts to resolve environmental issues through communication. It is a shining example of what citizens can do to create change, even when environmental devastation seems overwhelming.

Cawaco RC&D Council

■ Supporting locally driven watershed restoration efforts

The Resource Conservation and Development Program was created by the U.S. Department of Agriculture in 1962 to assist citizens in rural areas in planning and implementing projects that enhance local environments while promoting the conservation of natural resources. Through this effort, RC&D Councils – classified as non-profit organizations – support economic development and enhance the quality of life in rural America.

RC&D Councils operate with one basic premise: local people know best how to improve and nurture their communities. For that reason, these organizations are locally organized, sponsored, and led. USDA provides technical support and financial assistance, while groups working with and through the RC&D Councils obtain additional funding from other sources while building a base of dedicated local volunteers.

In Alabama, there are a number of these areas, and in one in particular – Cawaco RC&D – is working with local watershed groups to renew the tainted waters in the



Terry Joyner, a 2000 Office of Surface Mining Summer Watershed Intern, collects water samples at an AMD-impacted stream near Birmingham, Alabama.

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coalfields of the state's northern region. Cawaco has worked with watershed groups to promote educational outreach, environmental stewardship, and watershed restoration.

Last summer, Cawaco RC&D sponsored an intern through the U.S. Office of Surface Mining's Watershed Intern Program. Terry Joyner, who is still working with Cawaco to this day, was able to work with residents and local entities within the RC&D to promote watershed restoration and AMD-related issues. While investigating community support for the project, Joyner increased public awareness of remediation options and the availability of financial and technical resources for treating AMD.

Cawaco RC&D, by utilizing the intern program, was able to create a database which contains more than 300 names of quality monitors, local, state, and federal resources, and water advocacy groups for watersheds being targeted within the RC&D. An educational display was created to use during watershed events throughout the area, and the response from event attendees has been

Citizens are shown here working at a remediated site that is used by local schools and colleges for studies. Among its many uses, the site has an area where a college is attempting to "grow" an already naturally occurring "sulfur-eating" bacteria that can be used to remediate AMD water.



excellent. Joyner also spent a great deal of time reaching out to different groups within the RC&D area, including the county Soil and Water Conservation Districts and the Natural Resource Conservation Service. In one county, Cawaco is helping organizations create a water education bus tour, and the local Boy Scouts are working to build a canoe access point near abandoned mine lands to be used for educational purposes.

Last summer, Cawaco also assisted with several public events, including the Blount County Ground Water Festival. More than 1,000 4th and 5th graders got the chance to learn about the importance of ground water in daily life. Another event held at the Birmingham Botanical Gardens was equally successful.

Locally, Cawaco RC&D has been providing technical and administrative support for the Black Warrior River Basin Clean Water Program, which is designed to address water quality issues and future resource management practices in the Black Warrior River basin. The effort is a component of the na-

Cawaco has worked with watershed groups to promote educational outreach, environmental stewardship, and watershed restoration.

tional Clean Water Action plan and is coordinated by the Alabama Department of Environmental Management and the Natural Resources Conservation Service. The organization has been awarded more than \$600,000 in

federal funds to assist partner organizations and agencies in various water quality projects. It is a perfect example of how Resource Conservation and Development Councils work to bring together numerous interests to create positive change within a region.

RC&D Councils work throughout the eastern coal region and across the nation to improve water quality and quantity. Cawaco RC&D continues to work with numerous community, state, and federal organizations to promote AMD remediation and watershed restoration.

The effort goes far beyond simply cleaning up water. It involves educating the public, creating a sense of awareness, and energizing citizens to take control of their communities. By helping to coordinate efforts and foster communication, Cawaco has helped fundamentally improve the quality of life throughout the coalfields of Alabama.

Eastern Pennsylvania Coalition for Abandoned Mine Reclamation

■ Bringing watershed groups together to create change

The Eastern and Western Pennsylvania Coalitions for Abandoned Mine Reclamation, or EPCAMR and WPCAMR, as they are widely known, were formed six years ago to support and coordinate the efforts of local watershed organizations, community groups, municipal governments, and conservation districts, to focus on the reclamation of abandoned mine lands and the remediation of these lands. Throughout the anthracite coal region of northeastern Pennsylvania, EPCAMR has helped form more than 14 watershed groups, all of which are working to help clean up some of the most significant acid mine drainage problems in the region.

The anthracite coal region has unique characteristics unlike those found in traditional bituminous areas and therefore has unique problems. Mining was so deep in the region that mine companies bore tunnels to drain areas naturally by gravity. The result has been huge tunnels of AMD with water flow sources that are largely untraceable and impossible to stop.



Various conservation groups participate in a 1998 survey of the West Branch of the Schuylkill River in Pennsylvania.



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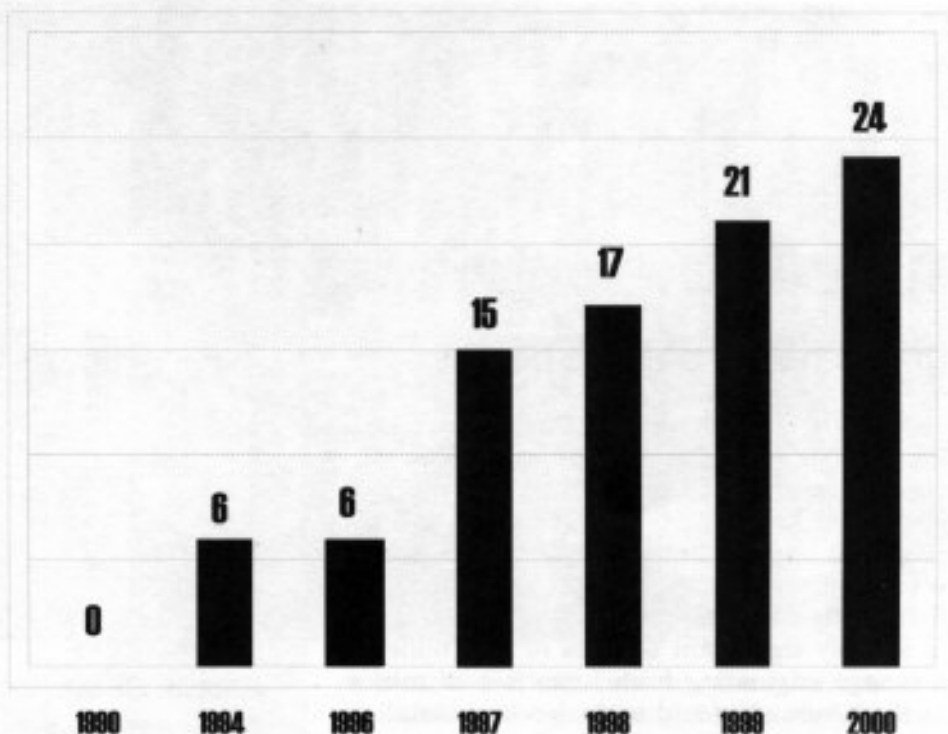
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These overwhelming odds have not stopped the area's watershed groups, under the umbrella of EPCAMR, from working to create remediation sites that can clean up these polluted waters. The area covers more than 550 square miles, and for years, it provided the nation with a large supply of coal. During World War I, coal was mined out of northeastern Pennsylvania at a rate of 100 million tons per year. Today, that number is somewhere around 2 million, but the environmental devastation of unregulated mining practices can still be felt.

EPCAMR supports several groups that have made major differences in the region. One of these groups is the Catawissa Creek Restoration Project. The organization obtained grant money through a number of sources, including the Office of Surface Mining, EPA 319 funds, and Pennsylvania Growing Greener grants. With this money Catawissa Creek was

This data details the number of fish species found in Swatara Creek near Ravine, Pennsylvania. Because of AMD water quality work in the area through the help of community groups along with EPCAMR, life is slowly being restored to this and many other streams throughout the region. (Source: USEPA)



able to create an oxalic limestone drain to restore the water inside a gated mining community that had AMD flowing into it at a rate of 1,500 gallons per minute. Previously, the AMD had been adversely impacting a lake, as well as 12 miles of stream water. The organization currently is working on its second project.

In 2000, EPCAMR implemented the Regional Watershed Support Initiative Grant program, which has provided more than \$45,000 to 11 watershed groups to assist them in working on AMD projects. The organization has also assisted in numerous educational outreach projects. The groups EPCAMR works with have implemented environmental education and litter control programs so students can learn early the importance of responsible environmental stewardship.

EPCAMR has also been affiliated with the

Ashland Area Historical Preservation Society, a non-profit organization dedicated to providing tourism in education experiences. This

group has created a 90-minute driving tour of the coal region to teach people about the coal mining legacy and its implications on the present and future.

Work being done throughout the anthracite region is noticeable. For example, EPCAMR has worked with citizens from Swatara Creek to improve their water quality. By treating AMD, the group has been able to significantly increase the number of fish species found in the stream. In 1990, there were no fish to be found, but today, at least 24 species and possibly more thrive.

By building communication among various groups

and working tirelessly to secure various forms of funding, EPCAMR is helping watershed groups gradually put an end to the devastating consequences of the region's industrial past.

In 2000, EPCAMR implemented the Regional Watershed Support Initiative Grant program, which has provided more than \$45,000 to 11 watershed groups to assist them in working on AMD projects.

North Chickamauga Creek Conservancy

■ Working to clean up and protect natural treasures

The North Chickamauga Creek Watershed Restoration Project is a multi-organizational effort to restore the upper 18 miles of the North Chickamauga Creek watershed in Hamilton and Sequatchie Counties, Tennessee, to a level that will support a warm water fishery. Specific objectives of the project are to identify significant sources of acid mine drainage originating from historic coal mines in the headwaters and to design and install passive treatment systems such as anoxic limestone drains and constructed wetlands to elevate pH and remove toxic metals from the water. Working with North Chickamauga Creek Conservancy, partners such as the Tennessee Valley Authority, the U.S. Army Corps of Engineers, the Office of Surface Mining, the Tennessee Division of Water Pollution Control, Bowater, and others have helped to make the stream waters in the area cleaner while improving the quality of life for all citizens in the region.



Citizens participate in an educational and recreational birdwalk sponsored by the North Chickamauga Creek Conservancy, which works to clean up the 32-mile stream in Tennessee.



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Location: Southeastern Tennessee

Congressional district: TN 3rd

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Hixson, TN 37343

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The creek, which begins approximately 15 miles from Chattanooga, makes its way through a scenic 10-mile area of a gorge, which is home to a number of rare species, not to mention beautiful vistas and countless recreational opportunities. The North Chickamauga Creek Gorge is listed by the National Park Service in its Nationwide Rivers Inventory for the gorge's "outstanding scenic, recreational, geologic, fish and wildlife, historic, and cultural values." In addition, it is on the "Top 200" list of the American Rivers Conservation Council, and is recognized as one of the highest quality and most difficult whitewater creeks in eastern U.S.

The upper North Chickamauga Creek is severely impacted by AMD emanating from more than 15 discrete sites in headwater tributaries. AMD is characterized by low pH and elevated concentrations of acidity, iron, manganese, aluminum, sulfate, and other

Local citizens clear trash from North Chickamauga Creek in southeastern Tennessee. The creek runs through a scenic gorge in the area, home to a number of rare species and more than 8,000 acres of protected lands.



pollutants which are toxic to aquatic life and result in reduced aesthetics and potential uses of the water. Typical water chemistry in North Chickamauga Creek acid mine drainage is a pH of 2.6-4.0, and prevalent metals such as iron, aluminum, and traces of zinc and copper.

Project teams provide technical assistance for the installation of passive treatment systems at AMD sites in the North Chickamauga Creek watershed. These projects will help restore the environmental integrity of the watershed and will provide demonstrations and study opportunities for the innovative technologies employed. When properly designed and operated, passive systems should require minimal operational and maintenance expenditures and treat the AMD to help eventually restore the ecology and usefulness of the watershed. They will also provide wildlife habitat, a natural and aesthetic alternative to conventional treatment

schemes, and will enhance the area's value as an outdoor classroom and laboratory for environmental research.

The Standifer 15 passive treatment system was installed in 1998 to treat AMD emanating

from an underground coal mine. The AMD has a pH of 3.2 and a number of heavy metals. The treatment system consists of several components such as a limestone drain and a series of channels to direct water and has improved water quality of the mine drainage by increasing the pH.

This is just one of the many successful projects underway or completed in the North Chickamauga Creek area. Since 1989, more than 6,000 acres have come under some form of protection, increasing the extensive network of recreational trails available for outdoor enthusiasts. There are also areas of the creek where modest trout fishing is possible. As the waters

continue to improve through the efforts of the conservancy and other partners, the economic opportunities in the region can only improve.

When properly designed and operated, passive systems should require minimal operational and maintenance expenditures and treat the AMD to help eventually restore the ecology and usefulness of the watershed.

George's Creek Watershed Association

■ Hard work makes what once seemed impossible reality

George's Creek runs for 17 miles through the mountains of western Maryland and flows into the Potomac River, ultimately winding its way to the Chesapeake Bay. More than a century ago, this creek was home to a thriving population of trout, but perhaps more importantly, it was home to the families of local miners whose hope rested on the vastness of coal buried beneath the state's soil. Today, most of the mines are gone, and left behind is a legacy of environmental devastation – the result of years of unregulated mining practices.

The George's Creek Watershed Association, a group of local citizens working to clean up this creek and breathe new life into the region, was originally formed to combat acid mine drainage in Mill Run, which flows into George's Creek. The run contributes almost 20 percent of the AMD found in the larger creek and is a major source of pollution. Consequently, the local activists living in the area knew something had to be done to clean up Mill Run if real improvement was going to



Volunteers shown here are assisting in one of the various remediation-related efforts that are currently underway along George's Creek and its tributaries.



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Lonaconing, MD 21539

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be seen.

Originally, the group completed an active treatment system, working with local partners and public agencies, approximately three years ago. Fine-ground limestone is dumped into the stream at various points, resulting in a pH increase of an acidic 3 to 6.5 – healthy water.

Mill Run is healthy again, thanks to the work of these citizens. Many in the region never thought it would be possible. In fact, most had never even seen fish in the creek, and there seemed to be no hope of the situation changing. Upon completion of remediation work, the state has been able to find more than 500 native brook trout per stream mile. The clean water not only improves public health but also creates a potential recreational attraction that results in increased local revenue.

George's Creek Watershed Association also completed a comprehensive stream improvement of Mill Run, a tributary of George's Creek. At cost of \$285,000, the group, with the aid of state and federal agencies, was able to repair the stream channels, which had

A volunteer working with George's Creek Watershed Association prepares a water sample to be tested. Thanks to local cleanup efforts, native trout are once again able to thrive in a stream that for years had been virtually dead because of unregulated mining practices.



been redirected by man-made practices, producing extensive flooding in the area. Today, the stream runs along its more natural course and has been restored to its previous beauty.

With stream improvement funding, George's Creek was able to create a park on the floodplain, where old homes once stood. The county government purchased the homes and had them removed, and now, a park exists as a permanent reminder of what can be accomplished when citizens take an active role in restoring their environment.

George's Creek Watershed Association is not done, however. The group currently is working on a new passive treatment system. Near a place known as the Fazenbaker Farm, two AMD seeps are leaking into the water and adding to the pollution of George's Creek. The new systems will employ state-of-the-art passive technology, will require minimal maintenance, are cost effective, and should be good for 20-25 years. Funding comes from the U.S. Office of Surface Mining, the Maryland

state Bureau of Mines and Reclamation, and various other agencies. Volunteers such as the county Soil and Conservation Office will assist with bookkeeping. The effort truly

reflects activism at the most grassroots level.

George's Creek ultimately expanded its sphere of concern beyond Mill Run. The citizens involved in cleaning up the watershed hold themselves to the principle that AMD remediation is simply one of the many important projects that must be undertaken in order to see fundamental quality of life improvements. The coal region of western Maryland still suffers from mining practices undertaken at the turn of the 20th century, but at the turn of the 21st, George's Creek Watershed Association is working to make polluted waters a topic of history as well.

By working with government agencies and bringing public and private entities together, George's Creek is successfully completing water

quality improvement projects that will significantly impact the region for years to come, improving the quality of life for all residents in the watershed.

Maryland still suffers from mining practices undertaken at the turn of the 20th century, but at the turn of the 21st, George's Creek Watershed Association is working to make polluted waters a topic of history as well.

■ Leading the way with new approach to AMD remediation

AMD&ART is a non-profit organization that is artfully transforming environmental liabilities into community assets in the coal country of southwestern Pennsylvania. The AMD&ART process is one that combines public art, environmental improvement, and community engagement in treating AMD. With multidisciplinary intervention and wide public participation, AMD&ART has taken a holistic approach to re-creating place, incorporating recreational elements, artful spaces, educational opportunities, historic reminders, and restored wildlife habitat into designs for passive AMD treatment systems. This approach honors a past of hard work and community building, bringing that same civic engagement to the design and construction of treatment systems that clean polluted waters, reach people, restore nature, and revitalize abandoned spaces.

AMD&ART was instrumental in starting the Dark Shade Brownfields Project, the Stream Team, the OSM/NEA initiative, and



Jessica Noble and Nathan Sheesley apply varnish to a large wooden sign for the Vintondale site, an AMD treatment park created by AMD&ART.



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Web site: www.amdandart.org

has worked hard to share this information with other watersheds throughout Coal Country. The group's pilot project in Vintondale serves as a model of inclusive, interdisciplinary environmental problem solving. Community members, along with a team of artists, scientists, landscape architects, and historians, participated in the design of this AMD treatment system and community park. The Vintondale site is situated on 35 acres of reclaimed mine land, where a washery, power plant, tipple, and a battery of 152 coke ovens once stood. The site is bordered by the Ghost Town Rail Trail, which is traveled by 70,000 hikers and bicyclists each year. The AMD discharge at Vintondale is relatively small (200 gpm); a passive treatment system and new wetlands will cleanse the water of metallic pollutants and raise the pH to a healthy, neutral level. The treatment system and wetlands will be enhanced by plantings of native trees and shrubs, works of public art, and commemoration of the site's history.

AMD&ART has received the support of

Vintondale residents and AMD&ART staff work together to build a park bench for the Vintondale AMD treatment system and community park. The area is already under construction.



federal, state, and local environmental agencies. A number of arts and humanities groups also support AMD&ART, relieving pressure on the usual sources of funding for AMD remediation. To finance continuing operation and maintenance of the Vintondale treatment system, AMD&ART sold new wetlands to the Pennsylvania Department of Transportation. This is the first time PennDOT has mitigated the destruction of wetlands by purchasing constructed wetlands associated with an AMD treatment system. The purchase will allow AMD&ART to create a trust fund with the local Community Foundation so that the Vintondale site can be maintained in perpetuity. To transform abandoned mine land into wetlands, AMD&ART has arranged a government financed construction contract (GFCC) with a fuel procurement company that, at no cost, will remove a layer of boney from the site and take it to a co-generation facility. By partnering with public agencies and private industry, AMD&ART has saved significantly on construction costs for the Vintondale site.

Community support has been essential to

the success of AMD&ART in Vintondale. Community involvement has taken many forms, from residents taking an active part in design meetings to volunteers building park benches at the town firehall. People of all ages have worked to move the Vintondale project forward, from schoolchildren to se-

niors, and they are building more than just a park; they are building connections between generations that will make their community more cohesive and resilient.

Visitors will come to the Vintondale site for a variety of reasons: to see an historically important coal mining site, to view birds and wildlife, to gain a better understanding of the science behind AMD and its treatment, and to learn how community based initiatives can restore the environment to health.

AMD&ART is working with the residents of Vintondale to interpret the natural and historical features of the site and to develop recreational amenities and a small community environmental education center. The Vintondale site, once the bustling center of work and life in this company town, will again be a vital part of community life.

with
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AMD&ART has
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approach to
recreating place...

Patoka South Fork Watershed Steering Committee

■ Innovation and renewal at the grassroots level

The Patoka South Fork watershed is part of the larger Patoka River watershed, which has a drainage of 862 square miles. The river flows through eight counties before joining the Wabash River at Mt. Carmel, Illinois. Deep mining began in the region around 1836, and by the 1920s, had been replaced by surface mining. Because environmental controls did not exist, the sites were left unreclaimed, creating acid mine drainage runoff. All fish have since been lost from the South Fork tributary of the river.

Today, the South Fork is considered the most impacted watershed in the state. Approximately 60 to 75 percent has been damaged by AMD, which has been documented in numerous studies. The area is home to crop and pastureland as well as oil and gas drilling.

The Patoka South Fork Watershed Steering Committee was spawned by a meeting of the Indiana Society for Mining and Reclamation



Members of a local Boy Scout troop get a little muddy placing soda ash briquettes near a tributary of Augusta Lake in Indiana. Patoka South Fork Watershed Steering Committee has worked to energize volunteers to clean up the area's polluted water.

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that took place in 1994. Multi-agency meetings took place throughout 1995 to determine ways the Patoka region could benefit from the Office of Surface Mining's new Appalachian Clean Streams Initiative.

It was determined that any efforts undertaken would involve working with multiple groups, and that the project would be driven by the local community. A public meeting took place to create awareness of the watershed's problems, and by 1996, the group was officially organized.

The following criteria were established:

- The Patoka South Fork Watershed was identified as having a severe AMD problem
- No one government entity could pool enough resources to evaluate and abate all of the economic and environmental impacts
- Multi-agency involvement would focus new ideas and talents to solve old problems, like sharing responsibilities and decreasing the workload necessary for public involvement

Patoka's AMD remediation efforts have not

Patoka South Fork Watershed Steering Committee, with the help of federal funding and local citizens wanting to make their community a better place, completed the Lick Creek project in 1998. The site features an aqueous anoxic limestone drain – a revolutionary development in the treatment of acid mine drainage.



gone unnoticed. In fact, their Lick Creek restoration project was awarded the Innovation in Reclamation award at the 1999 Indiana Society of Mines and Reclamation conference. Lick Creek is part of the Patoka watershed and was adversely impacted by acid mine drainage, as well as public dumping of garbage. The site consisted of two connected mine pits surrounded by acid producing surface mine spoils, which ultimately created a two-acre area of sterilized environment of metals that had fallen out of solution once the AMD reacted with surface oxygen and caused the pH to rise. This area was part of a 40-acre high quality natural wetland, which was in danger of being destroyed – until some local ingenuity and the help of dedicated volunteers, non-profit workers, and government agencies came together to get something done.

Patoka created an aqueous anoxic lime-

stone drain, which allowed AMD to pass through a limestone channel, causing the pH of the water to rise without armoring the limestone with iron and other metals that fall out of solution. The concept of anoxic treatment of AMD is not new, but applying the concept as Patoka did was, in fact, revolutionary.

The organization actually created the limestone dam in one of the lakes in the area, which allowed the metals to settle out of solution in one end of the water before it passed into the wetland. Utilizing the anoxic properties of the lake itself had never been done.

Today, the area resembles a park, and water flowing into the wetland is now clear. Lick Creek

symbolizes the level of success that is possible when government works as an empowering body, helping local citizens take responsibility for their environments to make their communities stronger and the future for their children brighter.

The concept of anoxic treatment of AMD is not new, but applying the concept as Patoka did was, in fact, revolutionary.

Letcher Co. Water & Sewer District

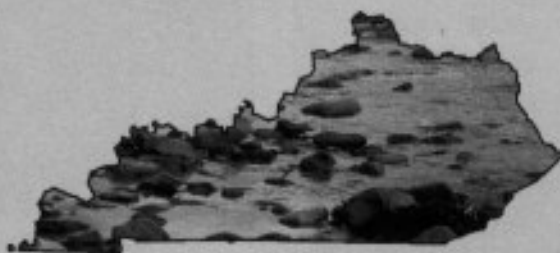
Local public entity breathes new life in polluted waters

The Letcher County Water and Sewer District, formed only five years ago, has made great strides in assessing the impact coal mining and raw sewage have had on the North Fork of the Kentucky River in Letcher County, Kentucky. This once-pristine area, located in the coalfields of the state's eastern region, has fallen victim to the two most pervasive water quality problems in Appalachia today. Fortunately, citizens at the most grassroots level are joining together to do something about it.

Around 1996, a county judge in the rural area of Letcher County decided that something needed to be done to address water concerns outside of municipal boundaries. Thus, he ordered the creation of a group to address these needs. After applying to Kentucky's Public Service Commission for approval, Letcher County Water and Sewer District was formed.

As its name implies, the organization has two primary objectives. The first is to work on cleaning up the acid mine drainage and other environmental devastation that has resulted from poor mining practices that went unregulated prior to the 1977 implementation of federal standards. Secondly, the group works to remove "straight pipes" from the North Fork of the Kentucky River, where raw sewage simply is dumped into the river with no filtration.

With only five active members, Letcher County Water and Sewer District has made



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Congressional district: KY 5th

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great strides in utilizing available resources to improve the quality of life for those who live not only in Letcher County, but downstream, where the benefits of renewed water can be experienced as well.

Last summer, Letcher County applied to participate in the Summer Watershed Intern Program, sponsored by the U.S. Office of Surface Mining. The program places interns with local organizations to assist them in planning, developing, and implementing AMD remediation projects. It also provides federal funding for the intern, as well as money for administrative costs and technical support.

Letcher County Water and Sewer District's U.S. Office of Surface Mining summer 2000 intern was sought to develop and conduct an AMD inventory throughout Letcher County, Kentucky. The goal was to document the effects of coal mining on the water quality of the North Fork of the Kentucky River and its tributaries through chemical and biological

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With only five active members, Letcher County Water and Sewer District has made great strides in utilizing available resources to improve the quality of life for those who live not only in Letcher County, but downstream, where the benefits of renewed water can be experienced as well.

analyses. Results were compiled in a database that will be used to plan remediation projects at selected locations.

The lack of field-testing equipment presented a substantial obstacle to beginning the inventory. In fact, this is a problem that many watershed organizations face when hoping to assess the impact AMD has had on their respective regions. Letcher County approached businesses that were able to provide them with kits to test for iron, manganese, dissolved oxygen, carbon dioxide, alkalinity, and pH at no cost. This kind of community generosity and personal responsibility fosters the kind of environmental activism among citizens needed to truly clean up AMD effectively.

Letcher County located and analyzed 10 sites within a 10-mile radius of the county seat of Whitesburg. All 10 of these sites were also sampled and sent off for further laboratory analysis. The University of Kentucky, in collaboration with the Letcher County Water and Sewer District, is currently developing a Headwaters Task Force that will continue collecting data along the North Fork and its tributaries.

This assessment project was also designed to ascertain the community's interest in water quality issues and to form a volunteer monitoring program if local citizens were interested in doing so. In collaboration with other public agencies, the group organized a community meeting to discuss water quality issues within the North Fork basin. This meeting was designed to get some local input from the

citizens of Letcher County on what they wanted to see happen within their respected watersheds.

Additionally, Letcher County has been working closely with members of the Kentucky Water Resources Institute to develop a group of watershed task forces that will

develop ideas concerning the remediation of the rivers and streams and will continue the water quality-monitoring program that has been set up through this internship.

A meeting was held at the Hazard Community College to delegate tasks within the sub-basins of the Kentucky River. Representatives from each region were invited to express their concerns regarding water quality in their respective areas.

As a result of the study, several locations were found within the region to be highly acidic. These discharges, now discovered, will be targeted in the future for AMD remediation projects. While federal and state funding cannot always provide a quick solution, it can help concerned citizens, such as those in Letcher County, take charge of their destinies. Funding can become an empowerment tool which energizes the citizenry to band together to improve the quality of life in their region.

The OSM summer watershed internship lasted 12 weeks, and in that amount of time, data was collected that will serve as the guide for future remediation projects, and watershed improvement efforts received a significant boost. Letcher County is now one step closer to ridding itself of AMD once and for all and creating a prosperous community for tomorrow.

Letcher County Water and Sewer District's U.S. Office of Surface Mining summer 2000 intern was sought to develop and conduct an AMD inventory throughout Letcher County, Kentucky. The goal was to document the effects of coal mining on the water quality of the North Fork of the Kentucky River and its tributaries through chemical and biological analyses.

Mountain Watershed Association

■ Fundraising efforts wield remarkable success

Ten concerned citizens in southwestern Pennsylvania met in a kitchen in 1994 to discuss problems in their watershed. Little did these people know at the time that this meeting would ultimately result in the formation of an organization 650 strong with an annual budget of more than \$100,000. Today, that organization is Mountain Watershed Association, and the group continues to raise funds, educate the public, and fight to restore the waters of the Indian Creek Watershed, which has been adversely impacted by more than 150 years of unregulated mining practices.

The Indian Creek Watershed is located in Fayette and Westmoreland counties in rural Pennsylvania. It is 80,000 acres in size and contains several townships. Approximately 9,500 people live within the watershed itself. Many of these people are currently living in poor conditions which are aggravated by poor water quality. In fact, 76 percent of the households in the watershed with children are below the poverty level, and average per



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capita income is approximately \$8,800.

These children, as well as their parents and others living in the area, are subject to mine drainage that impacts 17.4 miles of Indian Creek. Every year, 1,155 tons of acid, 230 tons of iron, and 71 tons of aluminum flow into the creek. Mountain Watershed Association was formed out of the efforts of concerned citizens willing to work to take back their communities, and since its inception, the group has celebrated remarkable success.

Mountain Watershed's mission involves multiple goals, including the promotion of conservation, educational outreach, information dissemination, promotion of economic growth, and the completion of various remediation projects. Since formation, the organization has raised hundreds of thousands of dollars in funds from private donors, non-profit groups, and government agencies. These funds have gone toward completing a number of important projects throughout the water-

Mountain Watershed Association, formed through the efforts of concerned local citizens, has worked to implement major acid mine drainage remediation projects since its inception. A Mountain Watershed summer intern is shown here working in the field.



shed, which have improved water quality, and ultimately, the quality of life for all of the citizens who suffer from the negative consequences of mining which went virtually unchecked until passage of the federal Surface Mining Control and Reclamation Act of 1977.

A major victory for Mountain Watershed Association has been to enlist and work with the Natural Resources Conservation Service, a part of the U.S. Department of Agriculture, to conduct a Public Law 566 study for the Indian Creek Watershed. This study, which looks at the cost-benefit ratio of cleaning up and area like this watershed, is showing a benefit to cost ratio of 2.2 dollars to one. The P. L. 566 study clearly finds that the social, ecological, educational, and economic benefits of doing a comprehensive mine drainage restoration project clearly exceed the costs. The study will result in an allocation of P.L. 83-566 funds for our community of more than \$2 million, qualifying the group for state and other funding in the same amount.

The P. L. 566 study clearly finds that the social, ecological, educational, and economic benefits of doing a comprehensive mine drainage restoration project clearly exceed the costs.

This is not the only success for Mountain Watershed Association, however. The organization has energized local citizens as well and has raised an average of \$6,500 per year in grassroots funding. The group is also working on completing a nature and biking trail and restoring an historic grist mill which will serve as an educational tool for the community, as well as tourists.

During 1999, Mountain Watershed participated in more than 30 event days, reaching out to approximately 2,500 people. The group gave presentations at two Rotary Club and Lions' Club meetings. They also set up Earth Day displays and presented at local elementary schools.

Actual AMD remediation is also a concern of the organization, and thus far, Mountain Watershed Association has successfully

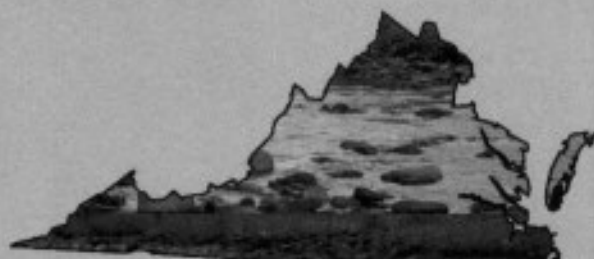
completed a \$300,000 project that resulted in the reclamation of a coal refuse pile and treatment of two mine discharges by constructing two anoxic limestone drains and uniquely installing two windmill aerators. A second project is now underway.

Guest River Group

Restoration success receives national attention

The Guest River Group formed in 1995 and is an informal alliance of watershed residents and more than 15 local, state and federal agencies. The Guest River Group developed a plan to address a variety of water pollution sources, including fecal coliform bacteria, AMD, sedimentation, hazardous wastes and urban non-point source runoff.

The Guest River in southwest Virginia has been designated a National Case Study Watershed for the application of stream corridor restoration technology. It is the third largest tributary to the Clinch River, draining approximately 100 square miles in Wise County, Virginia. It is typical of many coal-impacted watersheds in the Central Appalachians. Abandoned mined lands and poor land use practices create excessive erosion and sedimentation in most of the streams. Loss of riparian cover and habitat damage due to sedimentation have placed great stress on aquatic communities and pose public health threats to communities. An extensive water quality monitoring program carried out by the



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Volunteers clean up dump sites along the Guest River, located in the coalfields of southwestern Virginia.

Tennessee Valley Authority from 1994 through 1997 showed the Guest River water quality to be poor due to multiple impacts – among the most notable being untreated wastewater, past mining operations, and urban runoff.

The formation of the Guest River Group in 1995 sparked interest in restoring the Guest that was improbable just a few years ago. This informal alliance of watershed residents and local, state, and federal agencies has received back-to-back funding for 1998 and 1999 through Virginia's Department of Conservation and Recreation Water Quality Improvement Fund. The Guest River Restoration Project is addressing a variety of water quality impacts. Accomplishments to date include:

- Elimination of 50 residential straight pipes by installing wastewater treatment systems
- Pumpout of 400 residential septic tanks through a landowner subsidy program
- Restoration or protection of 6 miles of

streambank through tree planting, bank sloping, and installation of energy-dissipating structures

- Reclamation of five abandoned mined land sites in cooperation with the Department of Mined Land Reclamation, reclaiming 1.5 acres and nearly 3,000 feet of streambank

- Cleanup of 17 illegal dump sites and removal of more than 160 tons of material

- Stenciling of storm drains in the towns of Coeburn, Norton, Appalachia, and Wise

- Installation of an outdoor classroom for grades 4-7 designed around Virginia's Standards of Learning

- Educational and communications program linked directly to each project activity.

One particular success the group has celebrated involves the reduction of sedimentation in Glade Creek. Glade Creek is a channelized stream of slight gradient. The banks along the stream were steep in many areas, with grass as the only vegetative cover. The next 200 feet downstream was threatening to regain its meanders. The grass banks were eroding with the stream. The lower 400 feet of the stream were downcutting, resulting in collapsing banks. The banks were grassed on both sides, but one side was paralleled by a parking lot less than 10 feet away. The runoff from this parking lot was creating gullies on the streambank. This 1,200 feet of Glade Creek was severely choked by sediment. No gravel was visible in the stream substrate and during low flows the channel was clogged with vegetation.

Several treatments were used to restore Glade Creek. The banks were sloped, and several log sills and check dams were installed to dissipate excess energy and keep

the flow in mid-channel away from the streambanks. The log sills also improved aquatic habitat by creating riffles upstream of the sills. As water approached and flowed over the sills, small pools were created just below the log sills. Additionally, erosion control fabrics were anchored to the soil and seeded with grasses. Two different fabrics were installed, one being biodegradable and needed only to help hold soil until the grasses and woody vegetation were established. The other

was a synthetic mat used for permanent reinforcement where the stream was threatening to undercut adjacent tennis courts. This area was planted in grass only. Cedar tree revetments were anchored upstream of the tennis courts to protect and reclaim streambanks and reduce stream width.

Last, after construction phases were completed, trees and shrubs were planted along the stream to create a vegetated riparian buffer zone. This proved to be challenging due to the concern for security and visibility of the school grounds and impact on overhead power lines. Trees and shrubs were selected based to restrict tree height, not to exceed 20 feet, and restrict fullness of the shrubs. At present, an ongoing streambank maintenance plan is being carried out by the Wise School Board grounds people. This requires the removal of undesirable plants so that desirable plants installed will not

be challenged for nutrients and space.

Through its extensive water restoration efforts, Guest River has served as a national model for watershed renewal. By building partnerships and addressing the vast number of water quality issues affecting the river and its tributaries, the Guest River Group has and undoubtedly will continue to celebrate success long into the future.

The Guest River in southwest Virginia has been designated a National Case Study Watershed for the application of stream corridor restoration technology. The formation of the Guest River Group in 1995 sparked interest in restoring the Guest that was improbable just a few years ago.

Kiski-Conemaugh Stream Team

■ Group promotes activism, water quality education

The Kiski-Conemaugh Stream Team was formed in 1998 by the Kiski-Conemaugh River Basin Alliance and AMD&ART with funding from the U.S. Forest Service, OSM, and others. The K-C Stream Team evolved from the need for a basin-wide water quality assessment and educational outreach as identified in the Department of Conservation and Natural Resources Kiski-Conemaugh Rivers' Conservation Plan. It was founded to create a community outreach program that would engage people in stream monitoring/assessment and environmental education projects. The Stream Team is administered by two AmeriCorps volunteers of the federally funded AmeriCorps Program.

The Stream Team Project is a group of more than 88 volunteers responsible for conducting aquatic monitoring and educational outreach throughout the Kiski-Conemaugh River Basin. Monitoring takes place across the 1,887 square mile river basin, which includes the Kiskiminetas River, Loyalhanna Creek, Conemaugh River, Blacklick Creek, Little Conemaugh River, and Stonycreek River watersheds.



Howard Eldon and his grandchildren check stream flow at a sample site for the Kiski-Conemaugh Stream Team.



Name: Kiski-Conemaugh Stream Team

Location: Near Johnstown, PA

Congressional district: PA 12th

Address: 501 15th Street, Suite B
Windber, PA 15963

Phone: (724) 238-8205

Fax: (724) 238-7681

E-mail: kcstreamteam@floodcity.net

Web site: www.kcstreamteam.org

Currently, water quality data is collected from more than 100 strategic sites on a quarterly basis. Subsequent sample analysis by the PADEP Harrisburg laboratory and on-site volunteer analysis data is posted on the K-C Stream Team Web site. This Web site posting allows numerous groups to constantly monitor the health of the river basin.

The Stream Team's educational outreach program works with schools, environmental groups and community organizations to establish local education projects. This outreach also provides a good source of volunteer stream monitors.

Since the inception of the Stream Team in 1998, the following achievements have been accomplished:

■ Taken approximately 1,000 water quality samples. Some of the parameters tested are pH, alkalinity, total suspended solids, calcium total, magnesium total, sulfate total, iron total, ferrous Iron, manganese total, aluminum total, and hot acidity.

Two student volunteers conduct a field analysis of a stream site for the Kiski-Conemaugh Stream Team. The team has focused on educational outreach and has had a significant history of success during its short life span.



- Visited 22 schools and established curriculum modules based on the presentations. The grade levels are kindergarten through college.

- Developed interactive Stream Team Web site found at www.kcstreamteam.org

- 993 students and 779 adults have attended educational seminars and/or received volunteer monitoring training.

- Organized and conducted a Watershed Monitoring Symposium at Keystone State Park. Students involved in the stream team monitoring program shared their findings and interacted with other schools and watershed groups.

- Published the *Step-by-Step Guide to Creating A Stream Monitoring Program for Abandoned Mine Drainage-Affected Watersheds*. The federal

Office of Surface Mining has printed this publication for dissemination in the Appalachian Clean Streams Initiative.

- Participated in Earth Day presentations at Penn Trafford High School Earth Day, with nine other high schools in attendance.

- Highlighted in the Pennsylvania Depart-

ment of Environmental Protection's Growing Greener, First Year Report 2000. The Stream Team was described as Pennsylvania's version of an environmental "dream team."

- Was awarded the 2000 Governor's Award for Environmental Excellence.

(The Stream Team) was founded to create a community outreach program that would engage people in stream monitoring/assessment and environmental education projects.

The Stream Team Initiative has a very strong consensus component. The Conemaugh Valley Conservancy, the Kiski-Conemaugh River Basin Alliance, AMD&ART and the Stream Team Advisory Committee are committed to continue achieving the successes highlighted in *Kiski-Conemaugh: A River Revival*, published in June of 2000 by the Conemaugh Valley Conservancy.

Increasingly, the Alliance partners, the Stream Team, and other remediation groups in the Kiski Basin are being asked to provide assistance to other water-

shed organizations, across the state and nation, that are undertaking water pollution abatement efforts. Working together, these organizations made up of citizen volunteers are making progress that will have a lasting impact on the communities of Appalachia long into the future.

Kelly's Creek Communities Association

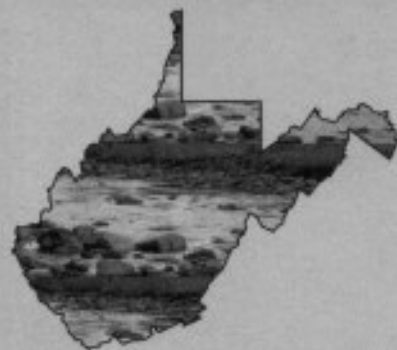
■ Award-winning group makes great strides in restoration

Kelly's Creek, located in the Upper Kanawha River Valley near Charleston, West Virginia, is an 18-mile stretch of water that for decades has been plagued by acid mine drainage, raw sewage, and massive amounts of trash and other debris. Along its shores sit tiny communities that were once home to coal miners and rail workers who moved resources out of Kelly's Creek hollow and down the river. Today, the citizens left in these towns are forced to live with the consequences of the mining that went unregulated and took place in the hills they call home. Fortunately, a group of these people has joined together to do something about it.

Kelly's Creek Communities Association was formed in March 1999 to help build a coalition of citizen activists who could work to clean up the creek and improve the quality of life for people who are faced with the reality of this degradation every day. The founders of the organization had been inspired to begin work after participating in a grant-writing



Members of the Kelly's Creek Communities Association are shown here receiving the 2000 West Virginia Watershed Association of the Year Award.



Name: Kelly's Creek

Communities Association

Location: Kanawha County, WV

Congressional district: WV 2nd

Address: P.O. Box 528

Glasgow, WV 25086

Phone: (304) 595-0400

Fax: (304) 595-0400

program and also talking with members of another local watershed group that had experienced some success with its work. KCCA hosted its first meeting in the town hall of Cedar Grove, the oldest town in the Kanawha Valley and the heart of an area steeped in a rich history. It was the beginning of an effort that has yielded remarkable results.

Support immediately began when people decided something could be done about the environmental problems facing Kelly's Creek. The mayor of Glasgow, a town which sits at the mouth of the creek, worked with the town council to provide office space at no charge. The Town of Glasgow repaired the building, including putting a new roof on it, painting, installing new lights, and adding new carpet. One group member, a former DuPont employee, contacted the local chemical company and requested assistance. The corporation donated all of the office and meeting room

furniture they needed.

Members of KCCA were hard at work from the outset and were able to immediately procure a \$5,000 administrative start-up grant from the Canaan Valley Institute. To assist with cleanup supplies, the Kanawha County Commission supplied \$5,000 as well. This all occurred during the first year.

One of the group's first projects was to participate in an Adopt-A-Highway cleanup. After much planning, advertising, and collecting donated food and drinks from local businesses, they were set to begin. On the actual day of the cleanup, members were shocked to discover that 85 volunteers had arrived to work. The plan was to clean one mile of the creek, but by day's end, five miles had been completed. It was the beginning of many more successes to come.

During the first year the group cleaned all 18 miles of the creek and was able to lay the groundwork for a successful organization. The second year has yielded results as well as things have taken off. KCCA has begun a sewage assessment feasibility study, developed a successful education and outreach program, and sponsored fundraising and leadership workshops. The group's efforts have been noticed, and in 2000, they were selected West Virginia Watershed Association of the Year. In their first year, they were runner-up for the prestigious award.

Kelly's Creek Communities Association was created and is dedicated to the purpose of sustaining, restoring, and revitalizing all that pertains to the watershed. The group recognizes that cleaning up pollution is just one small step in ending the cycle of apathy that seems impossible to break.

In the future, the group hopes to build

The group's efforts have been noticed, and in 2000, they were selected West Virginia Watershed Association of the Year.



Local volunteers working with Kelly's Creek Communities Association pose with the bags of trash collected from only one site along Kelly's Creek, which has been impacted not only by this kind of litter but also more pervasive problems such as AMD.

upon its success and continue working to restore Kelly's Creek to its former pristine beauty. By creating parks along the creek and educating citizens on the importance of keeping Kelly's Creek clean, members hope to permanently curb the amount of trash they found on their first cleanup. The group also hopes to continue working with government entities to empower citizens to help in cleaning up the more complex problems such as AMD and raw sewage. Progress is being made, and all it took were a few citizens banding together to make a difference that will be felt for generations to come.

Watershed Database

Note: Contact information for organizations listed in this database can be obtained from Canaan Valley Institute at 800/922-3601; email: information@canaanvi.org

State	City	Organization
AL	Birmingham	Alabama Rivers Alliance
AL	Birmingham	Cahaba River Society
AL	Birmingham	Cawaco RC&D
AL	Birmingham	Direct Action
AL	Blountsville	Friends of the Mulberry Fork
AL	Fairfield	Bayview Lake Clean Up Association
AL	Gardendale	Five Mile Creek Action Committee
AL	Hayden	Friends of the Locust Fork
AL	Hoover	Smith Lake Environmental Preservation Committee
AL	Tuscaloosa	Friends of Hurricane Creek
AL	Wetumpka	Alabama Water Watch Association
IN	Petersburg	Four Rivers RC&D Area, Inc.
IN	Winslow	Patoka South Fork Watershed Steering Committee
KY	Hopkinsville	Greasy Creek Steering Committee
KY	Middlesboro	Appalachian Focus
KY	Midway	Watershed Watch in Kentucky
KY	Munfordville	Kentucky Waterways Alliance, Inc
KY	Paintsville	Big Sandy Coalition
KY	Paintsville	Big Sandy RC&D
KY	Prestonsburg	Appalachia Clean Water Partners
KY	Whitesburg	Appalshop Inc.
KY	Whitesburg	Letcher County Water and Sewer District
MD	Lonaconing	George's Creek Watershed Association
MD	McHenry	Yough Watershed Association
MD	Swanton	North Branch Potomac, Cherry Creek
MD	Swanton	Youghiogeny River
NC	Sparta	New River Community Partners
NY	Burdett	Upper Susquehanna Coalition
OH	Carrollton	Carroll Soil and Water Conservation District
OH	Glouster	Sunday Creek Watershed Group
OH	McArthur	Raccoon Creek Improvement Committee
OH	Mineral City	Huff Run Watershed Restoration Committee
OH	New Straitsville	Monday Creek Restoration Project
OH	Steubenville	Yellow Creek Watershed Restoration
OH	Wintersville	Jefferson Soil and Water Conservation District
PA	Allison Park	Harts Run Watershed Association
PA	Altoona	Clearfield Creek Watershed Association
PA	Apollo	Kiski River Watershed Association
PA	Apollo	Roaring Run Watershed Association
PA	Ashland	Catawissa Creek Restoration Association
PA	Ashland	Mahanoy Creek Watershed Association
PA	Ashley	Earth Conservancy
PA	Benezette	Bennett Branch Watershed Association
PA	Benton	Fishing Creek Watershed Association
PA	Brockway	Little Toby Creek Watershed Association
PA	Brockway	Toby Creek Watershed Association, Inc.
PA	Bulger	Washington County Watershed Alliance
PA	Burgettstown	Cross Creek Watershed Association
PA	Burgettstown	Raccoon Creek Watershed Association
PA	Butler	Connoquenessing Watershed Alliance
PA	California	Pigeon/Maple Creek
PA	California	Pike Run Watershed Association
PA	Caudersport	Kettle Creek Watershed Association
PA	Central City	Dark Shade Brownfields Project
PA	Central City	Shade Creek Watershed Association
PA	Clairton	Peters Creek Watershed Association
PA	Clarion	Mill Creek Coalition
PA	Claysville	Buffalo Creek Watershed Association
PA	Clearfield	Canaan Valley Institute
PA	Coudersport	Kettle Creek Watershed Association
PA	Cranberry Twshp.	Stream Restoration Incorporated
PA	Curwensville	Anderson Creek Watershed Association

State	City	Organization
PA	Driftwood	Bennett Branch Watershed
PA	DuBois	Sandy Lick Watershed Association
PA	Dushore	Loyalsock Creek Watershed Association
PA	Ebensburg	Little Conemaugh Watershed Association
PA	Edensburg	Cambria County Conservation District
PA	Edensburg	Stoney Creek Conemaugh River Improvement Project
PA	Evans City	Connoquenessing Watershed Alliance
PA	Evensburg	Stoney Creek Conemaugh River Improvement Project
PA	Franklin	Scrubgrass Creek (Benango Co)
PA	Fredericktown	Ten Mile Creek Watershed Association
PA	Friedens	Wells Creek Watershed Association
PA	Greensburg	Western PA Coalition for Abandoned Mine Reclamation
PA	Harrisburg	Pennsylvania Organization For Watershed & Rivers
PA	Harveys Lake	Bowman's Creek Watershed Association
PA	Hegins	Tri-Valley Watershed Association
PA	Hollidaysburg	Horseshoe Curve Restoration Coalition
PA	Homer City	Blacklick Creek Watershed Association, Inc
PA	Indiana	Aultman Run
PA	Indiana	Blackleggs Creek Watershed Association
PA	Indiana	Crooked Creek Watershed Association
PA	Jersey Shore	Pine Creek Preservation Association
PA	Johnstown	AMD&ART Inc.
PA	Johnstown	Blacklick Environment Center
PA	Johnstown	Stoney Creek Conemaugh River Improvement Project
PA	Lebanon	Swatara Creek Watershed Association
PA	Leetsdale	Little Sewickley Creek Watershed
PA	Liberty	Blockhouse Creek Preservation Group
PA	Ligonier	Loyalhanna Watershed Association
PA	Lower Burrell	Pucketa/Chartiers Creek Watershed Assn.
PA	Mansfield	Tioga River Watershed Rec Project
PA	McClellandtown	Brown's Run
PA	McDonald	Montour Run Watershed Association
PA	Mehoopany	Mehoopany Creek Watershed Association
PA	Melcroft	Mountain Watershed Association, Inc.
PA	Mill Hall	Beech Creek Watershed Association
PA	Morrisdale	Emigh Run/Lakeside Watershed Association
PA	Mt. Carmel	Shamokin Creek Restoration Alliance
PA	Mt. Pleasant	Jacobs Creek Watershed Association
PA	Muncy	Babb Creek Watershed Association
PA	Muncy	Muncy Creek Watershed Association
PA	Murrysville	Turtle Creek Watershed Association
PA	New Bethlehem	Pine Creek
PA	Olanta	Little Clearfield Creek Watershed Association
PA	Pine Grove	North Swatara Creek Watershed Association
PA	Pittsburgh	Allegheny Watershed Network
PA	Pittsburgh	Brush Creek Watershed
PA	Pittsburgh	Chartiers Creek Watershed Coalition
PA	Pittsburgh	Meadow Run Watershed Association
PA	Pittsburgh	Scrubgrass Water Project
PA	Pittsburgh	Squaw Run Watershed
PA	Pleasant Hills	Peters Creek Watershed Association
PA	Pottsville	Eastern PA Coalition for Abandoned Mine Reclam.
PA	Pottsville	Schuylkill County Conservancy District
PA	Pottsville	Schuylkill Headwaters Association
PA	Ridgway	Elk County Fishermen/Habitat Group
PA	Rochester	Slippery Rock Watershed Coalition
PA	Rockwood	Casselman River Watershed Association
PA	Rural Valley	Cowanhannock Creek Watershed Association
PA	S. Williamsport	Babb Creek Trust Fund
PA	Saltsburg	Blackleggs Creek Watershed Association
PA	Saxton	Shoup's Run Watershed Association
PA	Scranton	Lakawanna River Corridor Association
PA	Sigel	Jefferson County Water Resources Network
PA	Somerset	Laurel Hill Creek Watershed Association
PA	St Peters	Schuylkill Riverkeeper
PA	State College	Spring Creek Watershed Community
PA	Sybertsville	Friends of the Nescopeck Creek
PA	Sycamore	Wheeling Creek Watershed Conservancy
PA	Tarentum	Bull Creek Watershed Association
PA	Towanda	Schrader Creek Watershed Association
PA	Uniontown	Greater Redstone Clearwater Initiative

State	City	Organization
PA	Vintondale	The Borough of Vintondale
PA	W. Salisbury	Casselman River Conservance
PA	Waynesburg	Dunkard Creek Watershed Association
PA	Waynesburg	Greene County Watershed Alliance
PA	Wellsboro	Cowanessque Watershed Association
PA	Wellsboro	Pine Creek Headwaters Protection Group
PA	West Newton	Youghiogheny River Council
PA	Wilkes-Barre	Wyo. Valley Watershed Coalition
PA	Williamsport	Loyalsock Creek Watershed Association
PA	Williamstown	Wisconsin Creek Restoration Association
PA	Windber	Kiski Basin Initiative
PA	Windber	Kiski-Conemaugh River Basin Alliance
PA	Windber	Paint Creek Watershed Association
PA	Windber	The Stream Team
PA	Wood	Trough Creek Watershed Association
PA	Wyomissing	Schuylkill River Greenway Association
PA	Wyomissing	Schuylkill River Heritage Corridor
PA	Youngwood	Sewickely Creek Watershed Association
TN	Chattanooga	Southeast Watershed Forum TVA Resource Stewardship
TN	Corryton	Friends of Norris Lake
TN	Corryton	Friends of Norris Lake "Anderson Co. Chapter"
TN	Hixon	North Chickamauga Creek Conservancy
TN	Johnson City	Boone Watershed Partnership with Beaver Creek
TN	Knoxville	Coal Creek Watershed Foundation, Inc.
TN	Lake City	Save Our Cumberland Mountains
TN	Nashville	Tennessee Environmental Council
TN	Nashville	Tennessee Scenic Rivers Association
TN	Rogersville	Friends of the Clinch & Powell River
TN	Soddy Daisy	North Chickamauga Creek Conservancy
TN	Tazewell	Sycamore Creeks Watershed Group
VA	Abingdon	Boone Watershed Partnership with Beaver Creek
VA	Abingdon	Upper Tennessee River Roundtable
VA	Appalachia	Hands Across the Mountain, Inc.
VA	Castlewood	Copper Creek Committee
VA	Chilhowie	Friends of the South Fork Holston
VA	Clintwood	Guest River Group
VA	Clintwood	Lonesome Pine Soil and Water Conservation District
VA	Clintwood	Upper Levisa Restoration Project
VA	Dungannon	Friends of Stony Creek
VA	Ewing	Indian Creek Watershed Action Group
VA	Gate City	Partners for Big Stony Creek
VA	Honaker	Swords and Lewis Creek Honaker Group
VA	Jonesville	Community for Middle Powell Watershed
VA	Jonesville	Hardies Creek and Powell River Group
VA	Jonesville	Martin Creek Watershed Group
VA	Jonesville	Wallen Creek Watershed Committee
VA	Lebanon	Big Moccasin Watershed Committee
VA	Lebanon	Black Diamond RC&D
VA	Oakwood	Headwaters Association
VA	Raven	Clinch River Headwaters Association
VA	Raven	Friends for Clinch Headwaters Association
VA	Rosehill	Martin Creek Watershed Group
VA	Saltville	Friends of the North Fork Holston
VA	St. Charles	Friends of the North Fork
VA	Winchester	Opequon Watershed
VA	Wise	Guest River Group
VA	Wise	Wallen Creek Committee
WV	Alderson	Friends of the Lower Greenbrier
WV	Baker	Bakers Run Watershed Conservation Society
WV	Belle	Simmons Creek Watershed Association
WV	Bridgeport	Simpson Creek Watershed Association
WV	Buckeye	Upper Knapps Creek Watershed Association
WV	Buckhannon	Buckhannon River Clean-up Project
WV	Capon Bridge	Friends of North River
WV	Charleston	Canaan Valley Insitute
WV	Charleston	Davis Creek Watershed Association
WV	Charlestown	Back Creek Conservation Improvements
WV	Clay	Buffalo Restoration Group
WV	Davis	Blackwater River Watershed Association

State	City	Organization
WV	Davis	Canaan Valley Institute
WV	Dawes	Cabin Creek Watershed Association
WV	Delbarton	Pigeon Creek Watershed Association
WV	Dellslow	Friends of Decker Creek
WV	Elkins	Shaver's Fork Coalition
WV	Elkins	West Virginia Rivers Coalition
WV	Elkview	Blue Creek Watershed Association
WV	Fairdale	Trap Hill Watershed Association
WV	Fairmont	Friends for the Resotration of Guyses
WV	Farmington	Buffalo Creek Dream Makers
WV	Fayetteville	Plateau Action Network
WV	Forest Hill	Indian Creek Watershed Association
WV	Gallagher	Lower Paint Creek Association
WV	Gallagher	Upper Kanawha Valley Forum
WV	Gap Mills	Moncove Lake Foundation, Inc.
WV	Gary	Elkhorn Creek Watershed Association, Inc.
WV	Glasgow	Kelly's Creek Watershed Association
WV	Hamlin	Upper Mud River Water Association
WV	Hansford	Lower Paint Creek Watershed Association
WV	Hedgesville	Blue Heron Environmental Association
WV	Hennshaw	Lens Creek Watershed Association
WV	Hillsboro	Greenbrier River Watershed Association
WV	Hugheston	Hughes Creek Watershed Association
WV	Keyser	Lower New Creek Watershed Association
WV	Keyser	New Creek Valley Watershed Association
WV	Kingwood	Friends of the Cheat
WV	Lavalette	Twelvepole Watershed Association
WV	Logan	Little Buffalo Creek Watershed Association
WV	Martinsburg	Friends of Tuscorora Creek
WV	Moatsville	Laurel Mountain/Fellowsville Area Watershed Assn.
WV	Montrose	Teter Creek Lake Neighborhood Watch
WV	Morgantown	Downstream Alliance
WV	Morgantown	Dunkard Creek Watershed Association
WV	Morgantown	Laurel Run of the Big Sandy Watershed Association
WV	Morgantown	White Day Creek Watershed Association
WV	Moundsville	Northern Panhandle Watershed Council
WV	Mount Hope	Duloup Creek Watershed Association
WV	Moyers	Thorn Creek Watershed Association
WV	Nitro	Friends of Trace Fork
WV	Nitro	Little Coal River Coalition
WV	Nutter Fort	Elk Creek Water Pollution Control
WV	Omar	Main Island Creek Partners
WV	Page	Loup Creek Watershed Association
WV	Pax	Upper Paint Creek Watershed Association
WV	Petersburg	Friends of Spring Run's Wild Trout
WV	Petersburg	Upper South Branch Watershed Association
WV	Philippi	Tygart Valley River Watershed Association
WV	Pipestem	People Who Care for Brush Creek
WV	Poca	Heizer Manila Stream Partners
WV	Princeton	Bluestone River Environmental Network, Inc
WV	Rainelle	Sewell Creek Watershed Beautification & Improvement
WV	Rock Cave	Friends of the Little Kanawha
WV	Second Creek	Friends of Second Creek
WV	Shepherdstown	Jefferson County Watershed Association
WV	Shinnston	Lower West Fork Watershed Association
WV	Sistersville	Middle Island Creek Conservation Group
WV	Sod	Friends of Mud River Watershed
WV	Tunnelton	Friends of Laurel Mountain Watershed
WV	Union	Indian Creek Watershed Association
WV	Wheeling	Carter Run Watershed Improvement Association
WV	Wheeling	Wheeling Creek Watershed Project
WV	Whitesville	Coal River Mountain Watch
WV	Winefrede	Fields Creek Watershed Association
WV	Worthington	Lower West Fork Watershed Association

Acknowledgements

Hope and Hard Work: Making a Difference in the Eastern Coal Region was originated and directed by **T. Allan Comp**, Ph.D. Comp has an extensive lifetime record of environmental and cultural resource experience and is the founder of AMD&ART and the Dark Shade Brownfields Project, two nationally recognized watershed restoration projects in southwestern Pennsylvania. He currently serves as Program Analyst at the U.S. Office of Surface Mining in Washington, D.C.

Michael R. Wood, a political science major at West Virginia University specializing in natural resources and the environment, designed the publication and edited the watershed stories. Cover design was also by Wood, with technical support provided by Wesley B. Nugent, West Virginia University Extension Service, and photos by Ellen Micoli, AMD&ART. Funding for this project was provided by a grant from the **Environmental Protection Agency**. Photos in the book were provided by individual watershed organizations.



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For More Information

If you would like more information on local watershed groups working to treat AMD throughout Appalachia, or to request a copy of this publication, please contact:

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Water Protection Division
3WP10
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U.S. Department of the Interior Office of Surface Mining

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Hope and Hard Work

Making a Difference in the Eastern Coal Region

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